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## About the Queensland Fire and Biodiversity Consortium

Healthy Land and Water's Queensland Fire and Biodiversity Consortium is a network of land managers and stakeholders devoted to providing a coordinated response and best-practice recommendations for fire management, fire ecology and the conservation of biodiversity in the state of Queensland through education, community engagement and applied research.

## About Healthy Land and Water

Healthy Land and Water is the **peak environmental group** for South East Queensland. For over 20 years it has been dedicated to investing in and leading initiatives to **build the prosperity, liveability, and sustainability of our 'future region'**.

We are experts in research, monitoring, evaluation and project management. Our team has led many thousands of projects to restore waterways and landscapes, improve native habitats, manage weeds, protect native species, inform policy and educate communities on the best ways to improve and protect the environment for future generations.

Working in partnership with Traditional Owners, government, private industry, utilities and the community, Healthy Land and Water delivers innovative and science-based solutions to challenges affecting the environment. The combination of scientific expertise and on-ground management works to deliver Healthy Land and Water's mission to **lead and connect through science and actions that will preserve and enhance our natural assets and support resilient regions long into the future.**

## Acknowledgements

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## Traditional Owner Acknowledgement

We acknowledge that the place we now live in has been nurtured by Australia's First Peoples for tens of thousands of years. We believe the spiritual, cultural and physical consciousness gained through this custodianship is vital to maintaining the future of our region.

## Contact details

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## Introduction

The Ecological Society of Australia (ESA) was established by Canberra ecologists in 1959 with the aim of promoting ecological science. Since then, the ESA has grown to over 1000 members from across Australia and welcomes people from all fields of ecology and related disciplines to support and share ecological science and knowledge.

Each year, the ESA produces publications, engages with all levels of professionals and organises conferences. Once again due to COVID-19, the annual Conference was held online from 22nd-26th November. The 2021 Conference was themed around 'Renewal'; renewed relationships with nature as we live with COVID-19 and the renewal of ecosystems after significant environmental events like the 2019/2020 bushfires.

The intent of this report is to provide readers with a quick reference and summary of attended presentations. The report is organised by day, session and schedule of presentations. Please see attached program. Talks of interest for each session are listed below.

## Highlight presentations

### Monday 22nd November

#### 1. Ecological impact of the 2019/2020 megafires

1.10 Protecting threatened species and ecological communities before and during bushfire: Learning from the 2019/20 fires. Kelly de Bie, Research Fellow, University of Melbourne.

#### 2. Planning our future cities: human-nature connections, coexistence and co-design

2.1 Verging on transformation: The social and ecological values of native verge gardens along suburban streets. Natasha Pauli, Senior Lecturer, University of Western Australia.

#### 3. Planning our future cities: policy and practice

3.3 Onsets not offsets for real biodiversity benefits. Sarah Bekessy, Professor.

### Tuesday 23rd November

#### 4. Indigenous ecological knowledge symposium

4.3 What opportunities does the Indigenous Carbon Industry offer to support better recognition of Indigenous land and sea management knowledge and practice? Anna Boustead, Indigenous Carbon Industry Network.

#### 5. Human behaviour change and the importance of nature connection for humanity's wellbeing

5.1 Melbourne's coffee consumers are swayed to drink wildlife-friendly coffee by motivations, not messages. Pia Lentini, Senior Research Fellow, RMIT University.

#### 6. Perspectives on environmental-economic accounting in Australia

6.4 Victorian Ecosystem Account for the Great Ocean Road. Phil Cryle, Senior Economist, Department of Environment, Land, Water and Planning.

#### 7. Open forum: herbivory and grazing ecology

7.1 The response of small mammals and reptiles to livestock grazing and time-since-fire in Central Queensland. Miranda Rew-Duffy, The University of Queensland.



### **Thursday 25th November**

#### **8. Ecosystem recovery and the forgotten elements of fire regimes: how ecosystems respond to changes in fire season, extent, and severity**

8.17. Watching the world turn green: citizen science after the 2019-2020 bushfires. Casey Kirchhoff, PhD Candidate, University of New South Wales.

#### **9. Renewal or reimagination? What we learned teaching ecology in unusual times**

9.1 De-colonising science through co-teaching consilience. Leanda Mason, Lecturer, Curtin University.

### **Friday 26th November**

10. Pf-fire: past fire frequency and intensity reconstruction.

10.6 Old rules for fire research no longer apply. Dr Diana Kuchinke, Sessional Lecturer, Federation University.

## Monday, 22nd November

### 1. Ecological impact of the 2019/2020 megafires

#### 1.1. Reptiles and fire; pretty hot and tempting

*Bridget Roberts, PhD Candidate, University of Wollongong*

- **Aim:** To study how reptiles respond to fire severity and the state of the vegetation in dry sclerophyll forests.
- Greater Sydney and Blue Mountains study areas.
- **Method:** Used camera and live trapping, active searches and artificial substrates to record data across low, high and unburnt sites.
- **Results:** More reptiles were found in sites of low severity, while species richness didn't change across severity types. Reptile responses were specific to habitat requirements. Overall, reptiles have not been extremely impacted.
- **Conclusion:** Important to consider the whole fire regime and all severity classes, as all components support reptile extant. Mosaic burning is recommended.

#### 1.2. Heath frogs and the associated aquatic community response to devastating fires

*Sarah Stock, PhD Candidate, University of Newcastle*

- **Aim:** To compare the post-fire responses of the Southern Heath frog (*Litoria watsoni*) from 2002 to after the 2019/2020 fires.
- Nowra, NSW study area.
- **Method:** Used molecular and genetic testing and traditional fieldwork to obtain data. Was able to compare data from a relevant 2001 study.
- **Results:** Overall, the population of *L. watsoni* was relatively stable between 2001 and 2020, with a decline in the population recorded post 2019/2020 fires.
- Continuing research will use genetic work to assess population changes and genetic diversity across different fire severities to assess resilience.

#### 1.3. Fire severity and its local extent is key to assessing impacts of mega-fires on koalas

*Brad Law, Principal Research Scientist, NSW Primary Industries*

- **Aim:** To assess the impacts of fire severity on koalas around Bellangry, NE NSW.
- **Method:** Used acoustic arrays and spatial count models to estimate male koala density before and after fires. Study areas represented different fire severities and unburnt areas. Overlaid fire severity mapping and koala density data.
- **Results:** Koala density declined relative to fire severity. Areas affected by low severity fires provide poor refugia. Results found a stable metapopulation.
- **Conclusion:** High severity fires have the most impact on koalas. Koalas show some resilience to low severity fires and persist where patches of refuge are available.



#### 1.4. Effects of the 2019/2020 megafires on vertebrate scavenger dynamics and carcass persistence rates

Thomas Newsome, Senior Lecturer, University of Sydney

- **Aim:** How do vertebrate scavengers respond to fire in the Blue Mountains?
- **Method:** Compared data from 2018 to data collected after the 2019/2020 fires. Placed kangaroo carcasses as experiment. Collected species richness, carcass detection and feeding times of dingoes, ravens, red foxes and lace monitors.
- **Results:** Found that scavenger activity increased post fire and avian species increased range as the landscape opened up. Carcasses can remain in the landscape for a long time after fires.
- **Conclusion:** Carcass persistence is dependent on apex scavenger presence. Further study into the responses of both vertebrate and insect scavengers is recommended to understand the effects of fire and decomposition.

#### 1.5. Restoring species' habitats in anthropogenic landscapes after megafires

Michelle Ward, Conservation Ecologist, University of Queensland/WWF

- **Aim:** To understand drivers, including fire, of habitat loss to prioritise restoration actions.
- East coast and inland, southern and South-Western Australia study area.
- **Method:** Used current and future species distribution models for priority species to identify future habitat to restore. Considered different threats, actions, sub actions and cost.
- **Results:** Some actions needed across the landscape like management of weeds, fire, logging, rabbits and invasive herbivores. 162mil ha needs restoration, of which 7.6mil ha overlaps with areas affected by the 2019/2020 fires. Results of costs are: replanting is \$5819/ha, invasive weed management is \$1432/ha and agricultural management is \$39/hectare.
- **Conclusion:** Restoration is needed both with and outside the fire footprint. Conservation is cheaper than restoration and provides lots of co-benefits like carbon sequestration and assisting the agriculture industry through rabbit management.

#### 1.6. Assessing impacts and threats on 100 priority NSW plants after the 2019-2020 bushfires

Liz Tasker, Principal Scientist Fire Ecology, NSW Dept of Planning, Industry and Environment

- **Aim:** To assess 100 priority plant species at risk in NSW post the 2019/2020 fires and predict threats to recovery.
- **Method:** Conducted field assessments of approximately half the species, with the remaining data collated from public, internal and personal communications data. Worked with 103 project partners.
- **Results:** 53 species were already part of the 'Saving Our Species' project. Fire mapping for accurate for 93% of species.
- Predicted threats are drought, high fire frequency and fire severity, herbivory and erosion.
- **Conclusion:** Follow up field assessments are scheduled. A significant number of species are still of concern.

### 1.7. Snail-tales from the Black Summer fires

*Orsi Decker, Research Officer, La Trobe University*

- **Aim:** How do native snails respond to fire and find fire refuges?
- **Method:** Surveyed between the Blue Mountains (NSW) and Victorian Alps (Vic). Focus on Gippsland study area for presentation. Used remote sensed fire severity mapping and on ground scores for understorey/litter.
- **Results:** Land snails can survive fire but decline with the burn severity of the understorey.
- Slugs are very sensitive to fire. Survival depends on fire severity and the availability of refuges.
- **Conclusion:** Further on-ground research is needed to avoid extinctions.

### 1.8. Megafire-induced interval squeeze threatens vegetation at landscape scales

*Tom le Breton, PhD Candidate, University of New South Wales*

- **Aim:** To analyse impacts of fire on vegetation communities.
- **Method:** Used remote sensing, fire history records and plant traits to determine thresholds of vegetation communities along eastern Australia.
- **Results:** Fire sensitive vegetation most impacted by fires and at risk of transitioning under changed fire regimes. Megafires can burn through previously burnt areas, reduce fire intervals and pressure ecosystems.
- **Conclusion:** Changes to fire management and addressing climate change are needed to avoid collapse of fire sensitive communities.

### 1.9. Mammals are weaker than reptiles. Megafire impacts on threatened skinks and broad-toothed rat

*Don Driscoll, Professor, Director, Centre For Integrative Ecology*

- **Aim:** To understand the impact of feral herbivores (horses and pigs) on the Broad-toothed Rat, Alpine Water Skink and the Southern Water Skink post fire. Australian Alps and lowlands study areas.
- **Method:** Surveyed 80 Alps and 80 lowland fire affected sites. Collected data on fire intensity, extent and effect of large feral herbivores on site occupancy and abundance.
- **Results:** Broad-toothed Rat occurrence declined with fire severity and feral horse impacts. Both skinks were more affected by weeds than fire.
- **Conclusion:** Recommendations are to cull feral herbivores, remove horses from the high country, protect alpine wetlands from fire and control weeds.

### 1.10. Protecting threatened species and ecological communities before and during bushfire: Learning from the 2019/20 fires

*Kelly de Bie, Research Fellow, University of Melbourne*

- **Aim:** To learn from the practices of the 2019/2020 fires to better prepare for future fire events.
- **Method:** Distributed an online survey and conducted semi-structured interviews with state agencies, biodiversity officers and fire operation staff to determine areas to improve biodiversity outcomes during fires. Asked what happened, what worked well, what did not and what needs to change for targeted protection of biodiversity.
- **Results:** Factors that contributed to success were having biodiversity representatives in the incident response team, having pre-fire plans, shovel ready plans and actions than can be



implemented during a fire. Challenges were inadequate capacity and resourcing, fast moving fires, lack of pre-fire planning and prioritisation and access to data.

- **Conclusion:** Resourcing and investment in planning and conservation asset management needs to be integrated to emergency planning and national standards. Frameworks and legislation need to include conservation of biodiversity and cultural values during fire events.

## 2. Planning our future cities: human-nature connections, coexistence and co-design

### 2.1. Verging on transformation: The social and ecological values of native verge gardens along suburban streets

*Natasha Pauli, Senior Lecturer, University of Western Australia*

- **Aim:** To understand the motivations and inspirations of Perth residents to plant native verge gardens.
- **Method:** Conducted semi-structured interviews with 22 households.
- **Results:** Respondents were inspired by seeing other verge gardens and were motivated to reduce maintenance and water use. Plant selection was driven by Local Government incentives and wanting to plant 'hardy' plants.
- **Conclusion:** Interest in verge gardens is increasing. Residents would benefit from locally relevant information to help promote these types of gardens as places of education, habitat and providing a sense of place.

### 2.2. Lawns as ecological and cultural phenomena. Searching for sustainable solutions in time of drying climate

*Maria Ignatieva, Professor, University of Western Australia*

- **Aim:** To consider alternatives to 'lawns' in a drying climate.
- Lawns provide a range of ecosystem services like cooling and social spaces.
- **Method:** Researched history of lawns and what they provide and represent. Looked to Europe and the USA for solutions, as there is very limited research in Australia.
- **Results:** Tapestry lawns using a selection of native herbaceous ground cover plants are used in Europe and the USA. A similar approach may work in Australia.
- **Conclusion:** The Living Lab in Perth is trialling different lawns and ground covers.

### 2.3. De-paving paradise: replacing parking with green space

*Thami Croeser, RMIT*

- **Aim:** To convert redundant parking spaces in Melbourne into green space and ecosystems to reintroduce nature into cities.
- **Method:** Calculated the number of redundant allocated street parking and where those spaces are. Tested three scenarios: where street parking was moved to commercial parking lots, private parking was open to the public and combination of both.
- **Results:** By fully utilising private and residential parking buildings, 6-15ha of parking spaces can be made available for green space, increasing new canopy cover by 30-50 hectare.
- **Conclusion:** Converting car parks to green space can improve habitat connectivity and mini ecosystems can be created to help water management.

## 2.4. Darwin Living Lab: collaborative learning and experimentation in a tropical urban ecosystem

*Stephen Cook, Senior Research Scientist, CSIRO Land and Water*

- **Aim:** Through the CSIRO's Darwin Living Lab, researching the liveability, sustainability and resilience in Darwin, with a focus on heat challenges.
- **Method:** 10year collaboration. Mapped hottest and coolest areas of Darwin, then help workshops with residents to vision the future and how nature can be used in cooling the city.
- **Results:** Paved areas, dry grass and bare ground were the hottest, whereas areas of mangrove, monsoon rainforest, beaches and mudflats were the coolest. Currently trialling urban green and retro fitting infrastructure to provide cooling benefits. Cultural significance and biocultural projects have been incorporated and are co-lead.
- **Conclusion:** Will continue to monitor land cover and socio-demographic changes.

## 3. Planning our future cities: policy and practice

### 3.1. Green space use in Darwin

*Brenda Lin, CSIRO*

- **Aim:** To investigate how green space in Darwin is utilised, what is valued and what are some of the barriers to use.
- **Method:** Online survey distributed. The same survey was also undertaken in Brisbane and Sydney to capture a larger sample. Results are only from the Darwin survey. Survey asked where people live (approx.), how often they use green space and what encourages and discourages use.
- **Results:** Responses indicated that green space is used very frequently (6-7 days a week), even if the green space isn't in the immediate vicinity of the participant's house. Barriers included poor weather and accessibility, lack of time and specific facilities and areas being poorly maintained. Drivers of use were accessibility, time in open space and nature, the facilities and well-maintained facilities.
- **Conclusion:** Results will be compared with the data from Brisbane and Sydney, and group discussion will be held to identify and design green areas that will benefit the people of Darwin.

### 3.2. Climate-change risk analysis for Australian urban vegetation

*Manuel Esperon-Rodriguez, Research Fellow, Western Sydney University*

- **Aim:** To analyse the predicted resilience of urban vegetation in a changing climate.
- **Method:** Measured climatic variables, vulnerability, exposure, risk and sensitivity of 3206 species in 87 Australian cities to determine species most at risk.
- **Results:** By 2050m species at risk will increase and will drive species mortality.
- **Conclusion:** Future climate should be considered when deciding which species to plant in urban areas.



### 3.3. Onsets not offsets for real biodiversity benefits

*Sarah Bekessy, Professor*

- **Aim:** To change the approach of offsets to one of onsets to improve development and biodiversity outcomes. Need everyday nature in cities for resilience and future liveability.
- **Method:** Created a framework where developers are required to retain, protect, restore and improve on-site biodiversity.
- **Results:** Offsets move biodiversity away from an area, whereas onsets enhance the on-site biodiversity and makes biodiversity an asset.
- **Conclusion:** Framework for onsets in urban development will help to bring species back into cities and encourage innovative approaches to urban developments.

### 3.4. Mapping green roof uptake in Melbourne

*Julia Schiller, PhD Candidate, The University of Melbourne*

- **Aim:** To quantify the uptake of green rooves in Melbourne and the role that policy has in this trend.
- **Method:** Desktop research using Nearmap and Google images from 2000-2019 to record a database of green roof installations across Melbourne.
- **Results:** The number of green rooves increased from 23 in 2000 to 224 in 2019, a growth of 874%. However, only 50% of the combined area had vegetation cover. Strongest uptake was on apartment buildings. Growth of installations was supported by several strategies such as the Growing Green guide (2014) and the Rooftop Project (2015).
- **Conclusion:** The Northern Hemisphere has a policy that all new builds are to have green roof space. Although there is no policy in Australia for this, the green roof project trend is likely to continue.

**Tuesday, 23rd November**

## **4. Indigenous ecological knowledge symposium**

### **4.1. Learning from 'lizard traps': Walking together to care for granite country**

*Susie Cramp, PhD Student, University of Western Australia Albany*

- **Aim:** To incorporate Traditional Ecological Knowledge (TEK) into literature and management of granite outcrops in the Southwest Australian Floristic Region, Western Australia.
- Part of the Walking Together Project where Traditional Owners and Conservation Scientists have conversations about land and the desired actions on Country.
- **Method:** Literature review of publications and interviews with three Elders. Video recordings made to document all Intellectual Property of Elders.
- Recorded TEK on lizard use of traditional 'lizard traps'.
- **Results:** The use of 'lizard traps' was better understood as the 'traps' also provide lizards with shelter and opportunities for basking, shade and foraging.
- **Conclusion:** Management actions to protect the area are restricted access, education and ranger programs to protect the area.

### **4.2. Reconnecting to River Research on Wadjuk Noongar Boodja with Traditional Owner**

*Vanessa Corunna, Curtin University*

- **Aim:** To develop a framework for best practice community engagement, historic research and conservation planning in waterways management.
- **Method:** Engagement through yarning workshops to build relationships, continually learn and collaborate management.
- **Results:** Framework will be replicated in other catchments to achieve healthier waterways and communities.
- **Conclusion:** Important that research benefits the community and that engagement is part of normal business.

### **4.3. What opportunities does the Indigenous Carbon Industry offer to support better recognition of Indigenous land and sea management knowledge and practice?**

*Anna Boustead, Indigenous Carbon Industry Network*

- **Discussion:** On the development of Carbon Farming projects across Northern Australia.
- Early dry season burns are undertaken to reduce emissions from large late season burns. Practice attracts a premium credit price and is used to offset carbon.
- There are 32 Indigenous owned and operated savanna fire projects which generate social, cultural, environmental and economic benefit to communities as well as an independent source of income.
- There is a market emerging for 'blue carbon' projects through restoring natural tidal flow.
- Indigenous Carbon Industry Network provides a coordination point for projects and best practice guide for carbon projects.



#### 4.4. The Turtuni story: representing Tiwi cultural values

Mavis Kerinaiaua, Researcher, Deakin University and Tiwi Resources

- **Aim:** To create paintings that represent cultural values for working with the people on the Tiwis.
- **Method:** Painting is part of the research and knowledge transfer for planning sustainable ecological development in the Tiwi Islands. Elements of the paintings are talked through.
- **Results:** Paintings used as an educational tool for working with people and understanding the services provided.

### 5. Human behaviour change and the importance of nature connection for humanity's wellbeing

#### 5.1. Melbourne's coffee consumers are swayed to drink wildlife-friendly coffee by motivations, not messages

Pia Lentini, Senior Research Fellow, RMIT University

- **Aim:** To persuade Melbourne coffee consumers to buy wildlife friendly coffee. Partnered with Melbourne Zoo.
- Concern that in coffee growing regions, demand for coffee is pressuring traditional growing methods that supports biodiversity to polyculture and intensive methods which threatens biodiversity.
- **Method:** Used online surveys to collected data on participants coffee purchasing behaviour, food production and connection to nature. Participants were tested with one of eight messages for psychological sway and were offered a discount voucher for a wildlife friendly coffee.
- **Results:** There behavioural difference between messages. Results showed that participants were concerned about resource impacts, sustainability and nature relatedness. There was a low understanding between coffee and biodiversity loss.
- **Conclusion:** More research is needed to understand barriers to consumers choosing wildlife friendly coffee.

#### 5.2. How do we plan and design conservation messaging that is strategic, ethical, and effective?

Emily Gregg, PhD Candidate, RMIT

- **Aim:** To use strategic communication practices to plan and design conservation messaging and consider the ethics behind the approach.
- **Method:** Used approaches from social marketing, advertising and public relations to design messages for engagement in biodiversity topics to try and change attitudes.
- **Results:** Design process presented. Create a narrative based on the target audience.
- Common names of species can evoke emotions and influence conservation e.g. The use of the word common and pale.
- **Conclusion:** Framing is important. People, problem and nature need to be framed together, not separately. The message needs to be right for the audience.

### 5.3. How do Australian conservation organisations use wildlife imagery for social engagement?

Meg Shaw, PhD Student, Deakin University

- **Aim:** To understand how imagery can be used in conservation to promote engagement.
- **Method:** Looked at how animals are represented in social media and how many 'likes' each species attracted. Analysed visual content of 800 wildlife images from Australian conservation organisations.
- **Results:** Classes in order of most representation are mammals, birds, reptiles, invertebrates, fish and amphibians with koalas, kangaroos and wombats receiving the most mammal coverage. There was not a significant difference between engagement with all species despite there being more mammals represented.
- **Conclusion:** Results can assist conservation organisations to promote images that help their cause.

## 6. Perspectives on environmental-economic accounting in Australia

### 6.1. The need for ecologically meaningful ecosystem accounts: a policy perspective

Dayani Gunawardana, Environmental Economic Accounting Section, Department of Agriculture, Water and the Environment

- **Aim:** To improve environmental, social and economic outcomes by assessing the value and benefit of what the environment provides, known as environmental services.
- Discussion of national strategy for 'Environmental Economic Accounting: A Common National Approach', using Gunbower-Koondrook- Perricoota Forest Icon, Victoria as a case study.
- **Method:** Used a multiuser consultation process to identify policy and decision making needs based on ecosystem services, evaluate the success of policies and how they optimise environmental, social and economic outcomes.
- **Results:** Challenges were how to classify services, determine capacity to deliver services and disentangle the impact of policy. There is a need for 'ecologically meaningful accounts.'

### 6.2. Ecologically meaningful ecosystem accounts for the Gunbower-Koondrook-Perricoota Forest Icon Site

Becky Schmidt, Senior Environmental Scientist, CSIRO Land and Water

- **Aim:** To test the development of ecosystem accounts for water management in the Gunbower-Koondrook- Perricoota Forest Icon, Victoria.
- Ecosystem accounts consider the social, environmental and economic values and services that the environment provides.
- **Methods:** Used the Australian Ecosystem Models Framework to capture environmental data and predict environmental-economic changes to the benefits the environment provides.
- Mapped ecosystem types and states against transitions like water extraction, fire, grazing and logging to assess the condition of the ecosystem.
- **Results:** Model can help land managers and policy makers understand the trade-offs in ecosystem services.
- Long term goal is for decision makers to use the same ecologically meaningful information to inform decisions.

### 6.3. Applying dynamic ecosystem models to ecosystem extent accounts for the Gunbower-Koondrook-Perricoota Forest Icon Site

*Anna Richards, Research Scientist, CSIRO Land and Water*

- **Aim:** To map the extent of different ecosystem accounts (services and benefits) to predict how future services will be affected for changes.
- Gunbower-Koondrook- Perricoota Forest Icon, Victoria case study.
- **Method:** Used Australian Ecosystem Models Framework ecosystem extent, state and expression in line with the System of Environmental-Economic Accounting.
- **Results:** Refinement of maps allowed for accurate and precise modelling of extent and drivers to understand changes across the ecosystem.

### 6.4. Victorian Ecosystem Account for the Great Ocean Road

*Phil Cryle, Senior Economist, Department of Environment, Land, Water and Planning*

- **Aim:** To visualise the value of ecosystem accounts for the Great Ocean Road to provide evidence and inform planning and investment in the region.
- **Method:** Ecosystems and conditions were mapped against ecosystem services (education, agriculture and tourism) and impacts (tourism and landslides) to determine value.
- **Conclusion:** Ecosystem accounts can be used to deliver socio-economic outcomes and assist in planning.

### 6.5. Valuing ecosystem services applying indigenous perspectives

*Kamaljit Sangha, Outstanding Future Researcher- Ecological Economics, Charles Darwin University*

- **Aim:** To communicate the value of ecosystem services for wellbeing to Indigenous peoples and local communities, using research from Indigenous communities in northern Australia.
- Ecosystem services not valued or undervalued because of ecosystems have a non-market value and approaches don't normally suit an Indigenous context.
- **Method:** Determined what makes up connection to Country, which in turn supports ecosystem services value (knowledge and skills, duty of care for ecosystems and ecosystem services).
- **Results:** Approach will help policy planners to understand the true value of ecosystem services to the wellbeing of Indigenous peoples.

### 6.6. An overview of the first national land account for Australia

*Alison Cowood, Assistant Director, Department of Agriculture, Water and the Environment*

- **Discussion:** To present the first national land account for Australia, which aligns with the United Nations System of Environmental-Economic Accounting framework.
- Collates spatial land data and non-spatial land value to integrate socio-cultural and economic value with other accounts like water, agriculture and ecosystems. Measures the effect of economic activity of the environment.
- Outputs will support multi-disciplinary decision making and management.



## 6.7. A review of the relationships between ecosystem condition and ecosystem services

*Michael Traurig, PhD Candidate, Deakin University*

- **Aim:** To assess the ecosystem services and against condition and biomes.
- In early stages of research.
- **Method:** Will look at water, air quality and cultural services to develop a mapping framework indicating the direction (positive, negative, neutral) of the relationships.
- **Conclusion:** Results will add to the understanding of how the condition of an ecosystem affects the ability to provide essential services to people.

## 7. Open forum: herbivory and grazing ecology

### 7.1. The response of small mammals and reptiles to livestock grazing and time-since-fire in Central Queensland

*Miranda Rew-Duffy, The University of Queensland*

- **Aim:** To investigate the effect of grazing intensity and/or time since fire on small mammals in the Brigalow Belt of central Queensland on Carnarvon Station.
- **Method:** Fire scars and Regional Ecosystems were mapped across 48 sites.
- **Results:** Skink abundance and richness didn't change between grazing and fire. Small mammal abundance and richness decreased with grazing but not to fire. Large reptiles were not significantly impacted. Regional Ecosystems had a greater impact on community compositions.
- **Conclusion:** Results will be useful for land managers and the impact of grazing for conservation, although grazing is only one component in the landscape.

Thursday, 25th November

## 8. Ecosystem recovery and the forgotten elements of fire regimes: how ecosystems respond to changes in fire season, extent, and severity

### 8.1. Ecological effects of Australia's Black Summer fires through an ecosystem lens: a national-scale assessment

*David Keith, Professor of Botany, University of New South Wales*

- **Aim:** To analyse ecological impacts of the 2019/2020 bushfires and to consider what mediates resilience or collapse.
- **Method:** Examined the interactions between climate change, ecosystem threats, human disturbance and fire regimes drivers to produce a national-scale, assessment of 95 ecosystems.
- Ranked threats and ecosystems using 10 criteria and mapped importance of different fire-related threats.
- **Results:** Cumulative threats with most impact were high fire frequency, recurrence of high severity fire, interactions of drought, fire and invasive species.
- Context of fire and interaction with other threats is critical.
- **Conclusion:** Priorities for action are climate change mitigation, reduce the risk of fire occurrence, protect refuges and reduce concurrent pressures; and invest in pre-fire planning and managing threats post-fire.

### 8.2. The severity of the 2019-20 fires in Australia was influenced by past fires

*James Barker, PhD Student, University of Wollongong*

- **Aim:** To look at how the severity of previous fires influenced the 2019/2020 fires and how patterns of recovery can help understand feedbacks.
- **Method:** Sampled mapping datasets for severity across Dry Sclerophyll Forest, Wet Sclerophyll Forest and Rainforest in New South Wales.
- **Results:** Found that previous low severity fires promotes low severity fires and conversely, previous high fire severity increased high severity fires. Prescribed burning resulted in lower severity fires, but not across all areas.
- Wetter forest had lower severity fire.
- Relationship with time since fire was not captured due to large scale modelling.
- **Conclusion:** Fires were influenced by past fires.
- A local approach to fire is needed.

### 8.3. The fuel-climate-fire conundrum: How will fire regimes change in temperate Australian ecosystems?

*Sarah McColl-Gausden, PhD Candidate, University of Melbourne*

- **Aim:** To look spatially at the role of climate change, fuel and altering fire regimes in temperate forests.
- Considered two key mechanisms of changing fire regimes - climate and changing fuels.
- Adelaide Hills and East Gippsland study area.
- **Method:** Used FROST fire modelling and CSIRO and ECHAM climate models for current and future scenarios over a 100 year period across six study sites. Analysed the direct effect of weather and fuel.
- **Results:** Under future scenarios, the Adelaide Hills will likely experience an increase flammable fuel characteristics and fire weather. East Gippsland will likely experience a decrease in flammable fuel characteristics but an increase in fire weather.
- Overall, climate will be the main driver increasing annual areas burnt and will variable across regions and fuels being a secondary influence.
- **Conclusion:** Study aims to provide a basis for targeted research and management in areas most likely to experience changing fire regimes.

### 8.4. Response of Australia's woodland bird community to fire: a review and meta-analysis

*Jessica Walsh, Lecturer, Monash University*

- **Aim:** To understand post-fire recovery of woodland bird communities and fire regimes to inform fire management for biodiversity.
- **Method:** Meta-analysis of primary literature to compare bird species richness and abundance between burnt and unburnt sites.
- Focused on Victorian studies but considered papers from across eastern Australia. Reviewed 75 relevant articles and analysed 24 of the most useful articles.
- **Results:** There was a diversity of data sets and time since fire. Species richness and abundance increased with time since fire. Bushfires had a negative impact on bird species richness and abundance, whereas prescribed burns had no significant effect on richness and mixed effect on abundance.
- **Conclusion:** Post-fire responses are consistent. Maintaining long unburnt areas within mosaic burning is recommended.

### 8.5. The impact of invisible fire mosaics on the recovery of vegetation after the 2019-20 wildfires

*Madeline Newbery, Research Assistant, University of Wollongong*

- **Aim:** To assess how previous fires impacted vegetation recovery in Monga National Park, 300km south of Sydney, with a focus on the Clyde Mountain fire.
- **Method:** Mapped fire extent and severity across prescribed burn and bushfire affected areas. Conducted vegetation surveys across 20, 400 m<sup>2</sup> plots to record abundance and foliar cover of plant species across areas impacted by low, moderate and extreme fire severity over a 50 year fire history.
- **Results:** Fire history significantly influenced plant communities, more than fire severity.
- **Conclusion:** The impact of the 2019/2020 fire was small compared with the fire history across sites, however the impacts may be more evident after future fires.



#### 8.6. Fighting the flames: Impacts of occurrence and severity of fire on Australian frogs

*Brittany Mitchell, PhD Candidate, University of New South Wales and the Australian Museum*

- **Aim:** To examine frog responses, post the 2019/2020 bushfires across the continent.
- **Methods:** Used citizen science and remote sensing data.
- **Results:** Found no significant decrease in frog species richness post-fire or with higher fire severity, however there was regional and site variability with species richness.
- **Conclusion:** Analysis allows for targeted conservation investment.

#### 8.7. Assessing the usefulness of expert knowledge and empirical data in managing bushfire for biodiversity

*Jenny Shih-Wen Huang, Graduate Student, University of Melbourne*

- **Aim:** How the use of expert knowledge and empirical data influences bushfire management responses.
- **Method:** Compared two expert datasets and one survey dataset for advantages and disadvantages for managing two woodland bird case studies post fire.
- **Results:** The impact of different models depended on the uncertainty each scenario could tolerate. For preventing loss of species abundance, all datasets recommended the same actions. To maximise species abundance, the expert datasets recommended the opposite to the survey dataset.
- **Conclusion:** Study can help identify when more empirical data is needed to inform decisions or if expert knowledge is sufficient.

#### 8.8. The impacts of severe fires on plant populations

*Dr Mark Ooi, Senior Research Fellow, University of New South Wales*

- **Aim:** To communicate how the different components of the fire regime work together affect plant communities.
- Individual elements of fire regime: frequency, intensity, seasonality are often studied separately. Frequency is the most studied element but how the whole regime interacts is less understood.
- **Method:** Presentation of case studies as examples of how plants respond to fire regimes.
- **Results:** Recommendations to avoid regular out of season burns and avoid the same time each season. Consider recovery time after extreme severity fires. High fire frequency is a known mechanism of decline.
- Framework developed to understand fire regime as a whole.
- **Conclusion:** Important to understand how all aspects of the fire regime function and affect vegetation communities and responses is important.

### 8.9. Seasonal fluctuations in live foliar moisture delineate fire seasons in Mediterranean-type Banksia woodlands

Nate Anderson, PhD Student, University of Western Australia

- **Aim:** How does live foliar moisture vary across season and soil moisture across ecosystems to inform windows for conducting prescribed burns.
- Seasonal trends in leaf moisture is an understudied element of fire regimes.
- Swan Coastal Plains and Banksia Woodlands, Western Australia study area.
- **Method:** Compared leaf and soil moisture across seasons the dry and wet season for 16 common species.
- **Results:** Lower live foliar moisture content is associated with an increased fire risk. Growth size, species composition and abundance, soil moisture and the understorey provide some predictive capacity for leaf moisture.
- Larger growth vegetation had less variation in leaf moisture and had less variation over seasons than smaller plants, especially shrubs and herbs.
- **Conclusion:** Live foliar moisture content is important for understanding potential flammability and therefore optimal times for conservation actions.

### 8.10. Leaves, litter and lineage: links to flammability?

Susanna Bryceson, Graduate Researcher, La Trobe University

- **Aim:** Does leaf origin or leaf lifespan influence leaf litter flammability? Do 'ancient' and 'recent' leaves burn differently?
- Many ancient Australian plant species evolved in northern savannas, while other plant species came from Southeast Asia two - three million years ago and are considered more recent.
- **Method:** Collected leaf-fall from ancient and recent plant species and tested chemical components.
- **Results:** Not all leaves burn the same. Litter from 'ancient' plants burn slower than 'recent' leaf litter. Some trees contribute more to flammability than others, while some leaves even help suppress fire more than other leaf types.
- **Conclusion:** Important for understanding flammability in the landscape and therefore management options.

### 8.11. Using plant functional types to predict the influence of fire regimes on heathland plant diversity

Ella Plumanns Pouton, PhD Candidate, University of Melbourne

- **Aim:** To use plant function types to understand complex fire regimes.
- Gariwerd/Grampians, Victoria study area.
- **Method:** Investigated time since fire, fire interval, fire severity and plant diversity. Grouped plants by function type.
- Recorded plant reproductivity of 32 species at 57 field sites. Sites varied in time since fire (0-82+ years), fire frequency (1-8 fires) and fire severity.
- **Results:** Plant functional types and predictions mostly matched.
- **Conclusion:** Plant functional type predictions may be used to identify the range of fire regimes needed for heathland plant diversity.

### 8.12. Effects of climate change on resilience of fire prone eucalypt communities

Harriet Simpson-Southward, PhD Candidate, University of Wollongong

- **Aim:** To investigate the interaction between bark traits of eucalypts, climatic factors and fire regimes; and if certain species are more vulnerable to changes in distribution with climate change.
- Grose Valley in the Blue Mountains, NSW study area.
- **Method:** Ten bark cores, type and thickness were sampled from dominant species. Fire scarring within a 10m radius was recorded. Supplementary climate, fire and topography data was analysed. Eucalypts on ridges and gullies were compared.
- **Results:** Trees on ridges had denser, rougher bark, correlating with high fire severity than trees in gullies which experience lower fire severity and have thinner, smoother bark. Dense, thick, rough bark may provide protection from fire on ridges.
- **Conclusion:** Important to understand the spatial distribution of eucalypts (and therefore bark types) and fire responses, to predict responses to increased fire and threat to species extant.

### 8.13. How do varying fire regimes affect savanna ant communities through time?

Francois Brassard, PhD Student, Charles Darwin University

- **Aim:** Study of ants to understand the impacts of fire and fire frequency on biodiversity in savanna areas.
- Continuation of long-term study (started 2003) at the Territory Wildlife Park, Darwin. Samples taken since 2003. Presentation on data collected between 2003-2018.
- **Method:** Assessed ant abundance, richness and species composition in annually burnt and unburnt areas.
- **Results:** Ants showed no immediate, short term (up to one year) response to fire. After five years of burning, differences were evident between low and high fire frequency sites, suggesting ants are fire adapted.

### 8.14. Impacts of extreme fire severity on wet sclerophyll forests

Alexandria Thomsen, PhD Candidate, University of New South Wales

- **Aim:** To study the responses of wet sclerophyll forests to different fire severities in the Upland Basalt Eucalypt forests, Sydney Basin Bioregion.
- How likely are ecotones bordering wet sclerophyll forests, to shift under different fire regimes?
- **Method:** Surveyed previously studied sites, one year post 2019/2020 fires. Compared different functional groups and mortality across *Acacia melanoxylon*, *Eucalyptus blaxlandii*, *Eucalyptus cypellocarpa* and *Eucalyptus radiata* across fire severity.
- **Results:** Dry sclerophyll forest displayed low mortality across fire severities, while Rainforest displayed resilient to low severity fire and higher mortality associated with higher fire severity. Frequency of fire had the greatest impact.
- **Conclusion:** Important for understanding how fire severity impacts wet sclerophyll forests and therefore what management actions are needed to conserve ecotones.



### 8.15. Effects of fire season on the reproductive success of the post-fire flowerer *Doryanthes excelsa*

Ruby Paroissien, Research Assistant, University of New South Wales

- **Aim:** To examine the effects of fire season on the flowering of *Doryanthes excelsa*. NSW study area.
- Seasonality of fire can affect plants which flower post-fire, as these plants rely on post fire conditions to reproduce.
- **Method:** Reproductive output of *D. excelsa* was recorded in both wet and dry soil moistures and across summer, autumn and spring. Seeds were collected at each plot for germination and testing of compounds (lipids, carbohydrates and crude proteins).
- **Results:** *D. excelsa* preferred summer burns, which resulted in the most reproductive outputs compared to spring or autumn burns. Autumn burns delayed flowering. The influence of soil moisture with season was inconclusive but may decrease reproduction.
- **Conclusion:** Burn season can affect post-flowerers. Understanding ideal conditions for post-fire flowerers can assist in timings for ecological and prescribed burns.

### 8.16. Fire season affects plant recovery following fire: evidence from a global meta-analysis

Ryan Tangney, Research Fellow, University of New South Wales

- **Aim:** To investigate how global shifts in fire season influence plant responses.
- **Method:** Meta-analysis of plant recruitment and mechanisms of survival of historic fire season records and outside the historic fire season. Compared with recruitment outside of the historical fire season.
- **Results:** Post-fire recruitment decreased outside of the historic fire season. Whereas early season fires increased recruitment.
- **Conclusion:** Continued changes in seasonal windows may reduce frequency and abundance of obligate seeders by favouring resprouters. Therefore, trade-offs will need to be considered with ongoing changes.

### 8.16. Watching the world turn green: citizen science after the 2019-2020 bushfires

Casey Kirchhoff, PhD Candidate, University of New South Wales

- **Aim:** How to monitor the large scale effects on biodiversity after the 2019-2020 bushfires.
- **Method:** Developed citizen science app to record observations post fire. App on iNaturalist as part of the Environment Recovery Project. Asked users to record any observations: scorched vegetation, species.
- **Results:** Rapid uptake of the app by citizen scientists. Results recorded by users accurately matched with remotely sensed data. A wide spread of data was collected from moss to mammals.
- Top experiences of citizen scientists were: inspiration, learning and contribution.
- **Conclusion:** Project was a way for landholders to engage with their own property and with the surrounding landscape.
- The project has grown into the Big Bushfire BioBlitz.

### 8.18. Impacts of early prescribed burning on granivorous finch site utilisation

*Sydney Collett, PhD Student, Charles Darwin University*

- **Aim:** To understand how Gouldian Finch responds to prescribed burns for bushfire mitigation. Wyndham in the East Kimberley study area.
- **Method:** Used radio tracking and tagging of 32 birds to understand the Gouldian Finch's use of the landscape post fire. Data was overlayed with fire scar and habitat mapping.
- **Results:** Early dry season fires favoured the greater seed for the birds and therefore a higher use of the area.
- **Conclusion:** Mosaic burning during breeding season and early – mid dry season is recommended.

### 8.19. Spring burns are not good for pollinators

*Joshua Whitehead, PhD Candidate, University of New England*

- **Aim:** To record pollinator responses to fire in the Australian landscape and determine the impact of timing and frequency.
- **Method:** Fourteen study areas monitored on the Northern Tablelands near Coffs Harbour. Recorded floral diversity, pollinator networks, abundance and diversity. Pollinator samples captured using traps, netting and observations.
- **Results:** Drought negatively impacted pollinators, as did burns in the middle of spring. Pollinator visitation rates were highest in sites burnt on average, twice between 2000 and 2020 than sites burnt more or less.
- **Conclusion:** Avoiding repeated burns during spring in south-eastern Australia is recommended, as is fires more than every ten years or less than once every 20 years. This may lead to a decline to pollinator populations.

### 8.20. Mammal response to increased wildfire frequency and severity in montane forests of Victoria

*Jeremy Johnson, PhD Candidate, University of Melbourne*

- **Aim:** To understand the relationship between ecological legacies (hollows, woody debris, vegetation cover), fire regimes and mammal communities in the Victorian highlands and montane forests.
- **Method:** Will look at mammals and legacies across spatial and temporal scales and compare with predicted fire regimes of the future.
- Intended outcome to identify where changes are happening, where future changes are most likely to occur and which species will be most at risk.
- **Conclusion:** In early stage of research.

### 8.21. Finches and Fire: will changed burning regimes renovate habitat for the Southern Black-throated Finch?

*Chris Kahler, Botanist/Ecologist, Ecological Interpretation*

- **Aim:** To investigate the effects of weed control and patchy cool burns on Southern Black-throated Finches in the Pinnacles National Park, Townsville, North Queensland.
- Area is a conservation offset area, previously grazed by cattle.
- **Method:** Implemented weed control and mosaic burning to promote habitat rehabilitation for the birds.
- **Results:** After three years of monitoring, weed control was fairly successful and patchy burning was successful in reducing woody thickening.
- A small population of birds is supported by the resources in the area, although more time may be needed to see greater results.
- **Conclusion:** Funding for the project will continue for a few more years, in which time it is hoped more can be found out about the relationship between fire regimes and Finches.

### 8.22. Recovery response of koala habitat after fire

*Derek Johnson, Research Student, University of the Sunshine Coast*

- **Aim:** To survey koala habitat post the 2019 bushfires to record habitat recovery on an Australian koala Foundation property near Crows Nest, South-East Queensland.
- **Method:** Used Regional Ecosystem mapping and remote sensing for fire severity mapping to identify forest types, tree species and recovery response.
- **Results:** Ironbark communities on ridges were worst affected but are recovering well. In comparison, stringybark, grey gum and mountain blue gum were less affected and appear to be slower to recover after an initial quick response.
- **Conclusion:** Research will help land managers to identify optimal and safer koala habitat.

## 9. Renewal or reimagination? What we learned teaching ecology in unusual times

### 9.1. De-colonising science through co-teaching consilience

*Leanda Mason, Lecturer, Curtin University*

- **Aim:** To decolonise teaching of science in universities and decentralise western science.
- **Method:** Teach First Nation history and knowledge in first year subjects and co-teach with First Nation tutors to integrate Aboriginal science and STEM. Students practice active listening and participate in yarning circles to deconstruct stereotypes.
- **Results:** Students focus on privileges that can be changed and reflect on biases, participate in empathy training and hear the First Nations voice in science.
- **Conclusion:** Science can be more inclusive and representative of non-white knowledge by deconstructing socio-cultural influences in teaching.



## 9.2. Opportunities and threats to teaching ecology in universities

*Dieter Hochuli, Professor, The University of Sydney*

- **Aim:** To discuss the barriers and opportunities to experiential learning in universities.
- **Method:** Used qualitative methods to understand the experiences of academics teach ecology during COVID-19 and what that means for the future ecological community.
- **Results:** There is a shift away from experiential learning because of a move to online learning, a diversion of funding away from education and into research.
- **Conclusion:** Experiential experience is crucial for ecologists. Recommends academics and teaching staff embrace the sharing of innovations, have an inclusive curriculum and have obligate and elective subjects that offer experiential learning. Suggests making education a pillar of ESA.

## 9.3. Imagining Lutruwita's Deep Time: a journey through science, art and song

*Penelope Jones, Lecturer, University of Tasmania*

- **Aim:** To use science, music and visual arts to communicate Lutruwita's (Tasmania) geological history and evoke a sense of connection to land.
- **Methods:** Performers matched a spoken script, music and drawing together to convey a sense of time and place. All parts were performed simultaneously.
- **Results:** Feedback from the audience was that the intertwined approach was mesmerising and encouraged an emotional and intellectual way of seeing the place.,
- **Conclusion:** The arts can be harnessed to communicate science.

## Friday, 26th November

### 10. Pf-fire: past fire frequency and intensity reconstruction

#### 10.1. Revealing the incredible workload required to keep Country open in northwest Lutruwita (Tasmania)

*Michael-Shawn Fletcher, Associate Professor, University of Melbourne*

- **Aim:** To understand how landscapes were kept open in northwest Lutruwita using Surrey Hills and Savage River National Park as a study area.
- Since British arrival, grassy plains and open woodlands have transitioned to rainforest which now dominates. This can happen quickly, over a 30year period.
- **Method:** Tree ring analysis.
- **Results:** Palawa people kept the landscape open through continuous burning over 12,000 years. Climatic drivers such as ENSO dried the environment making it easier to burn.
- Similar examples are evident in the Northern Hemisphere where people leveraged climatic conditions and fire to maintain grassy plains and open woodlands.

#### 10.2. Gulidjan Country: how have the western plains of Victoria changed since the British invasion?

*Dr William Henriquez, Post Doctoral Research Fellow, University of Melbourne*

- **Aim:** **How have the western plains of Victoria changed since European arrival and what does that mean for pre-1750 Ecological Vegetation Classes (EVC)?**
- **Method:** Core sampling at Dreeite Nature Conservation Reserve as representative of the western plains.
- **Results:** Prior to European arrival the Dreeite Nature Conservation Reserve area and western plains were an open landscape of herbs with no trees and low fire activity. Since British invasion, trees and exotic taxa have expanded across the landscape and increased local fire activity.
- The change from Aboriginal management to European style management and a lack of burning has altered the landscape. Consideration must be given to how EVCs are used for ecological restoration.

#### 10.3. Past fire shaping future fuel: Influence of fire regimes on *Eucalyptus pilularis*' leaf chemical content

*Margot Schneider, Australian National University*

- Honours research.
- **Aim:** How fire regimes affect leaf chemistry by looking at soil chemistry, leaf nutrients and terpenes levels and the influence on flammability. Study considered the effects of fire history on leaf minerals and terpenes in the leaf canopy and leaf litter in *Eucalyptus pilularis* forest in Booderee National Park, NSW.
- **Method:** Fresh and litter leaves were tested for Nitrogen, Phosphorus, Potassium, terpenes and moisture content and compared against high and low fire frequency.
- **Results:** High fire frequency reduced soil and leaf nutrients, with leaf litter samples showing lower levels of Nitrogen, Phosphorus and Potassium than canopy leaves. Phosphorous was most affected by fire frequency.

- There was no overall change in Terpene content.
- **Conclusion:** nutrient loss in leaves can increase leaf flammability.

#### 10.4. Response, resilience and recovery: An endangered fire-sensitive endemic conifer and its relationship with fire

*Sarah Cooley, PhD Candidate, University of Melbourne*

- **Aim:** To understand how Pencil Pine (*Athrotaxis cupressoides*) survived across the Tasmanian landscape before British invasion.
- Central Highlands study area.
- Pencil Pine are long lived 1000+ years and are hyper-fire sensitive.
- Since British invasion, the Pencil Pine distribution has reduced by 50%.
- Similar comparative studies of pine mortality and removal of Aboriginal management in the Northern Territory.
- **Method:** Use of palaeoecological and palaeoclimatological data to examine past dynamics of Pencil Pine across time and space before British arrival.
- **Results:** Pencil Pines are fire sensitive, but pollen data shows that Pencil Pine dominated in the past but are migrating to more suitable refuges.
- **Conclusion:** Results to contribute to understanding specie's resilience and the most appropriate way to manage the surrounding landscape.

#### 10.5. What makes peatlands burn: a landscape-scale assessment of fire history in peatlands

*Nicholas Lloyd, Student, Charles Sturt University*

- Honours research.
- **Aim:** To understand the variability and drivers in peatland fires in Victorian montane, sub-alpine and alpine areas.
- **Method:** Desktop landscape assessment of peats, recorded fires between 1940-2020 and frequency of fire for individual bogs. Explored relationship between variables of elevation, aspect, slope, bog size and vegetation type.
- **Results:** 75% of peatlands have burnt since 1985, 50% burnt at a high severity in the 2019/2020 fires and one third of peatlands burnt at least twice since 1985.
- **Conclusion:** To contribute to understanding of landscape fires in peatlands.

### 10.6. Old rules for fire research no longer apply

*Dr Diana Kuchinke, Sessional Lecturer, Federation University*

- **Aim:** To reconsider the approach to fire research by adding climate drivers to Bradstock's (2010) fire drivers.
- Author used her own research on the impacts of fire on birds in heath-dry forests of Victoria to highlight complexities in fire research and a rationale for a new approach to fire research.
- **Method:** Examined the four climate drivers that underpin fire weather Pacific Decadal Oscillation (PDO), El Niño Southern Oscillation (ENSO), Indian Ocean Dipole (IOD), and the Southern Annular Mode (SAM) and Bradstock's four switches that affect fire: biomass growth, availability of vegetation for burning, ambient fire weather and ignitions.
- **Results:** Presented a framework that looks at fire research holistically by drawing together Bradstock's four elements, overlayed with Murphy et al.'s (2011) time-scales with the overarching four climatic drivers.
- Developed framework to assist with future forecasting for long, medium and short term fire management based on climatic cycles.





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## ESA2021 Conference Program

Please note that the program is subject to change without notice. All times are AEDT (Sydney / Melbourne / Canberra time)

### Monday, November 22, 2021

PLENARY SESSION ONE					
9:30 AM - 11:00 AM	Session Chair: Alan Andersen				
	Welcome to Country and Conference Opening				
	<p>KEYNOTE PRESENTATION: The new Global Biodiversity Framework v. Australia: how our conservation policy needs to change, and what ecologists can do about it  <b>Dr Martine Maron</b>, <i>Professor of Environmental Management, The University of Queensland</i></p> <p>KEYNOTE PRESENTATION: The 2019/20 mega-fires: what did we learn and will it equip us for the future?  <b>Emeritus Professor Ross Bradstock</b>, <i>University of Wollongong</i> and <b>Dr Rachael Nolan</b>, <i>Research Fellow, Western Sydney University</i></p>				
11:00 AM - 11:15 AM	Morning tea (Monday)				
	Please <a href="#">click here</a> to visit our online networking hub.				
	<b>BUSINESS AND BIODIVERSITY: INSIGHTS FOR ECOLOGY AND CONSERVATION SCIENCE FROM RESEARCH AND PRACTICE</b>	<b>PLANNING OUR FUTURE CITIES: CREATING BIODIVERSE AND FUNCTIONING URBAN ECOSYSTEMS</b> <i>supported by the ESA Urban Ecology Research Chapter</i>	<b>MANAGING, MONITORING AND MODELLING MAMMALIAN PREDATORS (1)</b>	<b>OPEN FORUM: ECOLOGICAL IMPACT OF THE 2019/2020 MEGAFIRES</b>	<b>PRACTITIONERS COLLABORATING TO RESTORE AND REWILD LANDSCAPES</b>
CHAIR	Matthew Selinske	Julia Schiller	Matthew Rees	Brett Murphy	Sacha Jellinek / Samantha Lloyd
11:15 AM	<b>Dr Megan Evans</b> , <i>Lecturer and ARC DECRA Fellow, UNSW Canberra</i> - Closing the biodiversity finance gap with private investment: how is it working on the ground?	<b>Loren Fardell</b> , <i>PhD Candidate, The University of Sydney</i> - Considering landscapes of fear in urban biodiversity conservation	<b>Dr Rosemary Hohnen</b> , <i>Adjunct Research Fellow, Charles Darwin University</i> - Changes in the abundance and activity of feral cats following high severity fire	<b>Bridget Roberts</b> , <i>PhD Candidate, University of Wollongong</i> - <i>Reptiles and fire; pretty hot and tempting</i>	PRACTITIONER ENGAGEMENT AWARD PRESENTATION - <b>Alexandra Nance</b> , <i>PhD Candidate, Monash University</i> and <b>Melinda Wilson</b> , <i>Department of Agriculture, Water and the Environment</i>
11:28 AM	<b>Natasha Cadenhead</b> , <i>PhD Researcher, The University of Queensland</i> - Greening finance: Leveraging the finance sector to improve biodiversity outcomes	<b>Jacinta Humphrey</b> , <i>PhD Student, Research Centre For Future Landscapes, La Trobe University</i> - Avoid, adapt or exploit: Modelling avian species responses to housing and canopy tree cover	<b>Rebecca Groenewegen</b> , <i>PhD Candidate, The University of Melbourne</i> - Predator density estimation with information-poor data: spatial count models in a management program	<b>Sarah Stock</b> , <i>PhD Candidate, University of Newcastle</i> - Heath frogs and the associated aquatic community response to devastating fires	
11:41 AM	<b>Dr Matthew Selinske</b> , <i>Postdoctoral Researcher RMIT University</i> - Leading in business and biodiversity	<b>Zahra Saraeian</b> , <i>University of Melbourne</i> - Evaluating the performance of Australian annual seed mix on green roof under different irrigation frequencies	<b>Anna C Lewis</b> , <i>PhD Candidate, University of New South Wales</i> - Effects of population density and body mass on diet specialisation in a mammalian scavenger	<b>Brad Law</b> , <i>Principal Research Scientist, NSW Primary Industries</i> - Fire severity and its local extent is key to assessing impacts of mega-fires on koalas	
					<b>Dr Ronda Green</b> , <i>Adjunct Research Fellow, Environmental Futures Research Institute, Griffith University</i> - Habitat fragmentation and corridors: a brief review and a new citizen science project

11:46 AM					<b>Evan Parker, <i>Phd Student, The University of Adelaide</i></b> - Pleistocene fossil sites and their role in conservation public outreach: A World Heritage Area perspective	
11:51 AM					<b>Rangi Clubb</b> - Restoring cultural burning within the mainstream rural fire management system by overcoming western cultural issues	
11:54 AM	<b>Dr Rachel Morgain, <i>Senior Research Fellow The University of Melbourne</i></b> - Which way the wind is blowing: key issues driving business engagement with biodiversity	<b>Jaiden Johnson-Bates, <i>Honours Student, Griffith University</i></b> - Drivers of propagule bank and vegetation community composition in urban forest fragments of south-east Queensland	<b>Chris Pocknee, <i>Phd Candidate, The University of Queensland</i></b> - Have feral cats driven the decline of the northern bettong?	<b>Dr Thomas Newsome, <i>University of Sydney</i></b> - Effects of the 2019/2020 megafires on vertebrate scavenger dynamics and carcass persistence rates		
11:59 AM			<b>Gavin Trewalla, <i>Phd Candidate, Charles Darwin University</i></b> - Daily activity of the northern quoll, feral cat and dingo in a tropical savanna			
12:04 PM			<b>Matthew Rees, <i>Phd Candidate, University of Melbourne</i></b> - Efficient use of predator detections			
12:07 PM	<b>Carl Obst, <i>Director Ideaa Group</i></b> - Integrating biodiversity in business decision-making through natural capital accounting	<b>Alison Haynes, <i>Phd Candidate, University of Wollongong</i></b> - Where's the moss? Mapping urban moss to understand the challenges of city life for plants	<b>Tim Hendersen, <i>Student, University of New England</i></b> - Spatial and temporal interactions between spotted-tailed quolls and red foxes in a fragmented landscape	<b>Michelle Ward, <i>Conservation Ecologist, UQ/WWF</i></b> - Restoring species' habitats in anthropogenic landscapes after megafires	<b>Dr Pauline Marsh and Todd Dudley <i>Lecturer, Centre For Rural Health</i></b> - Can ecological restoration restore health and wellbeing in rural communities?	
12:09 PM						
12:11 PM						
12:12 PM		<b>Sophie Moore, <i>Graduate, Macquarie University</i></b> - Street trees relative to native trees: taxonomically rich, but functionally similar				
12:17 PM		<b>Katherine Berthon, <i>Phd Candidate, RMIT</i></b> - Using pollen meta-barcoding to understand pollinator preferences in urban greenspaces	<b>Tom Bruce, <i>Phd Candidate, James Cook University</i></b> - Drivers of feral cat occupancy and dingo-feral cat interactions in north Queensland tropical rainforests.	<b>Dr Liz Tasker, <i>Principal Scientist Fire Ecology NSW Dept of Planning, Industry and Environment</i></b> - Assessing impacts and threats on 100 priority NSW plants after the 2019-2020 bushfires	<b>Dr Jessica Rowland, <i>Post-doctoral Research Fellow, Monash University</i></b> - Setting research priorities for effective threatened ecosystem management: a horizon scan for Australian alpine peatlands	
12:20 PM	<b>Dr Jim Radford, <i>Principal Research Fellow, La Trobe University</i></b> - Farm-scale Natural Capital Accounting – accounting for biodiversity and profitability in agribusiness	<b>Manuel Lequerica, <i>Doctoral Candidate University of Sydney</i></b> - Tamara - Habitat exploration and foraging in hoverflies is sexdependent		<b>Professor Sungwon Hong, <i>Kyungpook National University</i></b> - Application of hierarchical Bayesian approach to single observation multi-time survey data of otter distributions	<b>Dr Orsi Decker, <i>Research Officer, La Trobe University</i></b> - Snail-tales from the Black Summer fires	<b>Mark Le Pla, <i>Phd Student, University of Melbourne</i></b> - How does fire influence the movement ecology of Long-nosed Potoroos in Otway Ranges heathlands?
12:22 PM						
12:30 PM			<b>Mahmuda Shamin, <i>Phd Candidate, Hawkesbury Institute for the Environment</i></b> - Habitat complexity affects invertebrate biodiversity in urban greenspaces		<b>Vivianna Miritis, <i>Phd candidate, The University of Sydney</i></b> - Surviving in a regenerating forest: predator and prey responses to the Black Summer bushfires	
12:33 PM	<b>Dr Holly Kirk, <i>Postdoctoral Research Fellow, RMIT University</i></b> - Translating ecological knowledge for urban developers through Biodiversity Sensitive Urban Design (BSUD)1			<b>Tom Le Breton, <i>Phd Candidate, UNSW</i></b> - Megafire-induced interval squeeze threatens vegetation at landscape scales	<b>Dr Ingrid Stirnemann, <i>Conservation Planning EPSDD</i></b> - Models for managers	
12:35 PM						
12:38 PM						
12:43 PM	<b>Dr Karel Mokany, <i>Senior Research Scientist, CSIRO</i></b> - Providing business with reliable biodiversity tools	<b>Daniel Jin, <i>Phd Student The University of Sydney</i></b> - Increased temperature range reduces herbivory by an urban leaf beetle	<b>Leonie Huijser, <i>Phd Student, The University of Queensland</i></b> - Social assortativity in Indo-Pacific bottlenose dolphins in Moreton Bay, eastern Australia	<b>Professor Don Driscoll, <i>Director, Centre For Integrative Ecology, Deakin University,</i></b> Mammals are weaker than reptiles. Megafire impacts on threatened skinks and broad-toothed rat	<b>Dr Lisa Farnsworth, <i>Restoration and Research Manager, Winton Wetlands Committee of Management Inc</i></b> - Grass roots to Growlers: Citizen scientists, land managers and researchers collaborating to rewild Litoria raniformis	
12:46 PM						
12:48 PM		<b>Jessica Grierson, <i>Student, University of Tasmania</i></b> - Urbanisation impacts our opportunity to gain exposure to microbial diversity in urban green spaces				
12:53 PM						

12:59 PM	Paul Dettmann, <i>Founder, Cassina</i> - Cassinia : a case study in the emergence of businesses for biodiversity				
1:01 PM					
1:06 PM		Dr Emily Flies, <i>Lecturer University of Tasmania</i> - How has urbanisation impacted microbial biodiversity, human health and urban ecosystem services?	Dr Hugh Davies, <i>Research Associate Charles Darwin University</i> - Feral cats on the Tiwi Islands: a threat to country and culture	Dr Kelly de Bie, <i>Research Fellow, University of Melbourne</i> - Protecting threatened species and ecological communities before and during bushfire: Learning from the 2019/20 fires	Dr Jason Cummings, <i>Chief Executive Officer Woodlands &amp; Wetlands Trust</i> - Science, Collaboration and Curation - the Mulligans Flat Woodland Sanctuary Journey
1:11 PM		Hanh Nguyen, <i>Phd Candidate, niversity of Tasmania</i> - Wildlife and microbiomes in the city: Urbanites, big and small			
1:15 PM	BUSINESS AND BIODIVERSITY: INSIGHTS FOR ECOLOGY AND CONSERVATION SCIENCE FROM RESEARCH AND PRACTICE - Live QA	PLANNING OUR FUTURE CITIES: CREATING BIODIVERSE AND FUNCTIONING URBAN ECOSYSTEMS - Live QA	MANAGING, MONITORING AND MODELLING MAMMALIAN PREDATORS - Live QA	OPEN FORUM: ECOLOGICAL IMPACT OF THE 2019/2020 MEGAFIRES - Live QA	Cristina Hernandez, <i>Phd Student, RMIT University</i> - Investigating the extent of biodiversity considerations in urban development design processes: A descriptive review
1:30 PM					PRACTITIONERS COLLABORATING TO RESTORE AND REWILD LANDSCAPES - Live QA
1:30 PM	Lunch (Monday) - spend some time in SpatialChat				
	Please <a href="#">click here</a> to visit our online networking hub.				
	RESEARCH CHAPTERS UPDATE AND NETWORKING				
	CONCURRENT SESSIONS 2				
	OPEN FORUM: EVOLUTIONARY ECOLOGY	PLANNING OUR FUTURE CITIES: HUMAN-NATURE CONNECTIONS, COEXISTENCE AND CO-DESIGN <i>supported by the ESA Urban Ecology Research Chapter</i>	MANAGING, MONITORING AND MODELLING MAMMALIAN PREDATORS (2)	OPEN FORUM: THREATENED SPECIES (1)	OPEN FORUM: CONSERVATION ECOLOGY (1)
2:15 PM	Meng-Jia Lau, <i>University of Melbourne</i> - Genetic stability of <i>Aedes aegypti</i> populations following invasion by wMel Wolbachia	Dr Ollie Cotsaftis, <i>Industry Fellow, RMIT University School of Design</i> - On the use of biodesign and living architecture in designing equitable and regenerative cities	Dr Judy Dunlop, <i>WA Feral Cat Working Group</i> - Western Australian Feral Cat Working Group a coordinated approach to research and management	Professor Stephen Garnett, <i>Professor of Conservation and Sustainable Livelihoods, Charles Darwin University</i> - Trends in the status of and threats to Australian threatened birds	Sara Balouch, <i>PhD Student, Deakin University</i> - Differing responses of arboreal and terrestrial reptiles to habitat degradation in agricultural landscapes
2:28 PM	Ettore Camerlenghi, <i>Monash University</i> - Can relationships within a social network predict altruistic behaviours in the wild?	Dr Viveka Hocking, <i>The Australian National University</i> - Cross-species Co-Conspirators in Urban Living: designing the built environment for human-animal interaction and wellbeing	Annalie Dorph, <i>Research Fellow, University of New England</i> - Assessing feral cat movement to determine and improve their rate of detection on remote cameras	Dr April Reside, <i>Lecturer University of Queensland</i> - What's required to recover all of Australia's threatened species, and how much will this cost?	Lachlan Howell, <i>PhD Student, The University of Newcastle</i> - Integrating biobanking could produce significant cost-benefits and minimise inbreeding for Australian amphibian captive breeding programs
2:41 PM	Professor Andy T.D. Bennett, <i>Chair In Life And Environmental Sciences, Deakin University</i> - Colour signalling in wild <i>Platycercus elegans</i> reveals why parrots are gaudy and popular	Dr Natasha Pauli, <i>Senior Lecturer, University of Western Australia</i> - Verging on transformation: The social and ecological values of native verge gardens along suburban streets	Alexandra Paton, <i>PhD Candidate, University of Tasmania</i> - Flash and dash? Impact of camera trap flash type on feral cat behaviour and re-visitation	Richard McLellan, <i>Phd Candidate, Charles Sturt University</i> -The ecological and cultural implications of extinction —sandalwood as a case study	Brigitte Wright, <i>Postgraduate, IMAS (University of Tasmania)</i> - Quid pro quo: reciprocal learning opportunities between climate-driven species redistribution and species invasion
2:46 PM			Vishnu Ramachandran Menon, <i>Phd Student University of Melbourne</i> - Are native mammals more resilient to fire in fox-baited landscapes?		



2:51 PM			<b>Dr Stephanie Pulsford,</b> <i>Ecologist, ACT Government</i> - Managing foxes in urban reserves, using Canid Pest Ejectors in a new context		
2:54 PM	<b>Dr Jessica Fenker,</b> <i>Atlas of Living Australia / Ecocommons</i> - A life in tropical savannas – patterns of ecomorphological diversification on independent squamate radiations	<b>Professor Maria Ignatieva,</b> <i>The University of Western Australia</i> - Lawns as ecological and cultural phenomena. Searching for sustainable solutions in time of drying climate		<b>Javiera Olivares-Rojas,</b> <i>Phd Candidate Monash University</i> - Efficiencies of species-based and ecosystem-based approaches for threatened biodiversity conservation	<b>Dr Kaya Klop-Toker,</b> <i>Post-doctoral Researcher University of Newcastle</i> - Impacts of coal-mine induced iron-staining on tadpole development.
2:56 PM			<b>Linda van Bommel,</b> <i>Postdoctoral Researcher, University of Tasmania</i> - Can livestock guardian dogs protect threatened species? The effect of maremma sheepdogs on fox behaviour		<b>Dr Heidi Zimmer,</b> <i>Research Scientist, Centre for Australian National Biodiversity Research</i> - Molecular systematics and taxonomy for orchid conservation in Australia
2:59 PM					<b>Dr Micha Jackson,</b> <i>Researcher, University of Adelaide</i> - Measuring shorebird habitat quality in a highly altered wetland
3:04 PM					
3:07 PM	<b>Gabriella Sparkes,</b> <i>PhD Student, University of Queensland</i> - Performance trade-offs and trait repeatabilities in male and female northern quolls ( <i>Dasyurus hallucatus</i> )	<b>Thami Croeser,</b> <i>RMIT University</i> - De-paving paradise: replacing parking with green space		<b>Chantelle Doyle,</b> <i>Ecologist/student UNSW/AMBS</i> - Can nursery growing medium influence translocated plant growth and flowering?	<b>Pawel Waryszak,</b> <i>Research Officer, Deakin University</i> - Coastal wetlands renewal: insights from two mangrove restoration case studies towards tailored restoration response
3:09 PM			<b>Dr Alyson Stobo-Wilson,</b> <i>Postdoctoral Fellow, CSIRO</i> - Small mammal decline in monsoonal northern Australia		
3:20 PM	<b>Arisa Hosokawa,</b> <i>Phd Candidate, University of Sydney</i> - The effect of age on the physiology and behaviour of the slime mould, <i>Physarum polycephalum</i>			<b>Samantha Yabsley,</b> <i>Student, Hawkesbury Institute for the Environment</i> - Human-modified landscapes provide key foraging areas for a threatened flying mammal: the greyheaded flying-fox	
3:22 PM					
3:33 PM		PLANNING OUR FUTURE CITIES: HUMAN-NATURE CONNECTIONS, CO-EXISTENCE AND CO-DESIGN - Live QA		<b>Amanda Lilleyman,</b> <i>Charles Darwin University</i> - Determining habitat preferences of Far Eastern Curlew	
3:40 PM	OPEN FORUM: EVOLUTIONARY ECOLOGY - Live QA		MANAGING, MONITORING AND MODELLING MAMMALIAN PREDATORS - Live QA	OPEN FORUM: THREATENED SPECIES - Live QA	OPEN FORUM: CONSERVATION ECOLOGY - Live QA
3:55 PM - 4:10 PM	quick break (Monday)				
	<a href="#">Please click here</a> to visit our online networking hub.				
	<b>CONCURRENT SESSIONS 3</b>				
	<b>OPEN FORUM: BEHAVIOUR, PHYSIOLOGY AND MOVEMENT</b>	<b>PLANNING OUR FUTURE CITIES: POLICY AND PRACTICE</b>	<b>OPEN FORUM: MAMMAL ECOLOGY</b>	<b>OPEN FORUM: CONSERVATION POLICY AND MANAGEMENT</b>	<b>OPEN FORUM: FRESHWATER ECOLOGY</b>
4:10 PM	<b>Cameron Baker,</b> <i>PhD Candidate, The University of Queensland</i> - Telemetry reveals predictable differences in crocodile personality	<b>Dr Adam Liedloff,</b> <i>CSIRO</i> - Engaging with the stories of Darwin to better understand our natural systems	<b>Dr Roan Plotz,</b> <i>Lecturer and Course Chair In Environmental Science Victoria University</i> - Black rhino, an asocial megaherbivore vulnerable to poachers, uses oxpecker alarm calls to evade humans	<b>Professor Emily Nicholson,</b> <i>Professor of Conservation Science, Deakin University</i> - Scientific foundations for an ecosystem goal and indicators for the post-2020 global biodiversity framework	<b>Brock Hedges,</b> <i>Phd Candidate, The University of Adelaide</i> - Temporary freshwater rock-holes: an accessible resource to vertebrates of conservation interest in arid Australia

4:23 PM	<b>Amelie Corriveau</b> , <i>Charles Darwin University</i> - Managing magpie geese in northern territory mango crops	<b>Dr Brenda Lin</b> , <i>CSIRO</i> - Green space use in Darwin	<b>Dr Brenton von Takach</b> , <i>Forrest Prospect Fellow Curtin University</i> - Mammal declines and the conservation of adaptive capacity in northern Australia	<b>Dr David Tierney</b> , <i>Honorary Senior Research Fellow, University of Sydney</i> - Linking ecosystem restoration to the IUCN Red List: how to track the Earth's ecosystems	<b>Dr Galen Holt</b> , <i>Deakin University</i> - Diversity consequences of oviposition: applying coexistence theory to aquatic insect communities
4:36 PM	<b>Sara Ryding</b> , <i>PhD Candidate, Deakin University</i> - Some like it hot: reviewing morphological responses to climatic warming	<b>Dr Manuel Esperon-Rodriguez</b> , <i>Research Fellow, Western Sydney University</i> - Climate-change risk analysis for Australian urban vegetation	<b>Dr Benjamin Wagner</b> , <i>Research Fellow, The University of Melbourne</i> - Spatial patterns in feeding habitat influence the abundance and home range size of greater gliders	<b>Dr Noel Preece</b> , <i>Director Biome5 Pty Ltd</i> - A pathology of policies pushing species towards extinction - turning around stubborn resistance to action	<b>Dr Georgia Dwyer</b> , <i>Postdoctoral Research Fellow, Deakin University</i> - Positive and negative density dependent infection found in an emerging disease of stream insects
4:49 PM	<b>Dr Mylene Mariette</b> , <i>Research Fellow, Deakin University</i> - A prenatal acoustic signal of heat affects thermoregulation capacities at adulthood in an arid-adapted bird	<b>Dr Sarah Bekessy</b> , <i>Professor, School of Global, Urban and Social Studies, RMIT University</i> - Onsets not offsets for real biodiversity benefits	<b>Amy Smith</b> , <i>Melbourne University</i> - Mammal community composition in a fire-prone landscape	<b>Clare Vernon</b> , <i>Deakin University</i> - Systematic review of indicators used in terrestrial Red List of Ecosystem Assessments	<b>Callum Mulvey</b> , <i>Science Communication Officer, Threatened Species Recovery Hub</i> - Impacts of bushfire-associated stressors on threatened freshwater fishes
5:02 PM	<b>Isabella Contador-Kelsall</b> , <i>PhD Candidate, University of Wollongong</i> - Impacts of locust control pesticides on the physiology and behaviour of the Central Bearded Dragon	<b>Julia Schiller</b> , <i>Phd Candidate, University of Melbourne</i> - Mapping green roof uptake in Melbourne	<b>Kaylah del Simone</b> , <i>PhD Student, University of Queensland</i> - Trade-offs between speed and agility in an Australian critical weight range marsupial	<b>Elisabetta Canteri</b> , <i>PhD Student, The University of Adelaide</i> - IUCN Red List protects avian genetic diversity	<b>Dr William Bovill</b> , <i>Research Fellow, Environmental Flows, The University of Melbourne</i> - A field experiment to test for density-related dispersal of hatchling insects from natal sites
5:07 PM			<b>Dr Tyrone Lavery</b> , <i>Postdoctoral Researcher The Australian National University</i> - Counting wiliji on country: Indigenous led monitoring, camera traps and unmarked models	<b>Dr Rocio Ponce-Reyes</b> , <i>Research Scientist, CSIRO</i> - Towards an inclusive and sustainable Australian edible industry	
5:12 PM			<b>Brianna Coulter</b> , <i>PhD Student, UNSW</i> - A reinforcement of the greater bilby ( <i>Macrotis lagotis</i> ) affects the movement behaviour of resident females	<b>Veronica Toral-Granda</b> , <i>Charles Darwin University</i> - Humans as vectors of introduced species: the Galapagos Islands	
5:15 PM			<b>Alex Jiang</b> , <i>Phd Student, University of Queensland</i> - Movement of free-ranging koalas in response to male volcalisation playbacks	<b>Rob Dabal</b> , <i>Ecologist, Ecofutures</i> - Protect the Best: Maintaining ecological processes in Melbourne Water's Sites of Biodiversity Significance	
5:25 PM			<b>Simeon Zylinski</b> , <i>Phd Student, The University of Melbourne</i> - Mammal responses to habitat structure in a fragmented and fire-prone landscape	<b>Dr Brett Howland</b> , <i>Fenner School of Environment and Society, ANU</i> - Calibrating the 'restoration wheel' with data to inform post fire restoration efforts in SE Australia	
5:28 PM	<b>Isaac Rossetto</b> , <i>Phd Student, University of Adelaide</i> - Evolution of Visual Systems During Terrestrial-to-Aquatic Transitions in Snakes				
5:33 PM	<b>Jackie O'Sullivan</b> , <i>PhD Candidate, The Australian National University</i> - Multiscale influences of overwintering retreat site selection by reptiles in south-eastern Australia		<b>Aurelie Kanishka</b> , <i>Phd Candidate, Australian National University</i> - How fox baiting has changed the co-occurrence of Common Brushtail Possums and Bush Rats	<b>Adam Toomes</b> , <i>Phd Candidate, The University of Adelaide</i> - Endemic Australian reptiles threatened by international trade: the case of the shingleback lizard ( <i>Tiliqua rugosa</i> )	<b>OPEN FORUM: FRESHWATER ECOLOGY</b> - Live QA
5:38 PM					
5:40 PM	<b>OPEN FORUM: BEHAVIOUR, PHYSIOLOGY AND MOVEMENT</b> - Live QA	<b>PLANNING OUR FUTURE CITIES: POLICY AND PRACTICE</b> - Live QA	<b>OPEN FORUM: MAMMAL ECOLOGY</b> - Live QA	<b>OPEN FORUM: CONSERVATION POLICY AND MANAGMENT</b> - Live QA	
5:45 PM					
5:55 PM					
6:00 PM - 7:00 PM	<b>ESA2021 BARBRA RICE MEMORIAL POSTER SESSION</b> <i>Visit the online poster gallery - poster presenters are standing by to talk with you about your poster. Click on the poster you are interested in and 'join the queue' to chat online with the poster presenter</i>				

Tuesday, November 23, 2021

	Please <a href="#">click here</a> to visit our online networking hub.				
	<b>PLENARY SESSION TWO</b>				
9:30 AM - 11:00 AM	Session Chair:				
	KEYNOTE PRESENTATION: Negative emotions and mental health impacts attributable to climate change <b>Associate Professor Navjot Bhullar</b> , <i>School of Psychology, University of New England</i>				
	INDIGENOUS KEYNOTE PRESENTATION: <b>Professor Stephen Van Leeuwen</b> , <i>Curtin University</i>				
11:00 AM - 11:15 AM	Morning tea (Tuesday)				
	Please <a href="#">click here</a> to visit our online networking hub.				
	<b>CONCURRENT SESSIONS 4</b>				
	<b>TAILORED RESTORATION RESPONSE: PREDICTIONS AND GUIDELINES FOR COASTAL WETLAND RENEWAL USING ECOLOGICAL THEORY AND DATA</b>	<b>INDIGENOUS ECOLOGICAL KNOWLEDGE SYMPOSIUM</b>	<b>HUMAN BEHAVIOUR CHANGE AND THE IMPORTANCE OF NATURE CONNECTION FOR HUMANITY'S WELLBEING</b>	<b>OPEN FORUM: THREATENED SPECIES (2)</b>	<b>OPEN FORUM: FIRE ECOLOGY (1)</b>
11:15 AM	<b>Dr Emma Asbridge</b> , <i>Marine Estate Manager, DPI Fisheries</i> - Marine Vegetation Management Strategies: A framework for estuary wide prioritisation of protection and rehabilitation	<b>Anna Boustead</b> , <i>Indigenous Carbon Indlstry Network</i> - How does savanna fire management support weaving of TEK with western science?	<b>Dr Lily van Eeden</b> , <i>Postdoctoral Researcher Arthur Rylah Institute</i> - Impacts of COVID lockdowns on access to nature, connection to nature, and wellbeing among Victorians	<b>Robin Leppitt</b> , <i>Phd Candidate, Charles Darwin University</i> - Mitochondrial phylogeny and genetic variation within the Yellow Chat ( <i>Epthianura crocea</i> ) and implications for conservation	<b>Madison Staff</b> , <i>Honours student, Monash University</i> - The impacts of fire on the structure and diversity of ants, Little Desert National Park, VIC
11:28 AM	<b>Catherine Lovelock</b> , <i>The University of Queensland</i> - Blue carbon to support restoration of tidal wetlands	<b>Susie Cramp</b> , <i>PhD Student, UWA Albany</i> - Learning from 'lizard traps': Walking together to care for granite country	<b>Dr Samantha Grover</b> , <i>Lecturer, Environmental Science, RMIT University</i> - Nature connection and climate change education in higher education: An atmospheric sciences case study	<b>Emily Hoffmann</b> , <i>PhD Student, The University of Western Australia</i> - Drying microclimates threaten persistence of critically endangered white bellied frogs	<b>Dr Leroy Gonsalves</b> , <i>Research Scientist, NSW Department of Primary Industries</i> - Roost selection by <i>Nyctophilus corbeni</i> in a patchy post-management burn mosaic in the Pilliga NSW
11:28 AM					
11:33 AM					
11:41 AM	<b>A/Prof William Glamore</b> , <i>University of New South Wales</i> - Combining hydrodynamic modeling and eco-hydrology for developing and assessing blue carbon ecosystem restoration options	<b>Dr Emma Ligtermoet</b> , <i>Postdoctoral research associate UWA/ANU affiliate</i> - Return of the kinga ( <i>Crocodylus porosus</i> ): Population 'bust then boom' shapes Indigenous freshwater biocultural knowledge	<b>Fern Hames</b> , <i>Director Arthur Rylah Institute for Environmental Research</i> - When disaster strikes: recognising and supporting the recovery loop for people and nature	<b>Dr Johan Gustafson</b> , <i>Researcher, Griffith University</i> - Habitat suitability of juvenile scalloped hammerhead sharks ( <i>Sphyrna lewini</i> ) in Queensland coastal waters	<b>Dr Brett Murphy</b> , <i>Associate Professor, Charles Darwin University</i> - Two decades of changing fire regimes in the Australian monsoon tropics: for better or worse?
11:46 AM			<b>Hannah Etchells</b> , <i>Hotspots Ecologist, Nature Conservation Council NSW</i> - "I never cared about the trees before": Empowering landholders to undertake ecological fire management post-2019/20		
11:51 AM			<b>Dr Georgia Garrard</b> , <i>Senior Lecturer, The University of Melbourne</i> - The psychological distance of biodiversity conservation		
11:54 AM	<b>Valentin Heimhuber</b> , <i>University of New South Wales</i> - Prioritising large-scale coastal wetland renewal: A state-wide perspective for maximising blue habitat benefits	<b>Lynette Knapp</b> , <i>Gail Yorkshire</i> , <b>Denise Smith-Ali</b> , <i>Noongar Boodjar Language Centre</i> , <b>Nat Raisbeck-Brown</b> , <i>CSIRO</i> - Linking Indigenous ecological knowledge to western science through language	<b>Dr Kita Ashman</b> , <i>Threatened Species &amp; Climate Adaptation Ecologist, WWF Australia</i> - Is Australia's environmental legislation protecting threatened species? A case-study of nationally listing the greater glider	<b>Sarah Mulhall</b> , <i>Phd Candidate, University of Melbourne</i> - Reptile responses to habitat, fire and landscape structure in a fire-prone, fragmented landscape	<b>Saumya Wanniarachchi</b> , <i>Phd Candidate, University of Melbourne</i> - Fire and habitat resources influence on occurrence of small mammals in an Australian woodland ecosystem
11:54 AM					
11:59 AM					

12:04 PM					
12:04 PM					
12:07 PM	<b>Dr Tanya Mason, Research Fellow, UNSW Sydney</b> - Multiple disturbance in upland swamps: top-down and bottom-up controls on primary productivity and species composition	<b>Dr Manuela Fischer, Wildlife Ecologist Australian Wildlife Conservancy</b> and <b>Johnny Murlson, Western Yalanji Aboriginal Corporation</b> - Northern Bettongs Bettongia tropica at risk of local extinction on the Mount Carbine Tablelands	<b>Christopher McCormack, Managing Director, Remember The Wild</b> - A new narrative for nature: Storytelling and the future of humannature relationships	<b>Dr Rochelle Steven, Species Conservation Project Coordinator, WWF-Australia</b> - Tracking mainland quokka recovery post catastrophic bushfire	<b>Joshua Lee, Student, University of New South Wales</b> - Rainforest bird communities threatened by extreme fire
12:09 PM			<b>Emily Gregg, PhD Candidate, RMIT University</b> - How do we plan and design conservation messaging that is strategic, ethical, and effective?	<b>Samantha Wallace, PhD candidate, The University of Newcastle</b> - Bouncing back from habitat modification - can threatened frogs recover?	<b>Dr Matthew Swan, Research Fellow, University of Melbourne</b> - Birds of a heather; influence of fire regimes on avian communities in contrasting heathland ecosystems
12:17 PM					
12:20 PM	<b>Oliver Dalby, PhD Student, Deakin University</b> - Identifying seagrass-sediment-light thresholds for effective seagrass restoration in Western Port, VIC, AUS.	<b>Dr Alison Lullfitz and Shandell Cummings, University of Western Australia</b> - Two-way learnings for conservation in a global biodiversity hotspot	<b>Meg Shaw, PhD Student, Deakin University</b> - How do Australian conservation organisations use wildlife imagery for social engagement?	<b>Charlotte Alley, PhD Student, University of Newcastle</b> - Long-term monitoring of the broad-toothed rat in the Barrington Tops National Park	<b>Dr Christopher Turbill, Senior Lecturer, Western Sydney University</b> - Fire impacts on golden-tipped bats - a rainforest specialist
12:22 PM					
12:30 PM					
12:33 PM		<b>Vanessa Corunna, Curtin University</b> - Reconnecting to River Research on Wadjuk Noongar Boodja with Traditional Owner	<b>Dr Alex Kusmanoff, Postdoctoral Researcher ICON Science, RMIT University</b> - 'Bins on Boats', a behaviourally-based intervention to curb marine pollution in Bass Strait, Australia.	<b>Joe Zilko, PhD Candidate Monash University</b> - Applying a thorough genetic risk assessment for mixing highland and lowland Leadbeater's possum	<b>Merinda Day-Smith, Masters student, La Trobe University</b> - Does burning reduce fuel loads and fire risk? Or simply create a grass fire cycle?
12:35 PM					
12:40 PM					
12:45 PM		<b>Anna Boustead, Indigenous Carbon Industry Network and the ICIN Board representatives</b> - What opportunities does the Indigenous Carbon Industry offer to support better recognition of Indigenous Ecological Knowledge?	<b>Dr Pia Lentini, Senior Research Fellow, RMIT University</b> - Melbourne's coffee consumers are swayed to drink wildlife-friendly coffee by motivations, not messages		<b>Dr Jodi Price, Senior Lecturer, Charles Sturt University</b> - Grassland plant responses to cultural fire in Dja Dja Wurrung country
12:46 PM					
12:48 PM					
12:53 PM	TAILORED RESTORATION RESPONSE: PREDICTIONS AND GUIDELINES FOR COASTAL WETLAND RENEWAL USING ECOLOGICAL THEORY AND DATA - Live QA	<b>Mavis Kerinaia, Deakin University and Tiwi Resources</b> - The Turtuni story: representing Tiwi cultural values			<b>Dr Holly Sitters, The University of Melbourne</b> - Fire promotes functional connectivity in an Australian reptile
12:59 PM					
1:02 PM					
1:15 PM		<b>INDIGENOUS ECOLOGICAL KNOWLEDGE SYMPOSIUM</b> - Live QA	<b>HUMAN BEHAVIOUR CHANGE AND THE IMPORTANCE OF NATURE CONNECTION FOR HUMANITY'S WELLBEING</b> - Live QA	<b>OPEN FORUM: THREATENED SPECIES (2)</b> - Live QA	<b>OPEN FORUM: FIRE ECOLOGY (1)</b> - Live QA
1:15 PM - 2:15 PM	Lunch (Tuesday)				
	<a href="#">Please click here</a> to visit our online networking hub.				
1:25 PM	ESA Mentoring Program (for potential mentees)				
	<b>CONCURRENT SESSIONS 5</b>				



	OPEN FORUM: MARINE ECOLOGY	PERSPECTIVES ON ENVIRONMENTAL-ECONOMIC ACCOUNTING IN AUSTRALIA	IMPROVING THE INTEGRATION OF THE SOCIAL SCIENCES INTO RESEARCH FOR CONSERVATION CHALLENGES	OPEN FORUM: CONSERVATION ECOLOGY (2)	OPEN FORUM: INVASIVE SPECIES
2:15 PM	<b>Jeremy Day, <i>PhD Student, University of Wollongong/University of Newcastle</i></b> - Dietary analysis implies only moderate urchin predation by eastern rock lobsters ( <i>Sagmariasus verreauxi</i> )	<b>Dayani Gunawardana, <i>Environmental Economic Accounting Section, Department of Agriculture, Water and the Environment</i></b> - The need for ecologically meaningful ecosystem accounts: a policy perspective	<b>Dr Dave Kendal, <i>University of Tasmania</i></b> - Ontology: the red pill for understanding humans in ecosystems	<b>Luke Halpin, <i>Phd Candidate, Monash University</i></b> - Arthropods prey on vertebrates and modify food web dynamics in isolated island ecosystems	<b>Aakansha Chadha, <i>PhD Scholar, Federation University Australia</i></b> - Ecology and management of rhizomatous weeds in the wet tropics
2:20 PM		<b>Dr Becky Schmidt, <i>Senior Environmental Scientist, CSIRO Land and Water</i></b> - Ecologically meaningful ecosystem accounts for the Gunbower-Koondrook-Perricoota Forest Icon Site			
2:28 PM	<b>Dr Emily Lester, <i>Postdoctoral Research Scholar, Australian Institute of Marine Science</i></b> - Relative influence of predators, competitors and seascape heterogeneity on the behaviour of coral reef mesopredators	<b>Dr Anna Richards, <i>Research Scientist, CSIRO Land and Water</i></b> - Applying dynamic ecosystem models to ecosystem extent accounts for the Gunbower-Koondrook-Perricoota Forest Icon Site	<b>Gabriella Allegretto, <i>PhD Candidate, University of Tasmania</i></b> - Beyond ecological light pollution:a holistic understanding of the importance of dark-skies for humans and non-humans	<b>Dr Sally O'Neill, <i>TERN Ecosystem Surveillance</i></b> - Standardising environmental monitoring and data systems for NRM practitioners: how ecologists and service providers can benefit from TERN's protocols developed for DAWE	<b>Julia Rayment, <i>Research Assistant, University of Wollongong</i></b> - Exotic Perennial Grass Invasion differs between threatened ecological communities within regions of NSW
2:33 PM					
2:38 PM					
2:41 PM	<b>Chantel Foord, <i>Phd Candidate, MMF &amp; RMIT</i></b> - Epidermal lesion prevalence and body condition in Burrunan dolphin populations; a crucial health assessment tool	<b>Dr Tom Harwood, <i>Senior Research Scientist, CSIRO</i></b> - A condition index that integrates remote sensing and expert knowledge for an experimental ecosystem account	<b>Haylee Kaplan, <i>PhD Candidate, University of Tasmania</i></b> - Understanding people's perceptions of nativeness in urban contexts	<b>Alexandra Nance, <i>Phd Student, Monash University</i></b> - Rapid assessment and response: measuring key vital metrics for Norfolk's endemic songbirds and mitigating threat	<b>Tracy Lyten, <i>Director Skylos Ecology Pty Ltd</i></b> - Using Conservation Detection Dogs in the battle against invasive aquatic weeds
2:43 PM		<b>Dr Chris Ware, <i>Research Scientist, CSIRO</i></b> - Biodiversity accounts for the Gunbower-Koondrook-Perricoota Forest Icon Site and Murray-Darling Basin			
2:48 PM		<b>Peter Meadows, <i>Assistant Director, Australian Bureau of Statistics</i></b> - Using Environmental-Economic Accounts from data to indicators: how the accounts reveal wider use of data			
2:53 PM		<b>Dr Heather Keith, <i>Senior Research Fellow, Griffith University</i></b> - Ecosystem accounting to assess the value of primary forests			
2:54 PM	<b>Kristina Heidrich, <i>Phd Student, University of Western Australia</i></b> - Improved reporting by tuna RFMOs needed for optimal protection of large pelagics	<b>Phil Cryle, <i>Senior Economist, DELWP</i></b> - Victorian Ecosystem Account for the Great Ocean Road	<b>Dimuthu Jayakody, <i>Phd Student, University of Tasmania</i></b> - Spatial Assessment of Place Attachment to Improve Place Based Conservation and Environmental Planning	<b>Emma Bennett, <i>PhD Candidate, Monash University</i></b> - Wind energy kills bats, but it doesn't have to: working with industry for better outcomes	<b>Adam Bernich, <i>Research Assistant, University of Wollongong</i></b> - Abating the threat of exotic vines and scramblers in Threatened Ecological Communities in NSW
2:58 PM					
3:03 PM	<b>Samantha Reynolds, <i>PhD Candidate, The University of Queensland</i></b> - Anthropogenic impacts on the habitat and physiology of the endangered whale shark <i>Rhincodon typus</i>	<b>Anna Boustead, <i>Indigenous Carbon Industry Network</i></b> - Indigenous perspectives on carbon co-benefit and natural capital markets	<b>Kim Zoeller, <i>Phd Candidate, James Cook University</i></b> - The influence of landscape context on the production of cultural ecosystem services	<b>Katherine Hill, <i>Phd Candidate, The University of Adelaide</i></b> - Feather Forensics: tracing the origins of parrots with stable isotopes and citizen science	<b>Dale Perkins, <i>Australian Tropical Herbarium - James Cook University</i></b> - Environmental clines as pools of invasive genotypes preadapted to climate change
3:16 PM		<b>Dr Kamaljit Sangha, <i>Ecological Economist, Fisheries Research and Aquaculture</i></b> - Ecosystem accounts for the Great Ocean Road			

3:20 PM	<b>Jacob Linsky, <i>PhD Candidate, University of Queensland</i></b> - Understanding humpback whale (Megaptera novaeangliae) health through adipokine gene expression	<i>Ecological Economist, Charles Darwin University</i> - Valuing ecosystem services applying indigenous perspectives			<b>Emma Carlson, <i>Ecologist, ACT Government</i></b> - Weather driven patterns of burrow dynamics contribute to population fluctuations in a rare grassland reptile	<b>Dr Daniel Montesinos, <i>Senior Research Fellow, Australian Tropical Herbarium</i></b> - James Cook University - The fast & furious: invasives align with the fast side of the plant economics spectrum	
3:21 PM		<b>Dr Alison Cowood, <i>Assistant Director, Department of Agriculture, Water and The Environment</i></b> An overview of the first national land account for Australia			<b>Dr Susan Nuske, <i>Swedish University of Agricultural Sciences</i></b> - Are we losing native truffle species before we can describe them?		<b>Zoe Xirocostas, <i>PhD Student, UNSW Sydney</i></b> A narrow escape: Enemy release explains success in only some invasive plants
3:25 PM		<b>Professor Richard Lucas, <i>Aberystwyth University</i></b> - Linking land cover change to land and ecosystem accounts					
3:26 PM							
3:33 PM	<b>Jaelen Myers, <i>PhD Candidate, James Cook University</i></b> - Going with the flow: assessing movements and behaviours of stingrays in sandflats with aerial drones						
3:38 PM	<b>Yi Mei Tan, <i>PhD Candidate, Deakin University</i></b> - Cultivating the intertidal seagrass, <i>Zostera muelleri</i> , for application in restoration programmes						
3:39 PM		<b>Michael Traurig, <i>PhD Candidate, Deakin University</i></b> - A review of the relationships between ecosystem condition and ecosystem services					
3:45 PM	OPEN FORUM: MARINE ECOLOGY - Live QA	PERSPECTIVES ON ENVIRONMENTAL-ECONOMIC ACCOUNTING IN AUSTRALIA - Live QA	IMPROVING THE INTEGRATION OF THE SOCIAL SCIENCES INTO RESEARCH FOR CONSERVATION CHALLENGES - Live QA	OPEN FORUM: CONSERVATION ECOLOGY (2) - Live QA	OPEN FORUM: INVASIVE SPECIES - Live QA		
4:00 PM - 4:15 PM	Afternoon tea (Tuesday)						
	Please <a href="#">click here</a> to visit our online networking hub.						
	CONCURRENT SESSIONS 6						
	FOREST RESTORATION AND RECOVERY	OPEN FORUM: HERBIVORY AND GRAZING ECOLOGY	OPEN FORUM: PLANT TRAITS	OPEN FORUM: CONSERVATION POLICY AND MANAGEMENT	OPEN FORUM: URBAN ECOLOGY		
4:15 PM	<b>Associate Professor Andrew Marshall, <i>University of the Sunshine Coast</i></b> - Essential science advances for effective restoration of the world's forest landscapes	<b>Miranda Rew-Duffy, <i>The University of Queensland</i></b> - The response of small mammals and reptiles to livestock grazing and time-since-fire in Central Queensland	<b>Dr Rachael Gallagher, <i>Hawkesbury Institute for the Environment, Western Sydney University</i></b> - Climatic drivers of plant trait composition at the continental scale	<b>Professor Brendan Wintle, <i>Professor In Conservation Ecology, University of Melbourne</i></b> - Toward reproducible ecological-economic predictions of global climate and land use change impacts on biodiversity	<b>Carly Campbell, <i>PhD Candidate, Griffith University</i></b> - Long-term changes in bird species prevalence in Australia's largest urban regions		
4:28 PM	<b>Emma Mackintosh, <i>PhD Candidate, University of the Sunshine Coast</i></b> - What are the implications of liana-rattan-tree competition on forest recovery from disturbance?	<b>Dr Thomas Richards, <i>Postdoc, Uppsala University</i></b> - Separating Direct and Indirect Effects of Ungulate Grazers on Population Dynamics of a Grassland Herb	<b>A/Prof Daniel Falster, <i>ARC Future Fellow University of New South Wales Sydney</i></b> - Three large-scale forces structuring assembly of plant communities	<b>Peggy Newman, <i>Data Manager, Atlas of Living Australia</i></b> - Improving data quality, robustness and sustainability in the ALA	<b>Matthew Hall, <i>Phd Candidate, The University of Sydney</i></b> - Distribution shift and habitat use of an urban colonising bird, the Australian Brush-turkey ( <i>Alectura lathami</i> )		

4:41 PM	<b>Charlotte Raven</b> , <i>Student, University of The Sunshine Coast</i> - Invertebrate Response to Disturbance Induced Liana Growth in Tropical Rainforest	<b>Dr Pat Taggart</b> , <i>Research Scientist, Vertebrate Pest Research Unit, Department of Primary Industries NSW</i> - Recovering Australia's arid-zone ecosystems: Learning from continental-scale rabbit control experiments	<b>Alicia Cook</b> , <i>Research Associate, University of Technology Sydney</i> - Can leaf traits explain variation in plant photosynthetic thermal tolerance?	<b>Dr Payal Bal</b> , <i>Postdoctoral Research Fellow, University of Melbourne</i> - Predicting future biodiversity land use conflicts	<b>Dr Laura Brannelly</b> , <i>Research Fellow, The University of Melbourne</i> - Developmental stressors are detrimental to larval amphibians, but compensatory growth can mediate these long-term effects
4:54 PM	<b>Dr Catherine Waite</b> , <i>University of the Sunshine Coast</i> - The impact of lianas on Australian rainforest recovery: where should we focus?	<b>Sophia Cain</b> , <i>Student, Australian National University</i> - Effects of macropod herbivory on intraspecific plant trait variation and consequences for forest flammability	<b>Shubham Chhajed</b> , <i>PhD Candidate, Macquarie University</i> - Save it or spend it: water budgets and hydraulic coordination to optimize photosynthetic gains	<b>Dr Dax Kellie</b> , <i>Atlas of Living Australia</i> - The changing shape of data in the Atlas of Living Australia	<b>Dr Paul Maxwell</b> , <i>General Manager, EcoFutures Consulting</i> - Managing for biodiversity outcomes in degraded urban streams
4:59 PM		<b>Montee Bonnefin</b> , <i>Honours Student, La Trobe University</i> - Beyond climate change: How does disturbance affect plant composition and shrub dynamics in alpine grasslands?			
5:04 PM		<b>Alex Blackburn-Smith</b> , <i>Masters Candidate, La Trobe University</i> - What the heck is a <i>Caltha introloba</i> ? And why should we care?			
5:07 PM	<b>Amanda Lo Cascio</b> , <i>PhD Candidate, The University of Melbourne</i> - Does context matter? Drivers of microbat distributions in fragmented, fire-prone landscapes	<b>Daniel Nugent</b> , <i>PhD Candidate, La Trobe University</i> - Livestock production land and conservation areas play a complementary role in conservation of the Plains-wanderer	<b>Professor Ian Wright</b> , <i>Hawkesbury Institute for the Environment (WSU)</i> - Coordinated leaf and wood traits drive field growth rates in Australian savanna species	<b>Shawan Chowdhury</b> , <i>Data Analyst, Atlas of Living Australia</i> - EcoAssets: Research data for environmental indicators	<b>Kristen Thompson</b> , <i>PhD Candidate, Queensland University of Technology (QUT)</i> - Can insectivorous bats be used as an indicator for monitoring urban bushland restoration?
5:09 PM					
5:12 PM	<b>Dr Gerard Ryan</b> , <i>Statistical Modeller &amp; Honorary Research Fellow, Telethon Kids Institute &amp; The University of Melbourne</i> - Predicting the impacts of forestry, fire and climate change on threatened fauna for policy decisions	<b>Corinne Schlierenzauer</b> , <i>PhD Student, Queensland University of Technology</i> - Different kinds of herbivores and plant invasion: their impact on plant diversity in grassy woodlands	<b>Kali Middleby</b> , <i>PhD Candidate, James Cook University</i> - Modelling the drivers of leaf temperature extremes in tropical tree	<b>Dr Iadine Chades</b> , <i>Principal Research Scientist, CSIRO</i> - Designing an agile conservation planning tool: from theory to practice	<b>Dr Scarlet Howard</b> , <i>Deakin University</i> - Complex preference relationships between native and non-native angiosperms and foraging insect visitors
5:20 PM					
5:22 PM		<b>Dr Gabrielle Lebbink</b> , <i>Post-doctorate Research Fellow, Queensland University of Technology</i> - How to measure the battle between plants and herbivores			
5:25 PM	<b>Collette Blyth</b> , <i>PhD Candidate, University of Adelaide</i> - Increased Genetic Diversity via Gene Flow Provides Hope for an Endangered Wattle Facing Extinction		<b>Antionette Portelli</b> , <i>Research Assistant, University of Melbourne</i> - Effect of Phylogeny on Functional Traits and their Relationships in Southern Australian Eucalypts	<b>Dr Kate Watermeyer</b> , <i>Research Fellow, Deakin University</i> - Progress and future of the Red List of Ecosystems in marine systems	<b>Dr Stephanie Courtney-Jones</b> , <i>Conservation Research - ACT Government, The Australian National University</i> - Urban connectivity: Using expert elicitation to inform ecological connectivity in the ACT
5:27 PM					
5:30 PM					
5:33 PM	FOREST RESTORATION AND RECOVERY - Live QA	OPEN FORUM: HERBIVORY AND GRAZING ECOLOGY - Live QA	<b>Mark Westoby</b> , <i>Macquarie University</i> - Trait ecology of startup plants	<b>Dr Vishnu Prahalad</b> , <i>Lecturer, University of Tasmania</i> - Offsets, not for endless compound growth, but de-growth and a steady-state economy	OPEN FORUM: URBAN ECOLOGY - Live QA
5:35 PM					
5:45 PM				<b>Cameron Gallagher</b> , <i>Spatial Planner, ACT Parks and Conservation</i> - Optimising digital data collection tools for ecological monitoring programs	
5:46 PM					
5:51 PM					

6:00 PM			OPEN FORUM: PLANT TRAITS - Live QA	OPEN FORUM: CONSERVATION POLICY AND MANAGEMENT - Live QA	
6:15 PM	Ecological Society of Australia AGM				
7:00 PM	ONLINE TRIVIA ! Join in the fun and win a complimentary 12 month ESA Membership				

### Wednesday, November 24, 2021

	PLENARY SESSION THREE				
9:30 AM - 11:00 AM	PLENARY SESSION 3				
	Session Chair:				
	AUSTRALIAN ECOLOGY RESEARCH AWARD (AERA) WINNER PRESENTATION: <b>Professor Euan Ritchie</b> , <i>Deakin University</i>				
	NZ TE TOHU TAIAO PRESENTATION: Using models to reconstruct past ecosystem dynamics and their legacies, <b>George Perry</b> , <i>School of Environment, University of Auckland</i>				
	<i>Participation in the Wednesday workshops is optional, and pre-registration is required. Numbers are limited</i>				
11:00 AM	<b>Workshop: Writing for Publication</b>  <i>Facilitated by Nigel Andrew</i>	<b>Workshop: A beginners guide to Data Analysis and Visualisation in R for Ecologists in the EcoCommons' cloud</b>  <i>Facilitated by: Dr Emilia Decker, Dr Jenna Wraith and Dr Jessica Fenker</i>	<b>Workshop: Empowering Indigenous land managers to use digital technologies to help monitor and manage Country</b>  <i>Facilitated by Jennifer Macdonald, Cathy Robinson, Justin Perry, Ricky Archer, Andrew Hoskins, Taryn Kong, Kadeem May, Feach Moyle, Renee Bartolo, Matt Tunstill, Andrew Jansen, Steve Van Bodegraven, Alyson Stobo-Wilson, Michael Douglas, Erin Graham, Indigenous Rangers, Traditional Owners and land management staff from Kakadu National Park, the Njanjma Rangers and Cape York from collaborative projects that are using digital technologies to adaptively manage country.</i>	<b>Workshop: Long live ecology – the case for an Australian long-term ecological research (LTER) Community of Practice</b>  <i>Facilitated by: John Morgan, John Hunter, Glenda Wardle and Bek Christensen</i>	<b>Workshop: Publishing data in the TERN Data Infrastructure</b>  <i>Facilitated by Habacuc Flores Moreno, Elisa Maria Girola &amp; Siddeswara Guru</i>
1:00 PM		<b>Workshop: Selection criteria and the hidden job market: removing the invisibility cloak</b>  <i>Facilitated by the ESA Early Career Ecologists Working Group Steph Courtney Jones, Leanda Mason, Sara Ryding and Caragh Threlfall</i>			
2:00 PM			<b>Workshop: Using the EcoCommons platform to run species distribution models and make climate projections</b>  <i>Facilitated by: Dr Emilia Decker, Dr Jenna Wraith and Dr Jessica Fenker</i>		
3:30 PM					<b>Workshop: A beginners guide to Data Analysis and Visualisation in R for Ecologists in the EcoCommons' cloud</b>  <i>Facilitated by: Dr Emilia Decker, Dr Jenna Wraith and Dr Jessica Fenker</i>



	PLENARY SESSION FOUR				
9:30 AM	PLENARY SESSION 4				
	Session Chair: Anna Richards				
	WILEY NEXT GENERATION ECOLOGIST AWARD WINNER PRESENTATION: <b>Dr Heather Neilly</b> , <i>Terrestrial Ecologist, The Australian Landscape Trust</i>				
	KEYNOTE PRESENTATION: Open Ecosystems and the challenge of defining them for Australia, <b>Professor William Bond</b> , <i>Emeritus Professor, University of Capetown</i>				
11:00 AM - 11:15 AM	Morning tea (Thursday)				
	Please <a href="#">click here</a> to visit our online networking hub.				
	CONCURRENT SESSIONS 7				
	ECOSYSTEM RECOVERY AND THE FORGOTTEN ELEMENTS OF FIRE REGIMES: HOW ECOSYSTEMS RESPOND TO CHANGES IN FIRE SEASON, EXTENT, AND SEVERITY (1)	REMOTE SENSING IN ECOLOGY (1)	ENGAGING COMMUNITY IN THE SCIENCE AND STORIES OF NATURE THROUGH SCIENCE-ARTS COLLABORATIONS <i>supported by the ESA Science Communication Research Chapter</i>	USING SOIL MICROBES TO RESTORE, REGROW AND REWILD <i>supported by the ESA Plant-Soil Ecology Research Chapter</i>	OPEN FORUM: CLIMATE CHANGE
11:15 AM	<b>Professor David Keith</b> , <i>University of New South Wales</i> - Ecological effects of Australia's Black Summer fires through an ecosystem lens: a national-scale assessment	<b>Dr Shaun Levick</b> , <i>Principal Research Scientist, CSIRO</i> - session introduction	<b>Dr Mark Nadir Runkovski</b> , <i>Senior Environmental Scientist, Natura Pacific</i> - Back from the Brink - communicating Queensland's extinction crisis through films and podcasts	<b>Dr Christina Birnbaum</b> , <i>Research Fellow, RMIT University</i> - Microbial community structure and function in dried peat and intact bog along soil depth gradient	<b>Dr Nicholas Clark</b> , <i>Lecturer and ARC DECRA Fellow, University of Queensland</i> - Rapid winter warming associated with major shifts in coastal fish communities
11:20 AM		<b>Dr Tim Brown</b> , <i>Director Australian Plant Phenomics Facility, ANU node</i> - High resolution data, national Infrastructure and ecosystem modelling to enable a carbon neutral Digital Australia			
11:28 AM	<b>James Barker</b> , <i>PhD Student, University of Wollongong</i> - The severity of the 2019-20 fires in Australia was influenced by past fires	<b>Dr Chris Owers</b> , <i>Postdoctoral Fellow, CSIRO</i> - Towards annual continental-scale habitat condition monitoring for Australia	<b>Dr Penelope Jones</b> , <i>Lecturer, University of Tasmania</i> - Imagining lutruwita's Deep Time: a journey through science, art and song	<b>Dr Annemarie Clements</b> , <i>Ecologist, Anne Clements &amp; Associates Pty Limited</i> - Re-establishing soil fungal hyphal matrix proved critical for storm protection on coastal dune ecosystems	<b>Alexandra Caitling</b> , <i>PhD Candidate, The University of Queensland</i> - Surviving and thriving as an annual plant: the relative importance of water, cover and competition
11:33 AM					
11:41 AM	<b>Sarah McColl-Gausden</b> , <i>PhD Candidate, The University of Melbourne</i> - The fuel-climate-fire conundrum: How will fire regimes change in temperate Australian ecosystems?	<b>Al Healy</b> , <i>Phd Student, University of Queensland</i> - Measuring changes in dryland grasslands using phenocams and remote sensing	<b>Dr John Gould</b> , <i>Research scientist and ecologist, The University of Newcastle</i> - Let me take a selfie: intraspecific skin feature variability allows for photo-identification of Australian anurans	<b>Shae Jones</b> , <i>PhD Student University of Wollongong</i> - Heatwaves and drought – How will Arbuscular Mycorrhizal Fungi help conserve our native communities?	<b>Dony Indianto</b> , <i>PhD Student, UNSW</i> - From wide to narrow: How fitness landscapes determine species persistence under directional climate change
11:46 AM			<b>Anthony Albrecht</b> , <i>PhD Candidate, Charles Darwin University</i> - A survey of the arts in conservation communication strategy		
11:46 AM			<b>Jackie Randles</b> , <i>Manager, Inspiring Australia NSW</i> - Engage advocates and spark action through creative ecology encounters		
11:51 AM					

11:54 AM	<b>Dr Rachael Collett,</b> <i>Deakin University</i> - Impact of the megafires and changing fire regimes on butterflies in the Australian Alps	<b>Dr Kristen Williams,</b> <i>Principal Research Scientist, CSIRO Land and Water</i> - Using satellite-based remote sensing and modelling to estimate habitat condition, change and trends	<b>Professor Kirsten Parris,</b> <i>The University of Melbourne</i> - Russell the growling grass frog goes to Jacana wetlands	<b>Frederick A. Dadzie, PhD Candidate, UNSW</b> - Harnessing soil microbial communities to improve restoration success in arid ecosystems	<b>Rodolfo Anderson, PhD Student, Monash University</b> - Fundamental niche of a small ectotherm tracks environmental variation along an altitudinal cline		
11:56 AM							
11:59 AM							
12:04 PM	<b>Dr Jessica Walsh,</b> <i>Postdoctoral Researcher, School of Earth and Environmental Sciences, University of Queensland / Monash University</i> - Response of Australia's woodland bird community to fire: a review and meta-analysis	<b>Dr Leo Hardtke,</b> <i>Department of Environment and Science, QLD</i> - Mapping Queensland's terrestrial vegetation condition, the Saptial BioCondition modelling framework	<b>Juliet Scrine, CEO Eaton Gorge Theatre Company</b> - Cats, bats and squirrel gliders, a theatrical approach to scientific communication	<b>Dr Katinka Ruthrof,</b> <i>Research Scientist (Fire Ecology), Department of Biodiversity, Conservation and Attractions (DBCA)</i> - Microbial responses to hotter drought and wildfire in a Mediterranean-climate type forest	<b>Dr John Dwyer, Senior Lecturer, The University of Queensland</b> - Functional traits explain rainforest seedling responses to experimental drought		
12:07 PM							
12:09 PM							
12:14 PM		<b>Dr Gerald Page,</b> <i>Research Scientist, Land and Water, CSIRO</i> - Satellite-based monitoring of intra- and inter-annual vegetation dynamics in the rangelands		<b>Emma Stevens, Master's Student, University of Western Australia</b> - Initial responses of soil microbiology to forest thinning	<b>Lily Leahy, PhD Candidate, James Cook University</b> - Thermal ecology of tropical rainforest ants in a warming world: the importance of arboreality		
12:19 PM		<b>Dr Randall Donohue,</b> <i>Principal Research Scientist, CSIRO</i> - Remote sensing of Australian grassland characteristics					
12:20 PM		<b>Kaitlyn Hammond, PhD Candidate, University of Melbourne</b> - How catastrophic is catastrophic? Assessing forest structural heterogeneity after the 2009 Black Saturday bushfires				<b>Dr Sheryn Pitman,</b> <i>Project Lead, Adelaide National Park City Green Adelaide, Department for Environment and Water, South Australia</i> - Ancient ants, oyster reefs, seaweed bioproducts, megafauna and more - inspirational pathways to understanding nature	<b>Beatrice Dewenter, PhD Candidate, University of Canberra</b> - The role of temperature variability in determining effects of climate change on stream macroinvertebrates
12:22 PM							
12:24 PM							
12:25 PM	<b>Sandra Penman, PhD Candidate, The University of Melbourne</b> - Using Terrestrial LiDAR to characterise post-fire habitat structure in dry Eucalypt forest	<b>Aaron Brace, PhD Candidate, Edith Cowan University</b> - Temporal changes in soil microbial community compositions of a threatened ecological community post disturbance	<b>Professor Stephen Williams, James Cook University</b> - Long-term declines in rainforest birds in the Australia Wet Tropics: a climate-driven biodiversity emergency				
12:29 PM	<b>Linda Luck, PhD Candidate, Charles Darwin University</b> - Reduced model complexity for tracking savanna tree biomass with terrestrial LiDAR						
12:30 PM							
12:33 PM							
12:34 PM	<b>Brittany Mitchell, PhD Candidate, UNSW Sydney/Australian Museum</b> - Fighting the flames: Impacts of occurrence and severity of fire on Australian frogs			<b>Dr Jose Ferrer-Paris, Research Fellow, University of New South Wales</b> - The quest for mapping the ecosystem of the Earth	<b>Dr Dana Bergstrom, Terrestrial Ecologist, Australian Antarctic Division</b> - Telling a climate change impact story through theatre	<b>Dr Adam Frew, Lecturer, University of Southern Queensland</b> - Plant protection by arbuscular mycorrhizas: A role for fungal diversity?	<b>Melika Missen, PhD Candidate, University of Tasmania</b> - Frequency of watering influences the photosynthetic benefit of elevated CO2 in the field
12:35 PM							
12:38 PM							
12:39 PM	<b>Jenny Shih-Wen Huang, Graduate Student, The University of Melbourne</b> - Assessing the usefulness of expert knowledge and empirical data in managing bushfire for biodiversity	<b>Joao Filipe, Student Murdoch University</b> - Remotely-sensed functional traits can indicate adaptive capacity to climate change of trees from Mediterranean-type ecosystems		<b>Dr Hongwei Liu, Western Sydney University</b> - Evidence for the plant recruitment of beneficial microbes to suppress soil-borne pathogens	<b>Samantha Andres, PhD Candidate, Hawkesbury Institute for the Environment</b> - Does listing status predict climate change risk? A case study with Australian Persoonia (Proteaceae) species		
12:40 PM							
12:43 PM							
12:44 PM	<b>Mitchell Johnston, Student, Deakin University</b> - Impacts of prescribed burning to the diversity of fungi and plants in a healthy woodland	<b>Dr Kwang-Ho Bae, Geospatial Data Scientist FMG</b> - Detection of bat caves with Airborne LIDAR and Photogrammetry using local relief mode		<b>Dr Tracey Steinrucken, Postdoctoral Fellow, CSIRO</b> - A giant rat's tale: prioritizing pathogens to develop a biocontrol agent against weedy Sporobolus grasses			
12:48 PM							
12:49 PM							

12:50 PM	ECOSYSTEM RECOVERY AND THE FORGOTTEN ELEMENTS OF FIRE REGIMES: HOW ECOSYSTEMS RESPOND TO CHANGES IN FIRE SEASON, EXTENT, AND SEVERITY (1) - Live QA	dynamics on machine learning performance	ENGAGING COMMUNITY IN THE SCIENCE AND STORIES OF NATURE THROUGH SCIENCE-ARTS COLLABORATIONS Live QA		OPEN FORUM: CLIMATE CHANGE - Live QA
12:53 PM					
12:54 PM		Rebecca Rogers, <i>Phd Candidate, Charles Darwin University</i> - Weather radar compliments animal telemetry data to better understand the movement ecology of aggregating waterbirds			
12:59 PM		Professor Stuart Phinn, <i>The University of Queensland</i> - Translating Ecological Remote Sensing for Monitoring and Managing Disturbance and Recovery in Australian Ecosystems			
1:01 PM				Dr Erinne Stirling, <i>Postdoctoral Fellow, Zhejiang Univeristy</i> - Plant growth stage through the lens of microbes and their viruses: the rice holobiont	
1:05 PM		REMOTE SENSING IN ECOLOGY (1) - Live QA			
1:15 PM				USING SOIL MICROBES TO RESTORE, REGROW AND REWILD - Live QA	
1:30 PM	Lunch (Thursday)				
	Please <a href="#">click here</a> to visit our online networking hub.				
1:45 PM	Lunchtime mentoring session - Thursday				
	ESA Mentoring Program (for potential mentors from academia and industry)				
	CONCURRENT SESSIONS 8				
	ECOSYSTEM RECOVERY AND THE FORGOTTEN ELEMENTS OF FIRE REGIMES: HOW ECOSYSTEMS RESPOND TO CHANGES IN FIRE SEASON, EXTENT, AND SEVERITY (2)	REMOTE SENSING IN ECOLOGY (2)	RENEWAL OR REIMAGINATION? WHAT WE LEARNED TEACHING ECOLOGY IN UNUSUAL TIMES	OPEN FORUM: PATHOGENS AND PARASITES	OPEN FORUM: ECOLOGICAL MODELLING (1)
2:30 PM	Dr Mark Ooi, <i>Senior Research Fellow, University of New South Wales</i> - The impacts of severe fires on plant populations	Professor Hamish Campbell, <i>Charles Darwin University</i> - session introduction	Professor Dieter Hochuli, <i>The University of Sydney</i> - Opportunities and threats to teaching ecology in universities	Danielle Wallace, <i>PhD student, The University of Melbourne</i> - The unexpected effects of wildlife disease – does chytridiomycosis influence frog breeding displays?	Julia Pilowsky, <i>Phd Student, University of Adelaide</i> - Simulating species' range dynamics across multiple millennia using process-explicit and pattern-oriented models
2:30 PM					
2:35 PM		Dr Renee Bartolo, <i>Principal Research Scientist, Department of Agriculture, Water and Environment</i> - Supervising Science Branch - Learnings in collecting drone data and labelling for identifying savanna trees species using artificial intelligence			
2:43 PM	Nate Anderson, <i>Phd Student, University of Western Australia</i> - Seasonal fluctuations in live foliar moisture delineate fire seasons in Mediterranean-type Banksia woodlands		Dr Anna Hopkins, <i>Senior Lecturer, Edith Cowan University</i> - How do we make online teaching equivalent to an on-campus experience in soil ecology?	Nynke Raven, <i>Phd Student Deakin University</i> - Ecoimmunology of an endangered marsupial, the Tasmanian devil ( <i>Sarcophilus harrisii</i> )	Dr Elisa Bayraktarov, <i>Ecocommons Program Manager, Griffith University</i> - EcoCommons - the platform of choice for ecological and environmental modelling
2:48 PM	Susanna Bryceson, <i>Graduate Researcher, La Trobe University</i> - Leaves, litter and lineage: links to flammability?	Eliane McCarthy, <i>Master of Research graduate, Western Sydney University</i> - Drone-acquired thermal imagery as an effective tool for the management and conservation of flying-fox colonies			
2:53 PM	Ella Plumanns Pouton, <i>Phd Candidate, University of Melbourne</i> - Using plant functional types to predict the influence of fire regimes on heathland plant diversity				
2:56 PM					
3:01 PM		Sophie Walker, <i>PhD Candidate, James Cook University</i> - Drones are a powerful potential tool for conservation, what is holding back their use?	Devika Nair, <i>Phd Student, Research Institute for Environment &amp; Livelihoods, Charles Darwin University</i> - Stream Suspended mud as an indicator of post mining landform stability	Robert O'Reilly, <i>Phd Candidate, Flinders University</i> - Using flow cytometry to examine viral community variation over an ecological gradient, in a skink	Dr Sam Nicol, <i>Senior Research Scientist, CSIRO</i> - Inferring the structure of migratory bird networks from eBird data
3:06 PM	Harriet Simpson-Southward, <i>PhD Candidate, University of Wollongong</i> - Effects of climate change on ...		Dr Jo-Anne Kelder, <i>Adjunct Senior Researcher, University of Tasmania</i> - Learning to ...	Lucas Hearn, <i>Phd Student, Flinders University</i> - Variation in parasitism of a stem-nesting bee	Dr Shane Morris, <i>Postdoctoral Researcher, University of Tasmania</i> - Using mechanistic niche
3:09 PM					

3:14 PM	resilience of fire prone eucalypt communities	<b>Jay Nicholson, <i>Botanist</i></b> <i>Department of Agriculture, Water and the Environment</i> - Millennial ecology - are drones and artificial intelligence replacing botanists?	<i>rasnana</i> - Learning to live sustainably: using online curricula to harness place-based, authentic experiential learning	stem-nesting bee suggests benefits of sociality vary across the life-cycle	Using mechanistic models to understand wombat activity patterns and their implications			
3:19 PM	<b>Francois Brassard, <i>PhD Student, Charles Darwin University</i></b> - How do varying fire regimes affect savanna ant communities through time?		<b>Dr Leanda Mason, <i>Sessional Academic, Curtin University</i></b> - De-colonising science through co-teaching consilience	<b>Tom Mansfield, <i>PhD Murdoch University</i></b> - Biological bulldozer meets ecosystem engineer: effects of <i>Phytophthora</i> dieback on quenda habitat and foraging activities	<b>Dr Saras Windecker, <i>Research Fellow, University of Melbourne</i></b> - Hierarchical trait-based point process model for distributions of presence-only data			
3:22 PM								
3:24 PM	<b>Alexandria Thomsen, <i>PhD Candidate, University of New South Wales</i></b> - Impacts of extreme fire severity on wet sclerophyll forests					<b>Dr Francesca Van Den Berg, <i>Associate Lecturer, The University of Sydney</i></b> Outdoors and online: Can remote field trips replicate authentic learning experiences for first year students?	<b>Alana Delaine, <i>Student The University of Adelaide</i></b> - <i>Psyllaephagus</i> , an important but problematic genus of parasitoid wasps	<b>Thomas Chen, <i>Academy for Mathematics, Science, and Engineering</i></b> - A Computer Vision Framework for Urban Ecology Conservation
3:27 PM								
3:29 PM	<b>Ruby Paroissien, <i>Research Assistant, UNSW</i></b> - Effects of fire season on the reproductive success of the post-fire flowerer <i>Doryanthes excelsa</i>	<b>Naima Andrea Lopez, <i>PhD Candidate, University of Western Australia</i></b> - Identification of the southernmost aggregation of juvenile scalloped hammerheads ( <i>Sphyrna lewini</i> ) in Australia	<b>Dr Yvonne Davila, <i>Senior Lecturer, University of Technology Sydney</i></b> - Thinking like an ecologist: Pivoting field-based learning to an online environment to enhance student learning	<b>Berta Blanch-Lazaro, <i>PhD Candidate, Deakin University</i></b> - Investigating beak and feather disease virus infection in crimson rosellas ( <i>Platycercus elegans</i> )	<b>Dr Mark Bonner, <i>Research Fellow, RMIT</i></b> - Those who can don't want to, those who want to can't: eco-evolutionary soil carbon protection			
3:32 PM								
3:34 PM	<b>Dr Ryan Tangney, <i>Research Fellow, UNSW</i></b> - Fire season affects plant recovery following fire: evidence from a global meta-analysis					<b>Dr Debbie Saunders, <i>Conservation Ecologist &amp; Founder, Wildlife Drones &amp; ANU</i></b> - Dead or alive: advances in drone radio-tracking technology for detecting and locating radio-tag mortality signals	<b>Ko-Huan Lee, <i>Macquarie University</i></b> - Bacterial and parasitic effects on the performance of lizards	<b>Kristy Stevenson, <i>Phd Candidate, University of Queensland</i></b> - Impacts of myrtle rust ( <i>Austropuccinia psidii</i> ) on seedling diversity in a wet sclerophyll forest
3:37 PM								
3:40 PM	REMOTE SENSING IN ECOLOGY (2) - Live QA	RENEWAL OR REIMAGINATION? WHAT WE LEARNED TEACHING ECOLOGY IN UNUSUAL TIMES - Live QA	OPEN FORUM: PATHOGENS AND PARASITES - Live QA	OPEN FORUM: ECOLOGICAL MODELLING (1) - Live QA				
3:45 PM								
3:50 PM								
3:55 PM								
4:10 PM - 4:30 PM	Afternoon tea (Thursday)							
	<a href="#">Please click here</a> to visit our online networking hub.							
	CONCURRENT SESSIONS 9							

	ECOSYSTEM RECOVERY AND THE FORGOTTEN ELEMENTS OF FIRE REGIMES: HOW ECOSYSTEMS RESPOND TO CHANGES IN FIRE SEASON, EXTENT, AND SEVERITY (3)	REMOTE SENSING IN ECOLOGY (3)	OPEN FORUM: ECOSYSTEM RESTORATION (1)	OPEN FORUM: PLANT AND SOIL ECOLOGY	OPEN FORUM: ECOLOGICAL MODELLING (2)
4:30 PM	<b>Dr Simon Verdon</b> , <i>Research Fellow, La Trobe University</i> - Post-fire succession creates shifting population hotspots for multiple threatened bird species	<b>Dr Petra Kuhnert</b> , <i>Senior Research Scientist, CSIRO Data61</i> - Vizumap: An R package for visualising uncertainty in spatial data	<b>Daniel Gautschi</b> , <i>Australian National University</i> - Artificial nest use by two sympatric species: are restoration efforts supporting endangered or pest birds?	<b>Giancarlo Chiarenza</b> , <i>PhD Student, Unsw Sydney</i> - Standing on the shoulders of misdirected giants: are ecologists focusing on the wrong soil variables?	<b>Dr Robyn Shaw</b> , <i>Postdoctoral Research Fellow, Murdoch University</i> - Ecological processes driving landscape-scale patterns in the Pilbara mammal community
4:43 PM	<b>Casey Kirchhoff</b> , <i>PhD Candidate, University of New South Wales</i> - Watching the world turn green: citizen scientists mobilise to monitor post-fire recovery	<b>Dr Mariana Campbell</b> , <i>Post-doc Research Fellow, Charles Darwin University</i> - Remote sensing in freshwater turtle ecology	<b>Nathali Machado-de-Lima</b> , <i>University of New South Wales</i> - Microbial communities underpin the threats of bushfires and mining in the Newnes Plateau Shrub Swamps	<b>A/Prof Rachel Standish</b> , <i>Murdoch University</i> - Looking belowground to explain plant species coexistence in a biodiversity hotspot	<b>Dr Natalie Briscoe</b> , <i>Research Fellow, The University of Melbourne</i> - Can dynamic occupancy models improve predictions of species' range dynamics? A test using Swiss birds
4:56 PM	<b>Sydney Collett</b> , <i>PhD Student, Charles Darwin University</i> - Impacts of early prescribed burning on granivorous finch site utilisation	<b>Dr Laura Ruykys</b> , <i>Terrestrial Ecologist, Northern Territory Government</i> - Call playback increases the probability of detecting ghost bats away from the roost	<b>Dr Robert Kooyman</b> , <i>Research Fellow, Macquarie University</i> - Rainforest restoration: building resilience with genetic diversity in times of change	<b>Theresa O'Brien</b> , <i>Masters Candidate, University of New South Wales</i> - Reducing measurement error in tree growth estimates from repeat forest surveys using longitudinal models	<b>Anwar Hossain</b> , <i>PhD Student, University of Melbourne</i> - Estimating and conserving patterns of grasshopper diversity and richness in Western Australia
5:09 PM	<b>Asitha Samarawickrama</b> , <i>Master of Science Candidate, University of the Sunshine Coast</i> - The impact of cultural burns on koala density and habitat characteristics on Minjerribah	<b>Brittany Hayward-Brown</b> , <i>Research Assistant, Charles Darwin University, Research Institute of Environment and Livelihoods</i> - Passive telemetry reveals resource-driven shifts in the movement of a small, highly mobile granivorous finch	<b>Isabel Ely</b> , <i>PhD Student REIL/CDU</i> - Preliminary results of bioaccumulation and biomagnification of metals in the Finniss River food web	<b>Travis Britton</b> , <i>PhD student, University of Tasmania</i> - Don't stand so close to me: neighbour identity and proximity strongly impact eucalypt growth	<b>Islay McDougall</b> , <i>Student, University of Melbourne</i> - Predicting the distribution of the Plains-wanderer, a critically endangered grassland bird
5:14 PM		<b>Hannah Calich</b> , <i>PhD Candidate, University of Western Australia</i> - Investigating megafauna movement and behaviour with Statistical Physics methods: A primer for Ecologists	<b>Lena Alice Schmidt</b> , <i>PhD Candidate, Hawkesbury Institute For The Environment Western Sydney University</i> - Native versus exotic floral strips play distinctively different roles in supporting pollinators year-round in agroecosystems		
5:19 PM		<b>Lauren Hawkins</b> , <i>PhD Candidate, Curtin University</i> - Passive acoustic monitoring of fish choruses along the Australian southern continental shelf	<b>Dr Nick Schultz</b> , <i>Lecturer, Federation University Australia</i> - Soil reconstruction after mining fails to restore soil function in an Australian arid ecosystem		
5:22 PM	<b>Joshua Whitehead</b> , <i>PhD Candidate, University of New England</i> - Spring burns are not good for pollinators	<b>Dr Martino Malerba</b> , <i>Postdoctoral Fellow Deakin University</i> - Effects of farm dams on frog biodiversity and carbon cycles	<b>Peter Contos</b> , <i>PhD Candidate, La Trobe University</i> - Rewilding with invertebrates and microbes: tiny tools for ecological restoration	<b>Manjunatha Chandregowda</b> , <i>PhD Student, Hawkesbury Institute for the Environment</i> - C3 & C4 grasses differ in their resource acquisition strategies, while responses to drought are species specific	<b>Kevin Newman</b> , <i>PhD Candidate, The University of Melbourne</i> - An Analytical Solution for Optimising Multi-species Detection Surveys
5:24 PM					



5:29 PM		<b>Dr Daniella Teixeira</b> , <i>Research Fellow, Griffith University</i> - Practical considerations for efficient acoustic monitoring	<b>Jake Wallace</b> , <i>PhD Candidate, Federation University</i> - PCLake+: Modelling stable states, critical nutrient loading, and weed harvesting in a man-made Australian Lake		
5:34 PM		<b>Michelle VanCompernelle</b> , <i>PhD Candidate, University of Western Australia</i> - A Global Threat Index for Marine Megafauna (TIMM)	<b>A/Prof Alex Kutt</b> , <i>Conservation Science and Planning Manager Tasmanian Land Conservancy</i> - Building resilience in Tasmanian Eastern Quoll <i>Dasyurus viverrinus</i> through targeted supplementation of wild populations		
5:35 PM	<b>Jeremy Johnson</b> , <i>PhD Candidate, University of Melbourne</i> - Mammal response to increased wildfire frequency and severity in montane forests of Victoria			<b>Dr Aubrie James</b> , <i>Postdoctoral Fellow, University of Queensland</i> - Positive frequency - and density-dependent interactions occur often in a hyperdiverse system of annual flowering plants	<b>Audrey Prasetya</b> , <i>PhD Candidate, Australian National University</i> - Where Sunda Meets Sahul: Biogeographical patterns in the Indo-Australian Archipelago from beta-diversity of bird assemblages
5:35 PM					
5:39 PM		<b>Katie Turlington</b> , <i>PhD Candidate, Australian Rivers Institute, Griffith University</i> - Using species calling behaviour to optimise automatic call recognisers	<b>Maree Treadwell</b> , <i>President, Bats and Trees Society of Cairns</i> - Recovering a controversial endangered species: the Spectacled Flying-fox Recovery Team - a renewal of hope		
5:40 PM	<b>Chris Kahler</b> , <i>Botanist / Ecologist, Ecological Interpretation</i> - Finches and Fire: will changed burning regimes renovate habitat for the Southern Black-throated Finch?		<b>Courtney Melton</b> , <i>PhD Candidate, The University of Queensland</i> - Resource provision and bully deterrent? The value of subcanopy vegetation structure for woodland birds		<b>James Kelleher</b> , <i>PhD student, University of Melbourne</i> - Empirical dynamic modelling of bat mosquito relationships at a California preserve
5:44 PM					
5:45 PM	<b>Derek Johnson</b> , <i>Research Student, University of the Sunshine Coast</i> - Recovery response of Koala habitat after fire				<b>Isabella Todd</b> , <i>Honours Student, University of Wollongong</i> - Using species distribution modelling to develop understanding of biodiversity distribution in Antarctica for conservation management
5:49 PM					
5:55 PM	<b>ECOSYSTEM RECOVERY AND THE FORGOTTEN ELEMENTS OF FIRE REGIMES: HOW ECOSYSTEMS RESPOND TO CHANGES IN FIRE SEASON, EXTENT, AND SEVERITY (3) - Live QA</b>	<b>REMOTE SENSING IN ECOLOGY (3) - Live QA</b>	<b>OPEN FORUM: ECOSYSTEM RESTORATION (1) - Live QA</b>	<b>OPEN FORUM: PLANT AND SOIL ECOLOGY - Live QA</b>	<b>OPEN FORUM: ECOLOGICAL MODELLING (2) - Live QA</b>

## Friday, November 26, 2021

	<a href="#">Please click here</a> to visit our online networking hub.				
9:30 AM - 11:00 AM	PLENARY SESSION 5				
	KEYNOTE PRESENTATION: Ecology in Wild Places – the value of conservation research partnerships <b>Dr Katherine Moseby</b> , <i>University of New South Wales</i>				
	KEYNOTE PRESENTATION: It's much more than just a climate problem: how we made our landscapes and why you need us to help save them, <b>Associate Professore Michael-Shawn Fletcher</b> , <i>Associate Dean (Indigenous), University of Melbourne</i>				
11:00 AM - 11:15 AM	Morning tea (Friday)				
	<a href="#">Please click here</a> to visit our online networking hub.				
	CONCURRENT SESSIONS 10				
	<b>VEGETATION INFORMATION SUPPORTING CLASSIFICATION AND MAPPING – ROAD TO RECOVERY (1)</b>	<b>ADVANCES IN GENOMICS FOR ECOLOGY</b>	<b>PF-FIRE: PAST FIRE FREQUENCY AND INTENSITY RECONSTRUCTION (1)</b>	<b>OPEN FORUM: CLIMATE CHANGE (2)</b>	<b>OPEN FORUM: ECOSYSTEM RESTORATION</b>

11:15 AM	<b>Dr Don Faber-Langer</b> , <i>Senior Ecologist and Conservation Methods Coordinator Natureserve</i> - Perspectives on Building an Australian National Vegetation Classification using the international EcoVeg approach	<b>Dr Rahul Rane</b> , <i>Research Scientist, CSIRO</i> - Advances in applied genomics	<b>Dr Simon Connor</b> , <i>Research Fellow, Australian National University</i> - Have we abandoned Australia's forests to catastrophic fire?	<b>Nara Vogado</b> , <i>PhD Candidate, James Cook University</i> - Effects of an experimental drought on the phenology and ecophysiology of tropical rainforest tree species	<b>Tina Parkhurst</b> , <i>PhD candidate, Murdoch University</i> - Recovery of woody but not herbaceous native flora ten years post old-field restoration
11:28 AM	<b>Ben Sparrow</b> , <i>The University of Adelaide / TERN</i> - Standardisation and collaboration are key to effective continental-scale long-term vegetation mapping	<b>Professor Dianne Gleeson</b> , <i>University of Canberra</i> - eDNA for ecological applications	<b>Alice Laming</b> , <i>Student, University of Melbourne</i> - Fire activity in Buchan, Victoria: using ethnopicorial evidence alongside paleoecology to understand past landscapes	<b>Ruby Stephens</b> , <i>PhD Candidate, Macquarie University; Royal Botanic Gardens Sydney</i> - How does climate shape flowering periods across Australian plant communities?	<b>Dr Angie Haslem</b> , <i>La Trobe University</i> - How long does it take for revegetation plantings to become suitable for different native birds?
11:40 AM		<b>Emily McColl-Gausden</b> , <i>PhD Student, The University of Melbourne</i> - Using hierarchical models to compare the sensitivity of metabarcoding and qPCR for eDNA detection	<b>Mark Constantine</b> , <i>PhD Student, UNSW School of Biological, Earth and Environmental Science</i> - Comparison of charcoal extraction methods on an 800-year record from Lake Werri Berri, NSW	<b>Elise Verhoeven</b> , <i>PhD Candidate, The University of Sydney</i> - Characterising the spatio-temporal dynamics of extreme drought and rain events in Australia	<b>Eddy Cannella</b> , <i>Principal Zoologist, Biostat Pty Ltd</i> - Mine rehabilitation - a renewal of sorts for fauna
11:41 AM	<b>Professor John Hunter</b> , <i>University of New England</i> - Poplar Box Woodlands: an assessment of a threatened ecological community within the IVC framework	<b>Gabe O'Reilly</b> - Genetic methods for detection of recent population subdivisions	<b>Caitlin O'Shea</b> , <i>Masters Student Researcher, University of Melbourne</i> - Did European Invasion add fuel to the fire? Interrogating historical fire management through subfossil record	<b>Dr John Morgan</b> , <i>Lecturer In Plant Ecology, La Trobe University</i> - Establishing native plant populations beyond their natural range is hard!	<b>Dr Megan Good</b> , <i>Post Doctoral Research Fellow, University of Melbourne</i> - Targeted monitoring to support restoration: a state-transition framework
11:53 AM					
11:54 AM	<b>Dr Donna Lewis</b> , <i>NT Government / TERN</i> - Developing a vegetation typology for the Northern Territory using numerical analyses of plot-based data	<b>Dr Erin Hahn</b> , <i>Postdoctoral Fellow, CSIRO</i> - Fixed in time: characterising historical genomes from formalin-preserved museum specimens	<b>Matthew Adeleye</b> , <i>PhD Student, Australian National University</i> - The role of Indigenous cultural burning in stabilizing past fire regimes—new insights from Bass Strait	<b>Dr Jamie Cleverly</b> , <i>Snr Research Fellow, TERN and the University of Technology Sydney</i> - High temperature versus high vapour pressure deficit stress in Acacia aptaneura during drought-induced mortality	<b>Andrew Denham</b> , <i>Research Scientist, NSW Department of Planning, Industry and Environment</i> - Importance of tree density on understorey diversity and weed abundance in restored grassy box woodland
12:06 PM					
12:07 PM	<b>Dr Sarah Luxton</b> , <i>Terrestrial Ecologist, Department of Environment, Parks and Water Security</i> - Comparison of intuitive and numerical classification: a case study from the Northern Territory	<b>A/Prof Alison Shapcott</b> , <i>University Sunshine Coast</i> - Molecular Ecology approaches to enhance our understanding of ecosystem renewal	<b>Harriet Magee</b> , <i>Student, University of Melbourne</i> - Temperate forest estates and big burn histories: fuel and fire reconstruction on Gunaikurnai Country, Victoria	<b>Charlotte Page</b> , <i>PhD Candidate, UNSW</i> - Characteristics and consequences of a coral disease outbreak at Norfolk Island, South Pacific	<b>Brittany Elliott</b> , <i>PhD Candidate, University of The Sunshine Coast</i> - Insect indicator species for monitoring and prioritising restoration actions
12:19 PM					
12:20 PM	<b>Rachel McIntosh</b> , <i>PhD Student, La Trobe University</i> - Identifying floristic vegetation patterns along a climatic gradient to evaluate fire management categories	<b>Kristen Fernandes</b> , <i>PhD Candidate, Curtin University</i> - Environmental DNA metabarcoding reveals the threat of urbanisation to native bees in a biodiversity hotspot	<b>Dr Christopher Wurster</b> , <i>Research Fellow, James Cook University</i> - Natural and human impacts on north Australian savanna fire regimes over the Holocene	<b>Professor David Watson</b> , <i>Charles Sturt University</i> - Climate change disrupts ecological interactions in mysterious ways: using ecological generalists to forecast community-wide effects	<b>Thomas Munro</b> , <i>Charles Sturt University</i> - Effects of seed enhancement technologies on seedling performance in water-limited soils
12:32 PM					
12:33 PM					
12:33 PM					
12:38 PM					
12:39 PM					
12:45 PM	<b>Dr Megan McNellie</b> , <i>Senior Scientist, NSW Department of Planning, Industry and Environment</i> - Species abundance distributions should underpin ordinal cover-abundance transformations	<b>Dr Caroline Chong</b> , <i>Threatened Species Botanist, Northern Territory Government</i> - Advancing genomics for threatened plant species management in the Northern Territory	<b>Anthony Romano</b> , <i>Research Assistant, University of Melbourne</i> - Bringing Back Bolin: Reconstructing the past environment of Naarm-Melbourne		<b>Ebony Cowan</b> , <i>PhD Candidate, Murdoch University</i> - Soil seedbank development in a 23-year restoration chronosequence following smoke treatment
12:46 PM					

1:10 PM	VEGETATION INFORMATION SUPPORTING CLASSIFICATION AND MAPPING – ROAD TO RECOVERY (1) - Live QA	ADVANCES IN GENOMICS FOR ECOLOGY - Live QA	PF-FIRE: PAST FIRE FREQUENCY AND INTENSITY RECONSTRUCTION (1) - Live QA	OPEN FORUM: CLIMATE CHANGE (2) - Live QA	OPEN FORUM: ECOSYSTEM RESTORATION - Live QA
1:25 PM - 2:15 PM	Lunch (Friday)				
	<a href="#">Please click here</a> to visit our online networking hub.				
	CONCURRENT SESSIONS 11				
	VEGETATION INFORMATION SUPPORTING CLASSIFICATION AND MAPPING – ROAD TO RECOVERY (2)	OPEN FORUM: PRACTICAL USE OF GENOMICS FOR ECOLOGY	PF-FIRE: PAST FIRE FREQUENCY AND INTENSITY RECONSTRUCTION (2)	OPEN FORUM: CLIMATE CHANGE (3)	OPEN FORUM: DECISION MAKING TOOLS AND SCIENCE COMMUNICATION
2:15 PM	<b>Dr Eda Addicott</b> , <i>Principal Botanist, Queensland Herbarium, Australian Tropical Herbarium</i> - How do the Eucalyptus tetrodonta woodlands fit into global vegetation?	<b>Owen Holland</b> , <i>Phd Candidate, Deakin University</i> - Ocean warming threatens key biotic interactions supporting a dominant herbivore in a climate change hotspot	<b>A/Prof Michael-Shawn Fletcher</b> , <i>Abiogeographer, University of Melbourne</i> - Revealing the incredible workload required to keep Country open in northwest Lutruwita (Tasmania)	<b>Hannah Carle</b> - Early signs of decline in the Australian tropical carbon sink?	<b>Dr Dana Bergstrom</b> , <i>Terrestrial Ecologist Australian Antarctic Division</i> - Facing ecosystem collapse using the 3As (Awareness, Anticipation and Action) Pathway of conservation decision science
2:20 PM	<b>Simon Casey</b> , <i>Honours Student, Deakin University</i> - Mapping and assessing Phytophthora dieback in the eastern Otways				
2:25 PM	<b>Alys Young</b> , <i>Phd Candidate, Deakin University</i> - Co-developing conservation knowledge and plans on the Tiwi Islands, NT				
2:28 PM		<b>Zachary Clark</b> , <i>Student Deakin University</i> - Investigating the diet of the white shark ( <i>Carcharodon carcharias</i> ) using DNA metabarcoding approaches	<b>Dr William Henriquez</b> , <i>Post Doctoral Research Fellow, University of Melbourne</i> - Guldjian Country: how have the western plains of Victoria changed since the British invasion?	<b>Anu Singh</b> , <i>The University of Melbourne</i> - The role of climatic variability on eucalypt regeneration in southeast Australia	<b>Jaana Dielenberg</b> , <i>Science Communication and Engagement Manager, Threatened Species Recovery Hub</i> - 7000 news stories later, 10 things I have learnt about generating media for environmental research
2:30 PM	<b>Katherine Zdunic</b> , <i>Program Leader Remote Sensing &amp; Spatial Analysis, Western Australia Department of Biodiversity, Conservation and Attractions</i> - Linking drones to satellites: measuring and monitoring vegetation attributes				
2:41 PM		<b>James Dorey</b> , <i>Postgraduate Associate Yale University</i> - Holocene population expansion of a tropical bee coincides with Fijian colonization rather than climate change	<b>Professor Simon Haberle</b> , <i>Australian National University</i> - A palaeoecological perspective on fire dynamics in Australian savannas	<b>Lucile Leveque</b> , <i>Phd Candidate, University of Tasmania</i> - Will the surviving Tasmanian native hen resist global changes?	<b>Professor Jenny Davis</b> , <i>RIEL, Charles Darwin University</i> - The conservation challenge of protecting recently discovered subterranean wetlands and stygofauna in northern Australia
2:43 PM	<b>Andrew Jansen</b> , <i>Freshwater Ecologist, Supervising Scientist</i> - Principles using deep learning to automate savanna tree species identification				
2:54 PM		<b>Dr Rebecca Jordan</b> , <i>Research Scientist CSIRO</i> - Can trees keep pace with climate change? Investigating genomic change and adaptability in <i>Eucalyptus pauciflora</i>	<b>Lucinda Duxbury</b> , <i>The University of Adelaide</i> - 5,000 years of fire and ecosystem change on Kangaroo Island, South Australia	<b>Sarah Taig</b> , <i>Student Deakin University</i> - Effects of temperature on aquatic insect development, survival and infectious disease	<b>Dr James Brazill-Boast</b> , <i>Principal Ecologist NSW Biodiversity Conservation Trust</i> - Evaluating biodiversity impact of a private land conservation program
2:56 PM	<b>Ian Cowie</b> , <i>Chief Botanist, DEPWS</i> - Patterns of endemism in the flora of the Northern Territory and implications for management				
3:07 PM		<b>Kendrika Gaur</b> , <i>Phd Candidate, Deakin University</i> - Testing the efficiency of eDNA compared with video-trap data: Terrestrial wildlife in the Victorian Mallee	<b>Margot Schneider</b> , <i>Australian National University</i> - Past fire shaping future fuel: Influence of fire regimes on <i>Eucalyptus pilularis</i> leaf nutrient content	<b>Jollene Reich</b> , <i>Phd Student, University of Canberra</i> - How do changes in annual mean temperature and annual temperature variability affect species' distributions?	<b>Anne Eichholtzer</b> , <i>Phd Student, Deakin University</i> - From ecological research to public engagement: the multiple values of Citizen Science
3:09 PM	<b>Diane Napier</b> , <i>Principal Terrestrial Ecologist, Dept. Environment Parks and Water Security</i> - What site data tells us about the edaphic preferences of <i>Terminalia ferdinandiana</i> (Kakadu plum)	<b>Alana Burton</b> - The Application of Environmental DNA for Detecting the Green and Golden Bell Frog ( <i>Litoria aurea</i> )		<b>Lorenzo Galletta</b> , <i>Phd Student, Deakin University</i> - The influence of parental pre-natal exposure to heat calls on thermal tolerance of their offspring	<b>Dr Samantha Travers</b> , <i>NSW Department of Planning Industry and Environment</i> - Which experts and how many? A quantitative comparison of how experts identify an ecological community
3:12 PM					
3:17 PM		<b>Morgan Ellis</b> , <i>Phd Candidate, Deakin University</i> - Use of eDNA		<b>Celina Burkholz</b> , <i>Phd Student, UWA</i> - Future-proofing declining kelp	<b>Jessica Tam</b> , <i>Honours Student, University of New South Wales</i> - Biases in

3:20 PM		<i>University</i> - Use of eDNA in Detecting of Two Invasive Species517	<b>Sarah Cooley, <i>PhD Candidate, University of Melbourne</i></b> - Response, resilience and recovery: An endangered fire-sensitive endemic conifer and its relationship with fire	prooing declining keip forests with Green Gravel	ecological research: How science can threaten species with extinction	
3:22 PM	<b>Louis Elliott, <i>Weed Scientist, NT Department of Environment, Parks and Water Security</i></b> - Extirpation: improving representation of species distribution point data using a status grid based methodology	<b>Dr Erin Weserhuis, <i>Terrestrial Ecologist, GHD</i></b> - Using genomic DNA and hormone metabolites in guano to monitor population dynamics of <i>Rhinonictoris aurantia</i>		<b>Emma Sumner, <i>Deakin University</i></b> - Heat, frost, drought: How will Australian alpine plants cope with future climate extremes?	<b>Jayden Engert, <i>PhD Student, James Cook University</i></b> - 20 Million Trees but few benefits to threatened species	
3:30 PM						
3:33 PM						
3:43 PM	<b>Marion Howard, <i>Phd Student, University of The Sunshine Coast</i></b> - Threatened Rainforest Communities of Central Queensland, are they a priority for Conservation?	<b>Ellyn Erlania, <i>Phd Candidate Deakin University</i></b> - Environmental DNA for approximating spatial sequestration of macroalgal carbon in marine sediments		<b>Julian Radford-Smith, <i>Phd Candidate, The University of Queensland</i></b> - How will Australia's subtropical rainforests respond to climate change?	<b>Dr David Nipperess, <i>Senior Scientist, NSW Department of Planning, Industry &amp; Environment</i></b> - Conservation prioritisation to secure the evolutionary heritage of New South Wales	
3:46 PM						
3:48 PM		<b>Jennifer Evans, <i>PhD Candidate Australian National University</i></b> - Testing explanations for population decline in an iconic Australian bird using novel application of genomics	<b>Dr Diana Kuchinke, <i>Sessional Lecturer, Federation University</i></b> - Old rules for fire research no longer apply	<b>Kristoffer Wild, <i>Phd Student, University of Canberra</i></b> - Differential dispersal and fitness-related consequences of sex-reversal in the central bearded dragon		
3:50 PM	VEGETATION INFORMATION SUPPORTING CLASSIFICATION AND MAPPING – ROAD TO RECOVERY – Live QA					
3:53 PM		<b>Dr Tom Mooney, Supervising Scientist</b> - Genomic technologies to future-proof the long-term ecological monitoring of the rehabilitated Ranger Uranium Mine				
3:58 PM						
4:00 PM		<b>Veronique Paris, <i>Phd Student, The University of Melbourne</i></b> - Population genomics informs urban ecology of a native Australian mosquito involved in disease transmission	<b>PF-FIRE: PAST FIRE FREQUENCY AND INTENSITY RECONSTRUCTION (2) - Live QA</b>	<b>OPEN FORUM: CLIMATE CHANGE (3) - Live QA</b>	<b>OPEN FORUM: DECISION MAKING TOOLS AND SCIENCE COMMUNICATION - Live QA</b>	
	<b>OPEN FORUM: PRACTICAL USE OF GENOMICS FOR ECOLOGY - Live QA</b>					
4:15 PM	Afternoon tea (Friday)					
	PLENARY SESSION SIX					
	PLENARY SESSION 6: Closing Plenary					
4:30 PM - 5:30 PM	Session Chair: Alan Anderson					
	ESA President's Address					
	ESA Award Presentations					
	2020 Fundamental Ecology Award Presentation: Trait-mediated demographic responses to spatial heterogeneity in a diverse annual plant community, <b>Isaac Towers, <i>Ecology and Evolution Research Centre, The University of New South Wales</i></b>					
	2020 Applied Forestry Scholarship presentation: The flammability of rainforest plants: a comparison of lifeforms from the Australian Wet Tropics, <b>Ebony Potts, <i>Centre for Tropical Environmental and Sustainability Studies (TESS) and College of Science and Engineering, Cairns</i></b>					
	Presentation of Prizes and Awards					

## POSTERS AT ESA2021 (Barbara Rice Memorial Poster Session - Monday 22 November)

# = Poster AND Speed Talk

	Poster title	First Name	Last Name	Organization
#	A survey of the arts in conservation communication strategy	Anthony	Albrecht	Charles Darwin University
	Does seed mass modulate species' responses to environmental variation and plant-plant interactions?	Isis	Arend da Silva	University of Queensland
	Neighbourhood diversity enhances plant survival in a restored ex-agricultural ecosystem	Joe	Atkinson	UNSW Sydney
	Coral demography changes during mass bleaching events	Kevin	Bairos-novak	James Cook University
	Genomic diversity and divergence among populations of the invasive woody shrub, <i>Leptospermum laevigatum</i> (Gaertn.) F.Muell.	Surendra	Bam	Department Of Ecology, Environment And Evolution, La Trobe University
	Using existing knowledge to map tiger corridors in Terai Arc Landscape, Nepal	Tek Raj	Bhatt	Griffith University
#	What the heck is a <i>Caltha</i> Herbland? And why should we care?	Alex	Blackburn-Smith	La Trobe University
#	Increased Genetic Diversity via Gene Flow Provides Hope for an Endangered Wattle Facing Extinction	Colette	Blyth	University of Adelaide
#	Beyond climate change: How does disturbance affect plant composition and shrub dynamics in alpine grasslands?	Montee	Bonnefin	La Trobe University
#	Temporal changes in soil microbial community compositions of a threatened ecological community post disturbance	Aaron	Brace	Edith Cowan University
	Hatchery-imposed selection does not impact the genetic diversity of farmed blue mussels	Georgina	Bramwell	Deakin University
#	The Application of Environmental DNA for Detecting the Green and Golden Bell Frog ( <i>Litoria aurea</i> )	Alana	Burton	
#	Investigating megafauna movement and behaviour with Statistical Physics methods: A primer for Ecologists	Hannah	Calich	University of Western Australia
	Complementarity based prioritisation of invasive willow control across eastern Victoria	Stephanie	Carter	Monash University
#	Mapping and assessing <i>Phytophthora</i> dieback in the eastern Otways	Simon	Casey	Deakin University
	Monitoring Ecological Population Trends in the High Arctic: Computer Vision for Sustainability	Thomas	Chen	Academy for Mathematics, Science, and Engineering
	A Computer Vision Framework for Urban Ecology Conservation	Thomas	Chen	Academy for Mathematics, Science, and Engineering
	Invertivorous fishes and their foraging preferences can influence epifaunal productivity in a tropical fringing reef	Yi-Yang (Alex)	Chen	The Australian National University
#	Urban connectivity: Using expert elicitation to inform ecological connectivity in the ACT	Steph	Courtney Jones	ACT Government / Australian National University
#	Does burning reduce fuel loads and fire risk? Or simply create a grass fire cycle?	Merinda	Day-Smith	La Trobe University
	Escalator to extinction: predicted community response to an uphill elevational shift in the Wet Tropics	Alejandro	De La Fuente	James Cook University
#	<i>Psyllaephagus</i> , an important but problematic genus of parasitoid wasps	Alana	Delaine	The University of Adelaide



	Not-so-forbidden fruit: conservation potential of toxic <i>Pimelea microcephala</i> fruits for native arid zone birds	Jenna	Draper	The University of Adelaide
#	5,000 years of fire and ecosystem change on Kangaroo Island, South Australia	Lucinda	Duxbury	The University of Adelaide
	Changing ways: how altered disturbance regimes affect the susceptibility of natural ecosystems to invasion	Rosa	Earle	Unsw
#	Conservation of the Long-necked turtle adopting a Two Ways approach in the Finnis River floodplains	Isabel	Ely	REIL/CDU
#	"I never cared about the trees before": Empowering landholders to undertake ecological fire management post-2019/20	Hannah	Etchells	Nature Conservation Council NSW
#	Testing explanations for population decline in an iconic Australian bird using novel application of genomics	Jennifer	Evans	Australian National University
	Soil carbon accounting in the world's most carbon-dense forests, the Victorian Central Highlands	Atalaya	Ferrari	Royal Melbourne Institute Of Technology
	Assessing the impact of Phantom Decoys on honeybees, <i>Apis mellifera</i>	Caitlyn	Forster	The University Of Sydney
#	Aligning decision support with target setting: the case of Tasmania's contested forests	Carley	Fuller	University of Tasmania
#	Optimising digital data collection tools for ecological monitoring programs	Cameron	Gallagher	ACT Parks And Conservation
	Habitat fragmentation and corridors: a brief review and a new citizen science project	Ronda	Green	Environmental Futures Research Institute, Griffith University
#	Mapping Queensland's terrestrial vegetation condition, the Saptial BioCondition modelling framework.	Leo	Hardtke	Department of Environment and Science, QLD
#	Passive acoustic monitoring of fish choruses along the Australian southern continental shelf	Lauren	Hawkins	Centre For Marine Science & Technology, Curtin University
#	Where's the moss? Mapping urban moss to understand the challenges of city life for plants	Alison	Haynes	University of Wollongong
#	Passive telemetry reveals resource-driven shifts in the movement of a small, highly mobile granivorous finch	Brittany	Hayward-Brown	Charles Darwin University, ResearchResearch Institute of Environment Livelihoods
	Alpine shrub functional trait variation along an elevation gradient: What are the implications under climate change?	Iris	Hickman	La Trobe University
	The effects of vessel traffic on pelagic fauna in marine protected areas	Lincoln	Hood	University of Western Australia
#	The effect of age on the physiology and behaviour of the slime mould, <i>Physarum polycephalum</i>	Arisa	Hosokawa	University of Sydney
#	Assessing the usefulness of expert knowledge and empirical data in managing bushfire for biodiversity	Jenny Shih-Wen	Huang	The University of Melbourne
#	Increased temperature range reduces herbivory by an urban leaf beetle	Daniel	Jin	The University of Sydney
#	Recovery response of Koala habitat after fire	Derek	Johnson	University of the Sunshine Coast
#	Mammal response to increased wildfire frequency and severity in montane forests of Victoria	Jeremy	Johnson	University of Melbourne
#	Impacts of prescribed burning to the diversity of fungi and plants in a heathy woodland	Mitchell	Johnston	Deakin University
#	Drivers of propagule bank and vegetation community composition in urban forest fragments of south-east Queensland	Jaiden	Johnston-Bates	Griffith University
#	Finches and Fire: will changed burning regimes renovate habitat for the Southern Black-throated Finch?	Chris	Kahler	Ecological Interpretation

	Influence of Urban Fabric on Microclimate in Sydney	Thilini	Kaluarachchi	Western Sydney University
#	Empirical dynamic modelling of bat-mosquito relationships at a California preserve	James	Kelleher	University Of Melbourne
	Effects of native soil microbial inoculation on plants and soils from a threatened Brigalow community	Kit	King	The University Of New South Wales
	Koala refugia on the edge of hydration	Ivan	Kotzur	Hawkesbury Institute For Environment
	Host genomic variation and beak and feather disease virus infection in crimson rosellas ( <i>Platycercus elegans</i> )	Candice	Lachenicht	Deakin University
	Untangling liana responses to elevated CO <sub>2</sub>	Bree	Laugier	
#	Counting wiliji on country: Indigenous led monitoring, camera traps and unmarked models	Tyrone	Lavery	The Australian National University
	Engineering soil microbiome to increase plant productivity using a root exudate	Hongwei	Liu	Western Sydney University
	Evidence for the plant recruitment of beneficial microbes to suppress soil-borne pathogens	Hongwei	Liu	Western Sydney University
#	Using Conservation Detection Dogs in the battle against invasive aquatic weeds	Tracy	Lyten	Skylos Ecology Pty Ltd
	Warming with temperature oscillation changing the thermal responses of pea aphids and their parasitoids	Mukta	Mala	
#	Martino Malerba - Effects of farm dams on frog biodiversity and carbon cycles	Martino	Malerba	Deakin University
#	De-colonising science through co-teaching consilience	Leanda	Mason	Curtin University
	THE ROLE OF HOST-ASSOCIATED MICROBIOMES IN PHOTOSYNTHETIC EFFICIENCY WITHIN THE HABITAT FORMING MACROALGAE, <i>HORMOSIRA BANKSII</i>	Alexander	Mcgrath	University Of Sydney
	Ecological knowledge essential to management of a threatened plant community with an uncertain future	Kristin	Monie	Federation University Australia
	Post-fire response of Queensland's subtropical rainforests following the catastrophic 2018-20 wildfires	Matthew	Mooney	University of the Sunshine Coast
#	Street trees relative to native trees: taxonomically rich, but functionally similar	Sophie	Moore	Macquarie University
	Disappearing alpine grasslands: a multi-decadal study of vegetation dynamics on the Bogong High Plains	Suzanne	Moss	La Trobe University
#	Going with the flow: Using aerial drones to analyse fine-scale distributions and behaviours of rays in intertidal sandflats	Jaelen	Myers	James Cook University
	Community structure of gorgonians is influenced by depth gradient and current regime in coral reefs.	Marta	Panero	James Cook University
#	Population genomics informs urban ecology of a native Australian mosquito involved in disease transmission	Veronique	Paris	The University of Melbourne
#	Pleistocene fossil sites and their role in conservation public outreach: A World Heritage Area perspective.	Evan	Parker	The University of Adelaide
	Ant Baiting by Autonomous Drone	Magen	Pettit	CSIRO
	Bringing the yams back: collaboration with a First Nations Women's Knowledge Group in Central Victoria	Nina	Roberts	La Trobe University
	Hollows, termites and long-term fire regimes in northern Australian tropical savannas	Ellen	Rochelmeyer	Charles Darwin University
	Evolutionary drivers of Austral soil invertebrate distribution	Giles	Ross	Hawkesbury Institute For The Environment

	Understanding ecological extremes: mechanism of resilience and recovery	Joelan	Sawyer	Anne Clements and Associates Environmental and Botanical Consultants
#	Different kinds of herbivores and plant invasion: their impact on plant diversity in grassy woodlands	Corinne	Schlienzauer	Queensland University of Technology
	Investigation into potential drivers on the historical demography of endemic Fijian Homalictus (Apoidea: Halictidae)	Patricia	Slattery	Flinders University
#	Mammal community composition in a fire-prone landscape	Amy	Smith	
#	Impacts of myrtle rust (Austropuccinia psidii) on seedling diversity in a wet sclerophyll forest	Kristy	Stevenson	University of Queensland
	Ground Control: soil microbe-plant associations improve resistance and resilience to climate change	Jana	Stewart	UNSW
	Assessing the dietary impacts of the translocation of hare-wallabies to a novel island ecosystem.	Rachyl-Anne	Stover	Edith Cowan University
#	Practical considerations for efficient acoustic monitoring	Daniella	Teixeira	Queensland University of Technology
	Evaluating camera trap-based abundance estimators for unmarked populations	Meryl	Theng	University of Adelaide
	Bringing diversity to monocultures: are retained habitat features valuable for birds within plantations?	Eliza	Thompson	The University of Melbourne
#	Using species distribution modelling to develop understanding of biodiversity distribution in Antarctica for conservation management	Isabella	Todd	University of Wollongong
#	Recovering a controversial endangered species: the Spectacled Flying-fox Recovery Team- a renewal of hope	Maree	Treadwell	Bats and Trees Society of Cairns
	Daily activity of the northern quoll, feral cat and dingo in a tropical savanna	Gavin	Trewella	Charles Darwin University
	A Global Threat Index for Marine Megafauna (TIMM)	Michelle	VanCompernelle	University of Western Australia
	Dry and warm: a novel open-top chamber for climate change research	Jeronimo	Vazquez-Ramirez	Deakin University
	Alpine shrubs as ecosystem engineers: Facilitating the growth of nearby plants?	Susanna	Venn	Deakin University
#	Systematic review of indicators used in terrestrial Red List of Ecosystem Assessments	Clare	Vernon	Deakin University
	Population structure of Petrogale penicillata following Australia's Black Summer	Melissa	von Moger	Australian National University
#	Bouncing back from habitat modification - can threatened frogs recover?	Samantha	Wallace	The University of Newcastle
#	PCLake+: Modelling stable states, critical nutrient loading, and weed harvesting in a man-made Australian Lake	Jake	Wallace	Federation University
	Termites in restoration - the forgotten insect?	Baptiste	Wijas	University of New South Wales
	Estimating the energy expenditure of lizards using tri-axial accelerometers: a validation with doubly labelled water	Kristoffer	Wild	University of Canberra
	Differential dispersal and fitness-related consequences of sex-reversal in the central bearded dragon	Kristoffer	Wild	University of Canberra
	Understanding bushfire impacts on plant-pollinator interactions at the interface between agricultural and native landscapes	Andrew	Williamson	Western Sydney University
	Right Plant Right Way	Nathan	Wong	Djandak
	Commonalities and differences between ecosystem risk assessment and ecosystem accounting	Hui	Xiao	Deakin University
#	A narrow escape: Enemy release explains success in only some invasive plants.	Zoe	Xirocostas	UNSW Sydney
#	Co-developing conservation knowledge and plans on the Tiwi Islands, NT	Alys	Young	Deakin University
	Factors that affect the occurrence of the Enemy Release Hypothesis	Karen	Zeng	UNSW Sydney