Biodiversity Across the Borders

'Biodiversity in the Balance: Conservation in a Changing World'

Conference Abstracts

Federation University Australia

5th June 2026

ISBN: 9781922874443 **(Print);** 9781922874450 **(e-Version)**

'*Biodiversity across the Borders*' Conference

Conference Theme: "Biodiversity in the Balance: Conservation in a Changing World"

ABSTRACTS

Federation University Australia
Mt Helen, Ballarat,
Victoria

Edited by: S. K. Florentine

5th June 2026

Organisers


Federation
University


LA TROBE
UNIVERSITY
RESEARCH CENTRE FOR
FUTURE LANDSCAPES


RMIT
UNIVERSITY


DEAKIN
UNIVERSITY AUSTRALIA


POSTERA CRESCAM LAUDE
THE UNIVERSITY OF
MELBOURNE


Charles Sturt
University

Sponsors


Federation
University


RMIT
UNIVERSITY


LA TROBE
UNIVERSITY
RESEARCH CENTRE FOR
FUTURE LANDSCAPES


Glenelg Hopkins
CMA


Australian Government


biosis
APEM Group


CORANGAMITE CMA


Nature
Advisory


sustainable
environment
ballarat
CITY OF
BALLARAT


faunatech
A WILDLIFE ACOUSTICS COMPANY


Federation
University
CeRDI


Aus Eco
Solutions
restoring native ecosystems


Beacon
Ecological


Wimmera CMA

Federation University / Future Regions Research Centre

PROGRAM

11th Biodiversity Across the Borders Conference, 2026

Biodiversity in the balance: Conservation in a changing world.

This one-day conference is designed to disseminate new ecological research findings to natural resource managers, researchers, and individuals interested in advancing environmental stewardship.

Friday, 5th June 2026
Federation University Australia, Mt. Helen Campus, Ballarat.

Federation University / Future Regions Research Centre

SESSION ONE: INTRODUCTORY AND KEYNOTE ADDRESSES	
VENUE: Caro Convention Centre (Building M)	
8:00	**REGISTRATION** (FOYER)
8:40	**WELCOME** Acknowledgement of Country, welcome Vice-Chancellor, and introduce the Keynote speaker. **PROF. IVEN MAREELS** Pro Vice-Chancellor Research and Innovation, Federation University Australia
8:50	**OPENING 11th Biodiversity conference** **PROF. DUNCAN BENTLEY, Vice-Chancellor** – Federation University Australia
9:00	**KEYNOTE ADDRESS** **PROF. MARTINE MARON** – University of Queensland Trends in conservation: innovation or diversion?

PLENARY SESSION - Chair: EM. PROF. MICHAEL CLARKE	
VENUE: Caro Convention Centre Main Hall Theatre (Building M)	
9:35	**PROF. PHILIP ZYLSTRA** – Curtin University Ecological controls on fire in a heated landscape
9:55	**PROF. LAUREN RICKARDS** – La Trobe University Conservation in a climate change world: vital importance, challenges, opportunities.
10:15	**PROF. DAVID WATSON** - Charles Sturt University Using sound to monitor biodiversity at scale.
SPECIAL PRESENTATION	
10:35	**EM. PROF. MARTIN WESTBROOKE**

10:40 - 11:25	**MORNING TEA & POSTER SESSION** (Caro Main Hall, Studio Theatre)

Keynote Speaker

Professor Martine Maron
The University of Queensland
Trends in conservation: innovation or diversion?

Plenary Speakers

Professor Lauren Rickards
Latrobe University
Conservation in a climate change world: vital importance, challenges, opportunities

Professor Philip Zylstra
Curtin University
Ecological controls on fire in a heated landscape

Professor David M. Watson
Charles Sturt University
Using sound to monitor biodiversity at scale

11th Biodiversity Across the Borders Conference, 2026

Biodiversity in the balance: Conservation in a changing world.

SESSION TWO		
	VENUE: Caro Main Hall Theatre	**VENUE:** Geoffrey Blainey Auditorium (Building C)
	Natural Capital in farming and rural environments **CHAIR: MR. CHRIS PITFIELD**	**Urban, grassland and plant ecology** **CHAIR: DR DEBBIE REYNOLDS**
11:25	**DR. ALEX MAISEY** Why farm-scale natural capital matters: building natural capital accounts for agricultural landscapes.	**DR. JACINTA HUMPHREY** Designing for nature doesn't cost the Earth.
11:40	**DR. GRACE SUTTON** Harnessing remote sensing and machine learning to improve estimation of natural capital on farms.	**DR. KATHERINE HORSFALL** Urban restoration of grassy ecosystems – fulfilling the requirement to connect and restore fragmented remnants to conserve threatened species.
11:55	**ASSOC. PROF. JIM RADFORD** How farmers are boosting their profits and production with nature's help.	**DR. BEN ZEEMAN** Threatened plant recovery on the Victorian Volcanic Plain.
12:10	**DRS. RICHARD ARCHER & FRANCISCO ASCUI** Democratising data for natural capital accounting and reporting.	**DR. MARK DOBROWOLSKI** Rehabilitation of malleefowl habitat post mineral sands mining in Victoria's north-west.
12:25	**MS. ANNETTE CAVANAGH** Plants on farms: species richness across an agricultural intensification gradient.	**MS. KRISTIN MONIE** Ecological data to guide conservation of the endangered ecological community *Tecticornia lylei*.
12:40	**MR. TIM D'OMBRAIN** The FMU Model - A new vegetation community map for Victoria to guide ecological management and restoration.	**MR. LUKE FLORENCE** Uncovering environmental niches in dual-mycorrhizal and non-mycorrhizal forest trees.
12:55 – 1:50	**LUNCH** Albert Coates Complex Poster session (Caro Main Hall, Studio Theatre)	
SESSION THREE		
	VENUE: Caro Main Hall Theatre	**VENUE:** Geoffrey Blainey Auditorium (Building C)
	Fire and Biodiversity **CHAIR: DR. KATE CALLISTER**	**Wildlife Conservation and Monitoring** **CHAIR: DR. KUSHAN TENNAKOON**
1:55	**ASSOC. PROF. LUKE KELLY** Fire mosaics for people and nature: a multidimensional approach.	**DR. DOUG ROBINSON** A 30-year statewide re-assessment of Grey-crowned Babbler populations across Victoria and implications for their future conservation.
2:10	**PROF. TRENT PENMAN** Future fires need current action not inaction.	**MR. JOSHUA FASTUCA** The benefits of conservation fencing for herpetofauna.
2:25	**DR. AMY SMITH** Simulating fire management for long-term ecosystem resilience.	**DR. ANTHONY RENDALL** Optimising reintroduction success of Bush Stone-curlew (*Burhinus grallarius*).
2:40	**ASSOC. PROF. DAVID CHEAL** Why the received wisdom of a post-fire increase in plant species' richness is wrong.	**DR. CHRISTA BECKMANN** Roadkill reimagined: A systematic review of innovative use and value of animals killed by vehicular traffic.
2:55	**MR. BEN WILSON** Incorporating the timelapse function to camera traps can improve monitoring of Australia's threatened social skinks.	**DR. RICHARD YANG** Signal vs Noise - The Hidden Contamination Problem in eDNA-Based Biodiversity Monitoring.

Federation University / Future Regions Research Centre

3:10 – 3:45	**AFTERNOON TEA** Poster session (Caro Main Hall, Studio Theatre)
	SESSION FOUR: Q&A PANEL DISCUSSION **Chair: PROF. DAVID WATSON & PROF. MARTINE MARON**
	VENUE: Caro Convention Centre - Main Hall Theatre (Building M)
3:45 – 4:45	PANEL MEMBERS: **DR. SOPHIE BICKFORD** (Executive Director, Biolinks Alliance); **DR. AYESHA BURDETT**, (Senior Wetland Ecologist, Nature Glenelg Trust); **DR. JAMES FITZSIMONS** (Senior Advisor, The Nature Conservancy); **DR. JENNY EMENY (**Business Development Manager, Glenelg Hopkins CMA)
	CLOSE
	VENUE: Caro Convention Centre - Main Hall Theatre (Building M)
4:45 – 4:55	**CLOSING ADDRESS: DR. GRANT PALMER** (Federation University Australia)

Proudly sponsored by

Federation University · RMIT University · La Trobe University Research Centre for Future Landscapes · biosis APEM Group · Australian Government · Corangamite CMA · Glenelg Hopkins CMA · Nature Advisory · sustainable environment ballarat · City of Ballarat · faunatech A Wildlife Acoustics Company · Federation University / CeRDI · Aus Eco Solutions restoring native ecosystems · Beacon Ecological · Wimmera CMA

11th Biodiversity Across the Borders Conference
Table of contents

Poster Abstracts

KEYNOTE ADDRESS

Trends in conservation: Innovation or diversion?

MARTINE MARON

The University of Queensland

***Email**: m.maron@uq.edu.au*

Abstract

The major conservation challenges have changed little over the past few decades: high rates of habitat destruction and degradation continue, even in Australia, alongside accelerating climate change and the persistent struggle against invasive species. Periodically, however, new ideas and innovations emerge, promising to break this impasse. Some of these ideas are compelling enough to become dominant trends. For a time, much conservation research and practice is framed through the lens of the latest concept; *Nature Positive* is a current example of a new conservation concept gone viral. But do such trends help or hinder meaningful progress? And how genuinely new and innovative are these ideas? I argue that while some innovations—particularly technical tools that improve the efficiency of conservation research and practice—can be genuinely valuable, others are actively harmful. Drawing on the rise, rejection, and subsequent repackaging of the mitigation hierarchy and biodiversity offsets, I illustrate a recurring cycle in which old ideas are relabelled, perpetuating inaction behind a façade of activity and rhetoric. I conclude by considering how we as a conservation community can encourage productive innovation while guarding against trends that distract from, or undermine, real conservation progress.

Notes:_____
_____
_____
_____
_____
_____
_____
_____
_____

PLENARY TALK

Ecological controls on fire in a heated landscape

PHILIP ZYLSTRA[1,2,]

[1]*Australian National University*
[2]*Curtin University*

***Email**: philip.zylstra@anu.edu.au*

Abstract

Global warming is increasing wildfire frequency in many forest communities through factors such as changed rainfall patterns and increasing lightning ignition frequency, with stark implications for biodiversity conservation. The primary response to increased fire risk is to further increase fire frequency through prescribed burning, but this accelerates biodiversity loss. Ecological Control Theory offers a solution to this dilemma by explaining and quantifying the controls on flammability that are inherent to forest ecology. Research in this area has followed two courses. Firstly, empirical analyses have identified the presence of 'Disturbance Stimulated Flammability' in mapped fire records, where disturbances such as logging, thinning and burning stimulate a pulse of increased wildfire likelihood and/or fire severity that lasts a period of decades. Secondly, state-of-the-art biophysical mechanistic modelling coupled with detailed forest ecology has been used to understand and quantify the mechanisms that drive this pulse of flammability. Ecological controls operate by converting biomass from acting as fuel that can accelerate fire spread, into acting as 'overstorey shelter' that can calm fire spread. In this way, post-disturbance forest recovery is marked by an increase in biomass that initially increases flammability, but then reverses to produce a maximum state of biomass with minimal flammability. Fire mitigation that accounts for these natural processes is termed 'ecological cooperation' and consists of two components. Reconciliation is the process of removing actions and management that disrupts ecological controls, allowing forests to restore the capacity to inhibit fire spread as they have done throughout their evolution. Reinforcement is the assignment of resources and technology to compensate for vulnerabilities in ecological controls caused by anthropogenic influences such as climate change. Projections based on empirical trends and their relationships to climatic drivers show that detrimental changes to fire regimes can be reversed in some forests, even under worst case climate change scenarios.

Notes:_____
_____
_____
_____
_____
_____
_____
_____
_____

PLENARY TALK

Centring the natural environment in climate change adaptation

LAUREN RICKARDS

La Trobe University

Email: l.rickards@latrobe.edu.au

Abstract

Climate change is often pegged as a 'sustainability' issue because of the role of greenhouse gas emissions, but it is a sustainability issue in far more profound and systemic ways. In this talk, I explore the multifaceted relationships between adaptation and environmental sustainability, and biodiversity more specifically. Whether it is the contribution of local environments to the climate change risks we face, the many indirect climate change threats that organisms and broader environments face thanks to their reliance on vulnerable human systems, or the environmental implications of emerging (mal)adaptation responses, the relationship between climate change adaptation and sustainability calls for deep analysis. To help us tease out these relationships, I draw on a range of recent work that colleagues and I have been doing on climate change adaptation. In particular, I outline my work with the Office of the Commissioner for Environmental Sustainability to start embedding climate change adaptation into Victoria's State of Environment reporting and reflect on the challenges that climate change poses for the tricky work of knowing, monitoring, protecting and enhancing biodiversity and natural environments. In closing, I explore the opportunity climate change adaptation presents to centre biodiversity in our discussions and underline the existential importance of healthy natural environments to human survival.

Notes:_____
_____
_____
_____
_____
_____
_____
_____
_____

PLENARY TALK

Using sound to monitor biodiversity at scale

DAVID WATSON

Charles Sturt University

***Email**: dwatson@csu.edu.au*

Abstract

Species occurrence data represents a foundational element of both ecological inquiry and conservation management, with reliability and extent constrained by sampling effort. Sampling effort is determined by various logistical factors, but invariably reflects cost—larger budgets enabling greater investment in higher resolution data. Machine-based monitoring breaks these rules, offering the promise of reliable detection of species at unprecedented scales within existing budgets. Arrays of motion-triggered cameras are now routinely deployed, reliable hardware and increasingly sophisticated image analysis software allowing users to monitor multiple sites continuously for long periods with minimal site disturbance or animal welfare considerations. Although only directly applicable to soniferous taxa, acoustic monitoring has rapidly become a trusted platform for collecting species occurrence data, long duration recordings representing high resolution datasets that can be readily searched, compared and archived. Until recently, analyses of long duration recordings either used acoustic indices to explore temporal changes at the community scale, or single species recognisers to focus on individual taxa. Machine learning approaches originally devised for recognising human speech have been applied to animal vocalizations, enabling rapid development of reliable species recognition tools. Using convolutional neural networks trained with exemplar calls, regional call classifiers can now be built, identifying all soniferous species within a specified area. When coupled with autonomous passive acoustic recorders, ecologists can now continuously monitor entire ecosystems, readily answering a range of pure and applied questions previously well beyond reach. Drawing on case studies from the Australian Acoustic Observatory, the Bush Bird Classifier and other ongoing collaborations, I explore what is now possible with acoustic monitoring, identify those classes of questions best suited to the approach, and suggest key priorities for further work.

Notes:_____
_____
_____
_____
_____
_____
_____
_____
_____

Why farm-scale natural capital matters: Building natural capital accounts for agricultural landscapes

ALEX MAISEY[1, †,] FREDERICK RAINSFORD[1,2,] GRACE SUTTON[1,] DANIEL O'BRIEN[3,] RACHEL LAWRENCE[3], IMOGEN SEMMLER[3,] SUE OGILVY[3] AND JIM RADFORD[1]

[1]*La Trobe University*
[2]*University of Turin*
[3] *Integrated Futures Pty Ltd*

[†]*Email: a.maisey@latrobe.edu.au*

Abstract

The demand for information about property-scale natural capital is growing rapidly as producers and supply chains respond to opportunities and pressures to report environmental performance information. Natural Capital Accounting offers promise but agreed methods for farm-scale accounts are currently lacking. Here, we propose a framework, methods and models to quantify on-farm natural capital and ecosystem services that support agricultural production. The accounts are outcomes-based, data-driven, transparent and repeatable. We demonstrate that our accounts are conceptually consistent with the UN System of Environmental-Economic Accounting Ecosystem Accounting, although they do differ in two main ways: (i) we combine information on Ecosystem Type and Ecosystem Condition into a single indicator of Ecosystem State; and (ii) we use ecological models to derive indicators of the ability of Ecosystem Assets to generate a range of ecosystem services. Our approach integrates farm operational and production data, remote sensed imagery and data, ecological modelling and state and transition models to generate accounts that contain verifiable information about the extent and condition of natural capital assets, indicators of the ability of these assets to generate a range of intermediate and final ecosystem services (e.g. habitat maintenance for biodiversity, forage for livestock, carbon sequestration, pollination, soil regulation, shade and shelter) and environmental performance at the farm scale. The accounts are underpinned by ecological models, built from empirical (field-tested) data, of the relationship between natural capital and measures of biodiversity and ecosystem services. We have demonstrated the practicality of our approach by producing farm-scale accounts for 50 farms in south-eastern Australia. Our accounts provide farmers with detailed information that could be used for sustainability reporting and the promotion of sustainable farm practices. Simultaneously, our accounts provide the agricultural supply chain with transparent information on the environmental performance of farming entities, helping to overcome false or exaggerated claims of sustainability by companies and retailers.

Notes:_____
_____
_____
_____
_____
_____
_____
_____

Mapping farm-scale ecological condition using remote sensing for natural capital accounting

GRACE SUTTON[1, †,] AND JIM RADFORD[1]

[1]*La Trobe University*

[†]***Email**: g.sutton@latrobe.edu.au*

Abstract

Accurate assessment of natural capital assets at the farm scale is essential for supporting sustainable agricultural management, informing emerging natural capital markets, and guiding evidence-based decision-making. Despite the growing demand for natural capital accounting, scalable and consistent approaches for assessing natural capital across agricultural landscapes remain limited. Ecological condition, defined as the degree of modification from a natural or reference state, is a critical component of natural capital assessment. Current methods for assessing ecological condition rely on labour-intensive and costly field-based surveys, limiting their scalability. This project addresses these constraints by developing a remote sensing–based model to map ecological condition at the farm scale. The model integrates ground-based ecological condition assessments with satellite-derived environmental indices to predict ecological condition across agricultural landscapes. Field observations representing a range of ecological states were used to train machine learning models to classify condition levels associated with varying habitat quality and vegetation structure. Model performance demonstrated strong predictive capability, with performance metrics exceeding 90% across condition classes. This approach may enable consistent, repeatable assessments over large spatial extents while significantly reducing the time and cost associated with traditional field-only methods. Project outputs are designed to support a range of end users, including farm advisers, landholders, and participants in natural capital markets. Outputs were tested with technical specialists and farmers to ensure they met the resolution and format requirements for practical application. Overall, this work demonstrates the potential of integrating ecological field data with remote sensing and machine learning to deliver practical, scalable and cost-effective natural capital assessment within working agricultural landscapes.

Notes:_____
_____
_____
_____
_____
_____
_____
_____

How farmers are boosting their profits and production with nature's help

JIM RADFORD[1,†,] GRACE SUTTON[1], DANNY O'BRIEN[2], LIZ HEAGNEY[3] AND SUE OGILVY[2]

[1] *La Trobe University*
[2] *Integrated Futures*
[3] *Nature Capital*

[†]***Email***: *j.radford@latrobe.edu.au*

Abstract

There is growing global interest in accelerating investment in on-farm natural capital - the natural resources including soil, vegetation, animals and water resources that farmers use to produce crops and livestock - to redress the degradation of ecosystems in agricultural landscapes and combat the threat that climate change poses to agricultural production and biodiversity. Markets for carbon and nature are emerging but remain nascent with insufficient funding to address the scale of the problem. Meanwhile, if farmers continue to fear that investment in natural capital 'comes at a cost' to their financial performance, investment in on farm natural capital will stall and natural capital will continue to decline. *Farming for the Future* (FFTF) is an interdisciplinary agricultural research and change program that is pursuing an alternative pathway to accelerating investment in natural capital. The objective of FFTF is to reveal whether higher levels of natural capital may improve farm business performance. Previous studies have explored environment-production synergies at broad landscape scales, or alternatively, at the plot scale. However, evidence-based demonstrations of the benefits of natural capital for agricultural productivity *at farm scale* are more likely to be actionable and influential. Our research was designed to address this key knowledge and adoption gap: that is, what is the relationship between on-farm natural capital and farm financial performance? Is there really a trade-off between nature and farm business performance? Our headline finding was that farm business performance was, more often than not, positively associated with natural capital. Livestock farms with higher levels of natural capital returned up to 3% higher productivity efficiency. This translates to improved profitability of up to $60 per hectare, which when conservatively extrapolated, could generate an additional $2 billion of revenue per annum across the sheep-wheat belt. The additional biodiversity value of increasing natural capital was estimated at approximately $40 billion. Income was also more stable on farms with higher levels of natural capital suggesting those farms are more resilient to climate volatility. These results provide robust evidence of the benefits of increasing on farm natural capital as a business decision – to boost productivity, profitability and financial resilience.

Notes:_____
_____
_____
_____

Democratising data for natural capital accounting and reporting

FRANCISCO ASCUI[1,†,] AND RICHARD ARCHER[1]

[1]*Federation University Australia*

[†]***Email**: ff.ascui@federation.edu.au*

Abstract

Natural capital accounting and reporting – or the systematic compilation and disclosure of information on the extent and condition of natural assets and the flows of benefits from those assets – depends on the availability of suitable environmental data. Often, it is infeasible to collect on-site measurement data for each and every natural capital accounting and reporting exercise, particularly those at larger scales. Fortunately, there is a vast and ever-increasing amount of environmental data already in the public domain. Nevertheless, finding, accessing and understanding how to use suitable environmental data remains extremely challenging, even for domain experts, and particularly for users without specialist spatial data analytics skills. We combine the findings of several related research projects aimed at identifying and addressing these challenges. We argue that publishing public environmental data according to FAIR Principles (Findable, Accessible, Interoperable and Re-usable) is necessary, but not sufficient to achieve data democratisation. Additional environmental data infrastructure is required to remove further barriers that prevent many users from finding, accessing and using data effectively to make better informed decisions. We provide examples of such infrastructure in the form of curated data catalogues, data visualisation tools, and modular, scalable and re-usable data ingestion, processing and analytics pipelines. These can be helpful for any user, from researchers to natural resource managers and companies, empowering all to make better informed environmental management decisions, with lower transaction costs. However, while such 'public good' environmental data infrastructure can create value and save costs for individuals, organisations, society and the environment, the challenge is developing business models to ensure their long-term sustainability.

Notes:_____
_____
_____
_____
_____
_____
_____
_____

Plants on Farms: Species richness across an agricultural intensification gradient

ANNETTE CAVANAGH[1,†,] JOHN MORGAN[1,] FRED RAINSFORD[2], AND JIM RADFORD[1]

[1]*La Trobe University*
[2]*University of Turin, Italy*

[†]***Email:*** *a.cavanagh@latrobe.edu.au*

Abstract

Agriculture has had large negative impacts on biodiversity globally. This necessitates a shift towards biodiversity-friendly farm management for native species conservation. Effective management requires an understanding of how native and non-native plant species respond to agricultural intensification. Species richness and species-area relationships (SARs) of native and non-native plants were analysed across an agricultural intensification gradient on 48 farms in south-eastern Australia. Vegetation attributes were used to classify habitats on farms into 16 condition states that represented increasing intensification in three ecosystem types (woodlands, derived grasslands and native grasslands). Native species richness declined across the agricultural intensification gradient in all ecosystem types, while non-native species richness showed little change. Similarly, SAR parameters (slope: species accumulation rate; intercept: richness at 1 m^2) for native species decreased with increasing intensification and non-native SAR parameters remained relatively stable. These patterns were found to occur across all regions of south-eastern Australia. These findings show that farm habitats with low agricultural intensification support a disproportionately higher number of native species per area, suggesting that a reduction in their size (e.g. by converting them to a crop) will result in larger losses to native plant diversity. The consistent outcomes found across ecosystem types and locations allows for these management implications to be cast broadly across south-eastern Australia, further informing policy and practice to protect biodiversity on farms.

Notes:_____
_____
_____
_____
_____
_____
_____
_____
_____

The FMU Model : A new vegetation community map for Victoria to guide ecological management and restoration

TIM D'OMBRAIN

SciLink and Biodiversity Services

***Email**: tim.bioserv@gmail.com*

Abstract

Following a decade of research and development, the FMU Model is officially launched today. It is currently accessible online for the Corangamite CMA, City of Ballarat and the Rural City of Ararat. Plans are in place to rollout the model in stages across CMA and or LGA regions in Victoria. A new not-for-profit company SciLink Ltd has been established to handle this process. The impetus for the model was driven by the need for information to guide ecological management and restoration at a plan scale. EVCs are too generalised to guide restoration efforts and the mapping inaccurate at a paddock scale. This contention is supported by DEECA. Further it, is hoped priorities for the conservation of vegetation communities can be reset. Many of the vegetation communities (or Floristic Map Units) described in the model are not recognised in the broader EVC descriptors and thus have no protection or status. These are some of the most interesting plant communities in the state often containing many unique and less-common species. This, the 26th iteration of the model is based on environmental variables with geology and a new landform classification being the most critical. The entire flora record for Victoria is then used to match environmental units with similar floristics. These are the FMUs. As it is an evidence-based model, there are data gaps across the state where survey data are thin. A heat map showing the data gaps is available. There is great opportunity for involvement by individuals across Victoria to provide species observations and photographs. The iNat app is perfect for this. All data are acknowledged. There is also opportunity for ecologists and naturalists to review FMU classifications through a peer review process. The most recent reviewer is considered the current authority for that particular FMU in a similar way to species taxonomic research. In this way there can be shared ownership or credit and refinement is constant as more data becomes available. Simply clicking on the web-based map shows the FMU information for the point of interest and a FactSheet for each FMU can be quickly downloaded as a pdf. This has been deigned to assist LandCare and guide participants in planting the right species in the right niches. While there are many groups across the state who have benefitted from this information already, it has not been publicised until now and enquiries are welcome. An introductory document to the background and methods is available. The FMU Model incorporates a climate change module. It is hoped the availability of the FMU Model and related tools will have a significant and very positive impact on biodiversity conservation across Victoria.

Notes:_____
_____
_____
_____
_____

Designing for nature doesn't cost the earth

JACINTA HUMPHREY[1, †,] HOLLY KIRK[2] AND SARAH BEKESSY[1]

[1]*The University of Melbourne*
[2]*Curtin University*

[†]***Email**: jacinta.humphrey@unimelb.edu.au*

Abstract

A key barrier to the development of nature positive cities is the unknown cost of implementing novel urban design elements. Strict budgets and government approval processes make it challenging for developers to trial new approaches, meaning most developments rarely deviate from 'business-as-usual' (BAU). To address this gap, we sought to estimate the relative cost of a set of Biodiversity Sensitive Urban Design (BSUD) actions intended to enhance habitat and mitigate threats for native fauna, while also providing health and wellbeing benefits for people. We shortlisted 18 actions proposed for public greenspaces including alternative planting designs, habitat analogues and elevated watering points for wildlife. We employed expert elicitation to estimate the cost of implementing these actions in a greenfield community development in peri-urban Melbourne, Australia. We recruited six practitioners whose expertise spanned engineering, landscape architecture, urban planning and design, integrated water management, urban heat mitigation and public lighting. Participants were primed with background information and asked to independently assess the feasibility, opportunities and challenges of each action, and estimate the relative cost of implementing each action compared to a BAU approach. We then facilitated an online workshop where participants were encouraged to reach a consensus on the relative cost of each action. Our experts concluded that 15 of 18 actions (83%) were likely to cost the same, or only slightly more, than a BAU approach. Actions that focused on creating diverse habitat structure were deemed particularly valuable, as they were likely to result in biodiversity benefits and were estimated to cost the same as BAU. These results suggest that BSUD is both feasible and relatively affordable to incorporate into a community development. We conclude that cost need not be a barrier to innovation in the design of urban spaces that benefit people and nature.

Notes:_____
_____
_____
_____
_____
_____
_____
_____
_____

Urban restoration of grassy ecosystems – fulfilling the requirement to connect and restore fragmented remnants to conserve threatened species

KATHERINE HORSFALL[1,†] AND NICHOLAS WILLIAMS[1]

[1]*The University of Melbourne*

[†]***Email**: katherine.horsfall@unimelb.edu.au*

Abstract

The expansion of cities, as well as agriculture, has destroyed most of the original range of grassy ecosystems in south-east Australia, including natural temperate grassland and grassy eucalypt woodland. Remaining fragments of these ecosystems are under extraordinary pressure from weed invasion, the threat of ongoing urban expansion and spatial constraints on the movement of genes and pollinators. To conserve rare plants and animals in these ecosystems a dual approach is required; we must devise ways to connect isolated remnants in addition to managing threatening processes within these remnants. Recent research at the University of Melbourne has been focused on refining techniques to restore grassy ecosystems on nutrient enriched and weed invaded urban sites. Working with authorities that manage public land, such as rail authorities and municipal governments, we are demonstrating the potential to reinstate species from critically endangered grassy ecosystems to urban corridors. This has involved work to select low nutrient mineral substrates, including recycled construction wastes, and sow diverse species mixes designed to deliver functionally diverse, species rich plant communities. These methodologies can be adapted to suit projects that span the ecological restoration continuum, from highly designed urban green spaces to vegetation communities that mimic adjacent endangered native grasslands. If properly resourced and targeted, these techniques can enable the rapid expansion of functioning native grassy ecosystems and enhance efforts to conserve species from critically endangered plant communities.

Notes:_____
_____
_____
_____
_____
_____
_____
_____
_____

Threatened plant recovery on the Victorian Volcanic Plain

BEN ZEEMAN

Glenelg Hopkins Catchment Management Authority

***Email**: b.zeeman@ghcma.vic.gov.au*

Abstract

The Glenelg Hopkins region covers just over half of the Victorian Volcanic Plain (VVP). Prior to European colonisation this landscape was largely dominated by grassland and grassy woodland. These ecosystems now occur over less than 1% of their former extent, with remnant areas largely restricted to isolated patches on farms, roadsides and a small number of reserves. The Glenelg Hopkins Catchment Management Authority (CMA) works with private landholders to protect grassy ecosystems on farms. Previous programs focused on controlling threats and increasing plant diversity through disturbance management. In the most recent program, the CMA have added to this approach by experimenting with seed addition of threatened plants. Seed addition work was supported by the development of a threatened plant Seed Production Area (SPA) which is producing large amounts of seed from seventeen threatened plants that occur on the VVP. Seed produced in the SPA has been hand sown into monitoring plots in twelve remnant grasslands. Four months after sowing, a total of 12,570 seedlings were counted. Seedling germination varied between sites, from as little as 8 seedlings, to as many as 2,697. Six sites produced over 1000 seedlings, with each of these sites having high plant diversity prior to seeding. Four sites had less than 250 seedlings recorded. Although each of these were dominated by native Kangaroo Grass (*Themeda triandra*), they lacked the initial high plant diversity of more successful sites. This result indicates that direct seeding into remnant grassland is more successful in more diverse grassland. The reason for this is currently unclear, but further investigation into soil variation and microbial interactions are planned. The SPA is proving to be a critical resource for establishing new threatened plant populations on the VVP. Next steps are to examine how this resource can be used to recover remnant plant populations on a trajectory towards extinction.

Notes:_____
_____
_____
_____
_____
_____
_____
_____

Restoring Mallee fowl Habitat in NW Victoria post mineral sands mining

MARK DOBROWOLSKI

Iluka Resources Limited

Email: *Mark.Dobrowolski@iluka.com*

Abstract

Iluka Resources has implemented native vegetation rehabilitation across two former mineral sands mines in the Victorian Mallee (north-west Victoria). This presentation will highlight outcomes from post-mining restoration of mallee vegetation at the F1 Block at Iluka's WRP mine (in collaboration with Greening Australia), and also at two adjacent reserves, McBain's and Kulwin Bushland Reserves. We aimed to re-establish semi-arid mallee vegetation communities with structure and composition consistent with the surrounding landscape. Techniques included direct seeding and planting of local provenance native species of grasses, shrubs and mallee trees, with management interventions (including weed control, erosion prevention and grazing management) to ensure landform stability and landscape integration. Multi-year monitoring (including repeat photography and vegetation surveys) has documented steady vegetation recovery. Vegetation cover and flora diversity across the three sites have increased over time, with species richness and plant density generally tracking towards regulatory benchmarks within several years of rehabilitation. Key structural elements of mallee vegetation, including spinifex hummocks, woody shrubs and developing mallee overstorey, are re-establishing and trending towards reference conditions. Approximately a decade post-mining, the rehabilitated areas are developing as mallee woodlands and shrublands that are expected to continue maturing with ongoing natural processes. Lessons from these sites, including the value of diverse seed mixes, partnerships in delivery, and adaptive management informed by monitoring, will be discussed in the context of biodiversity conservation and mine rehabilitation practice in semi-arid landscapes.

Notes:_____
_____
_____
_____
_____
_____
_____
_____
_____

Ecological data to guide conservation of the endangered ecological community *Tecticornia lylei* low open-shrubland

KRISTIN MONIE[1,†,] SHANE TURNER[2], GRANT PALMER[1], AND SINGARAYER FLORENTINE[1,3]

[1]*Federation University Australia*
[2]*Curtin University*
[3]*RMIT University*

[†]***Email*: k.monie@federation.edu.au**

Abstract

Effective conservation of rare and threatened species depends on understanding the ecological processes relating to their distribution and persistence. In extreme arid environments, climate change is expected to push conditions beyond the physiological thresholds of many species, and those with narrow habitat niches may be less resilient to these impacts. However, most remain poorly studied, lacking the foundational data needed to guide long-term conservation. This study aimed to address that gap for *Tecticornia lylei* low open-shrubland, an endangered ecological community in semi-arid New South Wales. We assessed all 14 known NSW sites to characterise population structure, habitat niche, floristic composition, seed germination responses, seed longevity, grazing impacts and population genetic structure. *Tecticornia lylei* low open-shrubland occupied an estimated 31.9 ha within the study area, with highly variable population sizes and plant densities. The community was restricted to nutrient-poor, predominantly sandy soils of acid saline lakes or playas, with elevated iron at sites influenced by ferruginous groundwater discharge, and surface salinities consistently lower than adjacent samphire communities. Species richness varied across sites (14–29 species), with total community richness increasing from six species following extended drought to 51 following higher-rainfall events. Ten characteristic species were identified, and the soil seedbank was sparse and species-poor. Germination was optimal at lower temperatures under reduced salinity and moisture stress; however, seeds tolerated extreme conditions and germinated rapidly upon freshwater availability. Seeds retained high viability following 18 months of field burial, and were long-lived under experimental storage. Established plants and seedlings were impacted by grazing but recovered rapidly and produced seeds in higher-rainfall years when feral goat and livestock grazing was excluded or maintained at very low levels of total grazing pressure. Genetic diversity was significantly higher in South Australian and one Victorian population cluster compared to NSW populations, where two clusters (three sites) showed low diversity and elevated inbreeding. Our findings provide a comprehensive assessment of *Tecticornia lylei* low open-shrubland as a foundation for targeted management. Habitat and recruitment data could improve surveys for additional occurrences across south-eastern Australia, and support restoration of populations degraded by grazing or mineral sands mining. Genetically distinct population clusters with low diversity and elevated inbreeding highlight priority intervention sites, while higher-diversity populations are potential reservoirs for assisted gene flow. Grazing management is a critical yet effective tool to assist recovery of a community where large-scale recruitment depends on higher-rainfall events.

Notes:_____
_____

Uncovering environmental niches in dual-mycorrhizal and non-mycorrhizal forest trees

LUKE FLORENCE[1,†,] JOHN MORGAN[1,] PETER VESK[2,] JENNIFER WOOD[1,] AND CAMILLE TRUONG[2,3]

[1]*La Trobe University*
[2]*The University of Melbourne*
[3]*Royal Botanic Gardens Victoria*

[†]***Email:*** *L.Florence@LaTrobe.edu.au*

Abstract

Mycorrhizal associations shape forest ecosystems, yet research on environmental niche patterns has focused largely on arbuscular mycorrhizal (AM) and ectomycorrhizal (EcM) trees, while dual-mycorrhizal and non-mycorrhizal (NM) trees remain underexplored. Australia's remarkable range of mycorrhizal strategies is well-suited for examining mycorrhizal environmental niches from a global perspective, as the continent hosts about 60% of dual-mycorrhizal, 38% of NM, 25% of EcM, but only 3% of AM tree species worldwide. We quantified environmental niches for 2,334 Australian native forest tree species spanning AM, EcM, dual-mycorrhizal, and NM strategies. Dual-mycorrhizal trees had the broadest environmental niches. While overlapping strongly with EcM trees in environmental space, dual-mycorrhizal geographic distributions extended into mid-latitudes, bridging AM-dominated tropical and EcM-dominated temperate forests. Our results identify Australia as a global epicentre of mycorrhizal tree diversity and show that dual-mycorrhizal trees combine EcM-like environmental preferences with niche-breadth flexibility to persist across transitional AM dominated and EcM dominated forest biomes.

Notes:_____
_____
_____
_____
_____
_____
_____
_____

Fire mosaics for people and nature: A multidimensional perspective

LUKE KELLY[1,†,] LEANNE GREENWOOD[1], JEREMY JOHNSON[2], STEVE LEONARD[3], CRAIG NITSCHKE[1] AND DALE NIMMO[2]

[1]*The University of Melbourne*
[2]*Charles Sturt University*
[3]*Department of Natural Resources and Environment Tasmania*

[†]***Email**: ltkelly@unimelb.edu.au*

Abstract

Fire mosaics are widely invoked in fire science, policy and practice, but the term often means different things to different people and groups. We present a new multidimensional framework for thinking about fire mosaics – as meaning, model and metaphor – and show how these dimensions can support more effective learning, clearer communication and better decision-making. The framework was co-developed through participatory workshops with fire experts from fifteen government agencies across southern Australia as part of the *Fire mosaics in landscape planning* project. Participants spanned a wide range of career stages, expertise and management responsibilities. We propose that fire mosaics can be understood through three complementary dimensions. *Meaning* is the broad definition of a fire mosaic that can be applied across diverse contexts and provides a foundation for shared language. *Model* refers to context-specific representation of a fire mosaic with an explicit domain, including clearly defined boundaries, elements, scales and processes. Making the domain explicit helps align representations of mosaics with particular decisions and reduces unproductive debates that arise when people are working at different scales or for different purposes. *Metaphor* refers to relational framings – including analogies and stories – that shape how fire mosaics are understood and communicated. Metaphors influence what people perceive and value, while also prompting new questions about how mosaics form and why they matter. Importantly, the term fire mosaic is itself a metaphor that highlights ideas about spatial patterns and variation within and among fires. Complementary metaphors explored in workshops included "Healthy Country", "Refuges" and "Pathways". Understanding fire mosaics through a meaning-model-metaphor framework recognises the importance of multiple knowledge systems, strengthens learning and creativity, and supports more constructive debate about desirable and undesirable mosaics – including which forms of spatial variation matter for people and nature.

Notes:_____
_____
_____
_____
_____
_____
_____
_____
_____

Future fires need current action not inaction

TRENT PENMAN

The University of Melbourne

***Email**: trent.penman@unimelb.edu.au*

Abstract

Patterns of landscape fire are clearly changing across the globe. The ability of management to alter outcomes have been the subject of much public debate. Arguments that have been presented are often based on point-based shifts in fire behaviour rather than consideration of landscape processes and consequences of fire. In this talk, I will examine the nature of changes in fire over the coming century and the ability of management to alter that risk. Future changes in fire vary across the climate fuel limitation gradient. Climate limited systems are more likely to experience greater shifts in fire extent. Management is predicted to be vital in reducing risk to people, property and the environment. Strategies can be developed that balance these seemingly competing outcomes. A do nothing or a suppression only approach results in a significant increase in the impact on life and property and key environmental values. These results suggest that in most regions we are likely to see significant changes to ecosystems as a function of fire. However, action taken now will enable us to manage ecosystems into the future by developing shared agreements around outcomes rather than approaches.

Notes:_____
_____
_____
_____
_____
_____
_____
_____
_____

Simulating fire management for long-term ecosystem resilience

AMY SMITH[1,†,] ERICA MARSHALL[1,] LAURENCE BERRY[2,] JENNY HUANG[2] AND TRENT PENMAN[1]

[1]*The University of Melbourne*

[2]*Department of Energy, Environment and Climate Action*

[†]*Email: amy.smith1@unimelb.edu.au*

Abstract

Wildfires play an important role in shaping flammable ecosystems around the world, however rapid changes to the fire regime threaten ecosystem function and resilience. Climatic changes are predicted to increase the severity and extent of wildfires, increasing the risk to social and ecological values. Globally, fire management generally focuses on the protection of life and property, while maintaining environmental values are often a secondary objective. As the result, the effectiveness of fire management for ecological values in the long-term are largely understudied. In this project, we used expert elicitation with land managers to design a set of fire management scenarios aimed at mitigating the effects of wildfire on ecological values. We used fire simulation modelling and future climate models in five Victorian landscapes to investigate the effects of these management scenarios over 75 years and compared the results. Fire simulation modelling was done in Fire Regime Operations and Simulations Tool (FROST), a fire regime simulator which combines weather, ignition and fuel models with fire behaviour models from PHOENIX RapidFire. Results were analysed in Fire Analysis Module for Ecological values (FAME), to evaluate the impact of fire management on three metrics for ecosystem resilience. The management scenarios changed the spatial and temporal distribution of wildfire in the landscape. They also shifted the distribution of post-fire age classes and tolerable fire intervals in native vegetation, as well as the availability of suitable habitat for animal species. Overall, no one scenario emerged as the best across all regions for both ecosystem resilience and risk reduction to life and property. This research gives Victorian wildfire management agencies improved information to strategically plan wildfire management for ecological values and long-term ecosystem resilience.

Notes:_____
_____
_____
_____
_____
_____
_____
_____
_____

Plant species richness increases after fires are an illusion

DAVID CHEAL

Federation University Australia

†***Email:*** *rorippa@bigpond.net.au*

Abstract

It's become part of the 'received wisdom' that plant species richness after fires (planned or wild) increases, with a number of species being recorded after fires that were not present before the fires or do not occur in nearby vegetation that has not been burnt. Indeed, this increase in species richness has often been used as a rationalization for applying planned fires to the landscape and thus used as a reassurance to the concerned public that planned fires are a 'good thing' and the land is being well managed for its biodiversity. This is an illusion, deriving from our quadrat-based survey methods and our continuing failure to sample the whole of the vegetation, notably its underground component (the soil seed store). When these latter aspects are incorporated, the post-fire species richness vaporizes and becomes restricted to a very small number of particularly vagile species, such as *Sonchus* spp.

Notes:_____
_____
_____
_____
_____
_____
_____
_____
_____

Incorporating the timelapse function to camera traps can improve monitoring of Australia's threatened social skinks

BEN WILSON[1, †] AND DALE NIMMO[1]

[1]*Charles Sturt University*

[†]***Email:*** *bewilson@csu.edu.au*

Abstract

Camera trapping is widely used in wildlife research and conservation, but has historically performed poorly for detecting and monitoring reptiles. Despite improvements in camera technology and survey design, camera trapping remains underused for this group. This limitation is especially important for Australia's social skinks, a distinctive radiation of lizards characterised by complex social organisation and strong site fidelity. Although they comprise only ~4% of Australian reptiles, social skinks account for ~10.5% of threatened herpetofauna, making improved monitoring a conservation priority. For many species, threats, population trajectories and basic life-history traits remain poorly understood. We tested whether adding timelapse image capture, a function available on most commercial camera traps, could improve detection and monitoring of social skinks compared with passive infrared (PIR) triggering alone. We deployed Reconyx® and Swift Enduro® camera traps at shelter sites of 13 social skink species from across Australia. Cameras were programmed to capture timelapse images at 30-min intervals, with PIR triggering set to high sensitivity, and were deployed for 3–6 months across spring and summer. Timelapse outperformed PIR across all species and metrics examined. It produced more independent detections, reached detection probability thresholds more rapidly, and generated more complete diel activity curves. For several small-bodied or nocturnal species, timelapse was the only reliable detection method, with PIR yielding negligible detections. Larger species were detected more reliably by PIR, but timelapse still produced higher detection probabilities across broader periods of activity. Our results show that timelapse provides a more reliable method for monitoring and studying social skinks than PIR alone, while combining PIR and timelapse provides stronger results than either method independently. Incorporating timelapse into camera-trap surveys offers a readily available way to improve detection of social skinks, particularly smaller species unlikely to reliably trigger PIR, and may help address a major constraint in their research, monitoring and conservation.

Notes:_____
_____
_____
_____
_____
_____
_____
_____
_____

Thirty years of Grey-crowned Babbler conservation: Case studies of extinction, decline and hope

DOUG ROBINSON[1, †,] CHRIS TZAROS[2] IAN DAVIDSON[3,] AND MICK MOYLAN[4]

[1]*Friends of the Grey-crowned Babbler*
[2]*Birds, Bush and Beyond*
[3]*Regeneration Solutions*
[4]*Regent Honeyeater Project*

[†]***Email**: petebog60@gmail.com*

Abstract

Grey-crowned Babblers are a charismatic, woodland bird which were once widespread and common through lowland woodlands and open forests across much of southeastern Australia. In the mid-1990s, in response to their listing as a threatened species in Victoria under the Flora and Fauna Guarantee Act, we did systematic surveys for the species across all known historical and recent localities in Victoria. We have recently repeated this statewide assessment to provide a snapshot of the species' population trends and causes of change over time. Our results broadly show that: there have been further contractions in range; many small populations have become extinct; even where populations have persisted, there have generally been local losses that are reducing overall population size and population connectivity. Our findings provide some support for the productivity hypothesis proposed by David Watson in 2011 to help explain the decline of woodland birds; namely, the disproportionate loss of productive, food-rich sites across their range. We found that family group size (an important metric of survival and breeding success) has stayed higher in more fertile areas. We also found that in some populations, groups had dropped out or declined in the less fertile areas but remained stable in the more fertile parts. Over the thirty years between our baseline and repeat assessments, land-use has changed significantly in most former babbler locations, with multiple trajectories of change in babbler status because of those changes. Negative trends have occurred in response to cropping, urbanisation and, unexpectedly, the transition from 'surrogate' woodlands to dense regrowth patches of eucalypts at a landscape scale. Positive trends have occurred in response to recent transitions of broadacre grazing properties to lifestyle farming, and where long-term conservation projects have continued providing new options for breeding habitat. We discuss these multiple pathways of population change and suggest ways to enhance the species' survival in future.

Notes:_____
_____
_____
_____
_____
_____
_____
_____
_____

The benefits of conservation fencing for herpetofauna

JOSH FASTUCA[1,†,] DYLAN WESTAWAY[2,] AND ANTHONY RENDALL[1]

[1]*Deakin University*
[2]*Australian Wildlife Conservancy*

[†]***Email:*** joshuafastuca@gmail.com or s222235885@deakin.edu.au

Abstract

Reptiles and amphibians (collectively 'herpetofauna') face similar threats to other vertebrates yet receive comparatively less attention. The impacts of habitat loss and modification from agricultural grazing and predation by invasive species are a major concern. Predator-exclusion fencing is commonly used for mammal conservation and may have benefits or drawbacks for herpetofauna, although this has been rarely studied. Herpetofauna diversity and abundance were investigated inside compared to outside mammal-focussed fenced reserves, and the impact of grazing sheep (*Ovis aries*) and invasive European rabbits (Oryctolagus cuniculus) on herpetofauna was determined. From August 2025 to January 2026, herpetofauna surveys were conducted at Mt Rothwell Biodiversity Interpretation Centre and Tiverton Sanctuary. Surveys were conducted across three treatment groups, including a control outside of the fence, compared to inside the fence with Rabbits and without Rabbits at Mt Rothwell. At Tiverton, treatments included outside the fence without Sheep, outside with Sheep and inside with Sheep. Herpetofauna assemblage inside the fence without Rabbits supported increased abundances in Tussock Skinks (*Pseudemoia pagenstecheri*) and Eastern Brown Snake (*Pseudonaja textilis*) compared to those with Rabbits, where Eastern Three-lined Skink (*Acritoscincus duperreyi*), Spotted Marsh Frog (*Limnodynastes tasmaniensis*) and Eastern Banjo Frogs (*L. dumerilii*) were abundant. Species richness, total herpetofauna abundance, Spotted Marsh Frogs, and Eastern Banjo Frogs increased inside the fences irrespective of rabbit presence. At Tiverton, herpetofauna were primarily detected where sheep grazing was absent. Our results suggest predator-exclusion fencing can have benefits for herpetofauna; however, the benefits may only be realised in the absence of abundant grazing species. For conservation fencing to have more ecosystem-wide benefits, management of invasive herbivores and abundant native herbivores is imperative.

Notes:_____
_____
_____
_____
_____
_____
_____
_____
_____

Optimising reintroduction success of Bush Stone-curlew (*Burhinus grallarius*)

Harry Wooldridge[1], Anthony R Rendall[1,†], Dale Crisp[2], Alicia Chadwick[3], Michael A Weston[1,4*]

[1]*Deakin University,*
[2]*Mt Rothwell Conservation and Research Reserve, Odonata Foundation,*
[3]*Barbaloot Reserve, Odonata Foundation,*
[1]*Deakin Centre for Marine Science*

[†]***Email:*** *a.rendall@deakin.edu.au*

Abstract

Reintroductions are widely used to restore threatened species but many fail because key threats at reintroduction sites are not understood, or adequately mitigated, before reintroduction occurs. In Australia, predator havens protect sensitive species from introduced predators, and for some species, can act as sources for seeding populations into surrounding landscapes. The Bush Stone-curlew (*Burhinus grallarius*) is a ground-nesting woodland bird which is locally extinct throughout much of south-eastern Australia. Strategic conservation actions have proposed reintroducing the species into fenced havens to support population recovery, however, threats inside and outside mammal-focussed fenced havens are prevalent. To assess likely threats prior to the species reintroduction, we deployed model clutches (n = 412) across four predator-barrier fenced reserves and adjacent unfenced areas in comparable habitat; model chicks (n = 120) were deployed at one site. Survival was low (18% of clutches and 23% of chicks survived 30-days) with corvids the dominant predator (taking 77.5% and 33.3% of identified model clutches and chicks, respectively). Survival differed between sites; survival inside havens was either higher or lower than outside depending on site, evidently because some havens contained high densities of native predators themselves the subject of havening. More visible nests experienced higher mortality. Site-specific faunal communities influencing the local effect of fencing, and nest visibility were the main factors influencing model egg and chick survival. Reintroduction could prioritise sites with lower predator densities that offer options for greater nest concealment. The universal occurrence of predators even inside havens suggests predator naivety may not be a major impediment to reintroduction from these populations.

Notes:_____
_____
_____
_____
_____
_____
_____

Roadkill reimagined: A review of innovative scientific use and value of animals killed by vehicular traffic

CHRISTA BECKMANN[1,2,3, †,] MICHAEL CROSSLAND[2,] KAILEIGH WRIGHT[4,] AND PETER BIRO[3]

[1]*RMIT University*

[2]*Western Sydney University*

[3]*Deakin University*

[4]*Trent University*

[†]***Email:*** *Christa.beckmann@rmit.edu.au*

Abstract

Millions of animals are killed by vehicles on roads yearly, left mostly to rot, but these unfortunate mortalities may have a benefit to society that is not widely appreciated: they represent a valuable source of animals for study that does not require and could even replace the use of live wildlife. Here, we provide the first literature review to uncover validated uses for roadkill, and in doing so encourage uptake of this valuable resource. We located 312 studies using roadkill whose aim included purposes other than enumerating or mitigating roadkill. We identified 26 broad-use and 91 specific-use categories of roadkill carcasses. These uses spanned from the mundane to the truly unique! The studies included at least 650 species; mammals dominated the studies, followed sequentially by reptiles, birds, amphibians and invertebrates. We discuss how we might better take advantage of this source of animals for study and highlight limitations and cautions in their use. Given the proven and diverse uses demonstrated in our review, we encourage the scientific community to now (re-)consider roadkill as an ethical alternative to live animal sampling.

Notes:_____
_____
_____
_____
_____
_____
_____
_____
_____

Signal vs Noise - The hidden contamination problem in eDNA-based biodiversity monitoring

RICHARD YANG FONG

Charles Sturt University

Email: *yfong@csu.edu.au*

Abstract

Environmental DNA (eDNA) is widely promoted for its exceptional sensitivity and specificity in detecting biodiversity across diverse environments; however, far less attention has been given to the pervasive issue of contamination that accompanies such sensitivity. This raises a fundamental question: how reliable are eDNA detections in practice? This presentation critically examines eDNA through a signal-versus-noise framework, highlighting contamination as a central challenge affecting data integrity and interpretation. Drawing on recent studies and ongoing research, contamination pathways are explored across the entire workflow, from field collection and sampling design to laboratory processing, sequencing, and bioinformatic analysis. A contamination-aware framework is presented, integrating preventive measures, a multi-tier negative control strategy, and bioinformatic decontamination approaches that leverage sequenced blanks as statistical baselines. Case-based examples demonstrate how inadequate control can lead to convincing yet spurious biodiversity signals, while robust, integrated workflows support more defensible inference. As eDNA transitions from research to applied and regulatory use, ensuring that detected signals reflect true biological presence rather than contamination is essential for maintaining scientific credibility and informing effective conservation outcomes.

Notes:_____
_____
_____
_____
_____
_____
_____
_____
_____

POSTER

The power of combining genomic studies and reproductive assays in the study of threatened species

SUSAN HOEBEE[1,†,] YENNIFER LONGO[1] AND MARK CLIFTON[1]

[1]*La Trobe University*

[†]***Email**: s.hoebee@latrobe.edu.au*

Abstract

Understanding the mechanisms underpinning reproductive failure is critical for the conservation of threatened plant species, yet traditional approaches often assess genetic diversity and reproductive function in isolation. Here, we highlight the power of integrating genomic analyses with reproductive assays to reveal hidden constraints on population persistence in multiple endangered Victorian plants. Many of these species show no obvious evidence of disrupted sexual expression in the field, such as floral abnormalities, leading to an assumption of functional reproductive systems. However, genomic data tell a more complex story. High-resolution genomic studies have revealed extensive clonality within populations of *Acacia sporadica* (Carboor population), *Banksia croajingolensis* and several *Callistemon* species from far East Gippsland, often resulting in a small number of genetically distinct individuals dominating entire stands. While clonal persistence may buffer short-term demographic decline, it substantially reduces effective population size and limits opportunities for successful outcrossing. When combined with reproductive assays, particularly pollen viability tests, a consistent pattern emerges: despite apparently normal flowering, pollen viability in these species is significantly reduced. This reduction compromises fertilisation success and exacerbates the reproductive limitations imposed by clonality. The integration of these approaches demonstrates that reproductive failure can occur without overt morphological or phenological signals and may therefore remain undetected by conventional monitoring. Importantly, the combined evidence suggests that genetic erosion and subtle physiological constraints on reproduction are already operating in populations that may otherwise appear stable. For conservation management, these findings underscore the risk of overestimating reproductive resilience based on field observations and census population size alone. By uniting genomics with functional reproductive assays, we gain a more complete and mechanistic understanding of extinction risk in threatened plant species. For the targeted species, this integrative framework provided a powerful mechanism for identifying cryptic vulnerability, prioritising intervention, and designing informed management strategies.

Notes:_____
_____
_____
_____
_____
_____
_____
_____
_____

Understanding the seed ecology of *Callitris gracilis* and co-occurring native species and their regeneration responses following direct seeding to inform restoration approaches in semi-arid environments

ANDREW COX [1, †,] SHANE TURNER[2], AND SINGARAYER FLORENTINE[1,3]

[1]*Federation University Australia*
[2]*Curtin University*
[3]*RMIT University*

Email: andycox@ballarat.vic.gov.au

Abstract

Callitris gracilis is a keystone conifer (Cupressaceae) of semi-arid woodlands in southeastern Australia, yet its populations have experienced long-term declines due to habitat loss, altered fire regimes and poor recruitment. This study investigates the seed ecology and early emergence and survival of *C. gracilis* and other direct seeded species to inform effective restoration strategies in degraded semi-arid environments. Laboratory experiments assessed the seed fill, viability and germination responses to cold dry stratification for three *Callitris* species – *C. gracilis*, *C. gracilis* spp. *murrayensis* and *C. glaucophylla*, across five provenance collections. Complimentary field trials evaluated seedling emergence, survival and community composition through line monitoring following direct seeding at Wyperfeld National Park, Pine Plains of *C. gracillis* and co-occurring native species. The field trial was conducted during the driest 12-month period on record for north-west Victoria, and the critical April–October period for early seedling establishment receiving only 56% of average rainfall. Laboratory and field experiments revealed variation in seed viability, germination and early seedling performance among all three *Callitris* spp. and across different provenances. Seed viability, varied, with *C. gracilis* (Pine Plains) showing moderate viability (34%) and the highest final germination (61.2%) under both stratified and non-stratified laboratory conditions. Stratification significantly increased germination for *C. gracilis* ssp. *murrayensis* (Dumosa) (from 11.0% to 16.0%, p = 0.006), and reduced the time to 10% germination by 6.6 days, but was ineffective or detrimental for other provenances, such as *C. gracilis* (Minimay). *Callitris gracilis* ssp. *murrayensis* (Narraport) seeds failed to germinate due to poor seed quality.

Field monitoring demonstrated that stratified *C. gracilis* seeds produced significantly taller seedlings at all time points and maintained a higher survival percentage (39% vs. 25%). Seedling mortality was closely associated with periods of high soil temperature (>45°C) and declining moisture, underscoring the vulnerability of *C. gracilis* to summer drought. Community composition shifted over time, with initial dominance by *C. gracilis* (Pine Plains) giving way to *Senna* and *Dodonaea* species as *C. gracilis* numbers declined, reflecting competitive and environmental constraints on conifer recruitment. These results highlight the need for rigorous seed source selection, pre-sowing viability assessment and optimisation of *in situ* sowing time to align with favourable environmental conditions.

Notes:_____
_____
_____
_____
_____
_____

Early establishment and performance of selected plant species in climate-ready vegetation plots in southeast Melbourne, Victoria

DEAN DOTZAUER[1,†,] KRISTIN MONIE [1,] SINGARAYER FLORENTINE[1,] SACHA JELLINEK[2]

NICHOLAS SCHULTZ[1], AND KUSHAN TENNAKOON[1]

[1]*Federation University Australia*
[2]*The University of Melbourne*

[†]***Email:*** *deanpdotzauer@students.federation.edu.au*

Abstract

Climate change poses an escalating threat to native vegetation in increasingly fragmented communities, placing growing pressure on revegetation practitioners to develop resilient planting strategies. Climate-adjusted provenance selection (sourcing seeds comparable to future climate analogues) has emerged as a promising approach to improve restoration resilience, yet early establishment performance across species with varying ecological niches and growth forms remains poorly understood. The objective was to evaluate how species sourced from future climate analogues perform under current site conditions, hypothesising that species from the warmer 2090 provenance would demonstrate superior survival and growth relative to local and cooler/wetter seed sources. We selected five native species for this experiment (*Acacia dealbata*, *Acacia melanoxylon*, *Bursaria spinosa*, *Eucalyptus ovata* and *Melaleuca ericifolia)* of varying life forms commonly used for native revegetation projects, sourced from four climate provenances (2023/local: Warrandyte, 2050: Echuca, 2090: Wangaratta/Corowa, cooler/wetter: Inverloch). Five study plots were established across three sites in southeastern Melbourne (Dandenong, 3 plots; Knox, 1 plot; Maroondah, 1 plot). A total of 1,760 plants (*A. dealbata* n = 353; *A. melanoxylon* n = 351; *B. spinosa* n = 352; *E. ovata* n = 352; *M. ericifolia* n = 352) were planted across all plots, with seedling survival, stem basal diameter, height, ground cover, herbivory, stomatal index (%) and chlorophyll content assessed across five survey timepoints over an 18-month monitoring period. Early establishment was primarily challenged by site-specific natural disturbances: waterlogging at Dandenong, exotic weed pressure at Knox, and a severe drought event across all sites during January and February 2025. Preliminary results show that provenance effects on growth and development were significant but highly species-specific, with no consistent pattern emerging across all five species over the monitoring period. Local provenances and cooler/wetter provenances demonstrated consistently strong survival (93.9% and 93.0% respectively) and growth performance across the monitoring period. In contrast, the warmer 2050 and 2090 provenances showed greater vulnerability across the trial, with survival reduced to 68.9%. Despite this, the 2050 provenance displayed the greatest within-provenance variability in stomatal index (%) and chlorophyll content, most notably in B. spinosa (SI: 26.8 ± 2.3%, range 15.9–50.0%; CHL: 55.3 ± 4.3 SPAD, range 21.1–77.3 SPAD), with a consistent but less pronounced trend observed in A. melanoxylon (SI: 12.0 ± 0.9%, range 7.8–21.8%; CHL: 63.4 ± 3.7 SPAD, range 39.0–89.0 SPAD). These initial results suggest that local adaptation retains a competitive advantage during early establishment, while the 2050 provenance may possess higher genetic diversity and adaptive potential despite its comparatively lower early survival. Continued long-term monitoring will be critical to determine whether the early establishment disadvantages associated with climate-adjusted provenances persist, or whether their greater physiological diversity translates into adaptive advantages as ambient conditions continue to change.

A global synthesis of how fire mosaics are constructed and operationalised across ecological and management contexts

JEREMY JOHNSON[1, †,] DALE NIMMO[1,] AND LUKE KELLY[2]

[1]*Charles Sturt University*
[2]*The University of Melbourne*

[†]***Email:*** *jejohnson@csu.edu.au*

Abstract

Fire mosaics are widely used to guide biodiversity conservation and fire management, yet there is little consistency in how they are defined, measured, or applied. Here, we present a global synthesis of how fire mosaics are constructed and operationalised across ecological, management, and socio-ecological contexts. We conducted a systematic review of 2,775 records, from which 199 empirical studies were identified that explicitly described or quantified fire mosaics. For each study, we extracted information on fire regime attributes, spatial and temporal scale, and the metrics used to represent mosaic structure. Most studies defined mosaics using a limited set of attributes, particularly time since fire, fire frequency, and fire severity, commonly derived from remote sensing or mapped fire histories. Metrics were typically restricted to single dimensions of heterogeneity, with relatively few studies integrating configuration, composition, and temporal dynamics. Definitions and measurement approaches varied systematically across research framings and management contexts, shaping how fire mosaics are represented and interpreted. These findings show that fire mosaics are not directly observed landscape properties, but analytical constructions shaped by methodological choices. As a result, many representations of mosaics capture only a narrow subset of fire-driven heterogeneity. Improving their application in conservation and land management will require clearer alignment between ecological objectives and the dimensions of fire regimes being measured across spatial and temporal scales.

Notes:_____
_____
_____
_____
_____
_____
_____
_____
_____

Post-fire trajectories of wildlife habitats across fire and environmental gradients

GRACE VIELLEUX[1,†,] TRENT PENMAN[1,] VICTORIA REYNOLDS[1] AND MATTHEW SWAN[1]

[1]*The University of Melbourne*

[†]***Email**: gvielleux@student.unimelb.edu.au*

Abstract

Fire fundamentally shapes forest structure by altering biomass and regeneration. Because vegetation structure underpins the availability and quality of wildlife habitat, understanding how forest structure recovers following fire is central to effective forest and wildlife management. Prior research has primarily characterised recovery as a function of time since fire, while the interacting influences of other fire regime attributes and environmental context remain comparatively understudied. This is a critical knowledge deficiency given rapidly changing fire and climatic extremes. To address this gap, we use understorey and tree structural data from 401 forest sites across 29 severity-mapped wildfires in southeastern Australia to ask how the effects of fire severity, minimum inter-fire intervals and environmental context – aridity index, drought, topography, and regeneration strategy – modulate the recovery of eight habitat structures across time since fire. Drivers of habitat structure varied among strata; however, fire variables were significant predictors for all but one habitat measure. Fire severity strongly influenced post-fire recovery of shrub cover, basal area of dead trees, tree density, and canopy cover, whereas litter depth, total log volume, and graminoid cover were better explained by environmental conditions, specifically aridity index or canopy regenerative strategy. Most top-ranked models included significant two- and three-way interactions which confirms the importance of considering the combined effects of fire regime and environmental conditions on habitat structures. These findings highlight that effective management of post-fire wildlife habitat requires accounting for the interactive effects of fire and environment, rather than relying on time since fire alone.

Notes:_____
_____
_____
_____
_____
_____
_____
_____

How far can Australian trees go under climate change? Improving range-shift predictions with trait-based models

LUPING ZHANG[1,†], EMMA HUDGINS[1] AND MICHAEL MCCARTHY[1]

[1]*The University of Melbourne*

[†]***Email**: luping.zhang@student.unimelb.edu.au*

Abstract

Tree distributions may fail to keep pace with rapid, climate-driven shifts in habitat suitability because of long generation times and limited dispersal rates. Traditional species distribution models (SDMs) may overestimate range-shift capacity because they often overlook dispersal processes and rarely incorporate realistic rates of movement across landscapes. As a result, understanding the trait-based predictors of dispersal ability is important for improving forecasts of future tree distributions. This study investigates how species traits influence tree range shifts under climate change, with a particular focus on dispersal-related processes. A structured review is being used to synthesise published evidence on trait–range shift relationships and to identify the traits most frequently considered in climate change studies. Early assessment of the literature suggests that trait effects have been studied unevenly, with greater emphasis typically placed on traits related to stress-tolerance and resource use, while dispersal-related traits have received less consistent attention across studies despite their likely importance in determining whether species can track newly suitable climates The review also reveals substantial inconsistencies in how this question has been studied, including differences in trait definitions and measurement methods, the range-shift metrics used, and major geographic gaps in regional study coverage worldwide, making it difficult to identify general patterns across species and systems. These insights will guide the next stage of the project, which will develop trait-based dispersal modelling and spatial simulations for Australian tree species under future climate scenarios. The findings will help identify tree species and distributions that may face dispersal limitations under climate change. Ultimately, this work will contribute to the development of climate-resilient management strategies for forest conservation planning, providing a quantitative basis for prioritising species and habitats most in need of adaptive interventions.

Notes:_____
_____
_____
_____
_____
_____
_____
_____
_____

Towards objective and cost-effective prioritisation of conservation actions at Parks Victoria

MATHEW BERG[1,†,] PHIL PEGLER[1], GENEVIEVE MATTHEWS[1] AND CONOR WILSON[1]

[1]*Parks Victoria*

[†]***Email**: mathew.berg@parks.vic.gov.au*

Abstract

Conservation management is usually limited by funding, so robust prioritisation is crucial to achieve the best outcomes for the available resources. In particular, conservation planners and practitioners often seek a balance between goals for biodiversity protection and the cost-effectiveness of required actions. However, incorporating costs into decisions about conservation priorities and interventions is challenging because the costs of conservation actions are often poorly reported and highly uncertain due to spatial and methodological variables. We sought to address this gap for Victorian parks and reserves by analysing costs across a range of recent conservation actions carried out by Parks Victoria, including pest animal and plant control. We considered predictors such as location, treatment method, and the size of areas treated. A key finding was that almost all actions show a non-linear decline in cost per hectare as treatment area increases, indicating substantial economies of scale. Unsurprisingly, treatment method, management aim and location were generally also significant predictors of cost. Our findings should help conservation managers plan and implement more cost-effective interventions. We also show how this information may be combined with habitat value, management goals and conservation action plans to support objective spatial prioritisation of conservation action at Parks Victoria.

Notes:_____
_____
_____
_____
_____
_____
_____
_____
_____

Investigating the relationship between embryo morphology and germination characteristics in selected native and threatened Species in Australia

EMILY KEMP[1, †,] KUSHAN TENNAKOON[1,] MEGAN HIRST[2,] AND HONGXIANG ZHANG[2]

[1]*Federation University Australia*
[2]*Royal Botanic Gardens Victoria*

[†]***Email**: emkemp7@gmail.com*

Abstract

Conservation and restoration efforts for threatened Australian native plant species are frequently constrained by complex, poorly characterised dormancy mechanisms that limit gemination success. This study investigated the relationship between embryo morphology and germination characteristics in 40 Victorian plant species, thirty of which listed as threatened under state legislation, stored for 1 – 20 years in the Victorian Conservation seedbank at the Royal Botanic Gardens Victoria. By assessing key morphological traits of the embryo—including the type, position, shape, and size—alongside seed imbibition behaviour, dormancy classification, and germination responses. The primary objective of this study was to clarify the morpho-anatomical basis of seed dormancy and inform conservation strategies for native Australian plant species. Species selection for this investigation was guided by taxonomic diversity, seed availability, and previous germination attempts outcomes. We hypothesised that species with challenging germination characteristics would possess underdeveloped embryo types (e.g., linear embryos) and be more likely to exhibit complex dormancy classes such as morphophysiological dormancy (MPD) or combinational dormancy (PY + PD). Imbibition tests revealed non-dormant and physically dormant species, with water-uptake patterns informing subsequent treatments required such as nicking or hard seed-coat removal. Eight embryo types were identified across the study species, with linear and spatulate embryos occurring most frequently. Dormancy classifications ranged from non-dormant to deep physiological, morphophysiological, and combinational dormancy, with 45% of species investigated exhibiting complex dormancy forms (deep physiological, MPD and PY+PD). Our findings suggest that embryo type was a strong predictor of dormancy class: species with underdeveloped embryos were predominantly associated with morphological or morphophysiological dormancy, requiring post-dispersal embryo growth, whereas species with fully developed embryos (bent, folded, or investing) were most commonly associated with nondeep physiological dormancy or were non-dormant. These findings enhance understanding of the evolutionary significance of embryo traits and support the development of species-specific germination protocols to improve seed banking, propagation, and restoration outcomes for threatened Australian plant species.

Notes:_____
_____
_____
_____
_____

Nature on Farms: Bringing together communities to integrate biodiversity into farming systems

HANNAH CONROY[1], AVIYA NACCARELLA[1,†], SARAH THOMSON[1], AND SASHA DOBSON[1]

[1]*Biolinks Alliance*

[†]***Email:*** *aviya.naccarella@centralvicbiolinks.org.au*

Abstract

As changing climates and extreme weather events place increasing pressure on both agricultural production and ecosystems, it is critical we recognise the interdependencies between agriculture, biodiversity, and human health and wellbeing. Natural assets on farms such as remnant vegetation, large old trees, native grasslands, shelterbelts, and dams provide essential habitat and connectivity across fragmented landscapes. Simultaneously, healthy and functioning ecosystems support farm productivity and sustainability. The 'Nature on Farms' project aims to enhance drought and climate resilience in the grazing systems in southern central Victoria and broadacre cropping-grazing systems in north-west central Victoria by scaling-up the adoption of practices that improve landscape function and ecosystem services. The project is centred on ten demonstration farms where a suite of tailored interventions will be designed collaboratively with farmers. These sites will act as living models showcasing working farms at various stages of adopting ecological-integrated farming practices and enhancing on-farm natural assets. Farm field days, training programs, and workshops will facilitate knowledge extension and capacity building within local farming communities. Monitoring will track changes in biodiversity in response to interventions using field surveys and citizen science, in addition to behavior and practice change across local communities. Working with farmers and practitioners on the ground, this project seeks to enable, support and build resilience within agricultural communities by applying a social-ecological systems approach to adapt to changing climates.

Notes:_____
_____
_____
_____
_____
_____
_____
_____
_____

Use of the herbicide, Clodinafop, to control annual weedy grasses in a native C_3 dominated grassland offset

THOMAS OTTENHOFF[1,†,] LILLI JOHNSON[1,] LAYNE OFFENER[1,] STELLA AUCKLAND-EVANS[1,] LEE ANDERTON[1,] ERIC EAMES[1,] JOEL LEBUSQUE[1,] AND TAYLOR GUNDRY[1†,]

[1]*Greenville Environmental*

[†]***Email**: taylor@greenvillelandscaping.com.au*

Abstract

Annual weedy grasses can outcompete native species in temperate grasslands, leading to reduced biodiversity and increased biomass accumulation. Selective herbicides may offer a targeted control strategy; however, their impacts on native grass species remain insufficiently studied. Clodinafop is a grass-selective herbicide commonly used in agricultural systems, though its safety for native grassland species at higher application rates is unclear. Anecdotal evidence suggests that low application rates (70 mL/ Ha) used to control wild oats (*Avena sp.)* do not adversely affect native genera such as spear grass (*Austrostipa sp*.) and wallaby grass (*Rytidosperma sp.).* However, the effects of higher rates (210 mL/ Ha), required to control annual rye grass (*Lolium sp*.), remain unknown. To address this knowledge gap, a field trial was conducted in July 2025 across two C3-dominated native grasslands. Both sites were treated with Clodinafop at 210 mL ha^{-1} using identical boom-spray applications. One grassland had been subjected to prescribed burning in the preceding spring, while the other had not experienced recent fire. In both sites, annual rye grass was effectively controlled, and native spear and wallaby grasses, continued to grow and set seed, indicating tolerance to the higher herbicide rate. However, in the unburned grassland, the reduction of ryegrass was followed by secondary invasion from soft brome (*Bromus hordeaceus*), resulting in a shift in weed dominance. These findings suggest that Clodinafop at higher application rates can selectively suppress annual ryegrass without detrimental effects on key native grasses, but management outcomes may depend on prior disturbance regimes such as fire. Further trials are planned to assess the role of burning and to evaluate later-season herbicide applications targeting secondary weed emergence.

Notes:_____
_____
_____
_____
_____
_____
_____
_____
_____

Rare flora on the rocks: challenges to the recovery of the critically endangered herb *Ballantinia antipoda* (Brassicaceae)

STAN WAWZRYCZEK

Threatened Species Conservancy

Email: *stan.wawrzyczek@tsconservancy.org*

Abstract

A sole member of its genus, *Ballantinia antipoda* (Brassicaceae) is a tiny annual herb growing with mosses on granite outcrops at high elevations. The species was considered extinct until it was re-discovered in 1983 at Mt Alexander/Leanganook in central Victoria. In recent years it has become increasingly clear that this last population of this unique species is in steep decline as its habitat rapidly disappears due to weed invasion, physical damage caused by feral animals, and climate change. Inbreeding depression likely also contributes to its decline, and past translocation attempts were not successful. *Ballantinia antipoda* is listed as 'critically endangered', with only ca. 4000 plants left in the wild (as of 2025) and little germplasm in ex situ conservation. Threatened Species Conservancy leads a last-ditch effort to recover *Ballantina antipoda* using multifaceted approach combining genetic rescue through ex situ seed orcharding, translocation and hand-weeding to recover the species' habitat overrun by weeds. Long-term plans are for reintroduction of the species to formerly occupied sites at Mt Cole and translocation to other suitable sites.

Notes:_____
_____
_____
_____
_____
_____
_____
_____
_____

The litter bird-en: using imagery to investigate bird–litter interactions in Australia

HANNAH FARAONE[1,†,] NICK SCHULTZ[1,] JACKIE MYERS[2,] KIMBERLEY MACDONALD[3,] AND BIRGITA HANSEN[1]

[1]*Federation University Australia*
[2]*RMIT University*
[3]*Department of Energy, Environment, and Climate Action (Victoria)*

[†]***Email**: hfaraone@students.federation.edu.au*

Abstract

Anthropogenic litter poses a significant global threat to birds which are well-known to interact with litter. Targeted action to reduce the risk of anthropogenic litter on birds is needed, however before that can be achieved it is essential to first investigate how birds are interacting with litter and understand which species and litter characteristics are involved. We set out to gain a baseline understanding of bird–litter interactions occurring in Australia, through a citizen-science based image collection study. We analysed 272 images of 65 bird species from across Australia. We found that in addition to ingestion, entanglement, and use of litter as nesting material, Australian bird species are interacting with litter in other ways such as capture and handling, use of litter to attract mates, perching, and distraction displays, thus revealing a broader range of interactions than previously anticipated. While plastic was the most common litter type recorded, we found some patterns between interactions, bird species, and litter characteristics. Insights from this study provide management organisations with the first step to developing targeted strategies that mitigate the risks of anthropogenic litter to birdlife.

Notes:_____
_____
_____
_____
_____
_____
_____
_____
_____

Post-fire recovery within the Corangamite lakes region

JAKE TANNER

The Lismore Land Protection Group Inc

Email: *lismorelpg@gmail.com*

Abstract

Victoria is considered one of the most fire prone regions in the world. Large agricultural areas and dry bushland can combine to cause large-scale fires. Historically, Black Saturday, Black Summer and Ash Wednesday fires have shown how extreme fire can be in Victoria. January 11th, 2026, was marked a catastrophic fire day across Victoria. Within the Lismore region a fire at Skipton burnt 20,000 hectares of land. Starting at Streatham it raced through the landscape destroying buildings, stock and pastures. Farmers were severely affected throughout the region. January 28th, 2026, marked another extreme fire day with a fire starting within the Leslie Manor area just north of Camperdown. This fire burnt through 10 properties killing cattle, sheep and destroying pastures. The Lismore Land Protection Group has been out to affected farms to observe and record the impact fire has had on Landcare plantings, wetlands, and environmental sites. Both the Skipton and Leslie Manor fires had varying impacts on biodiversity in the area. After visiting affected farms it's clear that some areas have been hit harder than others. Intensity has varied throughout the region. The main reason for this is *Phalaris* and the type of pasture sown near shelterbelts. Plantations that contained higher concentrations of Phalaris burnt at a higher intensity. Species within these areas were stripped of all foliage and many younger trees were destroyed. However, shelterbelts that were grazed or had bare patches of ground adjacent were less impacted, with most eucalypts regenerating within 3 months. Trees such as *Callistemons* and *Melaleucas* are yet to show signs of regeneration. However, *Acacia melanoxylon* has been rapidly growing from seed. The group are gathering this information to support Landcare revegetation projects in the future. By collecting data on tree responses to both fire and drought we can hope to future-proof our biodiversity, subsequently combating the effects of climate change.

Notes:_____
_____
_____
_____
_____
_____
_____
_____
_____

Beyond conventional grazing: Biodiversity benefits of silvopastoral systems from global evidence to subtropical Australia

TIEN CHINH NGUYEN[1,4,†,] DAVID LEE[1] HELEN NAHRUNG[1] TERESA EYRE[2] AND NAHUEL PACHAS[1,3]

[1] *University of the Sunshine Coast*
[2]*Department of Environment, Tourism, Science and Innovation*
[3] *Department of Primary Industries*
[4] *Tay Bac University, Vietnam*

[†]***Email:*** *Tien.Nguyen@research.usc.edu.au*

Abstract

Silvopastoral systems (SPS) that intentionally integrate trees, pasture, and livestock have been increasingly promoted as a sustainable land use strategy. Understanding the biodiversity values of SPS based on global and region-specific evidence is crucial to developing SPS for the integrated goals of production and conservation. Therefore, a global meta-analysis was conducted to analyse the effect of SPS on biodiversity, compared to open pastures (OP) and native forests (NF). In addition, we assessed bird and invertebrate diversity in a silvopastoral system converted from a 17-year-old plantation in comparison with OP and NF in subtropical Australia. The meta-analysis showed that the effect of SPS on biodiversity varied with system types, studied taxa groups, and compared references. Overall, SPS exhibited significantly higher biodiversity than OP. Among SPS types, SPS with native trees and SPS with planted trees both enhanced biodiversity relative to OP. However, SPS with native trees had significantly lower biodiversity than NF, while the effect of SPS with planted trees compared to either native or planted forests remains unclear due to limited studies. In the Australian subtropics, the SPS with planted trees also exhibited similar patterns as this system supported higher bird and invertebrate diversity compared to OP, but did not reach the diversity values of NF. These findings highlight the role of SPS as a complementary strategy for biodiversity conservation rather than a direct substitute for native forests. Transitioning from conventional open grazing to silvopastoral systems offers a promising pathway to enhance biodiversity.

Notes:_____
_____
_____
_____
_____
_____
_____
_____
_____

Trial by fire: The importance of temperature for opening fruit and releasing seed in Banksia

SIMON HEYES[1,†] AND JOHN MORGAN[1]

[1]*La Trobe University*

[†]***Email**: S.Heyes@latrobe.edu.au*

Abstract

Fire plays a major role in Australian ecosystems, shaping community structure and population dynamics by driving plant regeneration. The genus *Banksia* has a long evolutionary association with fire, with many species dependent on fire for the release of canopy-stored seed and subsequent seed recruitment. *Banksia* follicles are unilocular fruits with a single suture that typically open only under high temperatures. This dependency on fire for seed release creates risks to recruitment, as inappropriate fire regimes - such as those that are too frequent or infrequent, or too cool or too hot - can affect follicle rupture and successful seed release, affecting population dynamics. For obligate-seeding Banksia, this will have a particularly profound impact on their population trajectory. Cool litter burns are increasingly used by land managers to minimise risk, but it remains unclear how temperature affects seed release in Victorian *Banksia* and whether low-intensity fires are suitable for species like *Banksia* that are adapted to long-interval, high-intensity fires. To test this, we burned cones from five Victorian *Banksia* species (*B. canei*, *B. spinulosa*, *B. marginata*, *B. saxicola* and *B. ornata*) at three temperatures and measured the proportion of follicles that opened and the proportion that successfully released their seeds. Although lower temperatures were sufficient to open follicles, only the highest temperature resulted in consistent seed release, with many seeds remaining trapped in partially opened follicles after exposure to lower temperatures. Low intensity litter fires may be hot enough to kill *Banksia* but not hot enough to release seed; this poses a potential recruitment bottleneck for obligate seeder *Banksia* that rely on high intensity fire to release seed.

Notes:_____
_____
_____
_____
_____
_____
_____
_____
_____

Bunanyung landscape alliance: An introduction

STEPHEN CAREY

Bunanyung Landscape Alliance

***Email**: bunanyunglandscapealliance@gmail.com*

Abstract

The Bunanyung Landscape Alliance is a community organisation that promotes native biodiversity in the catchments of the Moorabool, Yarrowee and Woady Yaloak rivers in Victoria. It is an advocate for biodiversity through education, fund raising and project governance. The recent publication of the *Bunanyung Native Habitat Restoration Guide* exemplifies the Alliance's educative role. The *Guide* is a tool for restoring degraded land. It is ecologically informed, including with regard to the likely effects of a warming and drying climate in south-eastern Australia. It is applicable at the paddock scale because it uses the recently developed floristic mapping units scheme for mapping native plant communities that is much more accurate and precise than other commonly used schemes. In late 2024, the Alliance was granted $701,000 from the Victorian Department of Energy, Environment and Climate Action's Green Links programme. Green Links was devised by the Victorian Government to support the restoration of biodiversity and habitat and enhance community amenity along waterways in urban and peri-urban areas. The Alliance has brought together eight Landcare and Friends groups in the Ballarat region in a project that is preparing the ground in thirteen locations covering 80 ha and planting 40,000 trees, shrubs, forbs and grasses. The last seedlings will be planted in winter of 2026.

Notes:_____
_____
_____
_____
_____
_____
_____
_____
_____

A new long-term bird mist netting project in the central Victorian woodlands

WOUTER VAN DONGEN[1,†,] CHRISTINE CONNELLY[1,] AND KERRY FANSON[2]

[1]*Victoria University*
[2]*La Trobe University*

[†]***Email**: wouter.vandongen@vu.edu.au*

Abstract

Woodland bird populations are declining across Victoria, largely due to habitat fragmentation and the associated loss of tree cover. Fragmentation not only reduces woodland bird diversity but also affects species differently, with some species persisting in fragmented landscapes while others continue to decline. While birds may remain present in woodland fragments, it remains poorly understood whether these populations experience altered physiological states compared with birds in more intact habitats, and whether fragmentation-tolerant species differ physiologically from decliner species. This long-term, large-scale mist-netting project aims to address these gaps by integrating non-invasive conservation endocrinology within a broader ecological monitoring framework. Specifically, we aim to non-invasively sample hormonal levels (corticosterone) from bird faeces to ascertain how habitat fragmentation affects corticosterone profiles of different woodland species. Corticosterones are associated with diverse functions including metabolism, foraging, stress and reproduction, and previous research has demonstrated that levels of the hormone vary with external factors, such as habitat quality. This project therefore aims to shed light on how birds persist in fragmented environments and help identify priority areas for conservation with specific habitat characteristics. In addition to collecting much-needed data on species-specific morphology, plumage characteristics and moult, the long-term aim of the project is to incorporate research on demographics, site fidelity, genetics, ecotoxicology and diet. Beyond its scientific significance, the project will form one of the only long-term and large-scale terrestrial bird banding projects currently operating in Victoria, creating an urgently needed training pathway for new bird banders.

Notes:_____
_____
_____
_____
_____
_____
_____
_____
_____

Squirrel Glider (*Petaurus norfolcensis*) **survey has revealed new locations in the Northern Grampians region of Victoria**

MARK MCLEAN[1,†,] LEE PARRY[1,] CONNOR BEVEN[1] AND CHRIS POCKNEE[2]

[1]*Project Platypus*
[2]*Central Victorian Biolinks Alliance*

[†]***Email**: manager@platypus.org.au*

Abstract

Squirrel Gliders (*Petaurus norfolcensis*) are a native mammal, endemic to the east coast of Australia and are found in dry-sclerophyll forest and woodlands along the Great Dividing Range. They are listed as threatened in western Victoria, being restricted to isolated areas of remnant woodland, national parks and reserves. Squirrel Glider distribution was poorly understood in Western Victoria as the last reports were published in the 1990s. Recent observations of Squirrel Gliders near Dadswells Bridge in 2022 indicated that the population was persisting in the Northern Grampians area and that new surveys were warranted. This study was undertaken to develop distribution maps that inform where future conservation activities should be prioritised to protect Squirrel Gliders in a larger community-based project. During 2024-25, visual surveys of 30km of roadside reserves and farmland were conducted, which covered 150ha between Dadswells Bridge and Stawell. Surveys targeted remnant woodland with large, mature, hollow bearing trees, including locations previously confirmed to have a Squirrel glider. Surveys were conducted at night using thermal scopes and red-light cameras to spot animals, while digital cameras with a telescopic lens and white light were used to photograph and confirm the species. Identification of other glider, possum and mammal species were also recorded. A total of 13 new Squirrel Glider locations were identified, while 10 inconclusive *Petaurus sp.* locations were also identified. These were generally juveniles that were either Squirrel or Sugar Gliders (*Petaurus breviceps*). More surveys will be conducted at these locations to confirm the species. The new Squirrel Glider locations will become the focus for future habitat protection works that include protecting mature, hollow bearing trees, nest box installation, underplanting shrub species that provide a food source for gliders and planting corridors to link habitat patches.

Notes:_____
_____
_____
_____
_____
_____
_____
_____
_____

Landscape permeability and fire-driven habitat structure influence occupancy of the Eastern Mallee Dragon (*Ctenophorus spinodomus*) in semi-arid New South Wales

TYLAH MEUNIER[1,2,†] AND ASHLEY OLSON[2]

[1]*Department of Climate Change, Environment, Energy and Water*
[2]*Federation University Australia*

[†]***Email:*** *tylah.meunier@dcceew.nsw.gov.au*

Abstract

Landscape permeability refers to the extent to which environmental structure facilitates or impedes animal movement through heterogeneous landscapes. In fire-prone ecosystems, post-fire vegetation succession alters habitat structure and connectivity, potentially influencing dispersal, occupancy, and habitat suitability for fauna. This study investigated how fire history and vegetation structure influenced occupancy patterns of the *Ctenophorus spinodomus* across a burn boundary separating habitats differing in fire age by 23 years within a semi-arid mallee ecosystem in southwestern New South Wales, Australia. A novel motion-activated camera trapping system to quantify occupancy of *C. spinodomus* in recently burnt (2021) and long-unburnt (1998) habitats at 72 survey sites. High-resolution remote sensing imagery and machine learning were used to derive spatial habitat metrics including *Triodia* cover, patch size, and connectivity. A total of 106 *C. spinodomus* were recorded across 37 sites. Occupancy was modelled using a Bayesian single-season occupancy model to account for imperfect detection and we found no evidence for a relationship between occupancy and burn history, *Triodia* cover, patch size, or connectivity even though significant structural differences occurred between fire-age classes. Long-unburnt habitats containing substantially larger *Triodia* hummocks, while recently burnt habitats exhibited more tightly clustered vegetation patches. Contrary to expectations derived from previous post-fire succession models, *Triodia* cover was similar between fire ages, likely reflecting accelerated post-fire recovery associated with above-average rainfall conditions. These findings suggest that fire age alone may be a poor predictor of habitat suitability for Eastern Mallee Dragons and that occupancy may instead depend on minimum thresholds of suitable *Triodia* structure. More broadly, this study highlights the importance of incorporating structural habitat metrics and into assessments of landscape permeability and post-fire management within ecosystems, as traditional floristic surveys alone may fail to capture these critical parameters.

Notes:_____
_____
_____
_____
_____
_____
_____

END