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Session One – Getting down to Business

Examine Contemporary Chinese Immigrant Entrepreneurship in the Framework of Dual Entrepreneurial Ecosystems

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Live Online Presentation

Between 2000 and 2017, the total number of immigrants living in these two countries increased by 60%, compared to a global increase of 49.3%. Meanwhile, a higher proportion of immigrants engages in entrepreneurship than natives in Australia and New Zealand. For instance, in Australia, immigrants own 33.6% of all businesses, despite making up only 28.8% of the total population. Evidence shows that Australia and New Zealand have experienced socioeconomic gains from international migration and Immigrant Entrepreneurship (IE). In addition to the host society's business environment, fragmented research shows that the immigrants' home country affects IE in certain aspects. However, there is a lack of holistic investigation into how immigrant entrepreneurs draw resources from the host and home countries to establish and grow their ventures. Recently, researchers have asked for a lens through which to examine the relative influences of the home and host country on IE. This project research IE phenomenon in a new analytical framework of dual entrepreneurial ecosystems which geographically located host country entrepreneurial ecosystem and cultural-social closed home country ecosystem. The research aims to comprehensively analyse the relationships among immigrant entrepreneurs' motivation, resource access from dual entrepreneurial ecosystems, adopted business strategies and firm performance. A mixed-methods will be applied. Qualitative research will discover and examine ecosystem factors. Quantitative research will determine the factor significance in the measurement model and test the structural model of the conceptual framework.

Keywords: Entrepreneurial Ecosystem, Immigrant Entrepreneurship, Entrepreneurial Motivations

Research Method: Mixed Methods

A New Measurement for Regional Economics: The Functional Knowledge Region

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Oral Presentation

The role of research organisations and universities in regional economic development has been questioned many times. From regional innovation systems to the triple helix, all are concerned with the ability to transfer new knowledge to meet the needs of the local area. As the regional area transitions from one industry to another, there will be changes to the economic growth drivers of a region; however, the ability to enable endogenous growth within a region is often tied to new knowledge generation. This research will examine the triple helix of university-industry-government relationships, focused on selected industries, examining the important question of whether the collaboration of the institutions is meeting the needs of the surrounding community. To measure this, the proposed Functional Knowledge Region (FKR) enables the quantification of the spillover of knowledge from Government backed Research Organisations (such as CRC's, CSIRO, DPI etc) and Universities into the surrounding areas, defining the spread of the knowledge that can form in clusters around these organisations.
A multi-stage process will be undertaken:

1. Address the research output of universities through a systematic literature review leading to the construction of an index of regional relevance
2. Quantify the spatial spread of human (knowledge) capital
3. Identify the clustering and specialisation of industries

Combining measurements of the spatial spread of knowledge (education level and field of study), industrial needs (industry specialisation) and the complete or incomplete triple helix research output of universities, the FKR is a new method that draws upon the Functional Economic Region as a new tool for understanding the regional relevance of research the application of the triple helix elements. End users of this new indicator include technology transfer officers, those concerned with regional development and commissioners of research. Organisations include CRCs, universities, CSIRO, emerging businesses and State or Federal funding bodies.

Keywords: Economics, Triple-Helix, Spatial, Census, Research

Research Method: Mixed Methods

A Framework to Assess the Effectiveness of Virtual Business Incubators (VBIs)

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Oral Presentation

The virtual business incubator (VBI) is increasingly recognised as a cost-effective economic and enterprise development tool to revitalise economies and foster new types of local businesses. Advantages of VBIs include the provision of business support services beyond the confines of a physical building, allowing for a much larger number of clients, who could be dispersed across extended geographical areas. Moreover, they have the potential to provide support to entrepreneurs at various stages of their business development. This represents a shift from the traditional focus of business incubators (BIs) that support entrepreneurs in the early stages of the business lifecycle. Similar to conventional business incubators, VBIs are quite diverse, they pursue different objectives and have differences in management structures. Yet, they vary in the way they leverage the capabilities offered by digital technologies to deliver their services and in the type of entrepreneurs they serve. Currently, there are no foundations, conceptual frameworks and methodologies to assess the effectiveness of virtual business incubators. Effectiveness refers to internal operations including the communicative and interactive features enabled by the digital technology used, administrative functions and operating procedures carry out by the management team to successfully delivered business support services and learning resources. In this study, a conceptual framework to assess the operations of VBIs is proposed. The framework takes into account the capabilities of the digital technologies, inherent characteristics of the virtual organisation (VO), best practices of business incubators and the success factors of virtual communities. The rationale of this approach is our conceptualisation of the VBI as a virtual organisation and as a virtual community, simultaneously.

Keywords: Virtual Business Incubator

Research Method: Quantitative

The Role of Brand Innovativeness and Hope in the Sharing Economy: The Case of Airbnb

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Oral Presentation

Are brands truly innovative? This research focuses on customer perceived brand innovativeness (CPBI) for the sharing economy firm, Airbnb, and investigates the role of hope in explaining the effects of CPBI on guests' perceived emotional and behavioural responses. An online survey was completed using Amazon Mechanical Turk in January 2019, with responses currently being analysed using SPSS. Preliminary findings suggest possible outcomes of CPBI can impact customers' goal attainment, perceived value of relationship with a brand, satisfaction, trust and commitment. Firms operating in the sharing economy space often invest substantial resources into marketing programs to enhance innovativeness in order to create an image of market leadership and create barriers to entry for competitors. Outcomes of the research could inform managerial strategies on the role of hope in shaping customer perceptions of brand innovativeness, and provide a platform to examine the societal impacts of collaborative consumption.

Keywords: Sharing Economy Consumer Behaviour Hope Airbnb

Research Method: Quantitative

About the UNE SMART Region Incubator and finding the startup opportunity in your research'

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Invited Presentation

The UNE SMART Region Incubator or SRI as it is known, is explained, what our startups are building, how we work with founders and how we can help you as a research student to explore commercial opportunity for your research. This session is about throwing open the door to commercial possibility for tech transfer and other approaches to your research. An opportunity to learn about the support that UNE SMART Region Incubator and the Expert in Residence programme offers to SRI Startups on their commercialisation strategy and how you can be involved in SRI events including the Agmentation and RISE hacks. Ed Lefley has worked with the SMART Region Incubator since July 2017 supporting the SRI founders and SRI hack events.

Session Two - Talking about Health

Understanding Therapist Drift

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Oral Presentation

Therapist drift refers to a tendency by psychologists (and other mental health workers) not to implement fully the evidence-based practices in which they are trained, even when resourced to do so. When therapists drift from empirically supported treatments patients may receive ineffective treatments, or treatments that are potentially harmful or ethically dubious. Identification of the correlates of therapist drift may lead to development of interventions to minimize the potential for drift or to reverse its course. Both therapist characteristics and the organizational settings in which therapists work may contribute to therapist drift. We have completed a systematic literature review examining the associations that exist between therapists' characteristics and drift from empirically supported treatments, identifying nine important associations. Currently, we are attempting to replicate and extend studies that have led to identification of these associations with a sample of Australian psychologists. Much of the extant research on therapist drift has explored drift occurring in the treatment of specific disorders (e.g., eating disorders; specific phobia), but there is a gap in the literature with respect to drift among therapists treating specific cohorts of clients (e.g., disabled clients; clients from non-majority ethnic backgrounds; gay, lesbian and bisexual clients). Accordingly, in a subsequent study we will explore the extent of therapists' drift from empirically supported treatments when working with gay males.

Keywords: Therapist Drift, Evidence-Based Practice; Homosexuality

Research Method: Quantitative

Measuring Chaos? Exploring the Validity of a Widely Used Survey Instrument in Two Cross-Country Samples

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Oral Presentation

The Confusion, Hubbub, and Order Scale (CHAOS) is a 15-item questionnaire developed and validated in the United States in the 1980s in a sample of toddler-aged twins. The scale briefly assesses the home environments of children participating in social research, circumventing the need for extensive (and time-consuming) observations. Researchers began using a shortened 6-item version of the scale in the late 1990s, however this version was never formally validated. This preliminary study investigates the construct validity of the short CHAOS scale using two samples. The Florida Twin Project on Reading (n=567 families) and the Australian Twin Study of the NAPLAN (n=1067 families) recruited school-aged participants of similar ages (Mean = 9 and 8.7 years respectively) between 2010 and 2017. Parent responses on the CHAOS scale in each sample were assessed to determine internal consistency, factor structure, measurement invariance, and criterion validity, using academic achievement as a criterion. Internal consistency for the scale was low. Confirmatory factor analyses suggested a two-factor model in both samples, which fit the data better than the one-factor model that has been used in all published literature using the scale to date. Measurement invariance testing demonstrated an average model fit when factor loadings were constrained to be equal in both samples. Further steps of invariance testing revealed progressively worse model fit with each additional equivalence constraint. Results of structural equation models showed the two factors predicted academic achievement differently in each sample. These results demonstrate heterogeneity in the CHAOS scale and raise questions about existing results that imply the scale measures a unidimensional construct. If research is to generate reliable knowledge about how chaotic home environments might affect the cognitive or behavioral development of children, further theoretical and applied work is needed to improve or renew the measurement.

Keywords: Construct Validity; Measurement Invariance; Twin Studies

Research Method: Quantitative

Voices from The Bisexual Community: Identifying and Addressing the Issues that Bisexual People Experience

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Oral Presentation

The LGBTQIA+ (lesbian, gay, bisexual, transsexual, queer, intersex, asexual) community is commonly considered a singular group, however, there are multiple distinct groups with their own experiences, health needs, histories, and demographics. The issue of lumping sexual minorities into one category is that it can conflate data which may not be representative of all subgroups and underestimate issues that may be pertinent to one particular group. Consistently, researchers have found that bisexual people have poorer mental health outcomes. Specifically, bisexuals experience greater psychological distress, are more likely to be diagnosed with and treated for a mental disorder, and have higher rates of suicidality compared with lesbian women, gay men and heterosexuals. A possible explanation for this disparity is that bisexual individuals often face dual-marginalisation or double discrimination, whereby, they experience discrimination from heterosexual and LGBT communities. In addition, this discrimination can stem from negative attitudes towards bisexuals which can include intolerance, hostility, stereotyping, and a desire to avoid them. Bisexuality stereotypes typically comprise of the instability and illegitimacy of bisexuality (confusion), sexual irresponsibility (promiscuity), sexual behaviour (viewed as sexually adventurous), and being viewed as sexual objects. These attitudes can result in prejudicial events including victimisation, violence and harassment. To understand these stereotypes, prejudice and discrimination, we will engage with the online bisexual community to hear from them about what they face in their everyday life. I will be conducting four studies over the course of my PhD with the aim to understand the underlying factors of bisexual mental health, understand their experiences with mental health services and aim to address these issues through education.

Keywords: Bisexual, Stereotypes, Discrimination, Prejudice, Mental Health

Research Method: Qualitative, Quantitative

Murder-Suicide Media Portrayals: Newsworthy or an Opportunity for Knowledge Creation?

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School of Health
Oral Presentation

News Flash! In a quiet neighbourhood, one adult and two small children are dead. Media coverage is extensive: we hear snippets on the radio, we read about it online, we see it on the evening news. A parent has killed their children and taken their own life, OMG, they must be mad! Everyone is shocked. The story continues against a backdrop of images: police examining the scene, a chopper flying overhead, neighbours expressing disbelief, distraught people laying wreaths, someone collapsing, others offering comfort as the cameras move slowly away. We're curious. We're hooked. We want to know what's happened and why in order to make sense of this tragic situation. Murder-suicide events make for 'great' news. However, the framing of them tends to reflect stereotypical and popularised gender views of the 'mad, bad, and sad' parents who kill their children. Research suggests that parents, mothers and fathers, who kill their children do so for different reasons, using a variety of methods, in comparable numbers. While gender is an important ingredient of newsworthiness, gender biased portrayals blinker our thinking and limit our understanding of what's happened and why. The truth is far more complex, with literature relevant to the topic found at the intersections of knowledge. In accepting the media as a primary source of information about these events, we acknowledge that its messaging has a major influence and impact on communities. In response, this exploratory and descriptive Australian study seeks to garner learnings about the way murder-suicide events and the associated community reactions are portrayed in the media. Utilising a socio-ecological framework and a mixed methodology, it aims to challenge gendered portrayals of events, with the results potentially informing empowering preventative messaging strategies. Preliminary findings from this new research will be shared in this presentation.

Keywords: Murder-Suicide, Children, Families

Research Method: Mixed Methods

Telehealth for Children with Complex Needs. A Mixed Method Systematic Review, Preliminary Findings

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Oral Presentation

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Telemedicine or telehealth offers the prospect of overcoming the challenge of isolation and distance for many rural and remote clinicians and their clients across the globe, thus improving health outcomes for all. Telehealth has been reported to benefit rural Australians in term of improved access and quality of health care and in the recruitment and retention of the rural health workforce (Moffatt & Eley, 2010). There has been a rapid growth in this style of consultation from centralised telehealth services model (Martin-Khan et al., 2015) to the delivery of allied health therapy remotely in small hospital clinical settings. It has been suggested by Iacona et.al., (2016) that the potential of ehealth to address the allied health needs of Australians living in rural and remote Australia appears unrealised. From initial literature surveys there appears to be few published studies on allied health telehealth service delivery. A systematic review of telehealth models of care in rural and remote Australia (Bradford, 2016) reported only 9/72 services to be allied health. The majority of reported studies (Speyer et al., 2018) were in the disciplines of psychology, nursing and social work. The author is aware many more services exist in rural areas that do not form part of published service reports.Slater et al (2016) suggests research is needed to increase our understanding of how best to use telehealth and digital technologies, to identify what works and for whom in terms of health outcomes, cost-effectiveness, acceptability, safety and sustainability. This presentation will present the preliminary findings of a mixed method systematic review into telehealth allied health service delivery for children.

Keywords: Telehealth, Children, Allied Health, Service Delivery

Research Method: Mixed Methods

Session Three – Animal Round-up

Evaluating Economic and Environmental Impacts of Selection for Residual Feed Intake and Tailored Diet Formulation in Pigs

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Oral Presentation

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To identify proper strategies for future feed efficient pig farming animal selection scenarios should be evaluated. Selection based on residual feed intake (RFI) has been proposed to improve feed efficiency. The aim of this project is to develop a model to account for individual animal performance in life cycle assessment methods to quantify the economic and environmental impacts of the selection. Experimental data from 118 pigs were collected from lines divergently selected for residual feed intake (low line, more efficient pigs, LRFI; high line, less efficient pigs HRFI). A parametric model was developed for life cycle assessment (LCA) based on the net energy fluxes in a pig system. A nutritional pig growth tool, InraPorc®, was included as a module in the model to embed flexibility for changes in feed, traits and housing conditions, and to simulate individual pig performance. The comparative LCA showed that LRFI pigs had lower environmental impacts than HRFI pigs, on climate change, acidification potential, fresh water eutrophication potential and land occupation. A sensitivity analysis based on pig performance traits revealed that these environmental impacts were least sensitive to carcass lipid contents and back fat thickness, and most sensitive to protein content, growth rate, feed intake and feed conversion ratio. Further modelling showed line differences in requirements for energy, protein and amino acids, which was used to formulate separate diets adjusted to the line requirements. The environmental assessment of the simulated line responses to these diets revealed that tailored diet formulation, according to the innate requirements of the pigs, is a promising strategy for achieving more sustainable pig production. An additional economic optimisation is currently being developed to propose an integrated framework to pig production stakeholders.

Keywords**:** Feed Efficiency, Life Cycle Assessment, Environment, Economic, Pigs

Research Method: Mixed Method, Life Cycle Assessment (LCA)

Genetic Parameters for Linear Measurements of Pigs from Image Analysis

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Oral Presentation

Current payment system for pig producers is through carcase weight. The purpose of this study was to explore alternative measures on the pig that may improve carcase value (namely pig length, leg length, middle length and shoulder length), and the potential to breed for these measures.The study included 1520 live pigs having both image and carcase records. The different linear measurement traits were taken from images of the back of pigs using the ImageJ software. To calibrate each image, the length of an A4 sheet of paper and the width of crate were measured. Photos were taken at 147 days of age (87.2 kg body weight) which was three weeks before slaughter. Pigs with records represented 93 sires and 980 dams. Pigs were recorded on one farm, and represented three different breeds. There were 24 contemporary groups defined by the week of test, which were fully nested within five different grow-out facilities. Genetic analyses on pig length, leg length, middle length & shoulder length was conducted using a series of univariate and bivariate models in ASReml with fixed and random effects of contemporary groups, breed, test weight (covariate) and animal. Heritabilities ranged from 0.02 to 0.17 for different length traits where the highest heritabilities were found for middle length (0.17) and pig length (0.10). This indicates that these middle length and pig length do express genetic variation, and we can select animals on them. Genetic correlations between traits ranged from 0.00 to 0.99 and the phenotypic correlations ranged from -0.00 to 0.71.The highest genetic correlation (0.99) was found between middle length and pig length. Further analyses will estimate genetic and phenotypic correlations between these image traits and the main carcass primal cuts of pigs in order to develop selection strategies to improve carcase value.

Keywords: Image Traits, Heritability, Genetic Correlations

Research Method: Quantitative

Breeding objectives for a Thai native chicken

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Oral Presentation

Thai native chicken (TC) is a dual-purpose chicken to produce both eggs and meat. Their meat has a unique texture and taste and thereby, it is a favourable product for Thai consumers. However, TC has production constraints such as low genetic potential for eggs and meat production. Nevertheless, they have high genetic diversity for both traits. Estimated heritabilities for body weights measured between 4 to 24 weeks of age ranged from 0.20 to 0.30 and for egg production traits (age at first eggs, egg weight at first eggs and total eggs up to 17 weeks of lay) ranged from 0.15 to 0.24 indicating that both egg and meat production traits can be improved through selection. Defining a breeding objective is the way forward in genetically improving the egg and meat production of TC. This means that objective traits have to be defined and economic values of improving these traits by selection have to be determined based on a bio-economic model of the production system. In order to characterise the production system of TC, a survey was conducted. Two production systems were categorise based on the level of management: intensive production systems (IPS), where chicken were permanently confined and supplied with feed and healthcare while the day old chicks hatched were sold for egg production and fattening, and extensive production system (EPS), where the chickens were partially confined and left to scavenge for feed and no supplementation was given. The survey revealed that the average number of hens per flock of IPS and EPS were 950 and 5, respectively. The production model is being developed to derive economic values of egg production and growth traits. Evaluations are undertaken to identify which is the most profitable production system of TC with its current genetic merit.

Keywords: Bio-Economic Model, Thai Native Chicken

Research Method: Quantitative

Genetic Association Between Milk Yield and Age at First Calving for Dairy Cattle in Kenya

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Oral Presentation

Milk production and age at first calving (AFC) in dairy cattle are important for profitable dairy industry. Few studies examined the influence of AFC on milk yield along the lactation under different production systems. To determine this, 9,734, 17,076 and 23,770 first lactation test-day milk yield records from 1,029. 1,640 and 2,484 multiple breed cows reared under low, medium and high production systems respectively, were analyzed. Production systems were defined based on the herds' milk productivity in a period of 305 days. Test-day milk yield under the three production systems and age at first calving were then modelled to estimate genetic correlations between the two traits along the lactation trajectory. Positive genetic correlations were estimated in the low production system (0.16 to 0.52) while negative to positive genetic correlations were estimated for medium (-0.13 to 0.59) and high production system (-0.17 to 0.58). Under all the production systems, positive genetic correlations were estimated between age at first calving and milk yield during early stage of the lactation. The negative genetic correlations estimated towards the end of the lactation were not significantly different from zero. These results indicate that genetic improvement of milk yield, especially in the early stage of the lactation would result to a delayed age at first calving. This could also imply that delaying first calving results in heavier cows at calving and produce more milk after calving. Heavier cows at calving would also result to a more persistent lactation under the low production system with higher correlations in mid-lactation. This information is important for selection to balance genetic improvement of milk yield and fertility. Although early calving age would help lower heifer rearing costs, too low age could lead to reduced milk yield and productive life as a result of reduced development of mammary secretory tissue.

Keywords: Correlation, Milk Yield, Fertility, Production Systems

Research Method: Quantitative

Session Four – Getting Things under Control

Presence of Potential Biological and Mechanical Vectors for Theileria Orientalis on Northern Tablelands, NSW, Australia

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Oral Presentation

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Among tick transmitted diseases, infections with haemoprotozoan parasite, theileria is an economically important disease of cattle in tropical and sub-tropical countries with *Theileria parva* and *Theileria annulata* being the most pathogenic species. Although *Theileria orientalis* is known to cause persistent infections with mild signs, in recent years there has been an increase in severe clinical outbreaks including mortality in Asia-Pacific region. In Australia, such outbreaks commenced in 2006 with new genotypes Ikeda and Chitose apparently responsible for clinical disease. In New South Wales, outbreaks were initially seen in higher rainfall coastal areas with infection now endemic. The situation in nearby inland areas having lower tick populations is less clear although outbreaks do occur. In the Northern Tablelands of NSW clinical outbreaks have occurred since 2013 even during cold winter months when tick activity is low. As part of a study on the abundance and infection status of potential vectors for *T. orientalis* in this region, 89 bovine blood samples from eight farms were subjected to qPCR assays where the two pathogenic genotypes (ikeda and chitose) were detected. The presence of mixed infections with genotypes were common in 93% (83/89) of the samples. The high prevalence of co-infection with both pathogenic and non-pathogenic genotypes indicated endemicity. Out of six farms used for potential tick study, *Haemaphysalis bancrofti* was present in only one. Although both adult and nymphal questing ticks were used for parasite detections, ikeda and buffeli were detected only in nymphs. Analysis of a retrospective data on Culicoides showed the presence of 25 different species of which six are known to feed on cattle. Moreover, results from potential biting insects study showed the presence of March and stable flies, and sucking lice. Detection of *T. orientalis* in these potential mechanical vectors is remaining work to be done in this project.

Keywords: Wallaby Tick, Biting Insects, Northern Tablelands

Research Method: Mixed Methods

Killer Joules: Using Microwave Radiation to Control Cereal Diseases

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Cereal production in Australia is impacted by stubble-borne diseases such as crown rot, caused by the fungus Fusarium pseudograminearum (Fp). The disease can be difficult to manage, as Fp can survive within crop residues as macroconidia or mycelium across multiple seasons. Microwave radiation may offer a rapid and chemical-free approach to destroying Fp inoculum within stubble. The energy required to kill Fp macroconidia using microwave radiation was therefore investigated in a microwave dose response experiment. Suspensions of macroconidia of Fp (2.6 x 104 macroconidia/mL) were microwaved in a conventional 1100 W microwave oven for 0, 4, 5, 6, 7, 8, 9 and 10 seconds. Viability after microwaving was assessed by counting colony forming units (CFU) following dilution plating on ¼ potato dextrose agar plus novobiocin. Conidial viability declined as the energy applied increased. Significant reductions in viability (>90% reduction in CFU) were achieved after 7 seconds of microwave treatment, or 131 Jg-1 of energy. Macroconidia were completely non-viable following microwave treatment times of 8 seconds or longer. The minimum mean energy and temperature requirements to achieve total death were therefore 172 Jg-1 of energy and 62.5C, respectively. Thus, microwave radiation can be used to destroy Fp macroconidia using a relatively small energy dosage. This method could be used for assessing the susceptibility of other plant pathogens to microwave radiation, and potentially adapted for treating inoculum in soil and stubble for crown rot management under field conditions.

Keywords: Microwave, Novel, Heat-Kill, Wheat, Barley, Pathology

Research Method: Quantitative

Mungbean (*Vigna Radiata*) Nutrient Uptake and Root Response to Phosphorus and Potassium Placement Strategies

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Oral Presentation

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Low soil phosphorus and potassium in pulse growing regions require novel fertilizer placement strategies and an understanding of root system responses to those nutrients. Although roots often proliferate in response phosphorus bands, no records of proliferation in response to potassium have been observed. Therefore increasing potassium fertilizer recovery and efficiency is challenging. An experiment was conducted to measure mungbean root morphological responses and nutrient uptake, to different phosphorus and potassium placement strategies. Phosphorus uptake more than doubled when potassium was co-located with phosphorus in deep or shallow bands. However, root proliferation induced by phosphorus application increased potassium uptake 4-5 times. Recovery of potassium when not co-located with phosphorus was less than 50% and did not result in increased root mass density. As expected, despite low phosphorus buffer capacity, applied phosphorus did not leach down the soil profile, in contrast with potassium which moved >10cm over the course of the experiment despite watering strategies designed to minimize leaching. Phosphorus and potassium acquisition efficiency was not affected by placement methods in phosphorous co-located potasium under phosphorous sufficient supply but which were increased by 5 - 6 times when phosphorous co-located potasium than single potasium and phosporous under phosphorous limited conditions.

Keywords: Mungbean, Phosphorus, Potassium, Uptake, Root response

Research Method: Quantitative

Diurnal Temperature Fluctuations Significantly Influence on the Demography of Megoura Crassicauda (*Hemiptera: Aphididae*)

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Oral Presentation

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The *Megoura crassicauda* (Hemiptera: Aphididae), an exotic pest in Australia, become a new challenge for bean production. The relationship between *Megoura* with the most important environmental factors like, temperature is not well known. Here we compare the impacts of diurnal temperature fluctuation on the performance of *Megoura* over constant temperature. In this study, a control temperature of 25°C and four fluctuating temperature regimes (increased by +0°C, +2°C, +4°C and +5°C from field-recorded, diurnally fluctuating base temperatures) were used as treatments. Results demonstrated that fluctuating temperature significantly increase total lifespan of *Megoura*. Specifically, the nymphal period increases from 10 days at base+0°C to 6 days at 25 °C, while adult longevity and total survival increases from 42 to 27 days and 52 to 33 days respectively. Consequently, the highest fecundity (103 eggs per female) was recorded at base+0°C. The *Megoura* population reared at diurnal fluctuating temperature has intrinsic rates of natural increase, affirming the most favourable temperatures for their growth, development and reproduction. These findings can contribute to understanding the bionomics, distribution and occurrences of *M. crassicauda* and thus, might boost management schemes.

Keywords: Diurnal Fluctuating Temperature, Life History, Megoura Crassicauda

Research Method: Mixed Methods

Abstracts by Streams and Sessions

STREAM TWO

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Session Five – Around the World

Characteristics and Impacts of Out-Migration in Mandalay and Sagaing Regions of Myanmar

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Oral Presentation

This study investigated migration patterns, characteristics of migrants, and reasons for migration in two case-study regions in Myanmar. Using stratifies random sampling in migrants and non-migrant households, 302 respondents were selected from twelve villages in four townships of Mandalay and Sagaing Regions. From the survey data, when compared with non-migrant households, migrant households tended to score higher on economic indicators such as total household income, farm assets, household assets, and total farm income. Although international migrants achieved higher incomes, domestic migrants outnumbered them. International migrants were predominantly male, but there was a nearly equal gender ratio for domestic migrants. International migrants tended to send more significant and more frequent remittances to their Myanmar households when compared with domestic migrants. The age range of migrants, especially the middle age range, also affected the decision-making around migration. Respondents from migrant households most commonly cited the primary advantage of migration as being the additional income earned; the commonly cited disadvantage was the creation of labor scarcity, in particular for agricultural production, due to the loss of the younger and more productive household members. The study findings have practical and policy significance as they highlight the scale and impacts of out-migration and identify adaptive strategies households can employ when confronted with increased out-migration in Myanmar.

Keywords: Out-Migration, Remittance, Income,

Research Method: Mixed Methods

Livelihood Capitals and Income Generation of Smallholders in Myanmar: Case Studies in the Cut Flower Industry

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Oral Presentation

Floriculture is a growing sector in rural economies and has the potential to make essential contributions to smallholder livelihoods. This study was conducted to analyse the relationships between income generation and livelihood capitals of floriculture households in Myanmar. Data relating to five livelihood capitals (human, natural, financial, physical, and social) were collected through interviews with 210 key actors of the cut flower value-chain in three major flower production areas. Analysis of the data revealed that out of 28 predictors, 11 and 14 variables which are related to human, natural, financial, and social capitals, were correlated with total income and flower income, respectively. Cultivated land area (natural capital) was positively and significantly correlated with the total income, but land ownership was negatively associated with flower income. Among financial capital attributes, the asset value and household expenditure had significant positive relationships with total income. However, household non-flower income source had a negative relationship with flower income. There were significant positive relationships between total income and accessible social organisations, and flower income and the household size (human capital). It was apparent that both total and flower income did not correlate with physical capital and many aspects of other capitals. Besides, the lowest household income of farmers indicated a strong influence of the major livelihood activity of participants and the lowest flower earnings in Shwedaung Township pointed out the impact of zonal localisation on the cut flower business. To conclude, success in flower business relies upon access to critical resources such as land, assets and family labour; social networking is beneficial; trading is more lucrative than farming alone. Floriculture industry development to improve the smallholder livelihoods in Myanmar will need specific strategies. They may include training in production and value-chain participation; quality assurance system for planting materials; infrastructure development; credit access.

Keywords: Floriculture, Value-Chain, Livelihood Strategy, Zonal Localization

Research Method: Mixed Methods

Lamb Weaning Weight and Dam Age Affect Intramuscular Fat Deposition

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Intramuscular fat (IMF) is a key factor to improving meat palatability, specifically texture and juiciness. Differences in IMF% within a flock is well noted and may be related to genetic variation and environmental factors, including maturity. Dam age influences milk production, which is reflected in lamb growth rate. Furthermore, accretion of IMF is influenced by muscle growth rate. Therefore, it was hypothesised that lambs with higher weaning weights from older dams will have higher carcass IMF%. Data were recorded (n = 4579) from Sheep CRC Information Nucleus flocks across nine sites from 2007 to 2012. Data were modelled using a linear mixed effects model (nlme; R). Intramuscular fat percentage was not influenced by weaning weight alone ($P = 0.545$), however, there was an interaction between weaning weight and dam age ($P < 0.01$). As weaning weight increases, IMF% of lambs at slaughter decreases from ewes that are two to nine years old rejecting the initial hypothesis, however six year old ewes displayed a slight increase in IMF%. However IMF is also impacted by birth year and flock. These data suggest that nutritional differences between years may be driving IMF deposition. Furthermore deposition of IMF is influenced by the genetic capacity of these animals, possibly accounting for the differences in IMF% across flocks. Further data analysis is required to understand the influence of sire and dam type on IMF% in these lambs.

Keywords: Palatability, Juiciness, Texture, Dam Age

Research Method: Mixed Methods

The Effect of Temperature and Water on Net Development of T. Vitrinus Eggs to Infective Stage

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Oral Presentation

Temperature and water availability have been identified as the two most important environmental factors influencing the development and survival of nematode eggs to infective larvae. These factors exert their impact through modulation of faecal water content which represents the microclimate in which eggs develop to infective larvae. However, experimental data quantifying the relationship between climatic variables and dynamics of free-living stages of nematodes are limited. This study attempted to quantify the impact of temperature and faecal water content on the net development of free-living lifecycle stages of T. vitrinus. A 5x5 factorial experiment for constant temperatures (0, 10, 20, 30, and 40°C) and faecal water contents (0, 20, 40, 60 and 80%) was conducted using temperature-controlled incubators. Each incubator with four shelves held 32 experimental units (petri-dish containing ~8 g of fresh faeces from mono-specific T. vitrinus infected sheep). From each shelf, one experimental unit was destructively sampled on each of 8 consecutive days for enumeration of the different life-cycle stages of T. vitrinus. Developmental stages were categorised as either eggs, pre-infective larvae or infective larvae. The mathematical model of Laurenson and Kahn (2018) was used to parameterise the experimental data. A standard linear regression between model predictions and experimental data was carried out to evaluate the model fit to data. Infective larvae stage were observed from Day 3 post-deposition when temperature was maintained at 20 and 30°C and when the target FWC was 40% or above. The regression model had a significant fit to data ($R2=0.48$, $se= 0.15$, $p<0.001$) for eggs, pre-infective larvae, intra-pellet infective larvae and extra-pellet larvae which accounted for 0.48, 0.33, 0.36 and 0.35 portions of variance in the model respectively. Overall, the net development of eggs to infective larvae seems to be less sensitive to temperature and more sensitive to faecal water content.

Keywords: Development; Environmental Conditions; Faecal Water; Nematodes.

Research Method: Quantitative

Effectiveness of Multilevel Innovation Platforms in Attaining Smallholder Livestock Innovation Outcomes in the Ethiopian Highlands

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Recently, there has been a gradual shift from technology-focused to a systems-oriented approach to agricultural innovation. As part of the system-oriented approach, the application of agricultural innovation systems concept through Innovation Platforms (IPs) has been widely promoted, particularly in Sub-Saharan Africa. By providing space and facilitating interactions among farmers, researchers and other stakeholders, the IPs promote collective actions and foster innovations that contribute to impact. The use of a multilevel IP structure that links community-level IPs to national-level IP was considered a promising approach to foster innovation both at farm-level and at other higher-level scales. Yet little is known if such structure is effective in attaining innovation outcomes. This article examined the effect of multilevel IP structure on the livestock innovation outcomes in the Ethiopian Highlands. We identified key activities performed during the five years of the multilevel IPs and mapped them to the functions of innovation systems that determined the development, diffusion and utilisation of livestock innovations. Our functional analysis shows that those functions that are related to research-oriented activities were given higher emphasis. Although the livestock value chain issues identified through diagnosis studies were interlinked that required technological and institutional innovations; the interventions introduced by researchers more focussed on improving cultivation and utilisation of feed technologies. Functions that farmers felt would assist them, such as institutional and market-oriented activities were given less attention, which limited the overall positive effect of multilevel structure on innovation. The lack of institutional innovations can be partly attributed to the dominance of researchers in the innovation process and lack of targeting specific value chains that determined the type of specific actors, resources, and contextual factors to engage. Similar to other findings, IPs that overlook institutional issues and focus on technological innovations at farm level achieve modest change that may not sustain and contribute to impact to scale.

Keywords: Functions Of Innovation Systems, Smallholder Farmers, Livestock, Ethiopia

Research Method: Qualitative

Session Six – Cretaceous and Beyond

From a Shipwreck to Shipshape: Systematic Botany of Paper Daisies in Australia from Banks and Solander to the Present

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Xerochrysum and Coronidium (Gnaphalieae; Asteraceae) paper daisies were collected by Banks and Solander in 1770 from the east coast of Australia. Plants collected from Endeavour River were named by Allan Cunningham as *Helichrysum banksii* MS, and published by de Candolle in 1838. Originally described as *Xeranthemum bracteatum* by the French botanist Ventenat in 1803 from plants cultivated in the Empress Josephine's garden at Malmaison, the species was transferred by George Bentham in 1867 to *Helichrysum*, with *H. banksii* as a synonym. This taxonomic concept was maintained after transferal to the new genera *Bracteantha* then *Xerochrysum*, and the last combination was used in the recent partial revision of the genus by Wilson (2017). *Xerochrysum bracteatum* has been regarded as a species complex for over 60 years, and putative new narrow-endemic taxa in *Xerochrysum* and *Coronidium* have persisted for many years under phrase-names without taxonomic resolution. *Xerochrysum bracteatum sens lat*. currently includes populations from north Queensland to eastern South Australia, occurring in coastal and inland habitats, from tropical to cool temperate to Mediterranean climates. The lack of a concise taxonomic treatment hinders accurate identification and the appropriate conservation management of rare taxa among this group of beautiful and widely grown Australian native plants.Online resources have greatly facilitated efficient field collections and ecological observations of targeted populations. We will present recently gathered chromosome counts and molecular data from Next-Generation-Sequencing. Analyses of Single Nucleotide Polymorphisms combined with morphological data derived from light microscopy and scanning electron micrographs of herbarium and cultivated live collections were applied to resolve species limits and phylogenetic relationships.

Keywords: Taxonomy, Phylogenetics, Xerochrysum, Coronidium, Asteraceae, Gnaphalieae

Research Method: Quantitative

Environmental Sensitivity in a Changing World

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An individual may perform differently in different environments. For example, an Australian would probably be better at running a 5K in the heat of the Australian summer than an individual from Denmark, where summer is but a dream. However, if the run was done in Denmark, the Australian might not do as badly as the Dane would here, i.e. The Dane would have a stepper decline in performance than the Australian when the environment changes. This phenomena is termed environmental sensitivity. Interestingly, some of the difference may be due to the country of origin (the environment) whilst others may be due to the difference in genotypes. The same is true for livestock. In livestock the interested is in differences among production level across and within environments. When animals are measured across environments, one family may respond differently compared to individuals from other families. Some families may also be more variable within environments. Both of these sensitivities impact the amount of product, primarily food, we can consistently obtain from the animals. As the global trends are not indicating stable environmental conditions in the future, highly sensitive animals will negatively impact food security. There is therefore an interest in identifying the animals having a genetic background exhibiting less environmental sensitivity when faced with perturbations. However, estimating the parameters of environmental sensitivity is complicated and data demanding. Especially the within environment sensitivity have been shown to require very well balanced data, which is not realistic in current livestock populations. The focus of the first chapter of my PhD project is to investigate the data constraints and explore the possibilities of analysing within-environmental sensitivity using simulated and real unbalanced data.

Keywords: Livestock Genetics, Environmental Sensitivity, Food Security

Research Method: Quantitative

A River and its People: Tracing Socio-Ecological Relations in a Contested River Landscape

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Oral Presentation

Rivers are the life blood of many Australian communities. They are multifunctional assets offering sources of recreation; commercial fishing and seafood harvesting; a means of attracting tourists and a sanctuary for marine flora and fauna. The threats facing rivers are many: population pressures; pollution; water extraction; climatic change and invasive species. The health of the Nambucca River means everything to the catchment community: a viable farming sector; thriving tourism; local prosperity and a great place to live. It is a beautiful river, the centerpiece of the landscape, and much loved by all. The aim of my research is to trace socio-ecological relations in a highly contested river landscape. I do this through the following conceptual lens 'the domination of spirit by a shallow instrumental rationality' (Bookchin, 1994). In the context of a ravaging drought, and increasing climate change uncertainty, these few words have plenty of meaning. To illustrate the complexity of issues, fieldwork investigating multiple perspectives is being undertaken in the Nambucca Valley (NSW). Those interviewed include: Aboriginal elders; dairy, beef, oyster, and organic farmers; government environmental officers; recreational river users; fishmongers; foresters; politicians and land care officers. One participant, a generational valley farmer, is used to exemplify formative research findings. Analysis of his narrative offers a view on balancing a river's ecological health with the impacts flowing from a society driven by a shallow instrumental rationality. The research is showing how critical it is to tackle the social part of the socio-ecological equation. In the Nambucca to do this well the community will need to be listened to, and worked with, to ensure a healthy future for both the river and its people.

Keywords: Social Ecology, Rivers, Climate Change

Research Method: Quantitative

Session Seven – Going with the Grain

Implications of Farmers' Perceptions of Salinity for Ensuring Food Security in the Coastal Areas of Bangladesh

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Oral Presentation

Achieving sustainable development goals (SDGs) by 2030 including: No poverty (SDG-1), zero hunger (SDG-2), good health (SDG-3) are prioritized in Bangladesh policy planning, which largely depends on sustainable agricultural production. However, salinization in the coastal areas of Bangladesh is having negative impacts on agricultural productivity and thus threatens food security. Similar to climate change adaptation, salinity adaptation strategies might depend on how salinity is perceived by farmers. This research examined rice farmers' perception of salinity and adaptation strategies, and the implications to the policy makers for sustaining rice production in coastal areas of Bangladesh. Boro rice growers (n=109) were randomly selected from Banskhali and Assasuni coastal sub-districts for a semi-structured survey. The majority of the rice farmers (89%) perceived that salinity has increased over the decades and the current salinity level in their fields was high. Similar proportion of these farmers (90%) perceived reproductive (e.g. booting, heading, and flowering) stage as the most sensitive to salinity problems. A high proportion of rice farmers (73%) also perceived less panicle extrusion (e.g. heading) as effect of salinity on rice crop. In-field salinity (ECe value) was also measured and categorized according to farmers' perception and scientific interpretation. Farmer's perception of high salinity occurrence was at a significantly lower EC level than scientific interpretation. Most of the farmers (67%) were undertaking early transplanting of seedlings and applying irrigation to adapt to increasing salinity problems in rice cultivation. To a lesser degree, farmers (27%) were using salt-tolerant varieties as an adaptation measure. This study demonstrated that farmers' perception of salinity and their adaptation responses were pre-emptive of when salinity was most likely to have an impact on rice crop growth. Adoption of local farmers' perceptions of salinization and adaptation strategies might not prevent salinity to increase but can potentially secure rice production and thus contribute to achieve SDGs (SDG-1, 2 and 3).

Keywords: Boro Season Rice, Salinity Perceptions, Food Security

Research Method: Farmer Survey and In-Field Salinity Measurement

Auxin Biosynthesis and Signaling During the Early Stage of Endosperm Development in Rice

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Oral Presentation

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Endosperm, the nutrient reservoir of cereal seeds, is an important determinant of seed quality and yield. Future enhancement of cereal yield will rely largely on our understanding of its complex development process. Different lines of evidence suggest that plant hormones are crucial regulators of endosperm development. Previous studies from our lab showed that the production of the plant hormone auxin in rice grains is controlled by three grain-specific *YUCCA (YUC)* genes (viz. *OsYUC9, OsYUC11* and *OsYUC12),* with *OsYUC12* expression occurring first. *OsIAA29,* encoding a non-canonical AUX/IAA repressor protein, was found to be strongly co-expressed with *OsYUC12*. There is, however, no detailed information on their temporal expression levels and the exact location of expression within the rice grain. In this study, we therefore aimed to investigate the spatio-temporal expression patterns of *OsYUC12* and *OsIAA29* during the early stage of rice endosperm development. Accordingly, we followed their temporal expression levels from 1 day after pollination (DAP) to 10 DAP on a daily basis by quantitative real-time PCR (q-RT-PCR). We determined the location of their expression in rice grain by in situ hybridization. Our q-RT-PCR results show that both genes are transiently expressed during the early stage of grain development. Their expression is first detected at 2 or 3 DAP, which reaches a peak at 5 DAP; after 7 DAP, the expression is drastically reduced. In situ hybridization results show that *OsYUC12* expression at 7 DAP is localized both in the dorsal and ventral aleurone layers, while *OsIAA29* expression was localized only in the dorsal aleurone layer. Based on these observations, we hypothesize that auxin regulates the development and differentiation of entire aleurone layer, and an auxin signalling occurring in the dorsal aleurone may prime it for nutrient uptake from the vascular tissue into the endosperm .

Keywords: Endosperm, Auxin, *OsYUC12, OsIAA29*

Research Method: Mixed Methods

Session Seven – Have your Say

Voice of the Repressed Indonesian Scholars

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Oral Presentation

Writing is a powerful means of communication because writers can express their voices without the fear of being judged. As a public activity, writing plays a significant role in sharing voices across countries. Voice is an important element in written communication because it is a way to claim an identity and take back power when it comes to stating an opinion or feeling. Regardless of its importance, expressing voices in writing is quite challenging, especially for non-native English speakers, because of repressive layers. The way authors express their voices depends on the spaces they live in and whether or not they are free from oppression. Ex-colonized Asian scholars, including Indonesians for instance, may have different ways of expressing their voices compared to their counterparts in Europe. In the post-colonial democratic era, the Indonesian government oppressed people's voices. Indonesian scholars do get an education but where are the opportunities to use this education? As a result, the Indonesian rich culture and social facts are hardly on the table of world-class discussion. Due to repression, this paper argues that these Indonesian scholars have a different voice regarding research findings.

Keywords: Voice, Research Articles, Indonesian Scholars' Writing Style, Repression

Research Method: Qualitative

Translanguaging in Monocultural English Departments: Possibilities and Challenges

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Oral Presentation

English departments in Bangladeshi universities tend to create an artificial monoculture through English-only instruction for teaching English language and literature contents. This monolingual approach does not serve the students' needs as this approach fails to tap into the multilingual nature of the classroom. Since translanguaging has emerged as a promising approach in multilingual education, this study scoped integrating translanguaging pedagogies to teaching a metaphysical poem in the English department of a Bangladeshi private university. In a two-step ethnographic research design, data were collected from two classroom observations, a pedagogical intervention, focus group discussions of seven students, and a semi-structured interview with the focal teacher. The analysis of observation data demonstrated the natural existence of translingual practices in a limited fashion despite the stipulated English-only policy. The findings of this study differ from the existing translanguaging literature since the output of the natural translanguaging did not meet the expectation of the focal teacher. The analysis of the intervention data and participant responses reveal that only well-defined and functional use of translanguaging instruction can improve learning outcomes, as well as student satisfaction and self-esteem. Although oral translanguaging has been appreciated in classroom practices, written translanguaging in assessment has met with criticism. This study has important implications in terms of reconceptualizing translanguaging as a teaching strategy in international higher education.

Keywords: International Higher Education, Translanguaging Pedagogical Apparoch

Research Method: Qualitative

Weber's Der Freischultz – Masculine Masterwork and Enduring Legacy

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Oral Presentation

Weber's Der Freischütz (The Freeshooter) is a dramatic opera hinting at nationalism and masculine representation. His opera combines innovation, phantasmagoria, and a dramatic social shift in the operatic repertoire. I consider the male and female spheres and the role of the devil to depict stratification, while considering the enduring effects of leitmotif in contemporary music.

Keywords: Opera, Sociology, Musicology

Research methods: Score Analysis, Feminist and Foucaultian critique

Session Eight – Law under the spotlight

Contemplating Corporate Rights and Duties under Indian Constitution: A Comparative and Critical Study

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Oral Presentation

The constitutional courts in India have manoeuvred the interrelationship of the state, the corporations and charter rights through the prism of the horizontal and vertical effect of rights. In doing so, the sole focus of the courts has been to ascertain the applicability of fundamental rights over non-state actors. But even after six decades of interpretation, the nature and scope of rights and duties of non-state actors, especially corporations under the Indian Constitution, remain unsettled. Moreover, these doctrinal developments have been accompanied by little reflection regarding the constitutional standing of corporations, corporate constitutional rights, and corporate personhood under the Indian Constitution. This contrasts sharply with the American and Canadian experience, where the Constitutional courts when confronted with these issues vigorously grappled with finding the interrelationship between the state, the corporation and the larger polity, and its implications for corporate constitutional status.Moreover, constitutional and legal doctrine in these countries concerning issues of corporate constitutional rights were not restricted to answering the dichotomy of the horizontal and vertical effect of rights. It was tended to be framed in terms of invoking or responding to varying conceptions of the corporation as a legal form. It is against this backdrop that this paper would attempt to capture the discourse of rights and duties' of corporations towards the protection of fundamental rights. To this end, this paper, in the first place, would examine the American and Canadian corporate Constitutional rights jurisprudence to encapsulate the relationship between doctrinal developments and evolving theories of the corporation. Secondly, it would explore the extent to which theoretical and doctrinal patterns that can be identified in the American and Canadian case law, are manifesting themselves in the Indian context. Finally, in light of these analyses, this paper would explore the dutiesof the corporations under the Indian Constitutional paradigm.

Keywords: Comparative Constitutional Law, Corporate Theories

Research Method: Qualitative

Session Eight – Worlds Colliding

Pedagogical Approaches Enhancing Students' Creative Thinking in Selected Secondary Music Classrooms

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Live Online Presentation

The aim of this study is to determine what pedagogical approaches employed by selected music teachers enhance students' creative thinking in a range of musical activities. Music programs in Victoria, Australia are often focussed on skill building in secondary schools. Within the upper year levels, teaching to the state certificate of education, the Victorian Certificate of Education (VCE) is the main focus. With this is mind, many schools are now looking for new and creative ways for students to engage in the curriculum. This study will use a mixed-method approach and will draw upon secondary music teachers, classes and students ranging from Years 7-12. Data collection will be in the form of experience surveys, interviews, focus groups, class observations and the use of a researchers' journal. Creative thinking will be assessed using the Webster's (1987) criteria of frequency, fluency and originality and Kratus (2001) criteria of cohesion. Qualitative data will be analysed using a coding method involves the 7 steps of describing, coding, categorising, labelling, ordering, reporting and discussing. This study will bridge the gap between teaching methods pedagogy and creative psychological studies and will benefit music teachers, music programs in schools and assist and support the learning and teaching in the wider school community. The study will allow for teacher participants to further enhance their creative teaching skills in the secondary music classroom.

Keywords: Creativity, Creative Thinking, Pedagogy, Music Teaching, Performing Arts

Researh Method: Mixed Methods

Plurilinguals' Experiences in the Languages Classroom in Regional New South Wales (New England Tablelands)

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Oral Presentation

Australia has one of the more complex linguistic demographics in the world because it compromises three groups: the indigenous category, with all its varieties, the settlers' British and Irish English, and the more than 350 languages introduced by immigrant groups arriving from the middle of the 20th century onwards. Around a quarter of the population speak another language than English at home. However, the mindset of the Australian society is still characterized by monolingual thinking. The aim of my research study is to examine the experiences of plurilingual students in regional Australian and to link these experiences to family and educational settings. The study will try to answer questions like: What is the experience of plurilingual children in regional schools generally, and in languages classrooms in particular? How can the results be used to help plurilingual students apply their linguistic knowledge and skills in the additional languages classroom more effectively? Can schools benefit from students speaking two or more languages? Is the school interested in supporting plurilingualism in general? Are there any policies in place that encourage intercultural competence? And furthermore, how can plurilinguals sustain their heritage language in a regional area like the New England with few to no other people speaking it in the community? Consequently, the study will investigate how students live their plurilingual life, how teachers and schools administer and support plurilinguals in the additional languages classroom and it will also show how plurilinguals manage to be resilient in a monolingual world.

Keywords: Plurilingual, Monolingual, Regional Australia, Language Learning

Research Method: Mixed Methods

The PhD Journey: From Theory to Reality and all the Way Back

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Oral Presentation

New teaching graduates can experience a sense of despair when faced with their first real life classroom experience. Armed with four years' worth of idealistic theories of education, they set forth like lambs to the slaughter, hurling themselves across the gap between theory and practice, yet miraculously, at least some of them manage to survive. But what happens when a survivor tries to return from practice to theory? This session presents my own leap of faith from the real world of Teaching English as a Second or Other Language (TESOL) in a tertiary college in Oman to the theoretical world of an Australian PhD. I will discuss my own experiences of the apparent incommensurability between these two worlds with reference to the underrepresentation of the Middle East and North African (MENA) region which has been identified in English medium education publications. By outlining the steps I took to overcome challenges, and with hindsight to suggest the steps I should have taken, I hope to provide some information that may be useful to other potential researchers in the region. Specifically, I will examine some of the issues around getting ethical approval, before moving on to restrictions on methodological choices including the choice of supporting software. The session will conclude with some comments on my continued attempt to make useful conclusions from the data.

Keywords: TESOL, World Englishes, MENA, Methodology

Research Method: Qualitative

Abstracts by Streams and Sessions

STREAM THREE

Session Nine - The Impact Factor
Session Ten - A Mixed bag of Science and Technology
Session Eleven - From Birds to Dinosaurs and Everything in Between
Session Twelve - The All-Sorts of Humanity

Session Nine – The Impact Factor

Understanding the Impact of Historical Trauma on the Health and Wellbeing of First Nations Adolescents

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Oral Presentation

First Nations peoples are greatly impacted by the lasting effects of colonisation, especially those vulnerable, the youth. This phenomenon is known as historical trauma (HT), which offers potential new understandings to address the ill-health discourse. A systematised scoping review was conducted. Quality of the articles was assessed using two effective and validated quality appraisal tools. Synthesis was conducted through a convergent qualitative approach, with predefined levels of impact. Consistent with the literature, the themes and levels of impact were interrelated, but despite this, studies predominately reported singular focus with limited representation of protective factors. HT is having a profound impact across First Nation's (FN) communities, the prominence of protective factors was deep-rooted within the FN led research designs, highlighting the need for research to be led by FN Peoples to produce knowledge on this growing phenomenon, ensuring multi-level and intergenerational-strength in prominent.

Keywords: First Nations, Historical Trauma

Research Method: Qualitative, Mixed Methods

Exploring the Patterns and Features of Methamphetamine-Related Presentations to Emergency Departments in QLD over a 13-Year Period

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Oral Presentation

Descriptive exploration of the patterns and features of methamphetamine-related injury presentations to emergency departments (ED) in Queensland 2005-2017. Background. The overall use of methamphetamine has reduced overall in recentsy years. Despite a reduction in methamphetamine use there has been an increase in the use of the crystalized form of methamphetamine which is sparking public concern and may be linked to increase impact on health care services and frontline emergency services. A descriptive observational study. ED injury surveillance data was sourced from Queensland injury surveillance unit (QISU) were analysed for methamphetamine-related injury presentations to EDs from 2005-2015 (n=132). Descriptive statistics were used to identify patterns and features of presentations and the relationship between variables (demographic, service type variables, and drug type) was assessed using chi square, and one-way ANOVA tests. A p value of < 0.05 considered statistically significant. Methamphetamine-related injury presentations were had a higher acuity (more likely to be allocated a triaged of 1 [resuscitation], 2 [emergency], or 3 [urgent]), required more resources (11.4% were brought in by or required police, and 19.5% were brought in by ambulance) and often presented exhibiting behaviour that was either, agitated, restless, aggressive or violent in nature (43.9%). Several key issues were identified that potentially has an impact on EDs, emergency services and mental health services. Methamphetamine-related presentations to ED are more acutely unwell and required more emergency resources (ambulance, police, ED staff) than other presentations. There is a need to explore and develop policy development for managing methamphetamine-related presentations in EDs related to behaviours, and the need for emergency services (police and ambulance) and training of emergency services staff around the issues highlighted in this paper.

Keywords: Methamphetamine, Ice, Emergency Department, Methamphetamine-Related, Presentations

Research Method: Mixed Methods

Knowledge and Attitudes of Mental Health Professionals and Students Regarding Recovery: A Systematic Review

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The study aimed to identify and synthesize evidence on knowledge, attitudes, understanding, perception and expectation of recovery among mental health professionals (MHPs) and students. We searched six electronic databases: Scopus, CINAHL, PsycINFO, Web of Science, Medline, Embase in addition to Google Scholar and the Web. The review was limited to articles published in English language between January 2006 and June 2019. The review was analyzed using a mixed method synthesis. Results: A total of 1464 articles were retrieved. After screening and quality assessment, we included 29 articles. Most of the articles used quantitative methods, 8 used qualitative and 3 used mixed methods. The review showed that there is increasing evidence on knowledge, attitudes, understanding, perceptions and expectation regarding recovery. However, there are disparities in how MHPs perceive and understand recovery. While some understood it to mean a personal process, others explained it as a clinical process. In addition, there was limited knowledge among the mental health professionals and students regarding the non-linearity nature of the recovery process and expectations regarding recovery. The implications from these findings suggest a need for more in-service training for MHPs and examination of the curriculum used to educate mental health professional (MHP) students. In particular, MHP students should be sufficiently informed about the non-linearity nature of the recovery process and how to develop hopeful and realistic expectations for consumers throughout the recovery process. The review findings recommend that future research should be directed towards mixed method design to achieve complementarity and convergence in data analysis. The review was pre-registered under Prospero (registration no. CRD42019136543).

Keywords: Knowledge, Mental Health Professionals, Recovery

Research Method: Mixed Methods

Rural Mothers Caring for Country Kids with Chronic Conditions. 'Heading to the Big Smoke: To Access Care'

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Oral Presentation

Caregiver burden is often associated with the care of an elderly family member. The number of children with chronic health conditions (CHCs) is increasing globally and mothers are mostly responsible for their care, this type of care goes beyond what is expected of normal mothering. Few studies have focused on rural mothers and their experiences of sourcing health care for their children who have CHCs. The purpose of this study was to explore the rural mother's experiences. Using a phenomenological approach, semi-structured interviews seventeen rural mothers were interviewed in 2018 about their experiences of accessing health care. The thematic analysis of resulting data revealed the theme 'Heading to the big smoke: access'. Rural mothers felt challenged accessing health care for their children in the major cities whilst also maintaining routine family life back home. The finding from this study will assist health professional in their understanding of these rural women's experiences and could assist in developing strategies to facilitate rural mothers to access the services and resources required for the optimal care of their child with a CHC.

Keywords: Chronic Health Condition, Rural, Mother, Distance, Travel, Child

Research Methods: Qualitative: Hermeneutic phenomenology

Factors Impacting Patient Outcomes Associated with Use of Emergency Medical Services Operating in Urban Versus Rural Areas: A Systematic Review

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Oral Presentation

The goal of this systematic review was to examine the existing literature base regarding the factors impacting patient outcomes associated with use of emergency medical services (EMS) operating in urban versus rural areas. A specific sub-focus on low and lower-middle-income countries was planned but acknowledged in advance as being potentially limited by a lack of available data. Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines were followed during the preparation of this systematic review. A comprehensive literature search of PubMed, EBSCO (Elton B. Stephens Company) host, Web of Science, ProQuest, Embase, and Scopus was conducted through May 2018. To appraise the quality of the included papers, the Critical Appraisal Skills Programme Checklists (CASP) were used. Thirty-one relevant and appropriate studies were identified; however, only one study from a low or lower-middle-income country was located. The research indicated that EMS in urban areas are more likely to have shorter pre-hospital times, response times, on-scene times, and transport times when compared to EMS operating in rural areas. Additionally, urban patients with out-of-hospital cardiac arrest or trauma were found to have higher survival rates than rural patients. EMS in urban areas were generally associated with improved performance measures in key areas and associated higher survival rates than those in rural areas. These findings indicate that reducing key differences between rural and urban settings is a key factor in improving trauma patient survival rates. More research in rural areas is required to better understand the factors which can predict these differences and underpin improvements. The lack of research in this area is particularly evident in low- and lower-middle-income countries.

Keywords: Rural and Urban Emergency Medical Services

Research Method: Systematic Literature Review.

Session Ten – A Mixed Bag of Science and Technology

Inferring the Interaction Rules Governing Collective Movement of Players in Field Sport

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Oral Presentation

Moving animal groups display the capability to perform highly coordinated manoeuvres without a centralized control. Familiar examples from nature that have been studied extensively include flocking behaviour in birds, schooling fish and pedestrian movements. It has been demonstrated that complex patterns of collective motion can arise from simple interaction rules through simulation. Aspects of group collective motion can be quantified through the use of metrics such as group polarization and rotation, along with the distribution of nearest neighbours. While there have been many studies investigating collective motion properties across a range of species there have been few attempts to understand collective motion and the interaction rules within field based sports. Qualitatively, players in these field sports exhibit similar group dynamics and collective motion properties to those observed in other species. Players display synchronized movement, execute group turns, maintain fixed distances and cohesion. The players exhibit attraction towards the ball, repulsion from non-ball carrying players and align with their team mates. This research analyses collective motion properties in field sports, with the aim of deriving the rules of interaction that reflect those evident with movement data. The ultimate goal of this project is to develop an agent-based model that links the individual-level behaviour with the group dynamics to provide a decision support tool capable of accurately simulating gameplay. This initial investigation explores the parameters and individual motion properties of two teams and their players, the emergence of group states and the influence of offensive and defensive phases of play on the group structure.

Keywords: Collective Motion, Field sport, Self-organisation

Research Method: Quantitative

Hacking the AWS Cloud: From Magecart to S3 buckets

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Oral Presentation

Cloud computing has evolved significantly over the past ten years. The high cost of infrastructure motivated organisations from startups to governments to take advantage of notable cost-savings benefits. The security responsibility of cloud providers is shared, as the cloud providers secure the physical infrastructure conversely its users are responsible for securing its applications. The services layer, which depends on the cloud infrastructure, are configured and used by consumers. Interestingly, the configuration of these services could empower an attacker to reveal information and inject malicious code.In this presentation, I will show how the infrastructure service configuration of (Amazon Web Services) AWS and the use of S3 Buckets could potentially reveal sensitive data. These presented attacks exposed several million credit card application information of customers in the infamous “Capital One”; breach in early 2019. Unsecured S3 Buckets still pose the same danger today, affecting several large institutions. I will also demonstrate mechanisms to inject malicious javascript into payment scripts to steal credit card information, commonly known as the Magecart attack. The Magecart attacks were initially developed for Magento shopping carts to steal cardholder information and have been adapted by attackers for all payment processing web pages.The attacks presented can be applied in the real world, and currently affects more than 10 000 websites hosted on AWS environments. We discuss both attack mitigations and detections and see how it is applied retrospectively.

Keywords: AWS, Magecart, Security

Research Method: Mixed Methods

Spatial and Temporal Scale: Critical for Describing Hydro-Geomorphic Character of Riverine Landscapes

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Oral Presentation

Characterising hydro-geomorphic character accurately is essential for understanding the processes whereby freshwater ecosystems maintain patterns of biodiversity and ecosystem processes. A key question is which temporal and spatial scales best represent the full diversity of habitat patches in riverine landscapes. Here, we characterise the hydrologic and geomorphic character of a large river-floodplain system (the Upper Mississippi River, USA) at multiple spatial and temporal scales. Seventeen variables are used to describe the hydro-geomorphic character of 99 backwaters and island lakes along 100km of the river. At the landscape scale (10s of kms), pool, position in pool and proximity to neighbouring patches were important in determining character. At the smaller patch scale (10s to 100s of m), the shape of entry to the patch, and water depth were distinguishing variables. There was clear variation too in relation to hydrologic character across temporal scales. At decadal time scales the nature of rises and falls separate patches, as does mean peak and duration of connection over long time periods. In contrast, the interplay of magnitude and duration of individual connection events produced unique patterns at inter-annual time scales. Importantly, different patterns are evident at different scales and picking up these patterns through a multi-scale approach provides a more complete view of the hydro-geomorphic character of the system. A clear understanding of how the physical template interacts with hydrology at different spatial and temporal scales provides a firm basis for investigating how biota interact with, and are influenced by, the system, with obvious implications for management.

Keywords: River Ecosystems, Spatial and Temporal Scale

Research Method: Quantitative

Does Thousand-Grain Weight 6 (Tgw6) Gene Actually Control Wheat Grain Weight or Hormone Content

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Oral Presentation

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Cereal yield is influenced by two key factors; grain number and grain weight. These two factors are regulated by a plant hormone auxin or indole-3-acetic acid (IAA) during grain filling. Most publications have shown a positive correlation between IAA and grain weight in cereals. However, two publications on the THOUSAND-GRAIN WEIGHT 6 (TGW6) genes in rice and wheat have shown a negative correlation. The active allele of TGW6 is reported to encode an IAA-glucose hydrolase that releases IAA from an inactive glucose conjugate. Inactive TGW6 alleles were reported to result in lower IAA levels in grains and higher grain weight. However, the TGW6 work has not provided any information on the source or existence of IAA-glucose. In addition, the authors have ignored the main source of IAA, produced from tryptophan using the products of two genes: Tryptophan aminotransferase (TAR) and indole pyruvate monooxygenase (YUCCA). In this work, we found expression of grain-specific TaTAR2.3 and TaYUC10 genes, increased 100-fold during the major grain fill period from 5-15 days after pollination (DAP) and was strongly correlated with the 100-fold increase in IAA content of grains over the same time period. On the other hand, we detected no expression of TaTGW6 during grain development from 5-20 DAP. We also detected no expression of TaIAGLU, required for production of IAA-glucose from IAA. Finally, we identified seven other genes in wheat with 80% amino acid identity to TGW6. Our results are consistent with a positive relationship between IAA, TAR/YUCCA expression and grain fill in wheat. Furthermore, the discovery of several TaTGW6-like genes and their lack of expression in grains or any correlation with grain IAA content suggests that their function has been misidentified.

Keywords: Auxin, Grain Filling, Grain Weight, Wheat

Research Method: Quantitative

Session Eleven – From Birds to Dinosaurs and Everything in Between

Broiler Performance can be Improved by Diets Supplemented with Carbohydrase Enzymes but not in Combination with Probiotic

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This study aimed to investigate the effect of carbohydrase enzymes (Rovabio® Advance) in the presence or absence of probiotic (Alterion) on net energy (NE) utilisation in broiler chickens. The study involved a net energy trial and a feeding trial. Birds were fed four wheat-SBM based dietary treatments replicated eight times for both NE and feeding trial. A 2 × 2 factorial design was employed, including 0 or 0.005% carbohydrases and 0 or 0.001% probiotic. In the feeding trial, 10 birds per pen were housed in floor pens and were weighed weekly from d0 - 35, to determine feed intake (FI) and weight gain. For the NE trial, birds were housed in closed-circuit respiratory chambers, 2 birds per chamber, from d21 - 28, providing a 4 day acclimatisation period followed by measurements of heat production, metabolisable energy (ME) and NE from d25 - 28. NE trial results showed an interaction ($P < 0.05$) between enzymes and probiotic in which enzyme supplementation reduced heat production, heat increment and ME intake per metabolic body weight only in birds fed diets without probiotic addition. The feeding trial results showed that the enzyme application improved feed conversion from day 0 - 7 ($P < 0.001$), as well as FI ($P < 0.05$) and weight gain ($P < 0.05$) from d19 - 28. However, enzymes × probiotic interaction for FI ($P < 0.05$) showed that probiotic supplement reduced FI in birds fed diets supplemented with enzymes from d19 - 35. Overall, the use of the enzymes improved broiler performance, but combining them with probiotic had no additional benefits. Further study on reasons behind this observed antagonistic effect is warranted.
Keywords: Metabolisable Energy, Net Energy, Retained Energy, Feed Conversion

Research Method: Quantitative

Comparing Spatial and Temporal Activity of Quolls and Foxes in a Fragmented Landscape

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Oral Presentation

The endangered spotted-tailed quoll (Dasyurus maculatus) is typically assumed to be a forest-dependent species, as forested habitats are thought to present a lower risk of exposure to invasive predators. However, a quoll population in the Hunter Valley persists with invasive predators in a landscape that has been severely fragmented by mining and farming activities. We aimed to investigate how quolls coexist in this fragmented habitat in the presence of invasive predators. Specifically, we explored whether quolls separated their spatial and temporal activity from foxes (Vulpes vulpes), to allow them to coexist. We deployed baited camera traps for 15 months to determine the spatial, temporal, and fine-scale spatiotemporal separation between quolls and foxes.Quolls and foxes displayed considerable spatial and temporal overlap across the study period. There was also no evidence that presence or absence of foxes influenced temporal activity of quolls. Furthermore, when quolls occurred on the same night as foxes, there was no evidence of spatiotemporal separation of foxes by quolls. These findings suggests that foxes do not have an impact on quoll spatial and temporal activity, and quolls are able to persist in this environment by coexisting with foxes, at least on a spatiotemporal scale.

Keywords: Quoll, Fox, Cameratrap, Temporal, Spatial

Research Method: Quantitative

Rearing Enrichments and Ranging Influenced Production, Health, and Welfare of Free-range Hens

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Rearing enrichments may be a method of improving the development of laying hen pullets destined for free-range systems. We reared 1386 Hy-Line Brown® chicks across 16 weeks with 3 enrichment treatments. These included a control group with standard housing conditions, a novelty group providing novel objects that changed weekly, and a structural group with H-shaped perching structures. The aim was to assess the production, health, and welfare of free-range hens from different rearing enrichments and ranging groups, as identified by individual hen tracking via radio-frequency identification technology, from 25 to 64 weeks of age. Egg weights, abnormalities and egg production at different laying locations were recorded from 18 to 64 weeks along with egg quality measurements at 44, 52, 60, and 64 weeks old. At 62 weeks, fearfulness tests were conducted and at 64 weeks, health and welfare parameters were evaluated via external assessment. The novelty hens laid more eggs in the large nest boxes and, egg weight and abnormalities increased with age. Rearing treatment affected eggshell reflectivity and yolk colour with the control hens showing paler colours across time. The control hens had the lowest feather coverage and a higher number of comb wounds and the high outdoor rangers had fewer comb wounds, shorter toenails and higher feather coverage but lower body weight than the indoor hens. Behavioural tests showed that the rearing treatments did not affect the fearfulness of hens but the outdoor hens were less fearful. Rearing enrichments had some impacts on production, health, and welfare but did not influence the fearfulness of hens. Ranging had the greatest impact on health, welfare, and fearfulness. These results indicate that enrichments provided during rearing can have some long-term benefits to the hens, but the management of range access is also critical in a free-range system.

Keywords: Novelty, Structural, Fearfulness, Rearing Treatments, Outdoor

Research Method: Mixed Methods

Over-Processing of Meat and Bone Meal and Phytase Levels Effects on Tibial Mineralization, Hock Burn and Litter Quality of Broilers Challenged with Subclinical Necrotic Enteritis

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This study was conducted to determine the effect of meat and bone meal (MBM) processing and phytase levels on bone mineralization and litter quality of broilers. A total of 768 d-old Ross 308 male broiler chicks were allotted to 48 pens with 16 birds each and assigned to 8 dietary treatments in a 2 — 2 — 2 factorial arrangement. Factors were: NE challenge (no or yes), phytase level (500 or 5000 FTU/kg) and MBM (as-received, AR or over-processed, OP). Half of the birds were challenged with field strains of Eimeria spp. at d 9 and 108 CFU per mL of Clostridium perfringens Strain EHE-NE18 on d 14 and d 15. The tibiae of 2 birds per pen were excised at d 16 for determination of ash, breaking strength (BS) mineral concentrations. At d 42, all the birds in each pen were assessed for hock burns and the litter in each pen was scored and assessed for dry matter. At d 42, challenged birds had higher litter DM ($P = 0.058$) and fewer hock burns than those unchallenged ($P < 0.05$). The tibiae from challenged birds had lower ash ($P < 0.001$) and BS ($P < 0.001$) than from unchallenged birds. High phytase tended to increase the tibial Na ($P = 0.054$). A challenge — MBM interaction was detected for Mg ($P < 0.05$), in which the challenged birds had lower Mg compared to the unchallenged fed the OP MBM. The tibial Ca ($P < 0.05$) and P ($P < 0.05$) were lower in the challenged. In conclusion, NE and OP MBM impair bone traits while high phytase might potentially increase bone mineral contents.

Keywords: Bone, MBM, Necrotic Enteritis and Phytase

Research Method: Quantitative

A Juvenile Lambeosaurine (Hadrosauridae) Bonebed from the Late Cretaceous of Northern Alberta, Canada

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A bonebed is an accumulation of vertebrate hard parts from at least two individuals, preserved within a limited area or stratigraphic unit. Macrofossil bonebeds are dominated by specimens greater than 5cm in total length, which frequently preserve identifiable morphologies that allow detailed assessments of anatomy, growth, ecological interactions, and overall population-level dynamics. Hadrosaurid dinosaur bonebeds are exceedingly prevalent in upper Cretaceous (Campanian-Maastrichtian) strata from the Midwest of North America (especially Alberta, Canada, and Montana, U.S.A), but are less frequently documented from more northern regions. In 2018, the Boreal Alberta Dinosaur Project rediscovered the Spring Creek Bonebed along the northern bank of the Wapiti River, southwest of Grande Prairie, Alberta, Canada, which had been lost since 1991. Earlier excavations and observations of the Spring Creek Bonebed suggested that the site was the result of a mass mortality event that entombed a group of young hadrosaurids. Continued work in 2018 and 2019 recovered ~300 specimens that include a minimum of seven individuals, based on the co-occurrence of left metatarsal III bones. The recovery of cranial elements allows for the first definite assignment of the Spring Creek hadrosaurids to the subfamily Lambeosaurinae. The overall sizes of the bones found at the site and the lack of skeletal fusion supports juvenile status for these animals (<3.5m total length), although some minor size variation was likely present. The exclusive preservation of juvenile lambeosaurines suggests that age segregation was a viable life history trait utilised by hadrosaurids. Diet and physical ability often differ between younger and older individuals, and the segregation of at-risk members of the population can lead to increased overall fitness of the main herd. The implementation of dynamic life histories, such as age segregation, may well have contributed to the highly diverse and cosmopolitan nature of hadrosaurids during the Late Cretaceous.

Keywords: Palaeontology, Dinosaur, Bonebed, Hadrosaurid, Canada

Research Method: Mixed Methods

Session Twelve – The All-Sorts of Humanity

Stay-in Strikes in 1930s Australia

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Live Online Presentation

In 1937-1938 there were a series of strikes in Australia that began using an unusual form of direct action. These strikes were termed stay-in strikes in the newspapers at the time. A stay-in strike is where the first action after negotiations break down is for the employees to occupy the employer's premises. Australian strikes were not unique as this type of action had begun in 1933 in Poland, moved to France in 1936, onto America in 1936-1937 and then onto Australia. The strikes moved like a wave around the world and returned to France in 1938. The strikes of this type were a way for the workers to assert their demands while stopping the employers from putting other workers in their place. The industries affected in Australia were mining, gas production, railway sorting yard, an abattoir, a brewery and a lone lion tamer.

Keywords: Strikes; Australian; Strike Wave; Stay-in

Research Method: Qualitative

From Outsider to Insider: Pin Up, Fashion, Ethnography and Community Engagement

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Oral Presentation

This paper traces the journey of me, the researcher, from 'outsider' to expert 'insider' over the course of my PhD fieldwork. My PhD asks why contemporary women choose to wear nostalgic 1950s style clothing. Using material culture as my methodology, I followed the advice of the renowned fashion scholar Valerie Steele to not only study the clothes, but to wear the clothes as the cohort does. A subgroup of my cohort are Pin Up Girls, who dress in glamorous nostalgic 1950s style and participate in pin up competitions. Over the course a year I transitioned from group outsider, to tentative insider, to expert insider. As part of this transformation, I was able to participate and engage meaningfully with both the Pin Up Cohort and UNE's local community by advising the organisers of Inverell's 2019 Sapphire Rock 'n' Roll Festival and participate as a judge in both their Vintage Fashion Parade and Pin Up Competitions. This paper charts my changing status with the cohort I was studying. In doing so it interrogates the impact on my research that the shift from outsider to insider facilitates. Material culture approaches are a potential strand of rich research within fashion studies, yet to date the use of this method has been fairly limited. My research within the Pin Up scene demonstrates that the material culture approach not only allows the researcher to engage with the object, but to experience the use of that within the culture, gaining a deeper understanding of the practices and understandings of the cohort. Further it contributes to the field of fashion studies by providing a framework of using material culture methodology effectively when analysing group behaviour.

Keywords: Ethnography, Community Engagement, Auto Ethnography, Subculture

Research Method: Qualitative, Mixed Methods

Rural Australian memoir in the 21st century

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Oral Presentation

The personal memoir can enlighten, entertain and inform, including by exposing readers to different cultures, places, experiences or lifestyles. In the Australian context, personal memoirs set in rural locations can offer insight into a way of life that might otherwise be inaccessible to many readers. While memoirs about rural Australian life make up only a small number of all memoirs published in Australia, a review of AustLit data for the period 2001 to 2015 reveals an upward trend in publishing figures for the rural Australian memoir. Australian Bureau of Statistics census data for the corresponding period shows a decline in the percentage of the national population actually living in rural Australia. Australian book publishers – who, importantly, are catering to a market – apparently chose to produce more books about rural life at a time when this way of life was becoming more removed from most Australians' realities. The rise in the publication of rural Australian memoirs suggests that publishers were responding to an increasingly urban population's ongoing – or growing – interest in stories about rural life. Even though the memoir about rural Australian life has established a place in the market, what constitutes a rural Australian memoir may be open to interpretation. This paper proposes a definition of rural Australian memoir as a distinct subgenre that centres around life on the land and the agricultural or pastoral activities associated with that way of life. It also explores the rise in popularity of stories about rural life and some ways that rural Australian memoirs appeal to readers' interests.

Keywords: Memoir, Publishing, Rural Australian Life

Research Method: Mixed Methods

Youth, Identity Politics and Social Relations: Understanding Power Politics and Ethnic Dimensions in Nepal

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Oral Presentation

Ethnic ostracism is an open secret in Nepali society. This is due to a handful of elite groups governing the state apparatus for hundreds of years. Upsurges of violent behaviour in relation to ethnic identity struggles are a steady occurrence as part of Nepal's political clashes. Cumulative knowledge about the magnitude of apathy have abetted in personalizing and/or localizing violence within Nepal's heterogonous social structure. With stimulation from an ethnically politicized Maoist's insurgency, several ethno-political rebellions involving the *Madheshis*, *Adivasi Janajatis* and *Tharus* has undeniably resulted in alarming social relations. The more common conflict dynamics between 'state versus society' has transformed into a situation where the more recent conflict could be described as, 'one ethnic group versus another ethnic group'. This changed conflict dynamics which has become further twisted, more complex and protracted in the landscape due to actions of both the rulers and oppressed ethnic populace, is guided by the notion of identity. In this situation, youth political violence falls in line with defending ethnic distinctiveness; it is feasibly a natural response.

Keywords: Identity Politics, Youth, Political Violence, Social Cohesion, Social Relations

Research Methods: Qualitative

Eco-Theology in a Range of World Religions

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Oral Presentation

All world cultures and their religious paths have a common interest in humanity's relations with the Natural world, and would admit that the continuation of our species depends upon maintaining a healthy ecosphere. We explore the approaches of several major religions to Eco-Theology, and consider how these might be brought to the attention of the general population, as well as those in positions to act within our communities.Is there an inter-faith space in the process of evolving, in which this issue can be discussed at a level of planetary overview one that transcends local politics and cultures, and focuses on how Humankind as a species has the responsibility of overseeing remediation for not only its own past and present destructive actions in the planetary environment, and the effects of these on Earth's population of nonhuman species and their ecological niches, but also of moving forward with a logical and sane approach, as natural life-support systems are reinstated and human beings learn to live in friendship with nature once again.We look at the work of some Eco-Theologians of various faiths, and consider their understanding of the situation and their advice for the future.

Keywords: Eco-Theology, Religion, Ecosphere

Research Method: Qualitative

Abstracts by Streams and Sessions

STREAM FOUR

Session Thirteen - Counting Sheep
Session Fourteen - The Education Experience
Session Fifteen - What it Seems May Not be What it is
Session Sixteen - Writing Music Place and Travel

Session Thirteen – Counting Sheep

Importance of Accounting for Maternal Effects on Parameters Estimates for Growth Traits in Hampshire Sheep Breed in Mexico

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Oral Presentation

In animal breeding, knowledge of the genetic parameters for the traits of interested is a major prerequisite when establishing a breeding program. Previous studies in other sheep industries internationally have reported the impact of both maternal and direct genetic effects on early in life growth traits. The inclusion of maternal effects in the model can contribute to improve accuracy of estimation for genetic parameters and breeding values, and avoid potentially biased estimates. The aim of this study was to identify an optimal model to evaluate the genetic potential of growth in the Hampshire sheep population of Mexico. The data were obtained from 122 farms between 1993 and 2018 with a total of 14,369 records, which were the progeny of 526 sires and 4,297 ewes. Traits considered in this study were birth weight (BW), weaning weight (WW), and weight at 120 days (W120), 150 days (W150) and 210 days (W210). After data cleaning, a series of animal models incorporating the fixed effects of gender, birth type and contemporary group were fitted in the variance component estimation software package ASReml. The models varied based on the inclusion of direct and maternal genetic effects, and the maternal permanent environmental effect. Based on a Log Likelihood Ratio Test, the best model included the direct and maternal genetic effects and a maternal permanent environmental effect, 0.15±0.02, 0.16±0.02, 0.15±0.03, 0.15±0.03 and 0.22±0.09, for BW, WW, W120, W150 and W210, respectively. When the correlation between direct and maternal genetic effects was included in the model, the heritability was overestimated ranging from 0.23±0.05 to 0.31±0.05 across the traits. It is recommended to include the maternal effects in the model, which will result in a more accurate and unbiased genetic evaluation for growth traits in Hampshire sheep.

Keywords: Parameters, Hampshire, Sheep, Growth, Maternal

Research Method: Quantitative

Developing a measure of longevity for Australian Merino sheep

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Oral Presentation

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Longevity is an important trait to the Australian Merino breeders and is associated with lifetime productivity. Longevity is defined as the period the ewe remains in the flock under commercial conditions. However, longevity differs between seedstock and commercial flocks as seedstock flocks primarily cull ewes on their genetic merit for production and not their capacity to survive. The main objective of this study was to develop a measure for longevity using data provided to MERINOSELECT by Australian seedstock breeders and estimate genetic parameters for longevity. Currently, seedstock producers do not provide records for the longevity of their breeding ewes. Therefore, a longevity trait was developed by utilising their production records, where the last recording event was used as a proxy for the ewe's date of departure from the flock. After cleaning the data to avoid censoring issues, 24,717 ewes from 9 flocks provided records. Four longevity traits were analysed; 1) Tlife, the time between birth and last recording event; 2) Plife, the time from the ewe's first to last production record; 3) Rlife1, was the time from the ewe's first lambing to the first time she was dry; and, 4) Rlife2, the time from the ewe's first lambing to the second time she was dry. Genetic parameters for longevity were estimated using an animal model where birth type, rear type, and contemporary group were fitted as fixed effects, and age of the dam and age of the dam square fitted as covariates. The heritability of Tlife, Plife, Rlife1 and Rlife2 were 0.19±0.01, 0.22±0.01, 0.06±0.01 and 0.08±0.01, respectively. The results indicate that production data can be used to define a measuring of longevity and that genetic variation exists between ewes for longevity. However, further research is required to determne if these traits relate to ewe longevity under commercial conditions.

Keywords: MERINOSELECT, Genetic Parameters, Seedstock

Research Method: Quantitative

Investigation of Methods for Inclusion of Fixed Effects for Weight Traits in Large Scale Sheep Genetic Analysis

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Doctorate
Animal Genetics and Breeding Unit
Oral Presentation

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Genetic evaluation of Australian sheep is based on large scale linear models using Best Linear Unbiased Prediction to obtain estimated breeding values (EBV's) for millions of animals over more than 100 traits. EBV's are estimated by correcting for systematic environmental effects to allow fair comparison between animals. The most common fixed effects that are important in sheep are age, birth type, rearing type, and age of the dam. There are two common approaches to correct for these environmental effects. One is a pre-adjustment of phenotypes for these fixed effects before inclusion in the model and the other is fitting these effects directly in the model. Currently, the Australian sheep genetic analysis applies a pre-adjustment of phenotypes for fixed effects and the only fixed effect directly fitted in the model is contemporary group (CG) with combination of flock, management group, year of birth and sex. However, the current correction factors might be outdated and potential interactions between these effects are not accounted for, potentially leading to bias in EBVs. The proposed research evaluates different methods and models to account for fixed effects for growth traits in Australian Merino sheep. Each fixed effect and their interaction will be fitted in a linear model and their significance will be tested. Estimates of fixed effect solutions will be compared with current adjustment factors. The differences between pre-adjustment and covariate methods will be compared through cross-validation via accuracy and bias of EBVs. The method that gives higher accuracy and lower bias for EBV's will be selected because that method can predict progeny performance better than the others. This research investigates feasibility of pre-correction for fixed effects including interaction. The finding of the research is expected to improve the accuracy of large-scale genetic analysis of Australian sheep.

Keywords: BLUP, Phenotype, Pre-Adjustment, Covariate, Cross-Validation

Research Method: Quantitative

Session Fourteen – The Education Experience

Yolngu Conceptions of Giftedness, Talents and Talent Development

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Faculty of Humanities, Arts, Social Sciences and Education
School of Education
Live Online Presentation

Australian Aboriginal learners have a long history of underrepresentation in gifted and talented education. Numerous frameworks have been proffered that can be used to explain this lack of participation. These include deficit theorising, involuntary minority status, identification issues, socio-capital deficits and epistemological differences. A number of initiatives have sought to redress one or more of these issues to increase Aboriginal participation in gifted education. These programs, however, tend to emphasise the Aboriginal learner's lack of social and cultural capital in the school context, and as such, focus on intervening to redress skill gaps from a western educational perspective. Where Aboriginal culture and knowledge have been incorporated, it has often been derived from a pan-Aboriginal perspective. Ideally, gifted education should harness local cultural conceptions of the gifted construct to better support gifted Aboriginal learners. With this in mind, this presentation reports the findings of an investigation into Yolngu conceptions of giftedness, talent and talent development. Importantly, for this cultural group, giftedness, talents and talent development are grounded in their foundation law. This means the skills, knowledge and activities associated with potential and performance are wedded to the cultural priorities and needs of the community. It follows that identification of giftedness and the development of talents occur in the context of the traditional activities that serve these cultural priorities. It also follows that Elders are key in shepherding giftedness and talents to ensure they sustain Yolngu culture. Finally, it is essential to recognise that Yolngu peoples value both-way talent development and talents (especially in the school context), and some non-traditional talent areas.

Keywords: Gifted, Talented, Education, Aboriginal, Yolngu

Research Method: Mixed Methods

Gifted Education Policy in Australia: The Relationship between Policy Definitions of 'Giftedness' and Australian Educator Conceptions of 'Giftedness'

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School of Education
Oral Presentation

Gifted Education policies are in place in most educational contexts across Australia, however, Australian students do not have equitable access to the Gifted Education practices contained in these policies. The limited literature in Gifted Education policy implementation suggests a disparity between policy definitions of 'giftedness' and educator conceptions (understandings) of 'giftedness'. This disparity may influence educator support of Gifted Education in schools. To date, it appears no investigation has taken place focussed specifically on this relationship. In Australian Gifted Education policies, Gagné's definitional construct of 'giftedness' is dominant. This construct of 'giftedness' recognises 10% of students as possessing natural undeveloped abilities in specific domains. When 102 Australian educators completed the Gifted Education Conception and Support Survey (GECaSS), they were asked what 'giftedness' is to them. Content analysis reveals three dominant themes: (1) 'giftedness' as contextual (2) 'giftedness' as requiring comparisons and (3) 'giftedness' as multifaceted. The underlying positionality of these findings indicate that Australian educators' conceptions of 'giftedness' do not generally align with definitions of 'giftedness' as currently supported in Gifted Education Policy in Australia.

Keywords: Gifted, Education, Giftedness, Educators, Australia

Research Method: Qualitative

Is Education a Silver Bullet?
Aboriginal Experiences in Northern NSW

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Oral Presentation

This study seeks to clarify the relationship between educational outcomes and socioeconomic outcomes for Aboriginal and Torres Strait Islander (ATSI) peoples. Several studies have demonstrated strong positive correlations between the level of education and employment. For an individual at least it seems that the path out of poverty is paved with education. This strategy for individual advancement has been extended to the level of social policy and assumed to be a solution for many ATSI social and economic inequalities. Evidence from the Census and other data indicate this strategy may not be able to do the heavy lifting required. Improvements in educational outcomes are not always reflected by improvements in other socioeconomic indicators such as employment and income. This study will examine statistical evidence to clarify trends in educational and socioeconomic outcomes and the relationship between them. Further research will then examine in depth education and work experience of ATSI people from a community in northern NSW. This mixed methods study will view the problem from multiple angles using national and local data with the views and explanations of local ATSI people to assess the evidence for education as a social and economic cure-all .

Keywords: Aboriginal, Atsi, Socioeconomic Inequality, Meritocracy, Rural, Education, Racism

Research Method: Mixed Methods Study Analysing Secondary Data and Interviews with Local Aboriginal People

Session Fifteen – What it seems may not be What it is

Profiles of Islamist Militants in Bangladesh

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Faculty of Humanities, Arts, Social Sciences and Education
School of Humanities, Arts & Social Sciences
Oral Presentation

Since the early 1980s, Bangladeshi militants have joined wars in Libya, Palestine, Afghanistan, Iraq, and Syria to fight for what they defined as the Ummah. Foreign cases of perceived Muslim suffering have always played a significant role in the escalation of Islamist militancy in Bangladesh. Originally, violent Islamists emerged principally in the Madrassas and from poor families with rural backgrounds. The recent wave of Islamist militancy associated with the arrival in 2013 of Al Qaeda and the Islamic State has dramatically altered the character of Islamist militancy. Online radicalization is playing a much larger role and militant organizations are increasingly recruiting urban youths attending secular educational institutions, from both the upper and the middle classes. This Research Note explores the new profile of Islamist militants in Bangladesh by examining the biographies of the deceased Islamist militants, killed by security forces in different operations and gunfights, between June 2016 and December 2018. The authors use data acquired from three newspapers, renowned for covering Islamist militancy issues and information provided by Bangladeshi security forces. Data have been limited to deceased militants because their militancy was proven by their violent actions, at least in a number of cases.

Keywords: Bangladesh, Islamist, Militant, Radicalization, Terrorism

Research Method: Quantitative

Changi - Assembling the Jigsaw

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School of Humanities, Arts & Social Sciences
Oral Presentation

The Japanese were grossly unprepared for the influx of Allied prisoners of war following the surrender of Allied forces in Singapore in February, 1942. Regarding the handling of POWs, the Japanese had no clear doctrine, no policies, and no detailed planning had taken place. Their efforts to handle those POWs was managed 'on the run'. Complicating efforts further was the fact that different Japanese commanders had widely different and changing policies and approaches to achieving their objectives. Within the established history of the capitulation and subsequent treatment and management of POWs there are many factors that scholars have overlooked, particularly regarding the role of officers in the management of camp life. This paper seeks to address this gap by focusing on several key individuals, such as Frederick Galleghan and Thomas Newey, and considering the way they managed key elements of life in camp, such as rations, discipline, and pay. Rations had three components - those Japanese-provided, supplementary rations (originally funded through the Red Cross, later locally fund-ed from prisoners' pay) and reserve rations - their changing arrangements were complicated and complex. Pay and finance were major features and ongoing problems since Japan paid soldiers (a small amount) for work, while officers were charged board and lodging and some pay was banked, with some funds used for supplementary rations. And discipline, claimed to be poor, suffered from outdated laws, varying practices and practicality, with behaviour different to civilian values. Overall, for staff working with the Japanese, many complications existed. An understanding of these systems and the role individuals played in their management, as conveyed by this paper, will build on the foundations established by earlier studies.

Keywords: Changi Prisoners-of-War Command

Research Method: Mixed Methods

The Great War and the British Family: British Soldiers and the Maintenance of Familial Identity, 1914-1918

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School of Humanities, Arts & Social Sciences
Oral Presentation

The experience of the First World War resulted in many soldiers a sense of separation from their pre-war selves, often understood as a discontinuation of their previous lives and a disconnection from their families. However, although there was to a certain degree a discontinuation of, or alienation from, a soldier's previous life, there existed tangible and intangible links maintained throughout the war between a soldier and the civilian life he left his family and his role as a member of. Alteration rather than discontinuation stands at the core of the soldier's position as a member of his family during his time on active service. Physical separation and traumatic experience (an emotional and mental separation, in a sense) have often been cited by scholars as the basis for the manifestation of a sense of discontinuity but, instead, it was through these issues that many bonds of kinship both consanguineal and affinal were drawn upon for consolation, commemoration and support.

Keywords: WW1 Marriage Patriotism

Research Method: Mixed Methods

Session Sixteen – Writing, Music, Place and Travel

Bob Herbert and the Evolution of No Names ... No Pack Drill (1979) into Rebel (1985)

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School of Humanities, Arts & Social Sciences
Oral Presentation

Bob Herbert who wrote plays both as R. C. Herbert and as Bob Herbert was an Australian regional playwright who wrote plays in Armidale that were performed at the New England Theatre Company, the University of New England and the Armidale Playhouse. He is a regional playwright alongside other regional playwrights such as Wendy Richardson in Wollongong and John O'Donoghue in Newcastle. Herbert also has a national context alongside New Wave playwrights of the 1970s and 1980s such as David Williamson. Unlike new wave playwrights, whose focus was on contemporary themes and settings, Herbert's most commercially successful play 'No names... No pack drill.' was concerned with an historical story set in the 1940s. This paper explores that play and its relevance to the region in which he was writing.

Keywords: Regional Theatre, War, Plays

Research Method: Mixed Methods

Early Winter Light: A Portfolio of Compositions Inspired and Influenced by Place and Travel

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School of Humanities, Arts & Social Sciences
Oral Presentation

Music and place can be intimately bound together. Place has the ability to influence music in a multiplicity of ways, ranging from being an aspect of the actual sound/timbre of a work through to influencing a composer/musician with its environment aspects, its cultural aspects or the political aspects that it contains. Music is able to conjure up images of, and feelings for, place. It can also provide cultural contexts and assist in building both individual and cultural identities. Understanding something about or visiting the place of origin of a piece of music is likely to enhance the understanding of that work.This project explores the influence and inspirations on the author's compositional practice of place; a container of physical, environmental, social and cultural meanings and its concomitant connector 'travel. The resultant musical works display how ideas and inspirations are approached, aesthetically, stylistically and technically, and how they are consolidated within a compositional approach. The associated exegesis explores and explains the works fashioned by the author's journey as a composer. The project adds to, expands and becomes part of the body of the author's compositional practice, as well as joining a broader and existing body of work that explores, models and illuminates the notions of place and travel within music.

Keywords: Music Place Composition

Research Method: Qualitative

Comparative Strategy for Unlikely Nineteenth Century Poetic Peers: Hopkins, Rimbaud and Laforgue

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School of Humanities, Arts & Social Sciences
Oral Presentation

The poetry of the isolated English nineteenth-century poet, Gerard Manley Hopkins (1844-1889) in its inventiveness and poetic dexterity differed markedly from that of his English poetic contemporaries but an unlikely comparison can be made with his French poetic contemporaries and peers, Arthur Rimbaud (1854-1891) and Jules Laforgue (1860-1887). A comparative strategy that uses the method of reading the poetry of Hopkins through the poetry of Rimbaud and Laforgue is designed to enhance our mutual understanding of their poetry and poetics. Amongst the many similarities between these three poets being investigated such as rhyme, rhythm, punctuation and word usage, the focus here is on rhyme and the juxtaposition of words, an analysis of which begins to elucidate the role of rhyme in the comparanda and the shock effect of both reading and listening to their poetry as well as the incipient playfulness in Hopkins' poetry when viewed through the poetry of Rimbaud and Laforgue.

Keywords: Poetry Comparison Juxtaposition Hopkins Rimbaud Laforgue

Reseearch Method: Qualitative

POSTER PRESENTATIONS

Stimulating the Innate Immune System to Protect Livestock against Disease.

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Faculty of Science, Agriculture, Business and Law
School of Environmental & Rural Science
Poster Presentation

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For many diseases of livestock the only form of treatment is antibiotics, yet antibiotic resistance is one of the greatest threats faced by the global community. Therefore, alternatives to antibiotics for the prevention and treatment of disease are required. However, production animals may encounter high-disease risk environments throughout their lives and antibiotics may be necessary to combat disease. Saleyards, feedlots and mustering for management procedures are all examples of high-disease risk environments. In a recent Australian study, bovine respiratory disease (BRD) was found to account for 82% of all veterinary treatments and 91% of all mortalities in feedlots. Antibiotics are currently the only option for treating BRD. Compounds that stimulate the immune system to 'kick into gear' and enhance its ability to fight off infection have potential as alternatives to antibiotics for protection against and treatment of livestock disease. Amplimune® (NovaVive Inc.) is a commercial product not currently available in Australia that contains mycobacterium cell wall fraction (MCWF). MCWF is a compound known to activate the innate immune system. Innate immune responses are rapid and broad in their action, whereas adaptive immune responses, like those targeted by vaccination, can take days to weeks to develop and are highly specific in their action. Thus, MCWF is a rapid, broad-acting immune stimulant, not a vaccine. We hypothesise that MCWF administered at entry to high-disease risk environments will complement current vaccination strategies to enhance protection of those animals against disease and reduce the need for antibiotics. Further, we hypothesise that the co-administration of MCWF with commonly used industry vaccines may enhance responses to vaccination.

Keywords: Cattle, Immune Stimulants, Alternatives to Antibiotics

Research Method: Quantitative

Reproduction of Blady Grass (*Imperata Cylindrica*) by Rhizomes

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Poster Presentation

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Blady grass (*Imperata cylindrica*) is an economic problem in many countries. It particularly affects crop quality and yield in perennial cropping systems. In environmental systems it can reduce native plant biodiversity. In Australia, blady grass is most common as a weed of perennial pastures. While blady grass can reproduce both sexually by seeds and asexually by rhizomes, there is a lack of information about its reproduction in Australia. The objectives of this research were to understand the reproductive process by rhizomes (temperature, colour and number of nodes) that will inform future weed management. In this experiment, rhizomes of blady grass were collected from two locations, Newholme Research Station, University of New England (UNE) and the UNE campus, Armidale New South Wales, Australia. Rhizomes were cut into either of two sections (with and without the apex) containing either 2 or 5 nodes and either being purple or brown in colour and planted at 2 cm depth into potting mix in pots with two segments of rhizome per pot under glasshouse conditions. The results showed that the rhizome pieces with tips and more nodes had greater regrowth than rhizomes without tips and less nodes, and the colour variation had no effect. Our results of greater activity from tips may help to explain the apparently more active growth zone around the perimeter of blady grass patches, while the results on node number suggest that, to be effective in control, cultivation would need to break rhizomes up into smaller pieces.

Keywords: Ecology,Phenology,Rhizome Viability,Weed Estabilshment

Research Method: Mixed Methods

Impact of Heat Stress Regimes on the Reproduction of Emerged Adult Helicoverpa Punctigera (*Lepidoptera; Noctuidae*)

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Poster Presentation

Performance of insects is largely dependent on ambient temperature. Predictions are the future will be warmer and drier, leading to prolong high temperature events on land, which will increase insects to heat events and therefore modify population dynamics by influencing life history traits. In this experiment, pupae were subjected to heat stress treatments of 43ºC and 44.2ºC. In each temperature treatment, pupae were exposed to either a single prolonged three hour heating event, or three one hour heating events with a recovery period of 24 hours between bouts, to determine the impact of the different heat stress regimes on days to emergence, adult appearance and reproduction of emerged adults. The results showed that adults in the heat stressed groups had extended days to emergence and extended life span. Females were more sensitive to heat stress than males. Pre-oviposition periods were extended in the heat stressed females. Fecundity and oviposition period was reduced in heat stressed females compared to their counterparts in the control group. In addition, we found that no eggs from females in the stressed groups hatched. Heat stress was detrimental to the development of adults, as more deformities were observed in the heat stressed groups. We establish that heat stress can influence the population dynamics of H. punctigera by reducing fecundity, egg hatchability, extending pre oviposition period and affecting adult development.

Keywords: Helicoverpa Punctigera, Heat Stress, Reproduction

Research Method: Quantitative

Fluctuating Temperature Double Life Span of the Aphid Megoura Crassicauda

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Poster Presentation

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Megoura crassicauda, an exotic pest in Australia, mostly restricted to the Vicia genus become a new threat for faba bean production in Australia. The effect of temperature on Megoura is not well known. This present study demonstrates the impact of constant and fluctuating temperature on Megoura aphid development and reproduction. We applied different temperature regimes to understand the demography of Megoura crassicauda. A constant temperature of 25°C and four different temperature regimes (increased by +0°C, +2°C, +4°C and +5°C) as compared to the base regimes were used as treatments. The base temperature was taken from daily mean temperatures, in the Armidale, NSW, Australia by averaging hourly temperatures for the months of January to December 2013 to 2017. We made life tables for Megoura aphid by using these treatments. Aphids exposed to base + 0°C temperature regime have the highest rate of population growth than the rest. Nymphal period, adult longevity, fecundity, mean generation time, population doubling time and life expectancy were increased in diurnally fluctuating temperature than constant temperature. As aphids can respond significantly to different temperature regimes, we cannot ignore diurnal temperature variation and this should be incorporated in our current research arena.

Keywords: Temperature, Reproduction, Life History, Megoura Crassicauda

Research Method: Mixed Methods

Carbohydrase Enzymes can Enhance Energy Values in Broiler Diets Containing Low or High Soluble Non-starch Polysaccharides

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Poster Presentation

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The objective of this study was to evaluate the effect of carbohydrase enzymes (Rovabio® Advance) on net energy (NE) in broiler diets containing low or high soluble non-starch polysaccharides (sNSP). The study employed a factorial arrangement with a random blocked design (blocked by run), with 4 dietary treatments replicated 8 times. Factors were: enzymes - no or yes; and sNSP - low vs. high. The experiment was run twice using 16 chambers per run with broiler chickens (Ross 308). All dietary treatments were wheat-soybean-meal based. The sNSP represented 9% of the total NSP in the low sNSP treatment and 16% of the total NSP in the high sNSP diet. Birds were housed in closed respiratory chambers with two birds per chamber, from d25 to 28. Data for apparent metabolisable energy (AME), NE, feed intake and growth measurements were recorded daily during this period. Inclusion of enzymes improved feed AME, NE and AME/GE ($P < 0.001$), as well as ileal digestibility of protein and energy ($P < 0.05$). Birds fed the diets with high sNSP also presented increased AME, NE and AME/GE ($P < 0.001$), as well as ileal protein and energy digestibility ($P < 0.01$ and $P < 0.001$ respectively). However, birds on this treatment showed higher ($P < 0.01$) proportion of energy retained as fat per total energy retained than birds fed diets containing the low sNSP and, consequently, showed an increased ($P < 0.01$) NE intake per weight gain. To conclude, the supplemental enzymes led to improvements in feed energy utilisation. However, the increased energy observed in broilers fed high sNSP was not cost effective in terms of energy intake per weight gain, as more than half of the total energy retained was used for body lipid deposition.

Keywords: Net Energy, AME, Respiratory Quotient

Research Method: Quantitative

How the Native and Introduced Dung Beetles are Faring Along Gradients of NSW Tablelands

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School of Environmental & Rural Science
Poster Presentation

Dung beetles are well known in Australia for controlling bush flies and livestock parasites along with efficient dung burial. A seasonal dung beetle monitoring program was conducted in native and improved grassed paddocks at eight different locations along elevation gradients from 385 to 1357 masl in Northern NSW during the autumn, spring, and summer seasons to assess dung beetle assemblages along an altitudinal gradient. Standard pitfall traps baited with cow, sheep and kangaroo dung were used to monitor the dung beetle assemblages. A total of 12,297 dung beetles and 23 different dung beetle species were collected: 8,951 (72.8 %) constituting 17 introduced species and 3,346 (27.2 %) constituting 6 native dung beetle species. The number of dung beetles trapped in cow dung bait was significantly higher (121.3-35.9 SE) than that in both sheep (105-29.6 SE) and kangaroo dung baits (29.8-8.72 SE). Moreover, in summer, significantly higher (185.1-41.3 SE) dung beetles were attracted compared to that in spring (48. 9-16.9 SE) and autumn (22.2-5.3 SE). Aphodius lividus (39.8 %) and Euoniticellus fulvus (10.8 %) were the most abundant introduced and Onthophagus australis (11.7 %), and Onthophagus granulatus (11.6 %) were the most abundant native species. The remaining 19 species comprised 26.1% of the total dung beetles. Community composition among seasons, elevations, and habitat shows how the introduced and native dung beetle species are structured. The higher species richness and abundance of introduced dung beetles elucidates their success in establishment and their potential in handling dung resources in the paddocks.

Keywords: Dung Beetles, Grasslands, Native, Introduced

Research Method: Quantitative

It is Greek to Me: The Challenge of Teaching Ancient Greek Participles to English Speakers

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School of Humanities, Arts & Social Sciences
Poster Presentation

New developments in Linguistics and in fields related to language learning in the last two centuries have changed the landscape in linguistic theory radically, affecting the way we approach, understand, analyse, and teach a language. In the last decades, advances in Theoretical and Applied Linguistics have led to the development of the very dynamic field of Ancient Greek Linguistics, and have fostered a strong interest for the improvement and the modernization of classical languages instruction. With the focus of classical languages teaching and pedagogy being on methodology rather than the content of language teaching, the development of linguistically informed teaching material is a neglected desideratum. There is, therefore, a strong demand for accessible non-technical descriptions of Ancient Greek language and for new analytical tools and material to be used in classroom or online education. Research on Ancient Greek Linguistics entwined with Language Teaching and Pedagogy could respond effectively to this need. The purpose of my research project is to examine how the insights of linguistic theory and research can be used to enhance the instruction of a language no longer spoken, such as Ancient Greek. By adopting a language-centred pedagogical approach, I am specifically interested in exploiting the applicability of theoretical frameworks and analytical tools proposed by the linguistic theory and research to the instruction of the Ancient Greek participle, a challenging though important construction for mastering Ancient Greek language.

Keywords: Ancient Greek, Classical Languages, Participles

Research Method: Mixed Methods

KEYNOTE SPEAKER

SPECIAL PRESENTERS

INVITED SPEAKERS

KEYNOTE SPEAKERS

Keynote Address – Day 1

A Biting Career

Dr Sally Isberg
Managing Director
Centre for Crocodile Research

Biography

Doing something different for work experience during her Agriculture degree at the University of Sydney led Sally down an unexpected career path into crocodiles. For the last 22 years, Sally has been researching crocodiles and now runs her own company, Centre for Crocodile Research. The Centre for Crocodile Research consults to the crocodile industry and is regarded internationally for developing relationships with government and university institutions to produce crocodilians more ethically, economically and sustainably. Sally volunteers heavily for the IUCN-SSC Crocodile Specialist Group and is on the Steering Committee as the co-chair of the Red List Authority assessing global crocodilian extinction risks. In this capacity, Sally is undergoing a journey to better understand the challenges of crocodile conservation globally, including human-crocodile conflict which poses the greatest risk to conservation efforts. In 2015, Sally was awarded the NT Rural Women of the Year which allowed her to explore her other passion which is capacity building young people in the Northern Territory to pursue R&D careers in primary industry sectors.

Session Overview

Sally will present an experiential account of her professional journey researching crocodiles. She will explain how this focus has provided her with a professional research niche that has been challenging and fruitful and how she has managed her professional and personal ambitions within her career.

Keynote Speaker – Day 2

Facilitating regional development in the New England NW

Dr Darren Keegan
Deputy Director
Regional Development (New England & NW NSW)
Department of Planning, Industry and Environment

Biography

Darren is a regional development practitioner working for the NSW Government Regional NSW division of the NSW Department of Planning, Industry and Environment. He has 20 years' experience working in private sector multinationals and public sector roles and has facilitated projects in aerospace, agribusiness, defence, education, energy, food processing, infrastructure, manufacturing, skills, and transport and logistics. He holds a PhD in Innovation (UNE), a Masters of Economic Studies (UNE), a Postgraduate Diploma Institute of Chartered Accountants Australia, and a Bachelor Degree Commerce (WSU). His professional doctorate examined how the role of regional development agencies could change to better support the broader economic transition to the low carbon

Session Overview

Dr Darren Keegan PhD.I (UNE) is a regional development practitioner. His presentation will outline a sample of regional development projects in the New England NW, how completing his UNE professional doctorate in innovation has contributed to his practice, and observations about future possible research topics.

SPECIAL PRESENTERS

Special Presenter – Day 1

Shaping your Research Journey: The Roles(s) of Stakeholders and Gatekeepers

Emeritus Professor Ray Cooksey
Faculty of Science, Agriculture, Business and Law
UNE Business School

Biography

Ray is originally from Denver, Colorado in the USA and moved to Australia in 1982 to join UNE; retiring in 2014 and was appointed Emeritus Professor in the same year. Ray has a PhD in Experimental Psychology from Colorado State University. He taught, researched and supervised UNE postgraduates in a variety of disciplines including business and management, information systems, organisational behaviour, marketing, psychology, psychometrics, education, sustainability, social policy, innovation and leadership. This includes 36 PhD and professional doctorate students along with many masters and honours students. Ray played a leadership role in conceiving and developing UNE's PhD.I (formerly known as Prof.D) degree, which is a doctorate that explicitly focuses on innovation development, evaluation and impact. In 2019, Ray finished the 2nd edition of *Surviving and Thriving in Postgraduate Research* (with Professor Gael McDonald, RMIT Vietnam) and the 3rd edition of *Illustrating Statistical Procedures: Finding Meaning in Quantitative Data,* both published with Springer Nature and both written primarily for postgraduate researchers. His major research areas include human judgment and decision making (with emphasis on managers and teachers), applications of complexity theory, Research Methods and statistics, organisational behaviour, learning and leadership, education, climate change attitudes, policy and adaptation.

Session Overview

Your postgraduate research journey is not something you undertake in isolation. Along the way, you will encounter various entities (individuals, groups, communities, organisations) who will be interested in your research and/or potentially impacted by it. These entities become stakeholders in your research (you, as the candidate, and your supervisors are, of course, central stakeholders in your research). Some of these stakeholders may possess knowledge or information you might wish to access and/or may control your access to research contexts, data, resources and participants, thereby transforming them from mere stakeholders into gatekeepers. Stakeholders and gatekeepers potentially have the power to influence the shape and focus of your research and, in some cases, may attempt to exert that power through political or regulatory behaviours. My presentation focuses on the often-neglected issues associated with the need to effectively anticipate and manage the needs of stakeholders and gatekeepers.

Stakeholders and gatekeepers don't just come out of the woodwork, it is the nature of your research project and the contexts in which it is situated that creates stakeholder interests, whether immediate or downstream. Some you may know about at the commencement of your journey; others may emerge as your journey unfolds. Some stakeholders may actually become participants in your research and, of course, any participants you sample, by definition, become stakeholders as well as gatekeepers for their own participation. If a stakeholder controls access to something you need in order for your research journey to progress, you need to manage communications and relationships with that gatekeeper in such a way that you get the access you require. Sometimes, stakeholders and gatekeepers may expect something in return for any knowledge they share or access they grant, and these expectations may exert pressure on you to develop your research in certain ways or to produce specific outcomes. You must be proactive in managing such dynamics throughout your research journey and we explore some strategies for doing this.

Special Presenter – Day 2

Community Engagement Strategies for Improving Feral Pig Management: Integrating Biophysical and Human Dimensions Research.

Darren Marshall[1], Ted Alter[2, 5], Matthew Gentle[3], Guy Ballard[4, 5] and Tanya Howard[5]
General Manager – Commercial Programs Southern Queensland Landscapes

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[5] University of New England, Armidale, NSW, 2351, Australia

Biography

Darren Marshall is a specialist in engaging people in effective, coordinated pest animal control and landscape scale environmental management. Darren is currently a General Manager with Southern Queensland Landscapes. He is completing a PhD.I, testing different engagement strategies, which use scientific research as a vehicle to motivate landholders to take collective action to address the feral pig issue in Australia. This study is part of a collaboration with the University of New England and Penn State University (USA). Darren has also worked with Inglewood Shire Landcare, (the then) Queensland Department of Natural Resources, the Queensland National Parks and Wildlife Service and the Australian Army. Darren's interests lie in improving environmental management through working with land managers to tackle issues that can only be addressed at a landscape scale, particularly linking good research with on-ground outcomes.

Session Overview

Significant advances have been made using the biophysical sciences to improve our knowledge of feral pig (*Sus scrofa*) ecology in Australia. Similarly, new management tools, such as HOGGONE®, are being developed to help manage feral pig populations and their damaging impacts. Despite these developments, landscape-scale management of feral pigs and their impacts is hampered by limited participation by land managers and others in applying coordinated control strategies. In partnership with land managers from four communities, as well as organisational stakeholders such as Northern Tablelands and North West Local Land Services, NSW National Parks and Wildlife, Arrow Energy, Santos GLNG and Southern Queensland Landscapes, this study integrates feral pig ecological research with human dimensions research applied in an experimental framework. We are testing whether a 'thick' engagement strategy, grounded in community-based research, will improve collective action and motivate communities to address the feral pig problem. This study is being conducted at six sites in eastern

Australia. Across four of these sites we have fitted 97 feral pigs with iridium-enabled telemetry collars to collect movement and spatial ecology. Simultaneously, the human communities associated with each site were assigned a unique community engagement treatment. The relative benefits of these treatments for catalysing relationships and strengthening feral pig management have been assessed using a most significant change evaluation strategy. Here we present our human dimension findings from this innovative study and highlight key lessons regarding community engagement for feral pig management purposes.

INVITED SPEAKERS

Invited Speaker – Day 1

Synergistic Modelling of Load, Wellness and Injury in Elite Junior Australian Football Players

Dr Timothy Lathlean[1,2], Paul Gastin[3], Stuart Newstead[2], and Caroline Finch[4]

Faculty of Science, Agriculture, Business and Law
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[2]Monash University Accident Research Centre (MUARC), Monash University, Clayton, Australia
[3]La Trobe Sport and Exercise Medicine Research Centre, Department of Dietetics, Human Nutrition and Sport, La Trobe University, Bundoora, Australia
[4]Australian Centre for Research into Injury in Sport and its Prevention (ACRISP), Edith Cowan University, Perth, Australia

Biography

Tim is a Lecturer in Exercise Physiology. He has 7 years of experience in researching training and competition loads, player wellness and injury in team sports. Tim is an Accredited Exercise Physiologist (AEP) and Accredited Exercise Scientist (AES) with Exercise and Sports Science Australia (ESSA). Tim acts as a reviewer for several sports medicine/ science and technology journals. Tim has supervised over 20 students in the applied sports science/injury setting as well as undergraduate and postgraduate students in the clinical setting. Tim is committed to high-quality teaching, scholarship and eager to pursue research opportunities across a range of interest areas.

Session Overview

Introduction: Despite the aetiology of injury being recognised as multifactorial, the majority of load and injury studies have investigated single risk factors only. This is an oversimplification and the interpretation of load-injury relationships should not be done in isolation, indicating a need for synergistic modelling. Aim: To investigate whether wellness mediates and/or moderates load-injury relationships in elite junior Australian football (AF) players across one competitive season. Methods: Elite junior AF players (n=562, average age 17.7, range: 16 to 18 years) entered their loads (session-RPE), player wellness and injuries into an online monitoring system. An injury was recorded if it led to a missed training session or match. Logistic Generalised Estimating Equations assessed for mediation (confounding) and moderation (interaction) in the relationship between load and injury (yes/no). Results: Wellness acted as a partial mediator on the load-injury relationship (OR 0.54 to 0.70), demonstrating that load appears to influence wellness (and specifically soreness), which then influences injury risk. There was a significant interaction between load and wellness in their association with injury (OR= 0.76, 95% CI 0.62-0.92, p =0.04) and evidence of mediating moderation (OR= 0.71, 95% CI 0.57-0.87, p =0.001) of wellness on the load-injury relationship. When wellness was low, injury risk

started to increase substantially at a 1-week load of 3250 au, which was a lower threshold than found in the moderation model alone (3750au). Conclusion: This is the first study at the elite junior level of AF identifying both mediation and moderation of wellness on load-injury relationships. Players who do not respond well to their training and competition loads, will be at higher risk of injury. This study highlights that measures of athlete wellness should be included as a component of any load-monitoring program as they have a synergistic relationship with load on injury.

Keywords: Injury/Rehabilitation, Technology and Monitoring, Strength and Conditioning.

Research Method: Prospective cohort study of elite junior AF players over the course of one competitive season. Mediation and moderation analysis were used to determine synergistic relationships of load, wellness and injury.

Invited Speaker – Day 1

Albalimulus: A case of Examining a Long-Forgotten Fossil to Further Understand Horseshoe Crab Evolution

Dr Russell Bicknell[1]
Faculty of Science, Agriculture, Business and Law
School of Environmental & Rural Science

[1] Palaeoscience Research Centre, School of Environmental and Rural Science, University of New England, Australia.

Biography

Prior to Russell's PhD at UNE, he grew up and then studied in Wellington, New Zealand. He conducted his BSc and MSc at Victoria University of Wellington. Russell recently completed his PhD that explored Cambrian-aged predation and predator prey systems and is now a Postdoctoral Research Fellow at UNE. During this fellowship, Russell will conduct research into the biomechanical ability of Cambrian predators. Furthermore, he will continue his research into understanding the evolution and taxonomy of iconic organisms called horseshoe crabs.

Session Overview

Horseshoe crabs have a fossil record which spans over 450 million years, but only one extant family: Limulidae. The origin of this family has been somewhat debated. The first limulid was thought to have arisen in the Triassic (c. 250 million years old) but here we challenge this paradigm with the discovery of a new limulid from the Lower Carboniferous (Tournaisian stage, c. 350 million years) of Scotland: Albalimulus bottoni. This discovery demonstrates that the three major Mesozoic group horseshoe crab families had a Palaeozoic origin. We present a systematic description of the taxon and a comprehensive phylogenetic analysis illustrating the placement of the taxon close to the base of Limulidae. Furthermore, landmark and semilandmark-based geometric morphometric analyses illustrate two major pulses of xiphosurid evolution between the Upper Ordovician and today. The first reflects the rise of belinurids and paleolimulids, and the presence of marine and non-marine groups, and the second the diversification of Limulidae. We conclude that continued study of such rare specimens is needed to thoroughly understand the evolutionary history experienced by these iconic chelicerates.

SPECIAL SESSIONS

Session One
Fishbowl Discussion with Supervisors

Professor Kim Usher, Associate Professor Amy Lykins, Associate Professor Stuart Wark and Emeritus Professor Ray Cooksey

Session Overview

Observations of the challenges facing Higher Degree Research Students at UNE

Attendees will be invited to participate in the fishbowl discussion alongside the invited speakers.

Session One
Meet your HDR Support Network Speed Conversations

Ms Eleanor Colla and Ms Kate Pardy

Session Overview

In these concurrent sessions HDR students will meet one-on-one with a number of staff from UNE's student support networks. You will learn more about the library, academic skills officers, UNE Sport, counselling, IT services, and many more, giving them the opportunity to put names, faces, and services together. If you would like to know more about the support and services offered at UNE then these sessions are for you!

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