

Volume 55-56

October 2025 / April 2026

CONSULTING ECOLOGY



Journal of the Ecological Consultants Association of NSW

www.ecansw.org.au

ISSN 1836 - 6813



Volume 55-56

October 2025 / April 2026

INSIDE THIS ISSUE

- 3 ECA Officer Bearers 2025-2026
- 3 Editor's Note
- 4 Message from the President
- 5 Need to renew your membership in 2026?
- 6 2026 ECA Conference
- 7 Book Review: Weeds of the South-east: An Identification Guide for Australia
- 8 Book Review: An Identification Guide for Australia and Interpreting Soil Test Results: What Do All the Numbers Mean?
- 9 2025 ECA Conference Abstracts
- 19 2025 ECA Trivia Quiz
- 24 Government Liaison and Advocacy: Potential amendments to the Biodiversity Conservation Regulation 2017
- 32 Government Liaison and Advocacy: ECA Feedback - Hollow-dependent birds Biodiversity Assessment Method Survey Guide
- 37 National Koala Recovery Team – update for members
- 38 Combining Ecological Tools to Reveal Small Mammal Behaviour
- 40 Rewilding and Biodiversity Stewardship Sites: Is it time to think 'outside the box' by collaborating with private aviculture?
- 47 2025 ECA Trivia Quiz Answers
- 50 Advertising opportunities with the ECA
- 50 Contributions to the newsletter
- 51 ECA Photo Competition Entries

Front Cover Photo Winner:

Editors: Brooke Thompson and Kat Duchatel

Mark MacKinnon

Design and Layout: Brooke Thompson

Echidna

Editor's Note

ECA COUNCIL OFFICE BEARERS 2025-26

PRESIDENT

Andrew Lothian
president@ecansw.org.au

1ST VICE PRESIDENT

Rebecca Hogan

2ND VICE PRESIDENT

Jason Berrigan

SECRETARY

Brooke Thompson
secretary@ecansw.org.au

TREASURER

Nick Tong
treasurer@ecansw.org.au

COUNCILLORS

Ian Benson
Nick Skelton
Paul Burcher
Deryk Engel
David Carr
Kat Duchatel
Narawan Williams
Corey Mead
Daniel McDonald
Mark MacKinnon

ADMINISTRATION ASSISTANT

Amy Rowles
admin@ecansw.org.au

Welcome to the spring 2025 edition of *Consulting Ecology*!

This issue is packed with great reading – including two excellent book reviews: *Weeds of the South-east: An Identification Guide for Australia* and *Interpreting Soil Test Results: What Do All the Numbers Mean?*

The ECA Council has also been hard at work advocating on behalf of our members. In this edition, we feature our detailed submission to the June 2025 Department of Climate Change, Energy, the Environment and Water (DCCEEW) consultation on proposed amendments to the Biodiversity Conservation Regulation 2017, along with feedback on the recently released draft Hollow-dependent Birds Biodiversity Assessment Method Survey Guide.

We're delighted to include an engaging article by Toni Blackwell (Anderson Environment and Planning), demonstrating how combining routine nest-box inspections with simple camera monitoring can reveal previously unseen breeding behaviour and species interactions in eastern pygmy-possums, including brown antechinus sharing these artificial refuges. The study highlights a low-cost, high-value enhancement to nest-box monitoring programs.

Steve Sass (EnviroKey) contributes an insightful article exploring how rewilding and the strategic use of captive-bred threatened birds, through collaboration with private aviculture, could expand the role of Biodiversity Stewardship Sites beyond vegetation management. His article considers how these partnerships can support meaningful fauna reintroductions – including the Bush Stone-curlew – and outlines a practical, policy-ready pathway for restoring ecological processes across NSW landscapes.

A big thank you to everyone who contributed to this edition.

If you would like to contribute to a future issue, including articles, practical tips, upcoming events or photographs, please send your contributions to our Administration Assistant, Amy Rowles, at admin@ecansw.org.au.

Happy reading!

Brooke Thompson
General Manager, Kingfisher Urban Ecology and Wetlands
Secretary, Ecological Consultants Association of NSW
Editor, *Consulting Ecology*

ECA COUNCIL MEETINGS

The ECA Council meets every three months to discuss and address current business of the Association. Any member wishing to view the minutes from ECA Council meetings may do so by contacting the Administration Assistant, Amy Rowles, at admin@ecansw.org.au.

Message from the President

Thanks to all on council last year and to those new and resitting for the incoming year. We have been busy with various reviews for Government documentation as our engagement with both the Federal and State Departments continues to strengthen. It has been a long time coming, but we have now established a working group with the EIANZ and NSW DCCEEW to go over survey guidance, credit generation and advice prior to it going live on BioNet. The aim will be more practical guidelines with less unforeseen and continuous changes. After the ECA NSW conference in July 2025, we have established communication with BioNet as well. We have been making various suggestions for improvements to information presented in the TBDC and the PCT-Threatened Species Associations Power Query Sheet.

We are all busy these days (hence this short welcome), but more hands will make lighter work of the tasks we have taken on. These pursuits will benefit all consultants (accredited or not), so please consider lending a hand for next year. Nominations are made prior to the ECA NSW AGM (you can fill in a form at the conference), and your minimum involvement will be 4 x 2 hour zoom meetings a year (conducted on Monday nights). There are a number of faces on the ECA Council that have been at it a long time, so it would be good to share the load with some fresh faces. Something that keeps coming up for discussion is what the younger consultants want from the ECA. Get involved and let us know.

The ECA NSW is now in a really strong position, with membership growing each year. We delivered a number of workshops again over the past year. Let us know what else you want workshops on for you or your staff and we will set the wheels in motion.

Again, many thanks to those tireless council members who have been pushing hard for the last few years. I look forward to seeing you at the ECA NSW conference in 2026 where maybe the ecological consulting world will be a little less stressful (fingers crossed). If nothing else we can take 2 days out of the office or fieldwork to catch up with old colleagues, and share a dinner over some great trivia. Thanks to Amy for putting these together in previous years, and thanks to our new Secretary Brooke who set up the trivia for the 2025 conference.

Andrew Lothian

Biodiversity Monitoring Services

President of ECA of NSW

NEED TO RENEW YOUR MEMBERSHIP IN 2026?

Invoices and renewal reminders for 2026 memberships have been emailed by Christine Neader. If you have not received your invoice, please contact admin@ecansw.org.au.

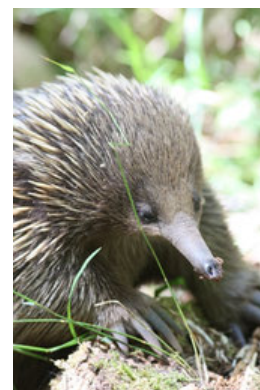
In fairness to members who have already renewed, all unpaid memberships will be cancelled as of 30 June 2026. Non-financial members will no longer be eligible for member discounts for conferences or workshops.

PHOTO COMPETITION

Thank you to everyone who entered our photo competition, and congratulations to Mark MacKinnon, our winner for this edition. All entries have been featured in the ECA Photo Gallery on the back cover.

To enter the next competition, email your favourite flora or fauna photograph to admin@ecansw.org.au for a chance to have your image featured on the cover of the next ECA newsletter. The winner will receive their choice of one year's free membership or free registration to the next ECA Annual Conference.

The winner will be selected by the ECA Council, with runners-up showcased in the photo gallery. Please ensure your photo is clear and submitted in high resolution. Submitted images may also be used on the ECA website.



CURRENT MEMBERSHIP

Membership Category	Number of Members
FULL	
Practising Ecological Consultant	134
Early Career Ecological Consultant	40
Retired Ecological Consultant	3
ASSOCIATE	
Government Ecological / Environment Officer	24
Non-practising	8
Subscriber	2
Student	6
Grand Total	213

ECOLOGICAL CONSULTANTS ASSOCIATION OF NSW

Annual Conference

20th & 21st July 2026

InterContinental Sydney,
117 Macquarie Street, Sydney

Biodiversity in Transition: Science, Policy, & Practice

Australia's biodiversity sector is undergoing a period of significant transition, shaped by evolving science, shifting policy frameworks, and the practical realities of delivering outcomes on the ground.

With contributions from government, including updates from DCCEEW on emerging regulatory directions, and insights from leading practitioners and scientists, the program will examine how changes to biodiversity assessment and offset frameworks are influencing ecological decision-making and project delivery.

Register here: ecansw.org.au/events

Earlybird fees (until 8 June): Members \$310, Non-members \$560, students \$150

After 8 June 2026: Members \$340, Non-members \$615, Students \$150

Single day rates available

Conference dinner on Monday 20th July 2026: \$90pp

Book Review

WEEDS OF THE SOUTH-EAST: AN IDENTIFICATION GUIDE FOR AUSTRALIA (2025)

by Richardson, F.J., Richardson, R.G. and R.C.H. Shepherd
CSIRO Publishing, paperback, 576pp (not too fat, not too thin)
\$99.99 (bargain)

In this age of never-ending excessive demands on an ecological consultant's time, especially those poor overworked and underpaid grads toiling under the yoke of their senior ecologist overlords: anything that saves time especially when trying to multi-task plant ID with a Netflix binge, is a godsend.

Picture identification books for plants are one of the most sought-after tools in our industry (hint hint CSIRO Publishing). If you can't recall the difference between a cladode and a phyllode; or want to judiciously identify every single garden escapee and garden weed in the backyard of your North Shore BAM plot to bulletproof any know-it-all 3rd party challenge: you must have this book.

Oh – if you're a bush regenerator: it would be embarrassing to admit you didn't own this book.

In comparison to the 1st edition of this book which I bought when dinosaurs roamed the Earth, toilet paper was in abundance, and the BAM was a BBAM, the key new BUY ME features are:

- About 100 pages bigger (size does matter!)
- An excellent botanical glossary at the front, complete with annotated photographs to overcompensate for missing that boring botany unit at University.
- A preliminary flower identification guide – using the most obvious feature (unless you're colourblind): colour!
- And as a special bonus for ecologists who failed to fit the square peg in the round hole in pre-school and forever shattered their father's dreams of their over-achieving child becoming an engineer (or colourblind): shapes!
- A "*Keep It Simple Stupid*" rapid family classification key based on flowers and growth form (fauna ecologists may feel targeted) corresponding to page numbers for a quickie ID.
- More than 3000 photos, which I quote from the provided promotional insert, include "*spectacular close ups*": don't leave this book alone with a botanist.

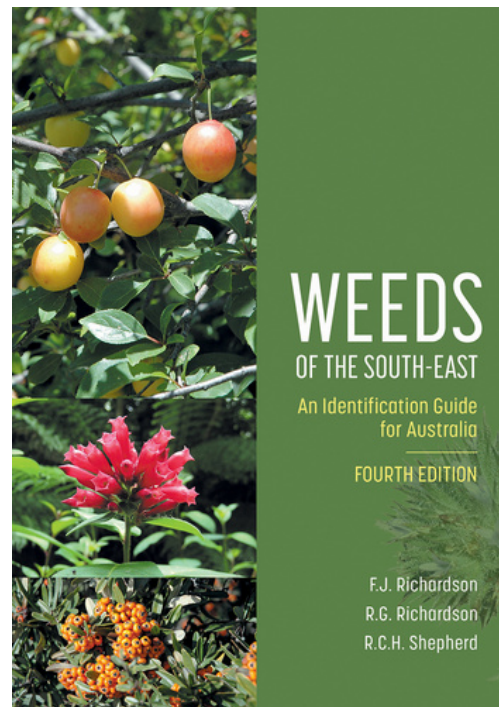
Aside from this, the book is much the same structure and content that made the 1st edition an essential to every ecologist's library: thousands of clear photographs. These are cleverly arranged per major family, and because now we've all read the preliminary flower identification guide and mastered shapes, we can flick through it like a kineograph (google it – I had to) until a particular photo catches our eye and we can check if that weed (or sometimes a native) is our plant. Or at least have a clue to its family, and armed with our illustrated glossary, we can then use that underfunded but essential resource: PlantNET!

My only criticism is the title: Weeds of the South-East – An Identification Guide for Australia. Technically, it only covers weeds "*all of Victoria, Tasmania, the ACT, south-east SA and the southern half of NSW*"

Highly recommended, and anyone who has this on a shelf in their office I will be initially convinced is a serious ecologist. I won't peer review you with extreme prejudice, unless you're a botanist and I find the missing pages in the shared bathroom. I've bookmarked those close ups (purely for research purposes), so I'll know which ones are missing...

Scores 8 Polka Dot Plants out of 10 Cat's Claw Creepers.

Jason Berrigan



Book Review

INTERPRETING SOIL TEST RESULTS: WHAT DO ALL THE NUMBERS MEAN? (2025)

by Pam Hazelton and Brian Murphy

CSIRO Publishing, paperback, 200pp

\$69.99

This is a dirty book, but not the one you need to hide from your mother or in your browser history.

It's all about explaining what the geotechnical (dirt) data, you may have thumbed quickly past in the appendices of a REF or EIS to reach the ecological report, actually means.

And I mean ALL of it.

It's incredibly detailed and inclusive for its 180 pages or so, and it's written in plain language that even a graduate engineer can understand without being restricted to four letter words, grunts, vigorous hand gestures and crude stick drawings that they call AutoCAD.

Chapter 1 covers the basics of sampling, when can be handy when instructing a geotech to undertake a survey and determine the geomorphological origins of a soil profile to help evaluate the presence/absence of an EEC, but also in planning a restoration project where soil limitations need to be understood e.g. acidity.

Chapter 2 details key soil characteristics you've probably heard about or blissfully copied from the geotech report into the body of the REF/EIS, especially if you're looking at issues like water holding properties and water repellence. Understanding some of these soil attributes in some fundamental sense can be important in mining restoration projects where things are just not what they used to be.

Chapter 3 slips into the paranormal world of soil properties for engineering constraints, which may be intimidating to all but the most fervent ecologists to wade through. Interesting, but like Paris, you'll probably only visit once. Saying that, there's some interesting information about slumping and tunnelling you could benefit from next time you propose under boring a few kilometres under that forested wetland to minimise impacts, and the project engineer clutches their chest and feigns a heart attack. Apparently, it is more complicated.

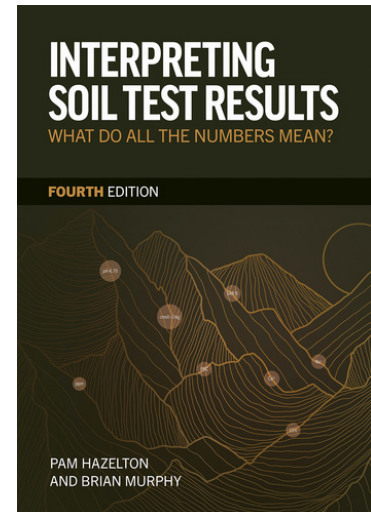
Chapter 4 deals in very good depth about erosion and erodibility, which will help with that REF for the cut and fill on a steep slope, but most ecologists will really sink their teeth into the juicy flesh of Chapter 5, which deals with thing we can still understand from that one core Chemistry unit in first year we just got a pass in: soil chemical properties. It does get quite technical, but there's more than adequate explanation embedded with the technical information to help you understand the key attributes of soil chemical properties, and how they can influence restoration projects on a disturbed site. Chapter 6 which deals with organic matter, further adds to this for the serious restoration specialist; and again, contains all the technical information you'll ever need, including the role of soil carbon in Climate Change.

Chapter 7 (application of wastewater) and especially Chapter 8 (the nasty side of soils: Contamination) round the back end of this very useful book with an excellent explanation of the variables and measurements often cited in the literature; as well as providing a useful summary of background levels. The final chapter is an essential collection of standards of measurement and conversions for quick reference.

This book should be on the shelf of the environmental scientist who prepares REFs and EISs; and needs to be a 'Jack of all Trades' capable of understanding and synthesising information from specialists; and regurgitating it into layman's terms for the consent authorities. For ecological restoration specialists, this book is a good foundation to understand limitations for complex situations such as soils impacted by mine leachate, salinity, heavy metals, water repellence, nutrient limitations, and structural instability: and then using that knowledge like a Rosetta stone to effectively communicate with geotechs and engineers.

Rated 4 out 5 dirty finger marks on the office fridge door.

Jason Berrigan



2025 ECA Annual Conference Abstracts



The 2025 ECA Annual Conference, *Avoid, Minimise, Mitigate: Evaluation & Justification of Options*, was held at Park Proxi Gibraltar in Bowral, in the Southern Highlands, on 24-25 July 2025.

The conference was enjoyed by 177 delegates across two days, with 150 attendees staying on for the conference dinner and trivia quiz. We extend a huge thank you to all presenters for generously sharing their expertise, and to our members for joining us for another successful year.

Below are the abstracts from the 2025 ECA Annual Conference presentations. Full presentations are available on the ECA website: <https://www.ecansw.org.au/conference-presentations/>

SESSION I

Assessment Standards for Avoid and Minimise

Dr Vanessa Owen

Department of Climate Change, Energy, the Environment and Water

Vanessa is Senior Team Leader, Biodiversity Assessment Method Review Team, in the Biodiversity Offsets and Planning Branch of Department of Climate Change, Energy, the Environment and Water. She has over 25 years' experience as an ecological professional in consulting, state and local government. Vanessa is a Biodiversity Assessment Method Accredited Assessor and is leading the team implementing the recommendations of the Biodiversity Assessment Method 5-year review.

Legislative reforms to the Biodiversity Offsets Scheme introduced changes to strengthen requirements to avoid and minimise impacts to biodiversity from development.

The 'avoid, minimise, offset' hierarchy that underpinned the scheme has now been legislated as a purpose of the Biodiversity Conservation Act. The hierarchy requires developers to take all reasonable measures to first avoid, then minimise impacts on biodiversity, before considering offsets.

The Biodiversity Conservation Regulation can now set assessment standards to support a consent authority to determine whether "genuine" avoid and minimise measures have been taken. Targeted consultation on options for these regulatory reforms are underway.

Local Government Perspective: Avoiding Biodiversity Impacts - What, Why, When & How

Martin Fallding
Lake Macquarie Council

Martin Fallding is an environmental planner with a career in ecological design and biodiversity planning practice. With a background in both urban planning and science, he has worked for all levels of government and published in the fields of biodiversity planning, biodiversity offsets, climate change and land management.

He has extensive experience in biodiversity planning, impact assessment and policy, especially as a practitioner at the local government level. He has participated in the evolving regulatory framework for threatened species planning, assessment and biodiversity offsetting since 1995.

Martin works part time for local government and is also principal of Land & Environment Planning, a planning and ecological consultancy specialising in strategic biodiversity planning, assessment and land management. He is former member of the NSW Biodiversity Conservation Advisory Panel and the NSW Koala Expert Panel, and prepared the Biodiversity Planning Guide for NSW Local Government in 2000 and the Planning Framework for Natural Ecosystems – ACT and NSW Southern Tablelands. Has been a member of ECA NSW since its formation.

Martin Fallding will provide a local government perspective on avoiding biodiversity impacts. The presentation considers how biodiversity assessment practice has evolved, and explains the expectations and scope of how avoidance is considered in land use planning and development approval practice. Tips are provided to assist ecological consultants navigate planning and approval processes and to achieve better outcomes and professional happiness.

‘Avoid and Minimise’ in Practice - Lessons from the Land & Environment Court

Alan McKelvey
Sparke Helmore Lawyers

Alan is an Accredited Specialist in Local Government and Planning Law, who regularly advises mining companies, property developers and government agencies on issues associated with environmental planning instruments, planning approvals, environmental licences and voluntary planning agreements.

He has extensive litigation experience, particularly in the New South Wales Land and Environment Court. Alan has conducted a wide variety of merit appeals (including as an advocate), judicial review and civil enforcement proceedings, criminal proceedings (as both prosecutor and defendant), Class 8 matters involving mining projects, objections against compensation following compulsory acquisition, and rating and valuation appeals.

Alan is a recommended lawyer on the Doyles list of ‘Leading Town Planning and Development Lawyers’, 2025.

Alan McKelvey will provide a legal perspective on how the Land and Environment Court evaluates ‘avoid and minimise’ measures. Drawing on key cases, the presentation will highlight the importance of robust, evidence-based justification and offer practical tips for consultants preparing material that will help consent authorities be satisfied that sufficient avoidance and minimisation measures have been implemented.

SESSION 2

Vertebrate Pest Management for the Environment and for Production - Putting Knowledge into Practice

Matthew McNaughton

Local Land Services Agency – South East Region

Matt McNaughton – South East Local Land Services Located in Berry – Department of Primary Industries and Regional Development:

- Current Role – Emergency Management Coordinator 18 months – Coordinate planning & Preparedness for Emergency response to natural disasters and Biosecurity Emergencies.
- Previously 8 years as a Senior Biosecurity Officer developing and coordinating broad scale vertebrate pest management programs across the Southern Highlands, Southern Tablelands and South Coast. Across the same area I/Matt also coordinated animal health surveillance activities to compliment broader Exotic Animal Disease Detection programs.
- Prior to Local Land Services I/Matt worked with Local Government in Environmental Compliance relating to land use and invasive plants.

An insight to pest management techniques available to landholders for various pest species. Information I provide will help participants understand pest animal impacts, and many of the complexities and considerations that are contributing factors to selection of the most effective/suitable control method for your pest problem. This includes a brief description of associated legislation and references to industry best practice guides. The presentation will detail various control methods and their effectiveness including insights to where these control methods may be applied (i.e. landscape type/pest population/pest behaviour). This presentation will also highlight the importance of collaboration with other land managers to achieve greater outcomes from pest control activities including collaboration with Local Land Services, who work regularly work with land managers across NSW to establish effective pest control programs.

The Role of Dingoes as Apex Predators in the Australia Alps

James Vandersteen

Recipient of the 2023 Ray Williams Mammal

Research Grant

How to manage Australia's top terrestrial predator, the dingo, is a controversial and complex issue. Dingoes beneficially regulate and promote ecosystem biodiversity but are a pest because they kill livestock. Consequently, dingoes are culled throughout Australia. However, there is concern that dingo eradication may trigger detrimental trophic cascades, especially concerning mesopredator release, but findings to date are conflicting.

Our aim was to investigate the direct and indirect ecosystem effects of dingo control in the Australian alpine landscape. We utilised field-methods centred on comparing ecosystem indicators between dingo control and no dingo control sites. This included an extensive camera trap array (90 cameras) to assess the effectiveness of dingo control regimes, and subsequently, how this impacted red fox and feral cat population dynamics.

Contrary to our predictions, we found that dingo density was highest at dingo control sites. As such, we used indices of dingo density as an explanatory variable to explain patterns in mesopredator populations. Here, we found that dingo density had a negative effect on red fox populations, but not that of feral cats. Understanding the flow-on effects of dingo control is crucial to understanding how apex predators' structure ecological communities and how human intervention impacts biodiversity. These findings emphasise how dingo retention within Australian ecosystems may be a powerful and cost-effective conservation tool.

Introducing the Created Habitat Success Database

Corey Mead & Narawan Williams

It was determined as an outcome of the ECA nest box workshop run in 2019, that there is a need for a central repository for successful usage of created habitat by different fauna species.

The ECA has formulated a Created Habitat Success spreadsheet with the aim to collect valuable information from accumulated experience across the environmental industry.

The spreadsheet will be sent out to ECA members, created fauna habitat manufacturers, fauna habitat specialists, Council's environmental officers and others involved in monitoring created fauna habitat in the coming weeks. The spreadsheet is designed to be simple to fill out and then returned to a specified email address.

The data will be collated and then provided on the ECA website to be used as a reference guide when making assessment and management decisions around providing habitat for fauna. An associated link will also be provided for people to submit new information as it comes to hand, so the spreadsheet will be a live setup.

Corey Mead will briefly explain the spreadsheet layout.

SESSION 3

We Contaminate Rainfall Twice in the Urban Environment, There is Now a Proven, At Every Level 'At Source' Solution to Protect Our Water Environments

Craig Rothleitner

Found & Director, ARI Water Solutions

Rainfall is contaminated when it lands on the urban environment and then for a second time when it enters the unprotected stormwater infrastructure. The vegetative matter that collects in drains starts to anaerobically break down within 3 days, where it then becomes a source of Phosphorous and Nitrogen that is so significant it has been literally ignored. Then you add the waste that accumulates in the system is the major cause of flash flooding

and is providing the perfect mosquito habitat. Combined with the hydrocarbons, heavy metals, construction waste, lawn trimmings, road emulsification, tyre rubber and plastics. This contaminated waste is not only polluting our precious rainfall but also killing our receiving water environments and ocean. Even worse the worlds urban water environments are now so nutrient rich they are supporting Cyanobacterial Toxic Algal Blooms almost year-round which are now considered deadly for pets, biodiversity and triggers for horrific neurological diseases such as Dementia, Parkinson's, Alzheimer's, and MND in humans. The ARI Stormwater Filtration Device (SFD) captures 95% of the physical waste, filters the water to 63micron with no risk of causing flooding. Most importantly the SFD keeps the waste dry meaning we can reuse the waste, engage with rainfall which is earth's natural water replenishment mechanism, all using the existing stormwater infrastructure.

From Source to Sea: Reframing Mitigation through Ecological Flows

Dr Pia Winberg

Dr Pia Winberg is a marine ecologist and entrepreneur with a background in regenerative nutrient cycling, seaweed cultivation, and biotechnology. She is the founder of Venus Shell Systems and PhycoHealth, pioneering Australia's seaweed industry through science-driven solutions for human and planetary health. Her work spans ecosystem restoration, sustainable aquaculture, and integrated food production systems, with a particular focus on nitrogen management and the power of seaweed to transform environmental liabilities into shared ecological value.

Avoiding and minimising environmental impact is critical – but when it comes to nutrient pollution, particularly nitrogen, full mitigation demands deeper systems thinking. In coastal ecosystems, nitrogen excess doesn't disappear; it flows. Downstream impacts like eutrophication and ocean deoxygenation result when upstream industries externalise this burden. This talk will explore how linking the ends of these flows –

through seaweed and oyster aquaculture – can transform mitigation into regeneration. Using examples from New South Wales, we'll highlight how coordinated industries, from agriculture to aquaculture, can share responsibility across the nutrient chain, and build new models of mutual benefit between land and sea.

SESSION 4

Building our knowledge of Southern Highlands koalas to inform local decision-making

Casey Taylor

Wingecarribee Shire Council

Casey Taylor is an Environment Officer at Wingecarribee Shire Council with a PhD in ecology from The University of Sydney. Casey currently works with the NSW Government in a regional partnership on the Southern Highlands Koala Conservation Project (SHKCP). The SHKCP delivers on-ground conservation actions for koalas including habitat restoration, community engagement, habitat mapping, monitoring and vehicle-strike mitigation. Wingecarribee Shire Council won first prize in Division B of the Natural Environment Protection and Enhancement Category at the 2024 LGNSW Excellence in the Environment Awards for their recent work on this project. Prior to her role at Council, Casey worked on various ecological research projects, restoration projects and taught undergraduate ecology and biology.

The Southern Highlands is home to over 3, 000 koalas, however, habitat loss, chlamydia disease, vehicle strike and climate change threaten the long-term survival of our local populations.

The Southern Highlands Koala Conservation Project was established in 2014 to build an understanding of Southern Highlands koalas and address the threats facing their populations. The project aimed to achieve this by focusing on six main areas: population monitoring, private land conservation, habitat restoration, fire management, roadkill, and supporting local wildlife rehabilitators.

A decade on, the Southern Highlands koala population is now recognised as one of the most well-understood in NSW. Years of data collection have led to thousands of koala BioNet records, revealed distinct differences between our east and west sub-populations and distinguished local feed tree preferences and habitat requirements.

This knowledge has informed a local seed collection strategy, koala habitat restoration projects and fine-scale koala habitat mapping, all of which will lead to more successful on-ground conservation actions, better koala habitat protection, and help ensure the long-term survival of our populations.

Connectivity conservation for arboreal marsupials in a fragmented landscape

Ana Gracanin

ANU

Dr. Ana Gracanin is a Research Fellow at the Australian National University, where she studies the conservation and ecology of arboreal mammals in fragmented forests. Her PhD work combined spatial modelling, genetic analysis and remote camera surveys to design and assess multi-species wildlife corridors. She now investigates movement, habitat connectivity and the effects of disturbances, such as wildfires, on species like the greater glider. Ana also specialises in tree-hollow ecology and is evaluating hollow-augmentation techniques to benefit greater gliders and other hollow-dependent wildlife.

Creating wildlife corridors is one landscape conservation initiative that can aid in mitigating habitat fragmentation. Ana's PhD thesis combined an evaluative approach in two themes of camera trapping and connectivity conservation, for eight arboreal mammal species. Firstly, testing the effectiveness of a camera trapping method, named the selfie trap, for its utility in obtaining arboreal species presence and absence, and population density data. The second theme utilises the camera trap data to inform species distribution modelling, as part of a connectivity analysis to identify a corridor pathway.

This least-cost pathway was further evaluated through ground-truthing to inform conservation and restoration efforts occurring as part of a wildlife corridor established in the broader landscape. Genetic techniques were used for the sugar glider (*Petaurus breviceps*) to quantify the impact of fragmentation and validate the modelled corridor identified from observational data. These results not only explore the impact of fragmentation, barriers to movement and the importance of evaluating models, but also provide the baseline from which future research and monitoring can be compared. This baseline data and evaluative approach is fundamental to quantifying the long-term success of such landscape corridor projects.

SESSION 5

Staged Offsetting for Biodiversity Development Assessments

Ben Ellis

Department of Climate Change, Energy, the Environment and Water

Ben is an accredited assessor and has been a member of the ECA for 8 years. He has worked as a private consultant and in NSW government across several roles including Senior Threatened Species Officer, Principal Conservation Planner and Principal BOS Trainer. Ben specialises in the assessment of biodiversity impacts from large-scale state significant development and infrastructure projects.

This presentation provides a practical overview to staged offsetting under the Biodiversity Conservation Act 2016, with a focus on its application during BDAR preparation. Aimed at accredited assessors applying the BAM, it highlights how staged offsetting can help you and your clients manage offsetting costs, gain time to secure biodiversity credits and adapt to changing project designs. The session covers legislative foundations, technical requirements and provides case studies to demonstrate how staging can support adaptive project design and improve alignment between biodiversity impacts and credit retirement.

You haven't complied with a guideline! What will the Land and Environment Court do?

Alan McKelvey

Partner, Sparke Helmore Lawyers

Alan is an Accredited Specialist in Local Government and Planning Law, who regularly advises mining companies, property developers and government agencies on issues associated with environmental planning instruments, planning approvals, environmental licences and voluntary planning agreements.

He has extensive litigation experience, particularly in the New South Wales Land and Environment Court. Alan has conducted a wide variety of merit appeals (including as an advocate), judicial review and civil enforcement proceedings, criminal proceedings (as both prosecutor and defendant), Class 8 matters involving mining projects, objections against compensation following compulsory acquisition, and rating and valuation appeals.

Alan is a recommended lawyer on the Doyles list of 'Leading Town Planning and Development Lawyers', 2025.

Alan McKelvey will provide an analysis of how the Land and Environment Court approaches guidelines and the factors the Court takes into account when deciding whether departures from ecological assessment guidelines will be acceptable and justified in any particular case.

BioNet for NSW ecological consultants

Dani Murphy

Biodiversity Information Systems Team,
Department of Climate Change, Energy, the Environment and Water; Product owner BioNet Vegetation Classification / BioNet Project Manager; BioNet, remote landscape sensing, strategic policy

Dani has worked in the NSW Public Service environment agencies for 32 years in the biodiversity domain, including field survey and research; threatened species and natural heritage management; policy development and implementation; biodiversity systems and data

(BioNet); biodiversity impact and offsetting assessment tools and data (BioMetric).

As Product Owner for BioNet Vegetation Classification, Dani focuses on system maintenance and improvement, data quality and accessibility. As BioNet Project Manager, Dani is involved in all aspects of project management, concurrently managing multiple system projects from minor enhancements to major migrations and new builds, as well as data projects essential for rollout of major tool-ready PCT classification data updates.

NSW BioNet is the state repository and authority for NSW biodiversity data. It began life 44 years and multiple iterations ago. Evolution of its systems, data, functionality and purpose has been complex and it is used in ways quite beyond its original scope. BioNet has lead the way amongst Australian jurisdictional data repositories and the national biodiversity system has been designed on the back of BioNet. It remains a foundational system and is an important source of primary data and secondary products that feed directly into the BAM Calculator and support assessments under the BOS. Multiple projects currently in progress to modernise the system.

This presentation will cover the BioNet systems, data and products, access, enhancements, and provide guidance on when to contact the BioNet team or the BAM Operations team for assistance.

SESSION 6

From Innovation to Application: The Evolution of Drone Surveys in Australian Wildlife Conservation

Dr Chad T. Beranek

Dr. Chad Beranek is a wildlife ecologist specialising in the monitoring of herpetofauna, microbats and arboreal species, the latter with drone technology. Since being a part of the pioneering team in the application of thermal drone surveys for koalas in 2019, Chad has been involved with developing and refining drone methodologies, significantly influencing wildlife monitoring and conservation practices across New

South Wales. His expertise includes spatial modelling, abundance mapping, and ecological applications of remote sensing technologies, which he applies to biodiversity assessments, conservation planning, and post-disturbance recovery projects.

Since initial trials for koala detection in 2019, drone-based wildlife surveys in Australia have rapidly evolved to become essential tools for conservation. Early work established the feasibility of thermal imaging for locating cryptic species, with subsequent milestones improving detection accuracy, spatial precision, and survey repeatability. These advances have enabled the integration of drone-derived data into the NSW Biodiversity Assessment Method (BAM), supporting more robust estimates of habitat suitability and species occurrence. Case studies illustrate how abundance mapping informs targeted conservation planning, such as identifying priority management zones through the use of landscape-scale predictive abundance maps. This talk reviews the history of wildlife drone survey development in Australia, highlights key methodological improvements, and demonstrates how cutting-edge aerial monitoring is transforming wildlife management through scalable, precise, and cost-effective data collection to aid conservation management.

Practicalities of on-ground works, effectively stating what's needed and predicting the cost?

Liam Emmington, Will Thurston, Geraldene Dalby-Ball, Darrel Davies

Darrel Davies has over 14 years of experience in the bush regeneration and land management industry, holding a Certificate III in Conservation and Land Management and currently working as a Site Supervisor. He manages multiple sites across Sydney, each presenting a diverse range of vegetation communities, environmental conditions, and operational challenges—including remote sites, endangered ecological communities, and areas requiring biosecurity and targeted weed surveillance.

Liam Emmington holds a Bachelor of Environmental Science & Management and Certificate IV in Project Management and is a quoting specialist and site supervisor for Dragonfly Environmental. Liam has worked in a diverse range of plant communities and ecosystems across Greater Sydney, managing and implementing a diverse range of bush regeneration projects. Liam brings both academic insight and practical expertise to ecological restoration projects and valuable insights into the role and capabilities of a bush regenerator.

William Thurston is an ecologist with over 20 years of experience in natural areas restoration, ranging from traditional Bradley Method regeneration in small pocket parks to large-scale revegetation projects of over 50 hectares. His work spans a wide range of environmental assessments and restoration programs, including Environmental Impact Assessments, Vegetation and Bushland Management Plans, Biodiversity Assessments, BAM assessments, translocation of threatened flora species, soil seed bank translocation, bush regeneration and riparian restoration. A former accredited BAM assessor, William combines in-depth legislative knowledge with botanical identification skills. William also brings extensive project management expertise and understanding of the commercial market, overseeing logistics, budgeting, staffing, reporting, and stakeholder engagement.

Implementation of ecological works forms the basis of assumed ecological outcomes.

Works can be maintaining existing areas in good condition, to assisting areas through weed removal all the way to total ecological re-creation consisting of planting, direct seeding, establishment and then maintenance. Projects can be creating habitat for threatened species such as Green and Golden Bell Frogs or Saltmarsh for migratory birds. Whether this be via a Vegetation Mgt Plan or a Biodiversity Offset or Stewardship site – most reporting also requires cost estimates. Being linked to bonds and expectations how important is to be accurate?

This panel aims to first provide the principles of considerations by experts in the implementation. After a short overview from each speaker we will open for QA and discussion. Ideally we all come away with more confidence and knowing what can be known and what we need to estimate, as well what to do in cases of uncertainty.

SESSION 7

Building Integrity and Capacity : The Accreditation Reset Program – Work program deep dive

Carlie McClung

Principal Project Officer Accreditation Reset Program, Department of Climate Change, Energy, the Environment and Water

Carlie has been with DCCEEW for over 5 years in a number of different roles including Project lead for the first accredited assessor audit in 2020/21, the establishment and operation of the BOS Help Desk and currently with the Accreditation Reset Program which includes the delivery of the BOS Compliance and Assurance program.

Carlie has been working in natural resource management for over 25 years. She has had a range of roles in both private consulting and government including local, regional and state. Her experience is diverse across the sector with over 15 years in environmental consulting including environmental planning and assessment, ecology (both aquatic and terrestrial) and environmental management & auditing, and with 10 years' experience working in government roles including Council Senior Environmental Planner, Hunter Central Coast BOS reforms local government support officer and State Government project officer roles.

The Accredited Assessor Reset Program is a key reform initiative to strengthen the integrity and effectiveness of the Biodiversity Offset Scheme. This presentation provides an update on implementation progress across three priority areas:

1. Revised Accreditation Scheme Framework

The review of the current accreditation scheme framework is underway to reflect on current stage of the scheme, the role of an accredited assessor and to enhance the application of the Code of Conduct and Biodiversity Assessment Method (BAM). Updates to roles and responsibilities will be informed by targeted stakeholder consultation during the review process. A legislative process will then follow to update the scheme framework and Accreditation Scheme for application the BAM Order 2017.

2. Training and Capability Development

In 2024-25, a total of 266 participants completed training across 18 courses. This included 207 existing AAs completed renewal training and 59 participants did main training. A review of the BOS learning journey is underway to consider all roles in the scheme. The training program will be redesigned to align with assessor roles and identified knowledge gaps. This will be supported by the implementation of a new Learning Management System, full in-house delivery of all training content and a modular training structure to improve accessibility and relevance.

3. Complaints and Feedback Management

A dedicated team now oversees complaints and feedback, with 46 complaints/feedback received and 21 accreditation actions undertaken in 2024-25. The program promotes a culture of continuous improvement, recognising both high performance and areas requiring development. A new Compliance and Assurance Framework, released in March 2025, supports voluntary compliance and provides clear, structured pathways for managing professional conduct and work quality matters.

The presentation will also outline the next steps for the program, including planned policy updates, enhanced transparency through auditing, and ongoing stakeholder engagement to ensure the scheme remains fit for purpose

Trophic effects of kangaroos on thick-billed grass wrens

Matt Smith

Recipient of the 2024 Ecological Consultants Association of NSW Conservation Grant

Despite concern that excessive grazing by kangaroos may adversely affect arid zone biodiversity, there is at present little data concerning kangaroos' impacts on arid ecosystems. Anecdotal observations suggest that grazing by over-abundant kangaroo populations may adversely impact the endangered thick-billed grasswren. However, collecting population level data on thick-billed grasswrens with traditional bird surveys is notoriously difficult. To test whether thick-billed grasswren populations are impacted by kangaroo grazing, we are trialling the use of downwards facing cameras inside and outside of three large (400 m x 400 m) kangaroo-proof exclosures on Nature Foundation's Witchelina Reserve, South Australia. Our aim is to investigate whether capture rates are linked to grazing mediated changes in vegetation cover or invertebrate prey abundance. From August 2024 to March 2025, we captured 3304 thick-billed grasswren images. Mean capture rates were initially higher where kangaroos were excluded. Capture rates declined during summer in experimental exclosures while remaining consistent in control plots, potentially in response to vegetation dynamics influenced by the exclusion of kangaroo grazing. Our results indicate that thick-billed grasswren activity may be highly sensitive to changes in productivity and vegetation cover. We suggest that the use of downwards facing cameras is a viable method of monitoring thick-billed grasswrens that can be readily scaled to increase spatial and temporal replication, and that high resolution continuous population and environmental data may be required to capture rapid responses by thick-billed grasswren to environmental change.

Cool burning for land management – understanding and reliability of outcomes

Noel Webster

Over the last 20 years, Noel has been working together with the local Aboriginal community to develop approaches to land management that recognise the cultural values of biodiversity and the environment. Through his custodian and stewardship responsibilities to Yuin Country, he has expanded an appreciation and ability to recognise the cultural and natural values of the environment. Mudjingaalbaraga Firesticks is a project that Noel has initiated and managed, to initiate discussion on Traditional Knowledge Systems amongst local Aboriginal community groups and to develop and implement Traditional burn practices on Country. The project uses low intensity fire (cool burn) to undertake a strategic approach to control local weed species, reduce fire hazard fuels, reconstruct Traditional Aboriginal landscapes, and restore native vegetation to improve biodiversity outcomes on land that have been exposed to the impacts of mistreatment and lack of recognition to bio cultural land management practices. The project includes workshops to teach local community to understand landscapes, how to read the fire indicators, and when to apply the appropriate fire knowledge. Noel is well equipped at applying Traditional ecological practice to improve landscape wellbeing, this way of teaching can be functional across broader landscapes. Noel is keen to engage with non-Indigenous land holders to share his knowledge.

SESSION 8

Noise Impacts on Wildlife: Measuring and Mitigating Effects in the Field

Daniel Natoli

Managing Director, AKA Acoustics Pty Ltd

Daniel Natoli is a multi-award-winning engineer and established leader in the fields of design, acoustics, and technology. Daniel holds a Master of Architectural Science (Audio & Acoustics)

from The University of Sydney, where he was recognised on the Dean's List of Excellence in Academic Performance. He is a Member of the Australian Acoustical Society, an Affiliate of Engineering Australia, and serves as a chairperson of the Sydney Section of the Audio Engineering Society. In 2020, Daniel was awarded the Australian Institute of Building NSW Chapter Presidents Award for his research contributions to the industry.

The ecological consequences of anthropogenic noise on wildlife are increasingly recognised among ecologists but the challenge of accurately measuring these impacts, and implementing effective mitigation strategies, remains.

Daniel will discuss the various methods of measuring noise exposure, the strengths and limitations of different monitoring approaches, and how this is relevant to ecological impact assessments.

Practical mitigation solutions will also be discussed with case studies illustrating how robust acoustic data can guide conservation interventions and improve outcomes for sensitive species.

The latest from Vegetation and Biodiversity Mapping including Restore Trees NSW and AI

Dr Adam Roff

Department of Climate Change, Energy, the Environment and Water

Adam's speciality is bringing technological innovation to ecology. He works closely with ecologists to seek a deep understanding of their requirements and then design technological solutions that increase their productivity. Most recently he has been using AI to map woody vegetation and find koalas using drones.

New AI spatial products to show, including a map of every tree in NSW at 1.5m resolution that should be on SEED in a few months.

2025 ECA TRIVIA QUIZ

Team Name: _____

Team Members: _____

USE OF MOBILE PHONES IS PROHIBITED

Score	Session 1	___/15	Session 2	___/24	Session 3	___/36	Total	___/75
-------	-----------	--------	-----------	--------	-----------	--------	-------	--------

SESSION 1 ____ / 15

- What animal is on the Australian 1-dollar coin? _____ (1)
+ BONUS POINT for how many are on the coin _____ (1)
- Who are the traditions custodians of the land we are currently dining on?
_____ (1)
- Which glider species, found in NSW, was split into three genetically and physically distinct species in 2021? (1)
a) Sugar Glider b) Squirrel Glider c) Yellow-bellied Glider d) Greater Glider
- In the BAM, what is the minimum number of plots required for a vegetation zone with an area of 15 hectares? a) 3 b) 4 c) 5 d) 6 (1)
- What are the three major components assessed in vegetation integrity under the BAM?
_____ (1)
- What is the scientific name for the iconic Wollemi Pine? _____ (1)
- What year was the Wollemi Pine discovered? _____ (1)
+ BONUS POINT for who discovered it _____ (1)
- Which animal's poo is cube-shaped? (1)
a) Eastern Quoll b) Wombat c) Koala d) Platypus
- What is Australia's largest owl? (1)
a) Boobook Owl b) Barking Owl c) Powerful Owl d) Masked Owl
- Which of the following species are considered obligate seeders in fire-prone ecosystems of NSW, relying solely on seed for post-fire regeneration? (2)
a) Eucalyptus robusta b) Banksia ericifolia c) Allocasuarina distyla d) Melaleuca quinquenervia
- How many IBRA bioregions are there in NSW? a) 12 b) 15 c) 18 d) 22 (1)
- What is the longest river in the world by length?
a) Amazon b) Nile c) Yangtze d) Mississippi (1)

Team Name: _____

SESSION 2 ____ / 24

1. Match the tail with the correct common and scientific name. (6)



Common name	(1/2each)	Scientific name	(1/2each)
Squirrel Glider		Petaurus australis	
Ringtail Possum		Petaurus norfolcensis	
Greater Glider		Cercartetus nanus	
Yellow-bellied Glider		Pseudocheirus peregrinus	
Brush-tailed Phascogale		Petauroides volans	
Eastern Pygmy-possum		Phascogale tapoatafa	

2. Which species of glider found in NSW has been recorded to “fly” up to 100 metres between trees? a) Squirrel Glider b) Sugar Glider c) Greater Glider d) Feather-tail Glider (1)
3. Unscramble these native plant names: (4)
- a) NAMLORDAL LFONIAGOL _____
- b) TUHUESREPS IULIFALSTO _____
- c) CUELMALEA YIDOSHESLSTIP _____
- d) LYTUAUPECS YCLAHLOSPLER _____
4. Which of these egg-laying species is known for its “caring father” reputation, where males incubate the eggs? a) Green Sea Turtle b) Platypus c) Echidna d) Emu (1)
5. What do a female praying mantis and a female redback spider have in common? (1)
- a) Both protect their young after hatching
- b) Both sometimes consume their mate after mating
- c) Both are venomous to humans
- d) Both use pheromones to lure prey

Team Name: _____

SESSION 2 ____ / 24

6. What is the smallest species of microbat recorded in NSW? _____ (1)
common name + BONUS POINT for scientific name _____ (1)
7. Fill out the blanks in these SAIL ecological communities: (4)
- Illawarra _____ (1/2) Grassy _____ (1/2) in the Sydney Basin Bioregion
- Grey _____ (1/2) – Grey _____ (1/2) _____ (1/2) Sclerophyll Forest in the NSW North Coast Bioregion
- Kincumber _____ (1/2) Gum Forest in the Sydney Basin Bioregion
- M _____ (1/2) Ulladulla _____ (1/2) Rainforest in the Sydney Basin Bioregion
- Who is the current Australian Minister for the Environment and Water? _____ (1)
8. Name this orchid R _____ s _____ (2)
- 9.

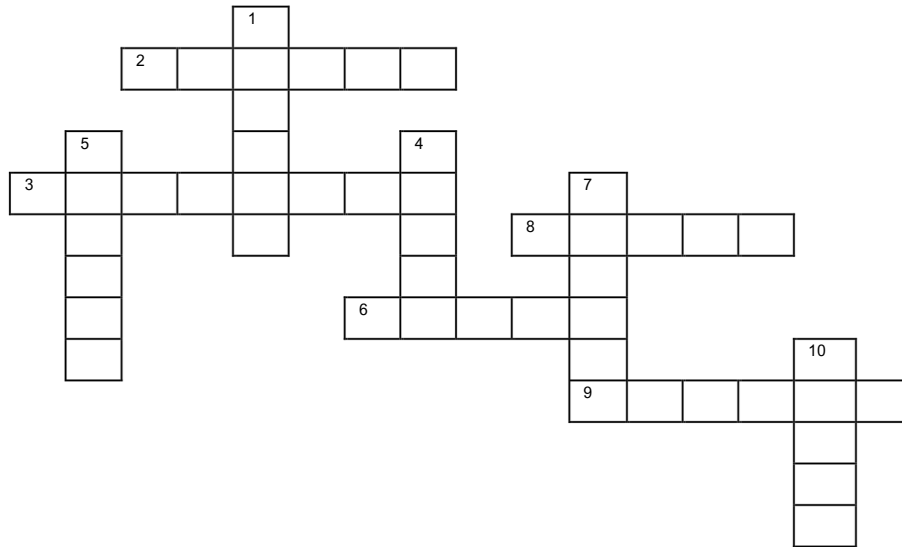


10. What is the orchid's listing status under the NSW Biodiversity Conservation Act 2016 (BC Act) and Commonwealth Environmental Protection and Biodiversity Conservation Act 1999 (EPBC Act)? (2)
- BC Act _____
- EPBC Act _____

Team Name: _____

SESSION 3 ____ / 36

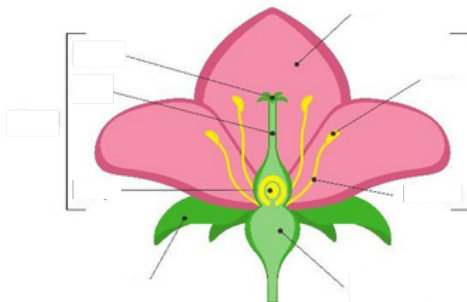
1. Flower anatomy crossword (10)

Across

2. Male part of the flower
3. What male part of the flower supports the anther
6. What part of the flower modifies leaves that encase the developing flower
8. The part of the flower that develops into fruit after fertilisation
9. The male reproductive organ of a flower

Down

1. Which female part of the flower collects the pollen
4. Which female part of the flower supports the stigma
5. What is the female part of the flower
7. The female reproductive cells that develop into seeds after fertilisation
10. The part of the flower that surrounds and protects the reproductive organs



2. Which native climbing plant has heart-shaped leaves and fragrant white flowers, and is common in wet sclerophyll forests? (1)

a) *Hardenbergia violacea* b) *Clematis aristata* c) *Kennedia rubicunda* d) *Pandorea pandorana*

3. Who is the 2024-2025 ECA President? _____ (1)
4. What bird is featured on the Australian 10-cent coin? _____ (1)
+ BONUS POINT for scientific name _____ (1)
5. What do you call a group of wombats? _____ (1)
6. In what year did the Emu War take place in Australia? _____ (1)
7. Which Australian animal has finger prints almost identical to humans? _____ (1)
8. What am I? _____ (1)

My walls are cells but not of flesh,
I capture light and make it fresh.
Neither root nor stem I grow.
But carbon's fate I always know.

9. Which Australian marsupial is known for dying after one breeding season? (1)
- a) Brown Antechinus
 - b) Brushtail Possum
 - c) Sugar Glider
 - d) Eastern Quoll
10. Which aquatic weed is a floating fern native to South America that forms dense mats and chokes waterways in Australia? (1)
- a) *Eichhornia crassipes* (Water Hyacinth)
 - b) *Pistia stratiotes* (Water Lettuce)
 - c) *Salvinia molesta*
 - d) *Azolla filiculoides*
11. Which nutrient, when excessive in waterways, can lead to algal blooms? _____ (1)
12. What is the national floral emblem of Australia? _____ (1)
+BONUS POINT for scientific name _____ (1)
13. Whose scat is this? _____ (1)



14. What pest species is pictured here? _____ (1)
+BONUS POINT for scientific name _____ (1)



Government Liaison and Advocacy

POTENTIAL AMENDMENTS TO THE BIODIVERSITY CONSERVATION REGULATION 2017

Andrew Lothian, President of the Ecological Consultants Association of NSW, is currently leading liaison with the Department of Climate Change, Energy, the Environment and Water (DCCEEW) in relation to the proposed amendments to the Biodiversity Conservation Regulation 2017.

On behalf of ECA members, Andrew has provided a detailed submission to the June 2025 DCCEEW consultation, representing the views of practising ecological consultants across NSW on reforms to the Biodiversity Offsets Scheme, including avoidance and minimisation standards, offset trading rules, use of the Biodiversity Conservation Fund and regulatory thresholds.

A copy of the submission is provided below.



Potential amendments to the Biodiversity Conservation Regulation 2017

Consultation paper June 2025

Department of Climate Change,
Energy, the Environment and Water



ECOLOGICAL CONSULTANTS ASSOCIATION of NSW Inc.

ABN 85 213 648 549

www.ecansw.org.au

Correspondence:

Amy Rowles

ECA Administration

415 Parishes Rd, Hilldale, NSW 2420

email: admin@ecansw.org.au

phone: 0418451488

28th July 2025

Bos.governance@environment.nsw.gov.au

Potential amendments to the Biodiversity Conservation Regulation 2017

The Ecological Consultants Association of NSW (ECA) was established 25 years ago to represent practising ecological consultants in NSW. We currently have over 230 members actively working within the industry, from sole traders and small businesses to employees and owners of large corporations.

The ECA understands that the proposed amendments to the NSW Biodiversity Conservation Regulation 2017 aim to improve the effectiveness of the Biodiversity Offsets Scheme (the Scheme) in line with the NSW Government's reform of the Scheme through the Biodiversity Conservation Amendment (Biodiversity Offset Scheme) Act 2024 (the Amendment Act).

The ECA is pleased to see that the NSW Government has sought reforms to the NSW Biodiversity Offset Scheme (the Scheme) and provides the following response to the questions posed in the DCCEEW consultation paper of June 2025.

Avoiding and minimising impacts on biodiversity values

1. Should the 'avoid and minimise' standards consider measures taken before the site assessment process?

DCCEEW has only provided three bullet pointed measures that might be considered before the site assessment and has not drafted any enforceable test yet. Because the detail will sit in a future Regulation and amended BAM, the policy team appears to be crowd-sourcing practical know-how from assessors, planners and ecologists. This would have been better achieved through industry workshops and more intensive consultation.

That said, it is unclear what the 'site assessment process' means. Is it the consent authorities' assessment process? If not, then the majority of larger projects are preceded by constraints analysis, with many constraints analyses informing the due diligence process during acquisition. It is after all impossible to know what to avoid until some degree of habitat assessment has been completed. This is not just restricted to biodiversity, but occurs in all specialist areas (heritage, bushfire, flood, arborist, contamination etc).

How smaller and single lot landowners are able to 'genuinely' avoid will prove very difficult, and realistically the level of documentation being asked for is simply going to add to the cost and administrative burden for such projects.

Exactly how such measures would be evidenced, credited or time-limited will need to be fleshed out in the forthcoming assessment-standards regulation and any revised BAM guidance.

The eventual standard should:

- reward genuine early avoidance.
- not double-count "business-as-usual" design choices, but also not double-dip on pre development planning proposals that have purposely rezoned land for avoidance.
- be auditable.

2. What type of measures to avoid and minimise impacts should be recognized as genuine?

How would genuine from non-genuine be demonstrated? What is to stop clients artificially inflating their footprints in the first instance only to reduce them to show "genuine" avoidance and project reduction? This is a common practice already.

Does a client building a house who comes to you with a BAL-FZ proposal need to go back to drawing a map with a BAL-12.5 proposal just to demonstrate the actual act of avoidance?

3. Are there any development types that require specific considerations in relation to defining genuine avoidance and minimisation measures?

Small area streamlined developments often have planning constraints and not a lot of room to move yet identified for residential or commercial uses. Many of these are C2/C3/C4 land which are zoned for residential land and are too small to be economically viable for stewardship sites.

A guest speaker at the recent annual ECA conference spoke of a last infill lot to be developed in an estate, which was cleared and developed or being developed. Consideration should be paid to the context of the site when considering what is adequate regarding avoid and minimise, including the zoning and/or end use of a site. Examples of scenarios that preclude avoidance include:

- Land that is topographically challenged and requires substantial earthworks (i.e., cut and fill) to facilitate its zoned land use;
- Local environmental plan and development controls that require ground or floor levels to be above specified elevations for flood proofing (i.e., fill required);
- Local environmental plan and development controls that require asset protection zones and other set backs on small lots that, with avoidance considered, could make the project economically unfeasible;
- Existing developments that are being redeveloped and have already isolated small patches of biodiversity values such that they are not feasibly self-sustaining.

General comments:

- While the changes are supported in principle, in practice these changes are qualitative and unlikely to make it any clearer to assessors on what constitutes adequacy compared to the current scenario. Sincerity is still going to be a matter of opinion likely to be argued between proponent and consent authority.
- What is the purpose of the avoid and minimise register? Will it be available and searchable by accredited assessors? If publicly available it could provide precedents. As with Land and Environment Court proceedings, not all case outcomes can be applied to all cases. The site context must always be considered.
- One of our councillors has a framework for estimating allowable impact on development sites based on various metrics. He may be willing to share this out of session once this is tested more widely on other case studies. It would replace the qualitative concept of “genuine” avoidance with a more quantitative estimate of how much is an acceptable amount of impact for a particular project considering the range of relevant inputs (VI, TEC status, threatened species habitat, and area).
- The amendment should provide clarity on whether the avoid and minimise hierarchy applies to developments that sit outside the Biodiversity Offsets Scheme where a BDAR is not required.

Reducing reliance on the Biodiversity Conservation Fund**1. What approaches to reducing reliance on the Biodiversity Conservation Fund (BCF) do you think would best deliver biodiversity outcomes and support the credit market?**

Boost the development of credit generation, make it easier to trade and retire credits. e.g. create an actual market where credits are listed with prices (what is wanted/needed by the generator), with a simpler system to buy/retire the credits.

It is currently difficult to compare like credits without contacting each credit holder separately.

Remove the ability to pay into the fund when there are credits available in the market. Have a specific time period to demonstrate Credits are not available. Waive the obligation to search for credits on the open market for small area streamlined developments (mum and dad clients building houses that only generate up to 30 or so credits of any one type). Some research may be required to determine what the biggest credit obligation has been for a residential house to find the appropriate threshold here. Over time, once the market has an adequate (all credits represented in abundance) supply of credits, then the BCF could be made obsolete.

2. Are there any ways to reduce reliance on the BCF that have not been identified that should be considered?

Remove access for large developments, e.g. >30 credits. I note in the stakeholder meeting there was discussion about the increased self-generation of offset credits by major project clients. I would warn against assuming this is a continuing trend, as the feedback we are getting from Clients is the time it takes and the hassle are not worth it and they would not go through the process again. This comes back to the uncertainty around evidence required to generate a species credit on an offset. When they start investigating the offset we tell them it is going to

cost \$X and they weigh it up and agree. After feedback from the Department says that is not enough evidence, we tell them it is going to cost \$X again, the cost base changes and they reluctantly agree to go another round as they are already down the rabbit hole. If they knew it was going to cost \$2X to start with they would have gone with the Fund.

3. Are there circumstances in which the use of the BCF is beneficial that should be retained?

In the short term the BCF will be important to ensure development delays are avoided.

Over the longer term, the BCF may still play an important role in sourcing alternative offsetting mechanisms when it can be demonstrated that there is no existing supply of the credits being sought. However, one could argue that over the long term, the absence of credits on the supply side suggests development should not proceed on that land until someone has decided to add it to the pool of managed stewardship sites. This is to avoid delays in biodiversity outcomes, particularly under the mantra of Nature Positive.

General comments:

Constraining the use of the BCF is supported by the ECA. Thresholds for what constitutes a large and small obligation will need careful thought and consideration of existing credit obligation data to find a balance.

If you go down the path of having a list where you cannot pay into the Fund where the credits will never be generated, this list would need constant updating, as the credits that are available will soon disappear. While we agree that this will help drive market driven prices, do you have the resources to maintain a live updated register of what credits can/can't be paid into fund? You can't leave this to be updated monthly as clients want to get on with things and don't want to be left waiting a month with no ability to buy via market (when credit supply exhausted) or via BCF (when still restricted). Resourcing of the provisions around the BOS seems to be an issue that has plagued its effective implementation and operation from the beginning.

Simplifying offset trading rules for ecosystem credits

1. How would changing the rules impact projects or biodiversity stewardship agreements you are familiar with?

Not applicable.

2. Do you have any suggestions as to how the offset trading rules for ecosystem credits could be simplified without compromising biodiversity outcomes?

Combining offset groups has inherent risks as not all data has been validated. Everything in the 90% cleared should be listed and therefore have its own trading group. A quick look at "Coastal Valley Grassy Woodlands >90% cleared group" has many groups with the clearing category of 70-90% or <50% (for Cumberland Shale Sandstone Transition Forest). Either the clearing category calculations are way off or there is something that does not align with the Scientific Determinations.

3. If you are a participant in the scheme, what benefits do you see in these types of changes? What else should government consider in making these changes?

Depends what type of participant. Credit holder – easier to sell a credit. Credit buyer, easier to buy a credit. Unit of biodiversity – going to lose out. We seem to keep making administrative changes that undermine the biological imperative here, particularly if we are supposed to be transitioning towards Nature Positive. I have prepared an example of what happens if you allow ecosystem credits to be sourced from IBRA regions and neighboring subregions under a system that has been designed to only offset within neighboring IBRA subregions or within 100km.

a. One thing you need to remember is that you are not just offsetting vegetation, but the ecosystem credit species that go along with them. Take Purple-crowned Lorikeet for example. It occurs down along the Victorian border of NSW. If you picked it up there as an ecosystem credit species, you could currently offset it (theoretically - pending PCT availability) within the same IBRA region all the way north to near Gulgong in the NSS IBRA region. If you allow ecosystem credit sourcing in neighboring IBRA regions, this would allow offsetting of Purple-crowned Lorikeet all the way to Narrabri (BBS IBRA region – BBS24 IBRA subregion). This is well beyond the species known distribution. You need to carefully think through how you are going to ensure all the ecosystem credits are picked up adequately. Currently your system has probably not been designed around offsetting at this scale so I think this is a bad move as a lot of species associated with the vegetation communities will fall through the cracks. Furthermore, the proposed changes will allow all vegetation along the coastal IBRA regions to be cleared and offset with vegetation in the tablelands IBRA regions, which is "land that is otherwise constrained and not intended to be developed" (your words – not genuine avoidance).

b. Your proposed changes appear to be designed to work in smaller IBRA subregions along the coast, with no regard to the scale of the IBRA subregions that occur to the west of the divide. You need to make a system that works across the whole State. The current variation rules for ecosystem credits allowing trading of credits within 100km over IBRA boundaries. These are considered sufficient to pick up extra credits that exist and are local to the development. No change needs to occur.

4. Are there changes to the use of species credits that the government should also consider?

As per response to question 3.

General comments:

The proposed changes in this section are generally not supported.

Though it was explained in the stakeholder meeting why the top offset trading group tiers could be merged, this was not widely understood or supported by those outside the stakeholder group. This is likely a journey that DCCEEW would need to take with ALL consultants on, not just those in the stakeholder meetings.

Extreme caution is advised regarding whether the calculations on the back end can deal with the changes being proposing when allowing ecosystem credit trading between IBRA regions. All ecosystem credit species need to be captured in order to be adequately offset, not just the vegetation components. This seems to have been overlooked (and may already have been overlooked with offset trading groups). Does anyone run a check to see if ecosystem credits are consistent between development and offset credits if they aren't the same PCT?

Balancing the application of the scheme with biodiversity risks

1. What options provide the right balance between robust identification of potential impacts on biodiversity values and reducing regulatory burden?

We suggest that in addition to having the small incursion of 300 m² (this will help with septic and stormwater etc.), that a provision be added that clearing that is permissible/required under the Rural Fires Act does not trigger a BDAR when intersecting with the Biodiversity Values map for the primary dwelling on a lot. Note, this relies on there first being 'avoid and minimise' to appropriately situate the house. BV mapping is good to push people away from better areas of a property and make them build on the less valuable parts. However, if the whole property is mapped and the block is zoned for residential development then you have to ask why it was zoned that way in the first place and consider letting it go as a legacy issue. A lot of this comes down to the accuracy of the mapping.

While your 300m² might be the size of a residential house in an urban area, in regional areas these houses come with asset protection zones, water tanks, septic tanks and sprayoffs, driveways etc. which bring it up to approximately 5000m² minimum generally (and that is often accepting the highest bushfire risk category). What are you willing to consider acceptable loss?

We also agree with increasing the threshold from 0.25 ha to 0.5 ha for minimum lot size of less than one (1) ha. That would also mean the next category should have to bump from 0.5 ha to 0.75 ha for a minimum lot size of 1 ha to less than 40 ha.

2. Are there other options that government should consider?

Removing the test of significance for small projects, would reduce the report writing burden, however I believe it would result in worse ecological outcomes in the small number of cases where it would trigger a BDAR. Even in the absence of a biodiversity report, a Stage 1 constraints assessment should be undertaken. This Stage 1 assessment would then feed into the broader site due diligence process that covers ecology, bushfire, cultural heritage etc.

3. Are there unintended consequences, and how can the impact of these be reduced?

Input from a member

"This whole dance of figuring out if it is a Flora Fauna report or a BDAR is becoming incredibly difficult and costly for clients, not to mention confusing. They ring up saying they need a biodiversity assessment and want to know how much. You tell them they have just asked you how long a piece of string is and that you will need a bunch of documents from them, a few thousand dollars and you can give them a quote and they suddenly come back with a million questions asking why. Then you have to consider all future clearing obligations on the property (under other legislative instruments). Even if your BOSET report comes back as triggered, half these projects are in cow paddocks so you need to go out to site to assess the ground vegetation just to figure out if they trigger the BOS (to give them a quote as to which pathway they are being assessed under).

I'm all for revisiting the thresholds, but I think we need to look at removing the zoning component and look at the gross impact to vegetation. If you are impacting under 1 ha of native vegetation, you can do a Flora Fauna report. Quick, easy, less burden on the Fund. If you are impacting on more than 1 ha of native vegetation you have to do a BDAR. Simple as that. Fiddle with the numbers if you want. Essentially this would make every individual house a FF report with no offsetting (unless we kept the significant impact trigger), and everything else would be a BDAR with offsets. The downside to this would be losing the push for avoid and minimise on these smaller developments. However, at the moment there is very little incentive for avoid and minimise for small houses as the clients don't understand the scheme and just consider it a cost of building their dream home anyway. They don't want to go from a 4 bed house to a 2 bed house to reduce biodiversity impacts and avoid offsets, they have 3 kids and have already bought the block.

Alternatively you could make it so that everything is a BDAR, but the streamlined BDAR requirements are much more reduced. I'd be happier knowing that I had to do a BAM plot and a streamlined BDAR every job and having that certainty, rather than having the uncertainty of which pathway is it after I've done 70% of the work down the wrong path. And perhaps the credits apply only for the amount of clearing over the 0.5 ha or 1 ha threshold. This incentivises clients to avoid and minimise down to under the threshold. You could ditch the site context stuff from small area streamlined BDARs, and perhaps not require certification if under the threshold. Just floating ideas at this point.

Another option is to keep the FF and BDAR pathways, but allow consultants discretion to provide a letter style report that states that the site was visited, there is little in the way of habitat on site for threatened species, native vegetation cover on ground is low, and there is likely to be no biodiversity impact from the development with the following conditions of consent: x y z.

This one is a little dangerous, but still needs to be accepted by the consent authority and would waive a lot of the BDARs being done in cow paddocks that generate 0 credits. Any BDAR that generates 0 credits is essentially telling you there is zero impact on biodiversity so the whole exercise has been a waste of time."

General comments:

The proposed changes in this section are generally supported by the ECA NSW, but further discussion should be undertaken on exactly what the solutions should look like with a wider panel of participants.

Other potential content***Remove mine site rehabilitation as an option for meeting offset obligations***

The ECA NSW supports this change.

Biodiversity Values Map Review

This process already exists.

How would this change?

There should be no fee, as the errors are due to the Government. LLS reviews of NVR mapping are free.

The current timeframe is way too slow. Especially when an explanation report is required first. We can't wait 90 days for a fix to be released in the BV mapping to run a new BOSET report to provide to Council to demonstrate that a BDAR is not required.

Case study 1: 2023 Map explanation took 48 days to return, then actual review took 97 days. Total = 145 days from start to finish for a <1ha site.

Case study 2: 2024. Start to finish took 90 days for a <1ha site.

Prescribed Impacts

Without knowing the proposed changes, it is impossible to comment on them. Can we see an example of the proposed changes?

There needs to be greater clarity on the requirement to assess impacts/prescribed impacts that result from items that occur outside the subject lot, for which there is no legal access to undertake the assessment. E.g. trees that could contain a forest owl hollow <800 m from the lot boundary, migratory pathways that are funneled through a constriction in neighboring land.

Conclusion

For the standards, we would like to see clear definitions and timing spelled out. We would want to see an eligibility screen that excluded actions already mandated by law (e.g. riparian setbacks). We understand there would be the requirement for evidence to be provided in the BDAR, but this should be scaled to the size of the development (i.e. can be minimal for a small area streamlined assessment for a house, but might need to be quite substantial for a major project). We would avoid setting physical thresholds for avoiding x% at this point as this might have perverse outcomes in some eventualities that have not been considered. We would like to see sector specific guidance published annually on examples of good (and bad) avoidance reporting. Finally the ECA would like to see a three year review of the standard once sufficient case studies exist. We can see if thresholds are adequate, the system for dealing with low/no impact projects is working, and if credit demands on the BCF are in decline.

Andrew Lothian



President Ecological Consultants Association of NSW

e: president@ecansw.org.au

w: www.ecansw.org.au

ph: 0421 841 726



ECA FEEDBACK – HOLLOW-DEPENDENT BIRDS BIODIVERSITY ASSESSMENT METHOD SURVEY GUIDE

The Ecological Consultants Association of NSW has recently provided formal feedback on the draft *Hollow-dependent birds Biodiversity Assessment Method survey guide*.

The feedback was developed in consultation with ECA members and the ECA Council, and was submitted to DCCEEW on 13 October 2025.

A copy of the correspondence is provided below.



Hollow-dependent birds

Biodiversity Assessment Method survey guide

Department of Climate Change,
Energy, the Environment and Water



Hi Liam,

Thank you for the opportunity to for the Ecological Consultants Association of NSW (ECA NSW) to provide feedback on the draft Hollow dependent Birds BAM Survey Guide. This window for comment has however been too short, particularly in light of our representation of NSW consultants implementing the BAM as well as our previously outlined concerns on owl surveys (when they were first changed to species credit species last year). We draw your attention again to the attached correspondence dated 3/6/24. Also attached are responses to your targeted questions on the new Survey Guide, and in pdf comments on the guideline. Further information is provided in the email below as well. This has all been put together from a three hour workshop we ran internally with a number of ECA parties who have extensive experience in hollow bird survey, as well as those familiar with the functioning of the BAM and the nuances around credit generation. The back and forth in the workshop showed the value of such an exercise when trying to tease out the most effective way to encompass biological relevance AND BAM requirements in a scalable way. All survey guidelines should be developed in this way (rather than by written review).

Fundamentally, the ECA is in strong opposition to survey guidelines that do not require the detection of threatened owl breeding trees, or otherwise locations showing breeding behaviour where nest trees are located nearby. There is no conservation logic to omitting the owls and the critically endangered Red-tailed Black Cockatoo coastal subspecies (which by comparison to the inland subspecies, is critically endangered) from the equal requirements of the other listed dual credit species. We can only conclude that this decision is most influenced by market demand. They should be approached as with all the other hollow-dependent species, with polygons drawn directly off the identified important habitat locations, not where they were called into. The Trust may have large owl credit obligations to offset, but this does not negate generation of credits using biological sense. Also, credits generated under a previous set of principles should not be offset under a new set of principles that aim to increase credit generation in the absence of biological relevance. This does not meet the legislative requirement of “no net loss” and is akin to market manipulation.

The threatened owls demonstrate repeated fidelity to nesting trees which is often the best available breeding hollow in their core breeding territory. To consider all hollows with an apparent entry of >20cm from ground inspections to be equal potential breeding opportunities as the basis for credit generation,

shows a lack of understanding of conservation obligations for threatened owls. Most hollows within this category are internally unsuitable for use. Our major concern however is that the hollows that are actually suitable, are often a limited resource in the increasingly fragmented forest patches along the developed eastern coastal areas of NSW. Such that removal of a historically used hollow could have direct consequences for local breeding distribution of a bird that occupies a large defendable home range. This is particularly the case for Masked Owls which are most impacted, requiring a cluster of large suitable hollows to effectively breed.

We wish to assist the department in resolving our abovementioned concerns, and are available for further discussion, as we have highly experienced owl ecologists willing to help. We have provided our logical Barking Owl survey requirements below that may be used as a template and refined for the remaining owl species, which such differences explained further below:

7.1 Dual credit species - with breeding habitat as a species credit

Barking owl (*Ninox connivens*)

Table 7 outlines the survey methods, survey period, minimum effort and number of survey replicates for barking owl.

Table 7 Barking owl survey requirements			
Survey method	Survey period	Minimum effort per survey replicate	Survey replicates
Identify locations of all potential suitable breeding habitat (HBT mapping)	January-December	Complete study area	
FOLLOWED BY			
Acoustic monitoring	May-September	10 nights	2 replicates at least 60 days apart
	Recording within 2 hours prior to first light; or within 2 hours after dusk.	Recorders spaced approx. twice the detection range across suitable breeding habitat	
FOLLOWED BY (in geographic range where calls were recorded on acoustic devices most nights)			
Hollow dusk watch of suitable breeding habitat	June-October	Observe during the complete dusk period (15 minutes prior to dark) and 45 minutes into dark.	1 replicate, OR if no acoustic monitoring done for a site, then 2 replicates at least 60 days apart
OR			
Climbing for hollow inspections	January-December	Check hollow base for prey item bone fragments	1 replicate
Preliminary (optional)			
Call-playback	May-September	Areas 100 to 1,000 ha, stations spaced 1,000 m apart	6 nights
	Preferred time around dawn or dusk	Areas >1,000 ha, stations spaced 1,500 m apart	

Survey method

Call playback can be used to determine species local presence. Where no response is recorded by the *Ninox* species only (Powerful Owl & Barking Owl) then no further survey is required. However where presence is determined, further survey is to follow in sequence to target a nesting tree location. Acoustic surveys over the entire study area are to guide where owls are setting up breeding territories during the breeding season. These acoustic surveys are a lead-in to later (more detailed) individual tree

investigations around these areas where calls have been recorded (via call playback or acoustic survey). Hollow dusk watching during the nesting period may be used to rule out current breeding hollows, while climbing inspections at any time can rule out past or current breeding hollows by searching the base material for signs of bones. These two methods may however be used as a first measure in survey (instead of acoustic surveys) to rule out breeding hollows, being a more viable immediate option for smaller sites. Note: Climbing inspections may rule out suitability of a tree hollow for use, but only hollow base material inspections can determine signs of breeding or roosting use. Hollow inspections and hollow dusk/dawn watches can be discontinued within 500m from where a breeding tree is identified.

Note that the species is known to use habitat patches within fragmented areas including paddock trees.

Suitable breeding habitat

Suitable habitat is vegetation zones associated with the species as listed in the TBDC, with living or dead trees with ALL of the following features:

- at least one hollow >20 cm diameter entry hole (and for climbing inspections, also an internal cavity suitable in size for the female and early stage chicks)
- hollow located >4 m above the ground.

The species lays in late winter or spring, with distinctive regular territory breeding calls preceding nesting.

Signs of breeding

Breeding habitat is confirmed by observations of ANY of the following additional breeding signs within the survey period:

- use of a hollow.
- male returning feed to the female.
- pairs exhibiting courtship behaviour (for example, duetting calls by both male and female).
- calls of begging juveniles, presence of fledged young

Species polygon

Draw the species polygon to include all suitable breeding habitat within a 500 m radius of the detected nesting tree. If the nesting tree is not located then the species polygon is to incorporate all suitable breeding trees within the recorded call range. Include non-associated PCTs within 500 m that contain the habitat constraint. If a vegetation zone intersects with the 500 m radius but extends beyond it, include the entire contiguous vegetation zone.

Note 1: The above is an example template to be used across the other hollow-dependent owl species. The ECA feels that call-playback can also be provided as a preliminary option for the Masked Owl or Sooty Owl, and preferably undertaken leading into their peak breeding periods, but cannot be used to rule out presence of those two species. Seasonal changes will also occur between the owl species (for example Powerful Owl will be a month earlier than those stated for the Barking Owl above), however there should be opportunity for acoustic surveys to be undertaken collectively for all owl species at the same time. The minimum effort per survey replicate for Masked Owl should be increased to 20 nights acoustic recording. Acoustic recorded Masked Owl calls do not need to be on most nights to prompt further target survey requirements for the nest tree. Masked Owls would also require a second replicate hollow dusk watch per suitable tree, as the male will often move between roosting hollows during breeding.

Note 2: The ECA recommends a new Section 5.5 under the Survey Methods up in the front of the survey guide explaining the added option to climb and inspect large hollows for indicative signs of owl use (as per this option indicated in the survey table for these species). This can be done at any time of the year and gives an accurate indication of current and historical use, so is a valuable option to add for those who have the resources and wish to survey outside of breeding periods. These methods are explained by a recent paper submission by Mead & Lawson to the Ecological Management and Restoration Journal. This paper has been provided to the BCD.

Qualified and experienced climbers are to work under the guidance of an ecologist. Suitability and use of the hollow by owls is to be determined from inspections, with use concluded from presence of base contents containing prey item bone fragments. For deeper hollows chainsaw inspections will be needed. Such inspections may also be permissible using an EWP depending on site access. Chainsaws are only to be used by qualified and experienced operators with techniques to ensure the cut hole can be securely returned. Where base inspections for bone fragments cannot be completed safely, then dusk hollow watches during the specified breeding period becomes the required method to rule out current use. Tree inspections must be conducted by a suitably experienced ecologist who knows how to plug the inspection hole. Method not suitable for cockatoos/parrots who don't leave bones in the bottom of nests/roosts. Chainsaw inspections to be conducted outside the breeding season.

Note 3: A new Section 8 of the Survey Guide, prior to References, could be prepared to guide Avoidance & Minimisation of impacts on breeding or roosting hollows. This section should state that survey effort outlined by the guidelines is to best achieve the location(s) of any hollow used by the target species. Avoidance measures should be demonstrated for identified hollows as the most preferred option for a development proposal. Where such a hollow has not been specifically identified during minimum survey effort then the species polygon should be extended to surround all identified potential trees.

Minimization of impacts is to then also follow a set procedure to be indicated in the BAR. This includes the identification of all potential breeding hollows from ground inspections prior to any future habitat clearing within the defined development footprint. Where any of these hollows are found to show signs of use at the time of their removal (such as indicated by owl prey species bone fragments in the base of the hollow), then these large hollows are to be relocated or effectively replaced with a carved large hollow providing the most appropriate dimensions and characteristics for that species within nearby retained habitat. Where this is not achievable a nest box of sufficient quality for longevity and target species requirements are to be installed in an appropriate location.

In the absence of adopting the above suggestions for owl survey, then the removal of threatened owl breeding hollows within small forest remnants should be nominated as a SAIL, under principle 4. Particularly as the guaranteed provision of large suitable hollows on stewardship sites has failed to be demonstrated. The SAIL could potentially be applied to IBRA regions east of the great dividing range where existing hollows are under greater threat of removal and there are increasingly smaller habitat patches. Or perhaps it could be related to NVC.

Note 4: The recorded presence of a non-threatened species utilising a hollow gives a good indication of the potential for similar sized hollow-dependent threatened species to utilise that same hollow at other times and most notably during their specified breeding period.

Note 5: For Powerful Owl 'Suitable breeding habitat' - hollow depth is typically greater than 40cm with a note that a pair has used a very shallow wide platform in a tree. When climbing to inspect hollow suitability, consider inspection for bones in the base material of shallow hollows wide enough for female and 2 chicks particularly in urban fragmented areas (measurements taken of nest tree hollows in Sydney region). Mostly trunk vertical hollows however a couple sampled near 40 degree angle. More detail can be provided of sampled nest trees.

Note 6: For the threatened hollow-dependent Cockatoos and Parrots, closer visual inspections (climbing, EWP or pole camera) may rule out suitability of a hollow for use. Unlike owls however, only closer inspections during the breeding period can rule out current breeding use.

Note 7: If a breeding hollow of any of the target species is found, then the buffer to protect the tree/s should not become completely isolated, surrounded by the development. This could lead to the birds not breeding in this area due to the disturbance from the development activities or increase the risk of harm to the threatened target species e.g. vehicle strike etc. Retained hollows must retain habitat connectivity via treed areas (except in the case of Superb Parrots nesting in paddock trees who may simply need connectivity over cleared ground absent of development to feeding/other breeding areas).

Those of us that represent the ECA Council have adapted to the changes of the BAM, but come from the generation that pride ourselves on learning to connect and understand our threatened biodiversity to make proper assessment, not through numbers and a calculator that tells us how to think. A new system that is promoted to ensure a no net loss, should be able to stand by that for animals that breed in hollows that take hundreds of years to form.

Can we please request a formal response to our suggestions, and a mandate for a working group to be established for the generation of future (and update of all) survey guidelines.

Andrew Lothian

President ECANSW

e: president@ecansw.org.au

w: www.ecansw.org.au

ph: 0421 841 726



National Koala Recovery Team – update for members

Correspondence provided by Danny Wotherspoon, on behalf of ECA NSW, indicates that the National Koala Recovery Team remains active, with the Board most recently understood to have met in April 2025.

Recent advice also indicates that the Community Advisory Committee has met periodically since its establishment, although there has been limited recent communication regarding its ongoing role in implementation of the National Recovery Plan for the Koala. Further clarification is being sought regarding the current structure, priorities and engagement process for the Recovery Team and associated advisory groups.

This remains relevant to ecological consultants, as Commonwealth koala recovery policy and guidance can directly inform development assessment and approval processes in koala habitat. ECA NSW is continuing to monitor developments in this area.

Link to the National Koala Recovery Team and Board updates

- National Koala Recovery Team – DCCEEW

<https://www.dcceew.gov.au/environment/biodiversity/threatened/species/koalas/national-koala-recovery>

- Koala Recovery Team Board Communiqué – Meeting 6, 8 April 2025

<https://www.dcceew.gov.au/sites/default/files/documents/koala-recovery-team-board-communique-meeting-6.pdf>

For further information, the DCCEEW contact provided to ECA is Katelyn Kummer, a/g Director, National Koala Recovery Coordination.



Photo: Ros Runciman

Combining Ecological Tools to Reveal Small Mammal Behaviour

Toni Blackwell (tonib@andersonep.com.au)

Conservation Manager, Anderson Environment and Planning

During the winter of 2025, AEP conducted routine nest box inspections at North Head in Manly to assess the population and distribution of eastern pygmy-possums (*Cercartetus nanus*), which were reintroduced to the site in 2016. AEP manages a long-term wildlife and ecological program at North Head on behalf of the Sydney Harbour Federation Trust. Our team continues this work through regular surveys and habitat assessments to monitor the population's progress. During this inspection, one of our boxes was found to be occupied by a female pygmy-possum with four dependent young (Figure 1).



Figure 1. Family of eastern pygmy-possums found occupying a nest box.

Our nest box occupation rate for this survey was ~23%, which, despite trending upwards, highlights the challenges of estimating the population and occupancy of a relatively cryptic species. Finding this family was a rare and exciting event for the team. After health measurements were taken, the family was returned to their box. To monitor their behaviour after release, two cameras were installed: an external trail camera positioned ~20 cm from the nest entrance, and an internal camera that replaced the roof of the box. Both were fitted with 4× magnification lenses to capture nesting behaviour (Figure 2).



Figure 2. Internal and external cameras, set up with 4x magnification lenses.

Over the course of the night, all juveniles eventually left the nest, either with their mother or independently. Interestingly, only a couple of hours after the last juvenile departed, a brown antechinus (*Antechinus stuartii*) was observed inspecting the inside of the same nest box (Figure 5), highlighting the sequential use of refuges by different small mammals that are unable to be determined by nest box inspections alone. This also underscores the potential for interspecific interactions, including predation, that may otherwise go unnoticed.

Two days later, the mother was last seen utilising the nest box, before departing at around 7 pm. Over the next few hours, footage shows the young gradually exploring the nest box entrance (Figure 3), while the mother periodically returns to the outside of the box every hour or so. At times, the young attempted to latch onto the mother to follow her (Figure 4), though she often moved off independently. The mother appeared to show intermittent care, checking, retrieving and encouraging the young to leave. It is difficult to determine whether the young 'latching' onto the mother's back was her intention to transition her young toward leaving.



Figure 3. Three young exploring the outside of the nest box after the departure of the mother.

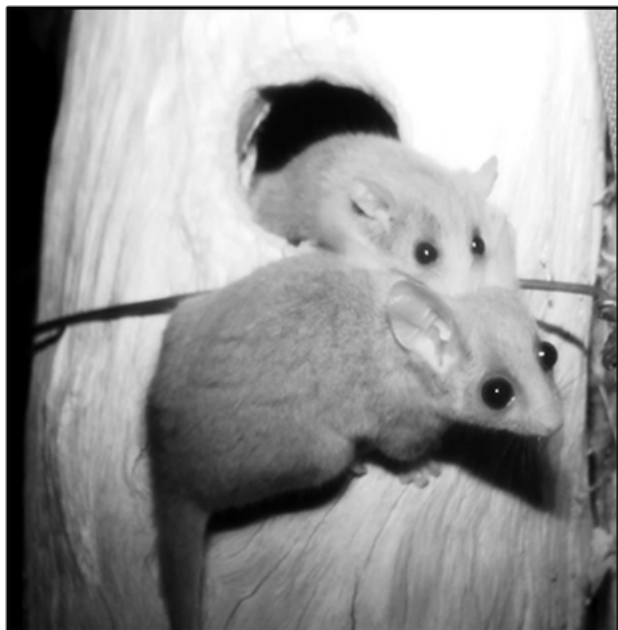


Figure 4. Juvenile pygmy-possum latching onto visiting mother.

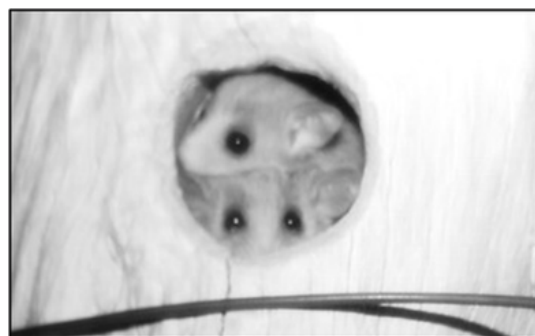
This short deployment demonstrated how simple camera setups can provide valuable information on nest box occupants, breeding behaviour, and species interactions that might otherwise go undetected during standard checks. Standard nest box inspections provide only a snapshot in time and are likely to underestimate the abundance and activity of target species. Pairing inspections with camera monitoring adds considerable ecological insight with minimal extra effort, extending our understanding into natural activity windows and revealing nocturnal behaviours and interactions that would otherwise be missed.

Scan the QR code to watch some of the footage captured by these internal and external cameras...



Figure 5. Brown antechinus inspecting nest box after the departure of pygmy-possum family.

Combining direct handling during nest box inspections with camera monitoring offers a more complete picture of artificial habitat use. Identification tagging conducted at the time of inspection allows subsequent camera footage to be linked to known individuals, improving the interpretation of occupancy, behaviour, and species interactions. Video footage provides compelling insights by both revealing behaviours that nest box evidence alone cannot show and communicating ecological stories to broader audiences. For consultants and researchers alike, these methods represent a relatively low-cost, high-value addition to nest box monitoring programs, deepening our understanding of how multiple species interact with artificial refuges over time.



Rewilding and Biodiversity Stewardship Sites: Is it time to think ‘outside the box’ by collaborating with private aviculture?

Steve Sass¹

¹EnviroKey, PO Box 7231, Tathra NSW 2550

steve@envirokey.com.au

Introduction

In Australia, biodiversity offsets have predominantly focused on vegetation management including restoration and weed control, as well as feral animal control and in some instances, fire management. In NSW, Biodiversity Stewardship Sites (BSS) created under the NSW Biodiversity Offset Scheme (BOS), provide the framework for biodiversity offsets with the main focus being to improve vegetation integrity through active management (NSWGovt, 2025a). Yet biodiversity conservation is not solely about vegetation structure as it encompasses the interactions between flora and fauna that maintain functioning ecosystems (Lindenmayer et al., 2014).

Rewilding has emerged as a central approach in global conservation, seeking to restore ecological processes and biodiversity at multiple scales (Lorimer et al., 2015). While this has gained traction in Europe and North America, in Australia it remains contested, especially in heavily modified agricultural landscapes (Sweeney, et al., 2019) and largely confined to large predator proof fenced areas.

Currently, there are dozens of threatened species that are bred by private aviculturists (bird keepers) under various state licencing frameworks. One of these species is the Bush Stone-curlew (*Burhinus grallarius*), a once widespread species across southern Australia but now locally extinct in many regions due to predation, habitat loss, and altered fire regimes (Johnson & Baker-Gabb, 1994). Bush Stone-curlew has been successfully reintroduced prior to the BOS being developed and is a prime candidate for reintroduction at BSS.

This paper explores the potential for the reintroduction of threatened species from private aviculture and presents a potentially transformative avenue for nature repair and biodiversity conservation in NSW and Australia.

Rewilding and Species Reintroductions

Globally, rewilding initiatives have sought to reintroduce apex predators, keystone species, or functionally important taxa. Examples include wolves in Yellowstone National Park (Ripple & Beschta, 2012), beavers in the UK (Puttock et al., 2017), and bison in Europe (Svenning et al., 2016). These interventions highlight the role of species as drivers of ecosystem processes.

In Australia, reintroductions have focused primarily on mammals threatened by predation, such as bilbies, bettongs, and bandicoots, often in predator-proof enclosures (Anson, 2018). Bird reintroductions have been less common, although projects involving the Regent Honeyeater and Orange-bellied Parrot demonstrate feasibility (Heinsohn, et al., 2022; Stojanovic, et al., 2023). The NSW Government has already supported the reintroduction of Bush Stone-curlew outside of predator-proof enclosures (NCWG, 2025). The successful breeding program run by Peter Redfearn of Moulamein and Neville and Jan Lubke of Jindera,

raised a total of 109 Bush Stone-curlew between 2008 and 2017. A total of 85 young Bush Stone-curlews were released at two locations in southern NSW and a 2016 monitoring report of the release sites provided evidence of Bush Stone-curlew breeding as well as recommending future releases (Tzaros, 2016).

Rewilding and Species Reintroductions

Ecology and Decline

The Bush Stone-curlew is a nocturnal, ground-dwelling bird once abundant across open woodland habitats of Australia. Its cryptic behaviour and haunting calls made it a familiar presence in rural landscapes (Marchant & Higgins, 1993). Populations have declined dramatically in southern Australia due to habitat loss, fox predation, and land-use intensification (Baker-Gabb, 1990). In NSW, it is listed as endangered under the *Biodiversity Conservation Act 2016* and it is considered critically endangered or locally extinct in many landscapes (Fraser, 2021).

Role in Ecosystems

As an insectivorous and opportunistic predator, the Bush Stone-curlew plays a role in controlling invertebrate and small vertebrate populations (Johnson & Baker-Gabb, 1994). Its presence also contributes to cultural and social values, with the species holding significance in Aboriginal and settler narratives (Low, 2014).

Suitability for Biodiversity Stewardship Sites

Many BSS in NSW encompass open woodland and grassy habitats suitable for Bush Stone-curlews (NSW Government, 2025b). Given the historical range of Bush Stone-curlew, reintroductions could restore both ecological and cultural functions. Importantly, the species is relatively easy to maintain in captivity and has an established history in private aviculture making it a practical candidate for rewilding projects (Smith, 2021). Bush Stone-curlew was recently reintroduced to Phillip Island in Victoria as part of a rewilding trial (ANU, 2025) and The Nature Conservation Working Group (NCWG) in southern NSW conducted the first successful release of captive bred Bush stone-curlews in Australia in 2008, which continued until 2017; all of which were not within predator-free fenced areas.

Private Aviculture and Conservation Potential

Private Aviculture in Australia

Australia has a long tradition of bird keeping, with thousands of aviculturists maintaining captive populations of native species (Hyde, 2000; Sass, in-press). These communities often breed species that are declining in the wild, including finches, parrots, and some ground-dwelling birds. While aviculture has historically been viewed with suspicion by conservation authorities, private aviculturists are at the forefront of developing captive management techniques for threatened species such as the critically endangered Luzon Bleeding Heart Dove from the Philippines (Sass & Hennessey, 2025). Private aviculturists represent a huge reservoir of genetic and demographic resources with many avicultural societies wanting to be involved in conservation projects.

Table 1: Current threatened bird species known to occur in the wild in NSW (or extinct in the wild in NSW) that are being successfully bred by private aviculturists in Australia (species credit species identified with a double asterisk**)

Scientific name	Common name
<i>Artamus cyanopterus</i>	Dusky Woodswallow
** <i>Burhinus grallarius</i>	Bush Stone-curlew
** <i>Cacatua leadbeateri</i>	Pink Cockatoo
** <i>Callocephalon fimbriatum</i>	Gang-gang Cockatoo
** <i>Calyptorhynchus lathami</i>	Glossy Black Cockatoo
<i>Glossopsitta porphyrocephala</i>	Purple-crowned Lorikeet
<i>Glossopsitta pusilla</i>	Little Lorikeet
** <i>Lathamus discolor</i>	Swift Parrot
<i>Neophema pulchella</i>	Turquoise Parrot
<i>Neophema splendida</i>	Scarlet-chested Parrot
** <i>Poephilla cincta cincta</i>	Black-throated Finch (southern subspecies)
** <i>Polytelis anthopeplus</i>	Regent Parrot
** <i>Polytelis swainsonii</i>	Superb Parrot
<i>Ptilinopus superbus</i>	Superb Fruit Dove
<i>Ptilinopus regina</i>	Rose-crowned Fruit Dove
<i>Ptilinopus magnifica</i>	Wompoo Fruit Dove
<i>Stagonopleura guttata</i>	Diamond Firetail
** <i>Turnix melanogaster</i>	Black-breasted Button Quail

Supply of Captive-bred Individuals

For reintroduction programs, sourcing individuals from private aviculture could complement zoo-based and government-managed breeding programs. Currently, a number of threatened bird species are being successfully bred in private aviculture across Australia and are of potential relevance for reintroduction to BSS (Table 1). For Bush Stone-curlews, this species is bred by private aviculturists in NSW, QLD and SA, with successful multigenerational captive populations (Smith, 2021; Sass 2025). These could supply individuals for release if health screening and welfare protocols were integrated into policy supporting rewilding at this scale.

Precedents for Collaboration

Around the world, private aviculturists have contributed to the reintroduction of species such as the Spix Macaw (Urmston, 2025) and Red Kite (Carter & Newbery, 2004). In Australia, however, collaboration between aviculture and formal conservation initiatives has been limited, partly due to regulatory barriers and cultural divides. Notwithstanding, private aviculture in Australia has collaborated on a number of conservation and research projects including the Red Siskin Initiative with the Smithsonian Institute (Fink, et al., 2017).

Barriers to Fauna Reintroductions at Biodiversity Stewardship Sites*Regulatory Barriers*

The BOS framework currently measures vegetation-based outcomes, with pathways for fauna-based species credits confirmed if these specific species are present at a BSS (DPIE, 2020).

A primary objection to avicultural contributions to conservation is the risk of genetic drift, hybridisation, or domestication effects in captive populations (Frankham, 2008). However, studies show that well-managed captive populations can retain high levels of genetic diversity (Lacy, 2014). Many aviculturists maintain record books, exchange individuals, and avoid inbreeding, albeit informally. If standardised genetic management protocols were applied, private aviculture could supply viable founders for rewilding at BSS.

For private aviculture to contribute to any fauna reintroduction, legal frameworks must permit transfer of captive-bred individuals to BSS. The *Biodiversity Conservation Act 2016* (NSW) allows for biodiversity credits to be created for species management actions, but does not explicitly reference private aviculture (Austlii, 2025).

Predation and Habitat Suitability

Predation by foxes and cats remains the key limitation for ground-nesting birds such as the Bush Stone-curlew (Woinarski et al., 2015). Unless predator management is strategically integrated into stewardship agreements and fully implemented as part of site management, reintroductions risk failure. While revegetation and management create habitat, without active predator control, reintroduced populations may not persist.

Socio-political Resistance

Debates on aviculture and conservation reflect broader tensions between professional science and citizen expertise. Some scholars argue that excluding private breeders ignores a vast reservoir of knowledge and genetic stock (Tudge, 1991). Others caution that integrating aviculture risks legitimising commodification of wildlife and undermining strict conservation ethics (Catterall, 2018). Bridging this trust gap remains essential.

Opportunities for Integration*Expanding the Scope of Biodiversity Credits*

The BCT offers an option for developers to meet their offset obligations by paying into the BCF. The BCT must use that money to deliver or fund biodiversity offset outcomes on behalf of the developer under the BOS. This includes the option to “fund biodiversity conservation actions that benefit the impacted species, communities or habitats”. If biodiversity credits could be awarded for successful fauna reintroductions, this would incentivise landholders and BSS agreement holders to engage in holistic biodiversity management. A “species credit” framework already exists under the BOS, but its application has been limited to maintain and improving existing populations of species credit species rather than proactive rewilding.

Building Public-Private Partnerships

Partnerships between conservation agencies, landholders, and avicultural groups could establish rigorous breeding, quarantine, and release protocols. Such collaborations would mirror zoo-based conservation programs but at larger scales, leveraging existing avicultural capacity.

Cultural and Educational Benefits

Reintroducing charismatic species like the Bush Stone-curlew could increase public support for the BOS and biodiversity stewardship programs, creating tangible conservation outcomes beyond vegetation metrics. Their haunting calls and nocturnal presence could reconnect communities with lost elements of local biodiversity (Low, 2014).

Is it time to think outside the box?

The disparity between actions to improve vegetation condition and a complete lack of fauna reintroductions as part of a BSS agreement is not due to ecological irrelevance but regulatory inertia. Management actions targeting vegetation improvement offers clear, quantifiable metrics, while fauna reintroductions require long-term monitoring and risk management. Yet without fauna, BSS risk becoming an exercise in “green scaffolding” rather than ecosystem restoration (Lindenmayer et al., 2014).

The Bush Stone-curlew offers a strong test case: it is culturally resonant, ecologically important, available in captivity, and has been successfully reintroduced into the NSW landscape previously. While risks exist, these can be mitigated through predator management, genetic screening, and adaptive management. Collaboration with private aviculture—if supported by rigorous standards—could unlock a vast reservoir of conservation capacity.

Ultimately, rewilding through fauna reintroductions should not be seen as separate from the existing scheme but as the logical extension of biodiversity stewardship goals. A landscape with improved vegetation values but absent fauna remains ecologically incomplete. How all of this integrates into generating species credits at a BSS will require discussion and policy adaptation. The simple act of the reintroduction should not be the only criteria, but rather, generation of species credits will require ‘outside the box’ thinking.

Conclusion

BSS under the NSW BOS have made significant progress in improving vegetation values and protecting habitats. Yet they remain undeveloped in terms of rewilding and fauna reintroduction. The Bush Stone-curlew exemplifies a species that is proven to be successfully reintroduced, and at BSS could restore ecological and cultural values to landscapes across NSW.

Private aviculture, often overlooked in the conservation space, could supply the demographic resources needed for such reintroductions, provided regulatory frameworks evolve to ensure health, welfare, and genetic integrity. While challenges exist, the integration of aviculture into rewilding initiatives could represent a promising future for Australian conservation.

The question “why can’t we introduce species from private aviculture at Biodiversity Stewardship Sites?” ultimately exposes a policy gap rather than an ecological impossibility. Addressing this gap could transform BSS into active rewilding landscapes, reconnecting people and ecosystems with lost species and processes. Its time to think ‘outside the box’!

References

- Anson, J (2018) Predator fencing for conservation: An AWC perspective. *Australian Zoologist*. 39 (2): 352-358
- ANU (2025) Birds with backpacks released on Phillip Island. <https://fennerschool.anu.edu.au/news-events/news/birds-backpacks-released-phillip-island#:~:text=The%20bush%20stone%2Dcurlew%2C%20which,fox%2Dfree%20status%20since%202017.&text=%E2%80%99CI%20successful%2C%20the%20reintroduction%20will,at%20penguinfoundation.org.au>.
- Austlii (2025) Biodiversity Conservation Act 2016. Date accessed 20/09/2025.
- Baker-Gabb, D. (1990). The Bush stone-curlew *Burhinus grallarius* in Victoria: Conservation and management. Arthur Rylah Institute for Environmental Research Technical Report, 85, 1–20.
- Carter, I & Newberry, P (2004) Reintroduction as a tool for population recovery of farmland birds. *Ibis*, 146 (2): 221-229
- DPIE (2020) Biodiversity Assessment Method. NSW Government.
- DPIE (2025) Threatened Species Profile: Bush Stone-curlew. <https://threatenedspecies.bionet.nsw.gov.au/profile?id=10113>
- Fink, J et al. (2017) Saving an endangered finch in partnership with aviculturists. *Finches 2017 International Finch Convention*, Brisbane, Australia.
- Frankham, R., Ballou, J. D., & Briscoe, D. A. (2010). *Introduction to Conservation Genetics*. Cambridge University Press.
- Fraser, N. (2021) Is the Bush Stone-curlew about to become extinct in the Hunter region? *The Whistler*, (15): 97-104
- Gilardi, J. D. (2006). Captive breeding of parrots and aviculture's potential role in conservation. *International Zoo Yearbook*, 40(1), 27–35.
- Heinsohn, R, et al (2022) Population viability in data deficient nomadic species: What it will take to save regent honeyeaters from extinction. *Biological Conservation*. 266
- Hyde, G (2000) 100 years of Aviculture, an Australian perspective. *American Federation of Aviculture*, 27 (2).
- Johnson, K. A., & Baker-Gabb, D. J. (1994). Bush stone-curlew. In: C. Garnett (Ed.), *Threatened and Extinct Birds of Australia* (pp. 230–231). RAOU.
- Lacy, R. C (2014) *Managing genetic diversity in captive populations of animals, in Restoration of Endangered Species*. Published by Cambridge University Press.
- Lieberman, A (1997) The role of private aviculture in bird reintroduction programs. *CITES*: 3-4
- Lindenmayer, D. B., et al. (2014). The value of revegetation on agricultural land for biodiversity conservation. *Biological Conservation*, 170, 14–21.
- Lorimer, J. et al. (2013). Rewilding: Science, practice, and politics. *Annual Review of Environment and Resources*. 40:39-62
-

- Low, T. (2014). *Where Song Began: Australia's Birds and How They Changed the World*. Penguin.
- Marchant, S., & Higgins, P. J. (1993). *Handbook of Australian, New Zealand and Antarctic Birds*, Vol. 2. Oxford University Press.
- NSW Government (2025a) The Biodiversity Offset Scheme
<https://www.environment.nsw.gov.au/topics/animals-and-plants/biodiversity-offsets-scheme>
- NSW Government (2025b) Biodiversity Stewardship Agreements Map
<https://www.environment.nsw.gov.au/topics/animals-and-plants/biodiversity-offsets-scheme/biodiversity-stewardship-agreement/map>
- NWCG (2025) Bush Stone-curlew Conservation. <https://www.bushstonecurlew.com.au/>
- Puttock, A., et al. (2017). Eurasian beaver activity increases water storage, attenuates flow and mitigates diffuse pollution from intensively managed grasslands. *Science of the Total Environment*, 15: 430-433.
- Ripple, W. J., & Beschta, R. L. (2012). Trophic cascades in Yellowstone: The first 15 years after wolf reintroduction. *Biological Conservation*, 145(1), 205–213.
- Sass (in-press) Aviculture in Australia: A cultural tradition and vital for community health and wellbeing. *The Avicultural Review*.
- Sass, S. (2025) Bush Stone Curlews: big, bold and one of the best softbills you can experience. *Australian Birdkeeper*.
- Sass, S & Hennessey, H (2024) Stabbed in the chest: Avoiding failure and sharing our success with the critically endangered Luzon Bleeding Heart and implications for a future captive breeding program. *Australian Birdkeeper*, 37 (3), 129-133.
- Seddon, P. J., Griffiths, C. J., Soorae, P. S., & Armstrong, D. P. (2014). Reversing defaunation: Restoring species in a changing world. *Science*, 345(6195), 406–412.
- Smith, G. (2021). Bush stone-curlew aviculture in Australia: Current practices and conservation potential. *Avicultural Review*, 33(2), 55–63.
- Stojanovic, D., et al. (2023) Conservation management in the context of unidentified and unmitigated threatening processes. *Biodiversity and Conservation* (32) 1639-1655.
- Svenning, J. C., et al. (2016). Science for a wilder Anthropocene: Synthesis and future directions for rewilding research. *Proceedings of the National Academy of Sciences*, 113(4), 898–906.
- Sweeney, O.F., et al. (2019) An Australian perspective on rewilding. *Conservation Biology* 33 (4).
- Tzaros, C (2016) Bush Stone-curlews in the Murray Catchment region of NSW: Results of field and landholder mail surveys. A report by Birds Bush and Beyond Ecological Services and Wildlife Photography for Murray Local Land Services. <https://drive.google.com/file/d/1-3w8apmiv1qvIHtLlqeGUaWxvT4AIF0a/view?pli=1>
- Urmston, D (2025) The role of aviculture in avian rewilding schemes. *The Museum of Aquarium and Pet History*
- Woinarski, J. C. Z., et al. (2015). Ongoing unravelling of a continental fauna: Decline and extinction of Australian mammals since European settlement. *PNAS*, 112(15), 4531–4540.

2025 ECA TRIVIA QUIZ ANSWERS

SESSION 1

1. Kangaroo

*BONUS POINT if you can tell us how many Kangaroos are on the coin.

Answer = 5

2. Gundungurra

3. A – Sugar Glider

The Sugar Glider was split into three genetically and physically distinct species – Krefft's Glider (*Petaurus notatus*), Savanna Glider (*Petaurus ariel*), and Sugar Glider (*Petaurus breviceps*).

4. A – 3

For vegetation zones with an area of 5-20 hectares, a minimum of 3 plots are required.

5. Composition, structure, function

6. *Wollemia nobilis*

*BONUS POINT if you can tell us who discovered it.

Answer = David Noble

7. 1994

8. Wombat

9. Powerful Owl

10. B – *Banksia ericifolia* and C – *Allocasuarina distyla* are obligate seeders.

11. C – 18

12. B – Nile at 6,650 km.

2025 ECA TRIVIA QUIZ ANSWERS

SESSION 2

1.

Common name	(1/2 each)	Scientific name	(1/2 each)
Squirrel Glider	E	Petaurus australis	D
Ringtail Possum	F	Petaurus norfolcensis	E
Greater Glider	A	Cercartetus nanus	C
Yellow-bellied Glider	D	Pseudocheirus peregrinus	F
Brush-tailed Phascogale	B	Petauroides volans	A
Eastern Pygmy-possum	C	Phascogale tapoatafa	B

2. C – Greater Glider

Sugar Gliders typically glide 10-50 metres, with ~60 m being the maximum recorded. Squirrel Gliders typically glide 20-40 metres, with ~80 m being the maximum recorded. Feather-tail Gliders typically glide 5-14 metres, with ~20 m being the maximum recorded. Greater Gliders typically glide 30-60 metres, with 100 m being the maximum recorded.

3.

a) NAMLORDAL LFONIAGOL	Lomandra longifolia
b) TUHUESREPS IULIFALSTO	Eustrephus latifolius
c) CUELMALEA YIDOESHELSTIP	Melaleuca styphelioides
d) LYTUAUPECS YCLAHLOSPLER	Eucalyptus sclerophylla

4. D – Emu

Male emus take on the responsibility of incubating the eggs and looking after the chicks after they hatch.

5. B – Both sometimes consume their mate after mating

6. Little Forest Bat

*BONUS POINT if you can tell us the scientific name.

Answer = Vespadelus vulturnus

7.

Illawarra Lowlands Grassy Woodland in the Sydney Basin Bioregion

Grey Box – Grey Gum Wet Sclerophyll Forest in the NSW North Coast Bioregion

Kincumber Scribbly Gum Forest in the Sydney Basin Bioregion

Milton Ulladulla Subtropical Rainforest in the Sydney Basin Bioregion

8. Murray Watt as of the 13 May 2025

9. Rhizanthella slateri

10. BC Act Vulnerable EPBC Act Endangered



ECHO ECOLOGY
EQUIPMENT
HIRE

Cameras, acoustic recorders,
bat detectors and more.

E: hire@echoecology.com.au
M: 0423 801 779
echoecology.com.au/hire

JC ROBINSON
INSURANCE BROKERS
ENVIRONMENTAL INSURANCE

*Professional indemnity, public
liability & business insurance for
ecological consultants*

Contact Hamish Robinson
hamish.robinson@absyd.com.au
0404 470 478

J.C. ROBINSON & CO Pty Ltd ABN 99 001 814 188 is a Corporate
Authorised Representative of Austbrokers Sydney Pty Ltd ABN
14 061 968 090 AFSL No. 244244

FOR SALE/WANTED

If you have 2nd hand ecological equipment that you would like to sell or would like to purchase you can place an ad in this newsletter. Free for members of \$40 for non-members. Contact admin@ecansw.org.au

Advertising Opportunities with the ECA

Website:

- \$200 for a banner
- \$300 for company name with some detail and a link
- \$500 for company name within box, logo, details and web link

All website packages run for one financial year and include a small ad in any newsletter produced during the financial year.

Newsletter:

- \$100 for a third of a page
- \$250 for a half page
- \$500 for a full page
- \$1 / insert / pamphlet

Advertising is available to service providers of the Ecological Consulting industry. The ECA will not advertise a consultant or their consulting business.

If you wish to advertise, please contact the ECA administrative assistant on admin@ecansw.org.au.

Contributions to Consulting Ecology, Volume 57

Contributions to the next newsletter should be forwarded to the administration assistant Amy Rowles admin@ecansw.org.au by the 30th of September 2026.

- Articles may be emailed in WORD, with photos included or referenced in an attached file as a jpg. Please save any figures as a jpg, so they can be easily transferred to the newsletter format.
- Please keep file size to a minimum, however there is no limit on article size (within reason).
- Ensure all photos are owned by you, or you have permission from the owner.
- Ensure that any data presented is yours and you have permission from your client to refer to a specific site (if not please generalise the location).
- All articles will be reviewed by the editorial committee, and we reserve the right to request amendments to submitted articles or not to publish.
- Please avoid inflammatory comments about specific persons or entity.

The following contributions are welcome and encouraged:

- Relevant articles
- Anecdotal ecological observations
- Hints and information
- Upcoming events
- Recent literature
- New publications (including reviews)
- Photographs

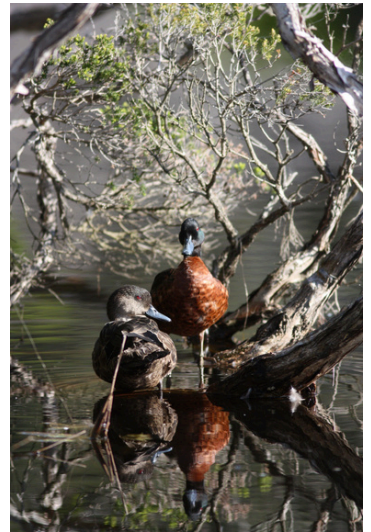
ECA PHOTO COMPETITION ENTRIES



LEFT: Pale-headed Snake. *Naomi Stackhouse*

RIGHT: Bush Rat. *Toni Blackwell*

BELOW: *Nephrurus levis*. *Gerry Swan*



ABOVE: Chestnut Teal. *Mark McKinnon*

LEFT: *Diurus tricolor*. *Steve Sass*



LEFT: Cobar Greenhood. *Steve Sass*



RIGHT: Giant Burrowing Frog. *Brooke Thompson*

LEFT: *Leucochrysum albicans* ssp. *tricolor*. *Frankie O'Brien*

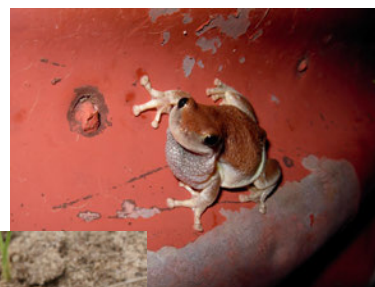


BELOW: *Thelymitra ixioides*. *Nick Tong*

BELOW: Golden-crowned Snake. *Narawan Williams*



RIGHT: *Litoria rubella*. *Narawan Williams*



BELOW: *Ozimops planiceps*. *Narawan Williams*



ABOVE: *Cyclorana novaehollandiae*. *Gerry Swan*

LEFT: Deer. *Ros Runciman*



ECA PHOTO COMPETITION ENTRIES



LEFT: Squirrel Glider. *Narawan Williams*



BELOW: Koala. *Ros Runciman*



BELOW: 2ND PLACE. Eastern Pygmy-possum.
Toni Blackwell

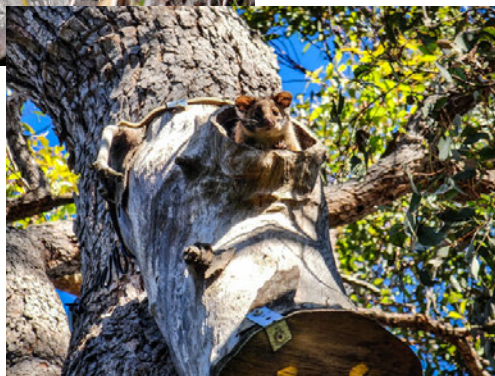
BELOW: *Amphibolurus burnsi*.
Gerry Swan



RIGHT: Common Ringtail Possum.
Keiren Giffen



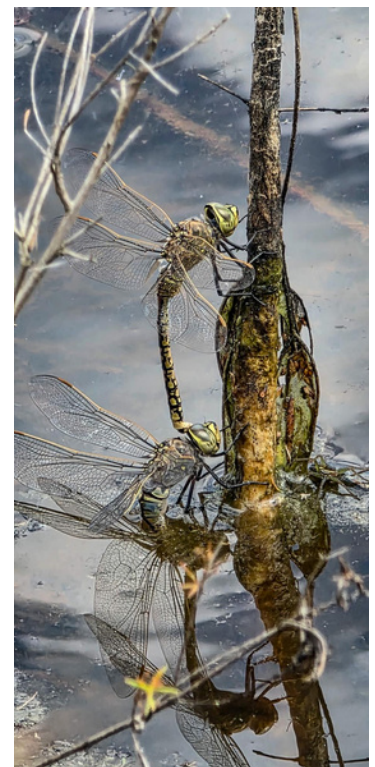
BELOW: Brown Antechinus.
Narawan Williams



BELOW: *Genoplesium insigne*.
Keiren Giffen



BELOW: Katydid.
Ros Runciman



BELOW: Australian Emperor.
Keiren Giffen

LEFT: Eastern Pygmy-possum. *Nick Tong*