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Back cover ECA Photo Gallery

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Issac Mamott

Superb Parrot

ECA Office Bearers 2024-2025

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ECA COUNCIL MEETINGS

The ECA Council meet every three months to discuss and deal with any current business of the association. Any member who wishes to view the minutes from any of the ECA council meetings may do so by contacting the Administration Assistant Amy Rowles admin@ecansw.org.au

Editor's Note

Welcome to the summer 2025 edition of Consulting Ecology! We have a great article from Greg Steenbeeke (Thesium) detailing the reappearance of one of the golden moth orchids, known as the Small Snake Orchid, Diuris pedunculata, near Rylstone, NSW, in Box Gum Woodland. Chani Wheeler, Simon Tweed and Amanda Griffiths (Niche) continue on the orchid theme and provide an excellent discussion on some of the challenges and frustrations associated with undertaking targeted surveys for Threatened orchids along with some recommendations to assist assessors in this regard. Jack Talbert (Lodge Environmental) provides a great yarn on their targeted search efforts in Wollemi National Park for the rare mint bush, Prostanthera discolor (and what a great tale it is!). Bill Wallach (Umwelt) provides a timely discussion on the need for a national database of bird and bat mortality from operational land based wind projects in order to assist assessors in much needed improvements to proposed wind farm BDAR impact assessments. More robust assessments would hopefully provide the regulatory authorities with greater confidence on the likely impacts as well as providing a counterpoint to misinformation that generally prevails in the community (eg. offshore wind turbines kill whales!). David Carr (Stringybark Ecological) details an interesting stewardship case study on the northern tablelands which indicates that the BAM risk weighting for assisted revegetation is too prohibitive, resulting in proposed revegetation works for stewardship sites generally being financially unviable. Karl Robertson (Biodiversity Australia) provides an insightful article on how the inaccuracies of the NSW Littoral Rainforest and Coastal Wetlands Mapping spatial dataset can often trigger incorrect planning approvals pathways for proposed developments and provides a solution to rectify this issue. Geoffrey Coates (ecoplanning) outlines a Masters project he is undertaking to investigate the structure of raptor communities in north-west NSW, a region that has been subject to widespread and frequent disturbances via agricultural activity and hopes to be able to use the study results to extrapolate impacts on raptors in other environments.

A big thank you to those who contributed to this edition. Happy reading!

Isaac Mamott Sclerophyll Flora Surveys and Research Pty Ltd Editor, Consulting Ecology

Message from the President

Dear Members,

I found myself reading through the recent newsletter article on the conundrum about consulting – surveying sometimes beautiful wild places only for the purposes of their demise. One thing that I was always reminded about from an old mentor was that this industry does not exist without development. No impact to assess, no ecological consultant. Yes we do other jobs and research projects as well, but the primary business of assessing impacts (and all the offsetting that goes along with it) would not exist without development.

The survey that we put together last year and presented to various politicians highlighted some rather troubling facts regarding the state of ecologists in NSW, mainly as a result of the roll out of the Biodiversity Conservation Act/Biodiversity Offsets Scheme. I know some good ecologists who left the industry disheartened with the scheme. But let me ask you this; do you think the environment in NSW would be in a better place without it?

I have been on the ECA Council for over 10 years now, and from the first mention of the BC Act (which was only September 2016), we started knocking on doors trying to get a seat at the table to review and provide input into the incoming legislation. A number of items were removed from the draft Act which may have been a result of our first stakeholder engagement.

From the inception of the BOS it was clear that the scheme was not very well thought through and a lot of the supporting documentation needed to run it was missing. The ECA was there at quarterly stakeholder engagement meetings to push for the most pressing updates and improvements to address the biggest pain points/omissions. Somewhere along the way these meetings fell by the wayside, partly due to Covid, partly due to staffing changes at the Department. Despite this, the ECA (myself in particular, supported by various other Council members) have continued to push for stakeholder engagement through various channels. We have been involved with the stakeholder engagement panel for the EPBC Act 20 year statutory review (6 monthly meetings since 2019). Myself and Belinda Pellow represented the ECA NSW in the parliamentary inquiry into the integrity of the Biodiversity Offsets Scheme, and the follow up NSW Audit office Inquiry. This resulted in a strong look at the state of offsets in relation to the amount of development credits the BCT were holding at the time. Rebecca and I then represented the ECA NSW at the more recent parliamentary inquiry into the BC Act Amendment Bill. Again, we forced real change with the clause allowing the Minister to order changes to our BDARs stricken from the Bill. I was involved in BOP-C/BCF charge system workshops before they were pulled from public view. It didn't seem to matter how important the tool was for planning and to facilitate us pushing for avoid/minimise, the market influence of publicly available prices was always going to interrupt free market functionality. Having some experience in economics I can understand this side of the argument, which is what gives me a unique perspective on the pricing side of the BOS. We have reviewed Koala survey guidelines, recently burnt area guidelines, partial loss guidelines to name a few, with varying levels of success at making meaningful feedback. This is an agenda item we are pushing again currently.

The direct result of our survey being sent to the Minister was re-establishment of the stakeholder meetings with the Department. Our first was in September 2024, and these are scheduled to happen every three months. Word of our survey resulted in contact with the EIANZ who we have opened communications with as well. Though they represent a much broader base of environmental consultant members, the ecology members are experiencing the same issues we are. We have decided to share these NSW DCCEEW stakeholder meetings with EIANZ after finding common ground on our BC Amendment Bill submissions. There is strength in numbers and I believe this only aids in us pushing for actions as a result of items raised in our meetings.

So where is this all going? You probably weren't aware, but the ECA Council is a collection of busy little beavers who have been working away in the background since 2016 on trying to make the BOS run more efficiently and effectively. We now have a quarterly seat at the table with the NSW DCCEEW (*name may only be current at time of writing this article), so please send in any action items you would like raised. If you are from a smaller

business and have a question, don't feel like a dummy, we are all struggling with at least some aspects of the BOS –Just send them in anyway. If you have a brilliant idea, don't keep it to yourself, enlighten us all. If you are part of a larger organization and have a solution/workaround for a pain point that could help the rest of the industry move on and get better outcomes, please share that with us too. If you find a recent scientific paper that is relevant to survey effort for a particular species, please share. This stuff doesn't get updated quick enough in the TBDC, but if you send it to admin@ecansw.org.au and it goes round the mailing list, someone is bound to see it and all our surveys will be better for it.

One more thing, if you are a consultant who has decided you want to stay away from the BOS (wouldn't blame you at all), and you just want to stick to Flora and Fauna reports, listen up. I have had a number of Flora and Fauna reports land on my desk over the last 5 years or so that were done by other consultants who were not BAM accredited/trained. If they had been, they would have realised from day one that the job they were about to do was going to result in triggering of the BOS and would thus be outside of their competency. If you wish to stay in the FF lane, make sure you know how to tell if a job triggers the BOS or not at the very least. You do not want to open yourself to litigation for providing a client with the wrong assessment (whether you knew it or not).

Andrew Lothian Biodiversity Monitoring Services President of ECA of NSW

Still need to renew your 2025 Membership!!!

Invoices for 2025 membership renewals and reminders have been emailed out from accounts@ecansw.org.au. Please contact accounts@ecansw.org.au or admin@ecansw.org.au if you have not been receiving them. In fairness to the members who have paid, we will be cancelling all unpaid memberships by June 30. All non-financial members will no longer receive the members discounts to the conference or workshops.

Photo Competition

Thank you to everyone who entered our photo competition. Congratulations to Isaac Mamott, winner for this edition. All entries for this competition have been included in the ECA Photo Gallery on the back cover.

Email your favourite flora or fauna photo to admin@ecansw.org.au to enter a competition and have your photo on the cover of the next ECA newsletter. Win your choice of one year free membership or free entry into the next ECA annual conference. The winner will be selected by the ECA council. Runners up will be printed in the photo gallery. Please ensure that your photo is clear with a high resolution.

Photos entered in the competition may also be used on the ECA website

Membership Category	Total
Full Member	
Practising Ecological Consultant	140
Early Career Ecological Consultant	31
Retired Ecological Consultant	3
Associate	
Government Ecological / Environment Officer (Associate)	24
Non-practising (Associate)	6
Student	6
Subscriber (Associate)	2
Grand Total	212

Currant Mambarshi



Bookings are now open (Register Now link below) for the Annual Conference of the Ecological Consultants Association of NSW. Presenting a valuable collection of data-backed solutions and emerging technologies to facilitate the design of robust avoidance, minimisation, and mitigation strategies for development projects. Hear from industry experts, researchers, consent authorities, and policy writers. The conference will allocate plenty of time for questions and healthy discussion around the difficulty of evaluating uncertain outcomes and sufficiency of justification of choices. The information to be shared and discussed is relevant to all who are involved in the design and approval of developments, including ecological consultants, engineers, planners, developers, consent authorities, and policy writers.

REGISTER NOW!

2024 ECA CONFERENCE ABSTRACTS

Relocating Large Trunk Hollows for Owls

Corey Mead

Tree House Ecology

In NSW now, not even a single season of survey is required to determine if a large hollow is of value for threatened owls. Furthermore, relocating large hollows to 'minimise' the potential impacts of development on threatened species is generally considered a 'too hard' and/or 'too costly' resolve in impact assessments. We readily replace or relocate small and medium hollows, however larger hollows take much longer to form, are far less represented in any landscape, and once destroyed aren't equally replaceable by habitat boxes. With this in mind, are we giving adequate consideration to the quality of each large hollow, their internal signs of activity, their possible historical use or potential for future use, and most importantly, the equivalent quality of large hollows otherwise remaining in that local landscape?

I will describe two case studies where nine-tonne trunk sections, both demonstrating historical owl use (from climbing inspections), have been successfully relocated into nearby forests and strapped against a large living host tree. For both, the hollow section was too large and too heavy to be supported by the canopy limbs of a host, so the entire trunk was rested on the ground. I will explain the process, the associated costs and the lessons learnt in order to improve safety, longevity and potential for future use by owls. Adequate termite protection also proves critical. In both scenarios, these trees were the best remaining large hollows in their local landscape and the monitoring results demonstrated this.

I will discuss the cost-benefit analysis considerations to determine when, on a case-by-case basis, large trunk hollows should be relocated instead of being destroyed.

Powerful Owl Nest Boxes: Success and Monitoring

Narawan Williams

Fauna Field Ecology

Are nest boxes a useful tool to mitigate the removal of a Powerful Owl nest tree? The answer is No.

Protection of known and potential nesting hollows of large forest owls is a priority.

Reason: Only three known nest boxes have been used by powerful owls for breeding. This is an extremely low success rate therefore nest boxes should not be used as a mitigation method. There are, however, certain circumstances a nest box may be useful and successfully provide nesting habitat.

In a Lane Cove Council reserve in Sydney there was a known pair of powerful owls that had shown no signs of nesting. The reserve has good roosting areas and food supply, however a lack of suitable hollows large enough for powerful owls to nest in. I was engaged to design, build and install a nest box for this pair of owls. I followed a set of criteria from my knowledge of natural nesting hollows and their position in the landscape to design the box and choose a suitable tree to install it on.

Three years after installation the owls were discovered to have bred in the box successfully by a volunteer from Birdlife's Powerful Owl Project. They had raised 2 owlets to fledgling stage. The following year they bred again and successfully reared a single owlet. This was likely the owl observed at the box trilling /begging and trying to steal food off an adult leading up to this years breeding season.

An Enduro Swift monitoring camera was installed after the first year of breeding. This viewed the entry and perch of the box to capture activity and behaviour throughout the breeding and non-breeding period. This year an additional Keen Ranger security camera was installed inside the box during the non-breeding period.

I do not believe the success of this nest box was due only to its design. It was more likely the combination of the box design, position of the box on the tree, position of box in the landscape, the lack of suitable hollows and the knowledge that a pair of mature owls were roosting in the area.

Further trials of this box design are needed to test the criteria used and determine if it will be successful in different situations.

Managing Southern Myotis in Urban Habitats

Dr Vanessa Gorecki

Research Fellow (Wildlife Management), Centre for Sustainable Agricultural Systems, University of Southern Queensland

The Southern Myotis, Myotis macropus, is Australia's only fishing bat. This species occurs in urban environments and is found roosting in concrete culverts under roads. Little is known about the selection of these artificial sites and how much connectivity occurs among culvert roosts to guide management actions. I investigated culvert roost availability and selection by M. macropus and used population genetics to study gene flow among culvert roosts in Brisbane, Australia. I surveyed 365 concrete culverts, identified 23 roosts, radio-tracked 13 nonreproductive females to locate day roosts and collected wing tissue samples from 72 bats. At the landscape scale, the distribution of *M. macropus* roosts was associated with a preference for culverts >1.2m in height and located on stream orders 3-5. Roosts in concrete culverts can be predicted and to occur and they were a limited resource with only 5.5% of culverts identified as potential roosts. At the roost scale, roost culverts differed from available culverts due to the availability of microhabitat. Culverts containing microhabitat were a limited resource in this urban landscape. Tagged bats were tracked to three day roosts; one bridge and two culverts. I found population structure and variable patterns of gene flow between urban roosts compared to peri-urban roosts and both tracking and genetic data indicate culvert roosting colonies located in urban areas are less connected to other roosts than culvert roosting colonies in peri-urban areas. These findings suggest disturbance to urban culvert roosts could be a significant impact to urban populations of *M. macropus* as displaced bats may have limited alternative roosts in use. To manage and conserve urban colonies in culverts, impacts to culvert roosts should be avoided and where impacts are unavoidable, nature-based solutions should be implemented to maintain permanent bat habitat in urban environments.

<u>Habitat use and roost selection of Eastern Cave Bat (Vespadelus troughtoni) and Large-eared Pied Bat</u> (Chalinolobus dwyeri)

Lachlan McRae

Macquarie University

The Large-eared Pied Bat (*Chalinolobus dwyeri*) and Eastern Cave Bat (*Vespadelus troughtoni*) are two of Australia's threatened insectivorous bat species. Critical gaps in our knowledge of their ecology and responses to threats persist, hindering effective conservation efforts. This PhD project will combine an ecological and genetic approach to improve understanding of the ecology and habitat requirements of both microbat species. The overall project design includes looking at aspects of habitat use, roost selection, movement patterns, diet and gene flow across the geographic range of both species, however, this presentation will primarily focus on my preliminary habitat use and roost selection results. The results will ultimately inform appropriate conservation management practices.

Bats, boxes and hollows: trialling artificial habitat for microbat conservation

Selina Kosak

Macquarie University

Many of Australia's hollow-dependent insectivorous bats are threatened due to the continued decline of hollowbearing trees. This critical roosting and breeding resource is often supplemented with generic artificial structures (bat boxes), despite significant knowledge gaps about their effectiveness, particularly when targeting threatened species. To address this problem, I used a before-after-control-impact experimental design to examine the effect of artificial roost installation (three boxes, one carved hollow) on bat activity at four field sites throughout the Cumberland Plain, Australia.

Despite a significant increase in common bat species activity, no change was observed for threatened species. Detection probability varied seasonally and peaked during months associated with mating. Roost occupancy by bats and other vertebrates (competitors and predators) varied significantly among artificial roost types. The Cube box with an enclosed base and front entrance, recorded the highest visitation by bats, while the Generic box with a large open base, recorded the most days with predator visits. Temperature difference was significantly less within the carved hollow (Hollow Hog) compared to natural hollows and the three remaining 'box' treatments, which all tracked closely to ambient temperatures. This research emphasises the urgent need for protocols outlining effective use of artificial habitat which is essential when provisioning resources for hollow-dependent species recovery.

Habitat Enhancement in urban ecosystems: landscape design and planting considerations

Dr Caragh Threlfall

Macquarie University

Urbanisation is a leading cause of global biodiversity loss, imposing the most rapid and ecologically damaging impacts of any human driven land-use change. Despite the trend of biodiversity decline, urban nature provides many health, wellbeing and workplace productivity benefits to city dwellers. Hence, there is an urgent need to return nature to cities not only to conserve biodiversity, but also to maintain human experiences of nature. To meet this challenge, there are currently significant global attempts to re-green cities to improve environmental condition, including restoring biodiversity habitat.

However, many barriers to widespread implementation still exist, including competition for limited space, a lack of technical capacity, poor organisational support and an unengaged community. New approaches to urban restoration are urgently needed that suit the small fragments of space available, and that can deliver multiple benefits not only to conserve urban biodiversity but also to reconnect people with nature. To overcome these challenges, I will present case studies that combine horticultural, ecological and social approaches to urban habitat management and restoration. These examples go beyond the provision of canopy cover to also support biodiversity and connect people with urban nature.

Can Industry and Frogs Live Together? A case study in business AND biodiversity at Kooragang

Colin McHenry

University of Newcastle

Kooragang Island in the Lower Hunter holds one of the most important surviving populations of Green and Golden Bell Frogs. Within the island, most GGBF are found in the industrialised southern part, especially in the old industrial waste facility. This of course presents some important challenges for management of the Kooragang GGBF population; there are at least 4 different companies whose environmental management plans are critical. The University of Newcastle runs the GGBF Kooragang Island Wide Survey program, which works with those companies and other land managers such as NPWS and EPA; now in its 10th year, the program

integrates monitoring across the island with helping the partners meet requirements for compliance, planning for major projects and maintenance activities, and designing and refining management programs to support the bell frog population.

Information from the program has been used to help design surface water management systems, devise vegetation management, and mitigate the impact of large and small construction projects; along the way, we have learnt a lot about how industry and bell frogs can live together. Currently, the frogs are doing well in areas close to industrial activity, and industry is learning to regard the frogs as an asset. We suspect that the lessons we've learnt from Kooragang can be applied to many situations where industry and biodiversity need to coexist.

Dealing with the Fiddly Bits – The City of Moreton Bay's Green Infrastructure Guidelines

David Francis

Francisii Ecology

Fully functional wildlife crossing infrastructure requires several components to work in unison. Often crossing infrastructure designs and standard drawings address individual components and do not necessarily consider how these components link seamlessly together. Furthermore, designs are sometimes interpreted by contractors in a way that does not achieve desired outcomes. To aid in addressing these issues, the City of Moreton Bay has developed a Green Infrastructure Guideline to provide finer detail and 'plug the gaps' where designs provide room for interpretation. The guideline is a live document thereby providing an opportunity to build on its content as the City of Moreton Bay's network of wildlife crossings is progressively delivered. This paper will discuss the guidelines; the learnings of the City of Moreton Bay through its delivery of over 55 wildlife crossing projects; how a destructive flood in 2022 informed the guidelines; and how to deal with the 'fiddley bits' of crossing infrastructure in a highly urbanised setting.

Better biodiversity on solar farms

David Carr

Stringybark Ecological

A new guide outlines a comprehensive pathway for achieving positive biodiversity outcomes alongside renewable energy objectives.

The Building Better Biodiversity on Solar Farms Guide presents innovative strategies and practical methods to mitigate land use conflicts through a focus on achieving a net gain in biodiversity for renewable energy developments. While the guide is tailored specifically to the unique ecosystem of the New England Tableland bioregion in northern NSW, its principles hold broad relevance, offering valuable insights and methodologies to neighbouring communities, host regions, farmers, developers and Landcare groups.

The Guide emphasises that well-designed solar farms can significantly benefit wildlife and contribute to environmental restoration, even while incorporating grazing practices. If biodiversity is considered in the planning stage of a new solar farm, significant gains can be made by avoiding impacts, improving biodiversity on site and working in with neighbours to enhance local biodiversity. Ecological consultants will find it useful to assist clients minimise impacts on biodiversity in the design and planning stage, including providing opportunities to 'avoid and mitigate' in Biodiversity Development Assessment Reports.

Moreover, the Guide outlines co-benefits for industry, illustrating how developments can be future-proofed and streamline the approval process by exceeding current legislated requirements. By achieving biodiversity increases and leveraging ecosystem services, industry players can also build constructive relationships with host communities and Traditional Owners.

The Guide has been funded by The Foundation for Rural & Regional Renewal, and launched in collaboration with Glen Innes Natural Resources Advisory Committee and Southern New England Landcare.

Design and Management of Wetlands in an Urban Environment

Elaway Dalby-Ball

Ecological Consultants Australia, Kingfisher Urban Ecology and Wetlands

Wetlands are key ecological resources. In urban areas the constructed wetlands can be the only remaining source of wetland habitats.

Thus it's of high importance to design in habitat features that will be able to persist. Most constructed wetlands are primarily for stormwater management and maintenance requirements focus on retaining stormwater capacity. Given this habitat, areas need to be robust to future maintenance requirements. Wetlands in urban areas designed specifically for a species typically include Green and Golden Bell Frogs and migratory birds.

This presentation has case studies from NSW urban wetlands, fresh and saltwater, with examples of i) maximising habitat in wetlands through design and maintenance and ii) case studies from wetlands designed and maintained for GGBF and migratory birds. Sharing what worked, what didn't, what we need to know more about, and how you can retain and bring back wetland ecology though influencing on-ground works. Drawing on works from a range of restoration specialists with many from Dragonfly Environmental.

Impacts, assessment and management of Myrtle Rust affected threatened plants in NSW

Craig Stehn

Threatened Species Officer, NSW DCCEEW

Dr Kate Newman

Senior Team Leader BAM Operations, NSW DCCEEW

Myrtle Rust, a disease caused by the exotic fungal pathogen *Austropuccinia psidii*, was first detected in NSW in 2010. Myrtle Rust infects new growth and significantly limits flowering and fruit set in susceptible plants – often leading to dieback and plant death. The pathogen has now established across much of the east coast of Australia and has led to the rapid decline of several species. In 2019, two previously widespread and common species, *Rhodomyrtus psidioides* and *Rhodamnia rubescens*, were listed as Critically Endangered under the NSW Biodiversity Conservation Act due to impacts from Myrtle Rust. There are a further 41 native host species that are thought to be severely affected by the pathogen.

Management options are limited, fungicide control is not feasible and is likely to have significant offtarget impacts. In NSW, the conservation response has focused on impact surveys, genetic studies, the establishment of ex situ collections, and the investigation of resistance and resistance breeding techniques.

In situations where the Biodiversity Offsets Scheme applies, the potential impacts on *Rhodomyrtus psidioides* and *Rhodamnia rubescens* from development proposals are assessed under the BAM. This may include additional assessment for serious and irreversible impacts, because of Critically Endangered listing status and the inability to control Myrtle Rust. Lack of control subsequently means there is a low likelihood of successfully managing the species' and their habitat on biodiversity stewardship sites.

Inability to respond to management creates challenges for offsetting impacts to these species and highlights the importance of avoiding and minimising impacts under the Biodiversity Offsets Scheme.

The Department of Climate Change, Energy, the Environment and Water in NSW is exploring better interaction between implementing the BAM and improving research and conservation of Myrtle Rust affected threatened plants.

Green and Golden Bell Frog Habitat Pond, Avoca

Ben Cuerel

Central Coast Council

The Green and Golden Bell Frog (GGBF) (*Litoria aurea*) is an endangered species in New South Wales (NSW), Australia, listed under the Biodiversity Conservation Act, 2016. Once widespread across NSW and Victoria, the species has experienced a dramatic 90% range contraction, now surviving in approximately 40 small, isolated coastal habitats, often in highly modified environments. One such population exists at North Avoca, centred on Bareena Wetland, a small water body created in the late 1960s due to the construction of a sewer pipe that separated it from Avoca Lagoon. Despite the physical separation, Bareena Wetland remains hydraulically linked to Avoca Lagoon, leading to its drying when the lagoon's entrance is opened to the ocean.

In line with Central Coast Council's "Opening of Coastal Lagoons Policy (R0.14)," Avoca Lagoon is mechanically breached when water levels reach 2.09m AHD to mitigate flooding of nearby infrastructure and properties.

Natural breaches can also occur during significant weather events, which can devastate GGBF breeding events by drying out Bareena Wetland and leading to the loss of tadpoles. To address this issue, a salvage protocol allows for the capture and relocation of Bell Frog tadpoles from Bareena Wetland to purpose-built ponds around Avoca Lagoon. These ponds provide a permanent water source and additional breeding habitat, particularly when the wetland dries out in summer.

Recent research by the University of Newcastle has modelled the impacts of lagoon drying on the North Avoca GGBF population, predicting a rapid decline to a very small population size within 20 years, with a significant risk of extinction due to lagoon draining. In response to these findings, and with support from the Australian Government's Environmental Restoration Fund, Central Coast Council initiated the creation of an additional habitat pond near Bareena Wetland in early 2023. This effort aims to enhance the efficiency of the salvage procedure and provide more breeding habitat, thereby improving the long-term population outlook for the Bell Frogs.

This presentation will delve into the context and development of the new pond, examining research findings, successes, and lessons from past efforts, and outlining future plans for the conservation of the Green and Golden Bell Frog at North Avoca.

Meeting the Challenges of Urban Restoration: the Sydney Olympic Park Story

Jenny O'Meara

Sydney Olympic Park Authority

Sydney Olympic Park is an island of green set in a rising tide of urban development. With a legacy of constructed landscapes, fragmentation and isolation, the Park is an outdoor classroom of adaptive management majoring in the pursuit of nature-positive outcomes. Over the last 25 years of experiential learning, management has focussed on optimising and retrofitting the maturing landscapes to incorporate habitat elements to support greater diversity.

Works have targeted improvements to individual systems and target species, addressing historical damage and fostering long-term resilience. Today the Park is well-known as an urban biodiversity hotspot supporting a high abundance and diversity of native plants and animals that are now uncommon in the Sydney region.

Exploring assessment, management and impact mitigation through case studies, this presentation will reveal the substantial achievements and multiple lessons to be found at Sydney Olympic Park:

• Reflecting on 25 years of habitat management for the Green and Golden Bell Frog which aims to provide the essential requirements of bell frogs; access to water, food, breeding habitat, refuges and ability to disperse within a mosaic of habitat stages, through the manipulation of pond wetting and drying cycles, and terrestrial and

aquatic vegetation renewal.

• Bringing back woodland birds: restoring vegetation complexity in a wholly planted landscape to enhance habitat for small passerines.

• Ecological monitoring programs: use of a multi-skilled team, citizen science and an adaptive management strategy allow the application of data-driven measures to reduce threats to and improve habitats.

Overcoming Green Roof reluctance in urban Sydney

Anne Marie Clements and M Donald

Anne Clements & Associates Pty Ltd

Australia is the land of fires, floods, droughts and coastal storms. With the expansion of our cities, canopy tree cover has decreased and heat island effects intensified. Application of green roofs has not been widely embraced in Australia.

To understand why there is resistance to installing green roofs in Australian cities, we carried out a green roof trial on a light-weight metal roof in the North Sydney residential area. This Council Authority in their planning legislation encourages residents *"to accommodate green roofs immediately after construction"*. Their Resource Manual details the merits of green roofs including thermal insulation, increasing the life span of the roofs, reducing heat-island effects, and reducing stormwater runoff.

In Australia, the barriers to widespread acceptance by residents and commercial developers of functional Green Roofs appear to be related to cost and lack of proven reliability, as well as confusion between functional Green Roofs and landscaped Roof Gardens. Landscape architects specify at least 300 mm of soil, watering systems and use of non local native plant species such as *Sedum* spp. *Sedum* spp. are the commonly planted species used on functional green roofs in Europe and America. They are succulents in the family Crassulaceae, and generally planted as a Sedum-mix blanket containing eight to twelve different types of Sedum.

From a restoration ecology point of view, growing plants on harsh roof environments is similar in many ways to growing dune species on silica sands, where mycorrhizal fungal symbioses are critical for plant nutrient and water uptake. The efficiency of any green roof for climate mitigation is likely to depend on establishing these plant / soil fungal associations.

The North Sydney roof trial followed the *FLL-Guidelines for the Planning, Execution and Upkeep of Green Roof Sites.* Instead of using *Sedum* spp., local native groundcover species were used. The factorial trial consisted of 40 cells (5 replicates, 2 soil types and 4 species mixes). The trial commenced on 8 November 2023 and the green roof was exposed to summer storms. After 3 months, despite the wind, summer heat and short bursts of intense rain, the plants in the 40 cells are thriving and soil mycorrhizal fungi developing.

The green chemistry of the soil mycorrhizal fungi associated with local native species may be the breakthrough required for long-term reliability of Green Roofs in the harsh exposed environment.

Bush Birds- Town Birds: strategies to support Glossy-black Cockatoos in the urban space

Dr Beth Mott

Saving our Species, DCCEEW

Despite its remarkable ability to adapt, the South-eastern Glossy Black-cockatoo is listed as vulnerable with estimates of less than 8,000 wild glossies currently extant. Whilst climate change and invasive species pose significant threats to the survival of this iconic bird, glossies are most heavily impacted by habitat loss, in particular, the loss of she-oak woodlands necessary for feeding and hollow-bearing trees essential for nesting. Whilst anthropogenic habitat loss has caused the extinction of mainland glossies in South Australia,

understanding impacts of habitat loss on the broader mainland particular in the aftermath of the black summer fires, is confounded by the long lifespan of glossies. Suspected severely negative impacts of habitat loss are predicted to escalate into the future. The urban space has the potential support significant habitat for glossies if appropriately managed.

As with many hollow-nesters, glossies are strongly tied to habitual locations in the landscape and often strong fidelity to these locations will persist despite the expansion of the urban footprint. This means there is the potential for glossies to use and even breed in urban landscapes. This presentation delivers new data on the movement of glossies in the post-fire landscape of the New South Wales South Coast, and an analysis of why the urban space has value for this species. It presents strategies associated with building effective vegetation corridors to support glossy breeding and movement across the broader landscape, discusses how to value-add to current conservation programs, and introduces a series of strategies including water points, nest boxes, planting and education that can be employed in the urban space to support glossies into the future.

Conservation of the Squirrel Glider in Urban Landscapes

Dr David Sharpe

Umwelt

Habitat loss and fragmentation are major threats to biodiversity worldwide. Urban environments represent particular challenges due to the hostile nature of the matrix, landuse conflicts and the constraints that current development poses to the mitigation of existing impacts. The Squirrel Glider (*Petaurus norfolcensis*) is a gliding marsupial threatened in the southern half of its range. While considered a common species in Queensland, Brisbane City Council uses it as a flagship species to promote the conservation of urban bushland. While the Squirrel Glider still occurs in many urban remnants in Brisbane, there is concern that small population sizes and population fragmentation will lead to a decline in the species over time. This talk provides an overview of research on the Squirrel Glider in the subtropics, including its diet, home-range, den tree use, movement ability and population viability modelling. The Squirrel Gider is also threatened by on-going urban development in coastal NSW. It will be demonstrated how the insights gained contribute to the Squirrel Glider's conservation in highly constrained urban landscapes.

What hope for Urban Ecosystems? Turning around the slow death of Status Quo.

Peter Dixon

President, Australian Association of Bush Regenerators

Many of our urban centres are placed in areas of high biodiversity and often contain many Endangered Ecological Communities and Threatened Species.

The mechanisms of ecological degradation of urban environments have been well understood for over half a century and there have been active and widespread bushland management and bush regeneration programs, both professional and volunteer, for over 30 years. There have been planning requirements and legislation in place to protect and restore urban environments for just as long.

Urban planners, stormwater engineers, fire authorities and environmental planners have an arsenal of proven methodologies and technologies at their disposal to mitigate environmental degradation through development and redevelopment. Bush Regeneration methodologies and practices have been shown to work in virtually all urban ecosystems and there are many success stories.

Why is it then that we continue to lose ecological integrity and species in our urban areas? Why are known solutions that could build back ecological and environmental values ignored, opportunities missed, even when they are supported by policy frameworks and public desire?

This presentation explores some of the governance failures (and a few of the successes!) that have led to the current situation and options to reverse the current downward trend.

Ecology meets industrial design: creating artificial habitat for Australia's wildlife

Mick Callan

Habitat Innovation & Management

The design and construction of artificial habitats for wildlife has historically been driven by good intentions but often relied on low-tech solutions, inexpensive materials, and limited species-specific knowledge. This traditional approach has frequently resulted in short-term success but long-term failure due to habitat degradation or avoidance by target species. The inadequacy of these habitats in meeting specific species' needs, particularly for species of conservation concern, highlights the necessity for a more sophisticated and informed approach.

Developing durable and appropriately tailored artificial habitats requires significant investment, time, technology, expert knowledge, and personal risk. This presentation explores the complex journey of creating effective artificial habitats, focusing on critical stages: research, development, funding, manufacturing, deployment, and monitoring.

Using case studies from our own successes, we illustrate the challenges encountered and the innovative solutions implemented to overcome them. These case studies emphasize the importance of multidisciplinary collaboration, advanced materials and technologies, and a deep understanding of target species' ecological and behavioural requirements within both natural and urban environments.

Our findings underscore the need for a comprehensive approach to artificial habitat design and construction, ensuring long-term viability and effectiveness beyond initial deployment. This presentation aims to provide valuable insights and practical guidance for researchers, conservationists, and policymakers involved in wildlife habitat restoration and conservation efforts, particularly in urban settings.

In silico experiments for conservation decision support: showcasing the landscape management of a globallynotorious invasive toad

Arman Pili

Monash University

The escalating impacts of invasive alien species on ecosystems and human societies warrant the development and application of tools that can reliably predict biological invasions and management outcomes at spatial and temporal scales relevant to on-the-ground management. A powerful ecological modelling paradigm for addressing theoretical questions and applied issues on biological invasions and biodiversity conservation is individual-based modelling (IBM). In demonstrating this promise, we developed virToad (Pili et al. 2022) - an IBM of a globally significant alien invader, the cane toad (Rhinella marina). We built virToad to predict the cane toad's local- to landscape-scale spatiotemporal population dynamics, and ultimately to explore, optimize, and recommend cost-effective management responses against its invasion. We designed virToad to make population dynamics an emergent consequence of the cane toad's fitness-maximizing behavioural responses to environmental constraints (e.g., water availability, kin selection), and to management actions. We then used virToad to simulate cane toad population dynamics in the absence of management, and under alternative management strategies implemented at a spectrum of effort: hand-capturing and trapping of juveniles and adults, fencing waterbodies, and trapping and chemically suppressing tadpoles. virToad simultaneously reproduced empirical patterns of the cane toad's population densities, detection probabilities, distributions, and spatial segregation - signifying high structural realism. Model analysis revealed that the cane toad's population dynamics are most sensitive to relatively well-studied parameters controlling growth, development, survival, and water ecophysiology - signifying confidence in model predictions. Simulation experiments indicated that the efficacy of competing management actions varied significantly, and that only moderate to high effort handcapturing and trapping of juveniles and adults has the potential to suppress invasions. Through virToad, we showed that IBMs are indispensable tools enabling researchers and practitioners to understand, defensibly forecast, and respond more efficiently to the impending challenges wrought by alien species invasions.

VegAssess App- A data collection tool for BAM, VQA and general flora surveys

James Garden

Ecology Systems Pty Ltd

VegAssess is a custom-built field app designed to assist ecologists efficiently collect, manage and present ecological field data. The app includes in-built assessment proformas for the Biodiversity Assessment Method (BAM) used in NSW and the Vegetation Quality Assessment (VQA) method used in Victoria. It also allows for the creation of species lists and recording of cover and abundance for use in plot-based assessments, such as quadrats.

A key focus for the development of the app was the desire to remove 'paper-based' forms and manually handling of data, therefore streamlining the process field collection, data review and export and presentation. This includes utilising recognised datasets (such as BioNet), auto-calculating scores (such as covers), and exporting to standardised templates (such as the BAM calculator template). The app also allows for the creation of 'projects' against which multiple assessments can be completed, further improving data management across large and small organisations.

Some of the key features of VegAssess include:

- Inbuilt PCT/EVC benchmarks and species lists.
- Dynamic, searchable drop-down lists for species, PCT/EVCs and more.
- Auto-calculation of cover and count sums and VQA scores.
- Exporting assessment data into the BAM calculator template (CSV) or VQA data sheets (PDF and CSV).
- Exporting species lists for all species recorded.

Birds in the 'burbs': How to improve habitat for native birds in residential areas

Dr Jacinta Humphrey

ICON Science, RMIT University

Birds are a prominent component of urban biodiversity yet many species, particularly small woodland and forest birds, are vulnerable to landscape change. To better design, manage and restore urban areas for avian communities, it is essential to understand the factors that influence the distribution and occurrence of bird species, especially those most disadvantaged by urbanisation. I examined the relative influence of three factors that potentially affect forest bird communities in residential areas of Melbourne, Australia: i) land-use type; ii) local habitat attributes; and iii) biotic interactions with the noisy miner (*Manorina melanocephala*), a native honeyeater that aggressively excludes small native birds. I systematically surveyed forest birds at 300 sites in a range of urban land-uses. The composition and richness of forest bird communities differed between land-use types: sites with greater native tree cover had a distinct and richer avifauna. However, the strongest driver of forest bird richness and composition was the relative abundance of the noisy miner. The dominance of the noisy miner poses a challenge for avian conservation because actions to improve urban sites for forest birds may also benefit this aggressive species. The conservation of forest birds will require larger intact patches of native vegetation fringing residential areas, coupled with an increase in understorey complexity in suburban neighbourhoods.

The Cat Conundrum: Balancing Love for Cats with Wildlife Conservation

Pamela Gray

Tweed City Council

Tweed shire council manages areas of high conservation value bushland (HCVB) on the Tweed Coast for the purpose of environmental conservation and wildlife protection.

In 2013, Council commenced camera monitoring in HCVB areas to inform management programs. This monitoring recorded a high level of activity by roaming cats, both owned and unowned.

Tweed Shire Councils presentation will provide an overview of the activities undertaken by council between 2014 and 2024 to try to reduce the level of cat activity in HCVB on the Tweed Coast.

These include:

On-ground monitoring and control works; the use of legislative mechanisms and compliance, and awareness raising and behaviour change programs.

Increasing the supply of in-demand biodiversity credits

Dr Louisa Mamouney

Executive Director of the Nature Markets and Offsets Division, NSW DCCEEW

Dr John Seidel

Director, Assurance & Biodiversity Stewardship, Nature Markets and Offsets, NSW DCCEEW

This presentation will cover the current focus and work program of the Credit Supply Taskforce to increase the supply of in-demand biodiversity credits. The presentation will outline new products that will assist to increase the supply of biodiversity credits, improve operation of the credit market and make it easier for landholders to establish Biodiversity Stewardship Agreements. It will also highlight the work undertaken by the Taskforce over its first 12 months of operation.

Powerful Owl Project: How planning can improve habitat in the urban matrix

Dr Annie Naimo

Urban Bird Program Coordinator, Birdlife

BirdLife Australia's Powerful Owl project aims to monitor, conserve and advocate for Powerful Owls. As apex predators, these owls play a pivotal role in maintaining biodiversity and ecological balance, yet urbanization presents many challenges for the species. Our project combines field monitoring supported by a network of volunteers, with data and guidance for land managers to promote best practice habitat management.

To support this aim, the Powerful Owl Project has developed a free guide for land managers, informed by our on -the-ground research and industry consultation. The guide has been developed as a tool for land managers to make informed decisions and mitigate risks to Powerful Owls when conducting works at significant habitat sites.

Come along to this session to learn more about the Powerful Owl Project and for access to the Powerful Owl Guide for land managers.

Beyond Species Richness: Integrating functional diversity into private conservation programs

Joshua Lee

Western Sydney University

Private land conservation provides a unique opportunity to grow our capacity to protect biodiversity, however there is room to expand the definitional space of what elements of biological diversity should be prioritised in achieving conservation outcomes. Species-based measures of diversity (i.e., the combined effect of the number and identity of species) have historically been the primary indicator for ecosystem condition and conservation value in both science and management. However, when conservation is exclusively species-based, many components of the nature of biological diversity can be ignored. To infer complex, multidimensional information about ecosystem function, the composition of species and the ways that they use resources in their environment provides richer information. I aim to explore the potential benefit of including functional traits and functional diversity as a supplementary way of capturing variation in ecosystems that is currently missing in existing monitoring programs. This is being achieved through collaboration with the NSW Biodiversity Conservation Trust who aim to enhance conservation outcomes through private land agreements.

I have found that while species richness is comparable, functional diversity is reduced in the BCT's monitoring network relative to benchmark vegetation data in NSW. Findings from this work advocate for a broadening of the definitional space of biodiversity and could help guide future investments to target the functional characteristics of species and ecosystems currently missing within protected areas.

<u>Koala Management in the urban interface of Port Stephens</u>

Kimberly Baker

Port Stephens Council

It's no secret that the management of Australia's biodiversity requires successful cross-agency collaboration; and the Port Stephens Koala population is no exception. The Port Stephens Koala population plays an important role in Port Stephens' identity, biodiversity and economy. This population however, is well documented to be in decline and facing rising pressures from habitat removal, wildfire and disease. A 2019 study also identified Port Stephens Drive as one of the worst Koala vehicle strike hotspots in NSW. Council has partnered with State and Federal Governments to deliver a number of projects to assist in securing its local Koala Population for future generations. This presentation will provide a brief overview of Council's key projects including: the award-winning Port Stephens Drive Koala Vehicle Strike Project, Koala Dietary Study, Vegetation Mapping & Koala Habitat Mapping Updates and local offsetting recommendations.

Mitigation and conservation plant translocations: do perspectives of practice, funding and success vary between <u>sectors?</u>

Chantelle Doyle

Centre for Ecosystem Science, UNSW

Conservation and mitigation translocations, that is those arising because of development conditions of consent, aim for similar positive outcomes, specifically net gain for a species. However, there has been limited examination of practitioner perceptions of the practice, how they compare across the conservation and mitigation sectors, or if there are differences in the budget, timelines, and outcomes between the two.

Using semi-structured interviews, we observed general support for translocation as a concept, however most practitioners perceived the goals of conservation and mitigation projects as different, and mitigation practitioners were less likely to feel that the resource expenditure was justified.

We observed large variation in funding for mitigation projects, meaning there was no significant difference in funding between conservation and mitigation projects. We did, however, record significantly greater investment of in-kind contributions, as well as longer planning and project duration phases in the conservation sector. The

reliance of the conservation sector on in-kind contributions is fraught, because although it correlates with longerterm project investment, there are risks from fatigue of personnel.

Interviewees from both sectors identified people-related project elements, such as expectations and communication, as key areas requiring improvement for better project outcomes. Site, timelines, and maintenance were also nominated areas for improvement, but this perception was influenced by experience level. Given the rapid growth in this field, we suggest the most advantageous improvements could be made in mentoring, communication, and planning, ensuring staged success criteria aligned with both species and team goals.

How Genomics Can Be Used for Restoration and Rehabilitation (and how consultants and developers can <u>embed this in DA's)</u>

Marlien van der Merwe

Research Centre for Ecosystem Resilience, Botanic Gardens of Sydney

Genomic data contains a wealth of information that can guide quality restoration efforts. It is also a tool that can be used for assessing and monitoring restoration and rehabilitation success.

It is now, commonly accepted that genetic diversity is a measure of population resilience and adaptability with greater diversity providing populations with an increased chance of surviving future challenges. Short term, populations that are genetically diverse will be able to avoid the dire consequences of inbreeding depression. How and where we source material for restoration can affect the levels of genetic diversity and as explained can have a flow on effect on the short- and long-term success of the newly created population.

Here I will explain how genomic data can guide sourcing of material, demonstrating the freely available Restore and Renew webtool and using specific examples. I will provide examples of how genetic data can guide translocations along with other applications of genomic data to questions pertinent to restoration and rehabilitation including issues such as taxonomy, provenance and threatened plant communities.

To conclude, I will discuss options of how genomic information can be incorporated into an accreditation system and how our team can assist with this. Finally, the audience will have an opportunity to vote on species to be added to the Restore and Renew webtool.

ECA RESEARCH GRANTS

Congratulations to the following 2025 Grant Recipients

Grant	Recipient	Project Title	Affiliation
Ray Williams Mammal Research Grant 2025 \$3000	Jackson Wilkes Walburn	Impacts of habitat degradation on the resilience of platypus populations to Australia's highly variable climate	UNSW
ECA Conservation Grant 2025 \$3000	Shelomi Doyle	Population genetics of <i>Boronia deanei subsp.</i> <i>deanei</i> , an endangered swamp obligate plant	UNE

GOVERNMENT LIAISON AND ADVOCACY



ECOLOGICAL CONSULTANTS ASSOCIATION of NSW Inc.

ABN 85 213 648 549 www.ecansw.org.au Correspondence: Amy Rowles ECA Administration 415 Parishs Rd, Hilldale, NSW 2420 email: <u>admin@ecansw.org.au</u> phone: 0418451488

6th September 2024 The Director Portfolio Committee 7 Parliament House, Macquarie Street SYDNEY NSW 2000

Ecological Consultants Association of New South Wales submission to the inquiry into the Biodiversity Conservation Amendment (Biodiversity Offsets Scheme) Bill 2024

The Ecological Consultants Association of NSW (ECA) was established 25 years ago to represent practising ecological consultants in NSW. The organisation currently has over 200 members actively working within the industry, from sole traders and small businesses, to employees and owners of large corporations.

The ECA of NSW currently has two key comments:

- There needs to be a genuine and representative industry consultation framework to better manage future changes to the biodiversity legislation and instruments.
- Changes to the BC Act that enable the NSW Government to issue directions to accredited persons relating to the preparation and modification of biodiversity assessment reports is inappropriate and unethical.

Insufficient detail has been provided to assess the suitability of the Bill's proposed changes to the Biodiversity Conservation Act 2016 (BC Act). Instead, relevant details have been deferred to other documents (regulations or strategies) that are not yet released for comment. Until these documents are released, the adequacy of the proposed changes to the BC Act cannot be fully reviewed. The lack of transparency is inappropriate and a more detailed level of industry consultation is expected by those affected by the proposed changes (all stakeholders). As with the introduction of the BC Act in 2016, the current amendment looks to be repeating the mistake of being rushed through without adequate consultation with key stakeholders (particularly practitioners).

There needs to be a genuine and representative industry consultation framework to better manage future changes to the biodiversity legislation and instruments. A survey investigating the extent and causes of workplace stress was distributed through the ECA of NSW membership and the organisation's social media platforms, achieving a representative 141 responses.

The results of the survey are indeed alarming and indicate an industry reaching crisis point. Among Accredited Assessors, 63% have considered leaving the industry in the last 5 years due to workplace stress. This is directly linked to the implementation of changes to the BAM and delivery of the BOS.

On the 22 August 2024, the ECA of NSW sent a letter to Penny Sharpe requesting an urgent meeting and no response has been received to date (see attached).

Changes to the BC Act to enable the NSW Government to issue directions to accredited persons regarding modification of their biodiversity assessment reports should not be permitted.

An object of this Bill is to amend the BC Act to reform the biodiversity offsets scheme and, in particular, to:

"enable the Environment Agency Head to issue directions to accredited persons relating to the preparation and modification of biodiversity assessment reports,"

This proposed objective of the Bill has been created under the false pretence that it is addressing a recommendation from the Independent Review of the BC Act (the <u>Independent Review</u>). However, this is not the case. <u>The Independent Review did not recommend that the Environment Agency Head issue</u> <u>directions to accredited persons relating to the preparation and modification of biodiversity assessment</u> <u>reports</u>.

In the NSW Government response to the Independent Review, it is stated that this proposed objective of the Bill was to address the following recommendations:

Recommendation 15: Set a requirement in the Act to publish reasons for approving serious and irreversible impacts and maintain a statutory register of these decisions. All areas over which the Minister for the Environment considers a project would cause a serious and irreversible impact should be added to the single spatial tool as a 'no go' area.

Recommendation 27: For certain government priority projects that give primacy to the environment:

 amend the Biodiversity Conservation Regulation 2017 to provide an option to enter an agreement with the Minister for the Environment to deliver an offset obligation in a way that provides certainty for biodiversity conservation, is aligned with a regional offset investment plan, delivers on-ground actions and generates credits on a like-for-like basis through entry into Biodiversity Stewardship Agreements, acquisition of land and conservation measures

 require the Minister for the Environment to publish details of any such decision and publicly report on the outcomes achieved

Recommendation 34: Set a requirement in the Act for the Environment Agency Head to maintain a public register of biodiversity credit obligations and how credit obligations are met. Recommendation 35: Set a requirement in the Act that relevant decision makers must provide the information required for any new statutory registers created, such as for credit obligations, avoided lands and projects with serious and irreversible impacts. Provide support and guidance to local councils and other decision-makers to meet this reporting requirement.

Recommendation 36: Develop fit for purpose digital systems that allow for consistent, real time and automated information collection for all statutory registers.

It is not ethical to enable the NSW Government to effect amendments of biodiversity assessment reports written by experienced ecologists who have been accredited by the NSW Government to prepare those reports. Without any details on how this would work, the ECA of NSW foresee (based on current experience) that this could result in an inexperienced Government employee ordering an experienced ecologist to change survey or assessment findings based on differing views. This is likely to significantly increase the stress on ecologists.

In addition, such changes could also invalidate a legal defence in the Land and Environment Court, where the ecologist has the ultimate ability to demonstrate their facts are correct against the Department and Consent Authority. ECA members can provide examples of where Department advice has been proven wrong in terms of Case Law (such as the site definition of an Endangered Ecological Community only being defined by Bioregion and floristic composition and structure, and not by these factors in combination with site edaphics; e.g. alluvial soils), literature review and evidence collected by standardised techniques (including the BAM) from the site.

Experience by many of our members reflects personal opinions of some Department officers overriding legal, scientific and even Department policies/advice, including clear statements in the BAM itself. It is not in the public interest to grant the Department the legislative power to force an accredited assessor to change a report unless there is a clear and objective demonstration that the BAM or its associated published guidelines and policies are not abided. All other matters are reserved for the Land and Environment Court if the issue cannot be resolved between the accredited assessor, the Department and the Consent Authority.

To our earlier point, the ECA of NSW has not been consulted on this proposed change. Some relevant comments from the survey investigating the extent and causes of workplace stress are as follows:

"The Government should not force ecologists to revise BDARs [Biodiversity Development Assessment Reports] and BSSARs [Biodiversity Stewardship Site Assessment Report] if they don't agree with the findings of the report. Ecologists need to be respected by government reviewers rather than treated poorly because their opinions differ from the dodgy databases created by the Government." – Ecological consultant. "The professional opinion of consulting ecologists (and even experts!) is constantly set aside in favour of the BAM-C [Biodiversity Assessment Method Credit Calculator] and the strict rules in which it operates. It creates unnecessary work, perverse outcomes and disillusionment amongst experienced ecologists in the industry." – Ecological consultant.

"Make it clear and not as rigid in that there are known experts out there that have a better understanding of targeted species (and their surveys). If you want us onboard you need to give the trust to the assessor if they come up with a better option." – Ecological consultant.

"Professional judgement is ignored or undervalued - more flexibility should be given to consultants in regards to survey effort or survey exclusion where applicable – BCD [Biodiversity & Conservation Division now Biodiversity, Conservation and Science] require justification for any variation to survey guidelines, however they want this based on peer reviewed information, when often some species have hardly any reviewed literature to back up justification because there is no information available. More professional judgement and justification needs to be given to consultants." – Ecological consultant.

Andrew Lothian

President Ecological Consultants Association of NSW

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Information for Ecological Consultants Association regarding Accreditation under the *Animal Research Act* 1985

In NSW, the welfare of animals used for animal research is protected by the <u>Animal</u> <u>Research legislation</u>, <u>Wildlife surveys</u> undertaken to determine the presence of animals are considered as animal research and are therefore subject to the provisions of this legislation. The legislation also requires that the conduct of animal research must be consistent with the provisions of the <u>Australian code for the care and use of animals for scientific purposes</u> <u>8th Edition 2013</u>.

If you wish to conduct wildlife surveys for animal research purposes, such as surveys to determine species presence prior to development or land clearance, to legally conduct such surveys there is two-stepped process businesses must follow. The process includes:

- Accreditation under the <u>Animal Research Act 1985</u> (the Act) through the NSW Department of Primary Industries (DPI) if your business is a corporation, i.e., is registered with ASIC and has an ACN; and
- 2. Approval of a project application by an Animal Care and Ethics Committee (ACEC).

Please note: if you are a sole trader with an ABN (Australian Business Number) only, you are not required to be accredited under the Act, however, you must still have Animal Care and Ethics approval for your animal research activities.

This requirement is not new, it has been in place since the introduction of the legislation. We are currently increasing the awareness of this requirement to help researchers improve their compliance with the legislation.

Accreditation is managed by the NSW DPIRD Compliance Systems and Accreditation unit. You can email <u>bfs.admin@dpi.nsw.gov.au</u> for more information on accreditation. If your project is already overseen by the Secretary's ACEC, this ACEC approval process does not change. If you do not have Animal Care and Ethics Committee approval for your fauna surveys/research activities and do not have access to a committee through a University, other Government department or other organisation accredited to undertake animal research in NSW, you are able to contact the Secretary's ACEC to ask if they would be prepared to supervise the type of animal research you plan to undertake. Follow the steps outlined on the <u>Secretary's ACEC website</u> under "Process for applying to the Secretary's Animal Care and Ethics Committee for project approval."

Please note:

'Spotter / catcher' or translocation work is undertaken for the purpose of protecting and minimising impact on animals due to demolition or land clearing activities. These types of activities do not meet the definition of animal research under the *Animal Research Act 1985*, they constitute normal animal management and so are <u>not</u> covered under Animal Research Authorities (ARAs) for fauna surveys. Pre clearance surveys to determine presence of animals are considered animal research and need to be approved under an ARA (Animal Research Authority).

INTERESTING OBSERVATIONS, TIPS AND FACTS

Share your interesting observations, tips and facts here by emailing admin@ecansw.org.au a paragraph or two, maybe a photo. If it is interesting to you, no doubt it is interesting to other ecologists.

Stuck in the MUD!

This young male eastern grey kangaroo shows why it is so important to have adequate fencing around construction sites, especially during dam dewatering. We were there to rescue eels and turtles and instead spent the morning trying to navigate metres of fine oozy sediments. The solution was to demolish on old shed and lay down sheets of corrugated metal on which we were able to reach this very grateful roo. He hung around with us for about an hour before regaining his strength and heading off.

Kat Duchatel

écologique





Left: Brooke Thompson, Kat Duchatel and a very stuck Eastern Grey Kangaroo. Right: Kat and Roo recovering from the 4hr rescue mission.

1) Match the image with the correct common name and then with the correct scientific name.

Ав	Yellow-tailed Black-Cockatoo	Calyptorhynchus banksia
	Palm Cockatoo	Probisciger atterrimus
c	Glossy Black-Cockatoo	Calyptorhynchus lathami
	Red-tailed Black-Cockatoo	Calyptorhynchus funereus

2) What three birds are on the Australian Coat of Arms?

- 3) What is the deadliest animal in the world?
- 4) The first megafauna fossils were found in Australia in 1823 at?
- A) Wellington Caves, NSW

D

- B) Winton, QLD
- C) Riversleigh, QLD
- D) Naracoorte Caves, SA

5) In what year were cane toads introduced to Australia?

- A) 1934
- B) 1938
- C) 1945
- D) 1949

6) What Australian Mammal has the largest sperm?

- A) Eastern Grey Kangaroo
- B) Honey Possum
- C) Humpback Whale
- D) Yellow-footed Antechinus

7) List the Common Name and Scientific Name for these monitors found in NSW.



ECA TRIVIA QUIZ 2024 - Questions

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of fungus to be collected and described from Australia.

9)Australia's only cold climate winter deciduous tree? *N_____g____*

10) What is the botanical name for:

- A) Woollybutt
- B) Prickly-leaved Paperbark
- C) Austral Bugle
- D) Hairy Panic

11) The largest and oldest-known living plant on Earth has been discovered in Australia.



What nationally threatened EEC might you find it in? L

LOOKING FOR GUIDELINES?

The BAM has specific guideline documents for Plants, Bats, Frogs, Reptiles, Koala. Then there are other guidelines provided in the Threatened Biodiversity Data Collection (in BioNet). Guidelines are freely available to anyone via the web (<u>https://www2.environment.nsw.gov.au/topics/animals-and-plants/biodiversity-offsets-scheme/</u> <u>maps-systems-and-resources/guides-tools-and-databases</u>).

LITERATURE

RECENT BOOK RELEASES

Information Taken from: CSIRO Publishing Website http://www.publish.csiro.au and collated by Amy Rowles.

Title: Wattles of Victoria and Tasmania

Author: Neville Walsh, Daniel Murphy, Arthur Court and Alan Gibb

RRP: \$59.99 Publisher: CSIRO Publishing Date: March 2025

Wattles (*Acacia*) are among the most vibrant plants in the southern Australian bush, with their iconic yellow blooms particularly visible in late winter and spring. As the largest genus of flowering plant in Australia, they are one of the most resilient, recognisable and culturally significant native plants. However, they can be difficult to identify at a species level.



Title: Finding Australian Birds: A Field Guide to Birding Locations

Author: T. Dolby and R. Clarke

RRP: \$59.99 **Publisher**: CSIRO Publishing **Date**: March 2025

From the eastern rainforests to the central deserts, Australia is home to some 900 species of birds. *Finding Australian Birds* covers over 400 birdwatching sites conveniently grouped into the best birding areas, from one end of the country to the other. This includes areas such as Kakadu in the Top End and Uluru in the Red



Centre of the Northern Territory, the Great Barrier Reef in Queensland, an amazing diversity of forests along the eastern Australian seaboard, including some of the world's tallest forests in Tasmania, the iconic Strzelecki and Birdsville Tracks in South Australia, and the mallee woodlands and remote Kimberley region in Western Australia.

Title: Weeds of the South-East: An Identification Guide for Australia

Author: F. Richardson, R. Richardson and R. Shepherd

RRP: \$99.99 Publisher: CSIRO Publishing Date: March 2025

Weeds of the South-East is a comprehensive identification guide to weeds found in the South-East Region of Australia. This fourth edition has been updated to include recent changes in nomenclature, bringing all species and genus names in line with the current Australian Plant Census.



BOOK REVIEW

FAUNAVERSE: Wildlife in Poetry– Tasmania and FAUNAVERSE: Australian Wildlife in Poetry

by Alexander and Jane Dudley.

• • • •

'And now I've told this Lizard's tale, I hope you see the good, of fallen trees as habitat, and not as "fire" wood.'

These books introduce the reader to a range of Australian fauna with those all important invertebrates not forgotten. Each poem includes some ecological fact or message to educate the reader and a little humour tucked in there as well.

'Milena the March Fly is really very sweet, On account of all the nectar that Milena likes to eat.'

'I'm a Little Penguin chick, I'm waiting for my Mum; She's been out at sea all day, I'm feeling pretty glum. I know that she will feed me well, but what an awful dish! 'cause what do I look forward to? Regurgitated fish!'

Glossy Black Watch

We're ecologists with special skills in wildlife observation Each allocated hollow trees which are our destination So we disperse into the scrub, warm clothes and heavy packs And sit in sight of target trees and wait for Glossy Blacks. These cockatoos are somewhat shy, their call metallic screeching A distinctive mournful cry, enchanting and far-reaching We huddle in our camping chairs, binoculars and snacks And hope our evening will be blessed by nesting Glossy Blacks. The mozzies swarm, the day grows cold, we huddle in our jackets Listening and watching with our hands in lolly packets And then on dusk we hear the sound! The Glossy Blacks are calling Will they come to our tree? There is hope as night is falling They circle round, deep wing beats slow, his long fanned tail a flame But then they fly off somewhere else. Well that was bloody lame! - Alexander Dudley The photos that illustrate these books are beautiful and have been printed at a high quality. What I really like, is that although some of our more iconic animals, such as the Koala are included, Alexander and Jane have also included species that are less well known (i.e. Dusky Antechinus Forty Spotted Pardalote, Robber Fly, Burton's Legless Lizard), species that for many readers will be their first introduction.

FAUNAVERSE

TASMANIA

Alexander is an experienced zoologist from Tasmania to Kakadu and an environmental educator. Along with his wife Jane they have published books and developed school programs to educate and inspire an interest in nature.

You can visit their website www.faunaverse.com.au watch and listen to music videos of a couple of the poems that have been skillfully turned to song and read more about the authors and purchase products.

I was lucky enough to spend some time out in the field with Alex who entertained us with his wit and poetry, with one such poem presented left.

Amy Rowles

A Diurus species rediscovery?

Greg Steenbeeke - Thesium Pty Ltd

A thrilling discovery has emerged from the Box-Gum Grassy Woodlands near Rylstone, NSW – the reappearance of the Small Snake Orchid, *Diuris pedunculata*, a golden moth orchid (subgenus *Xanthodiuris*) true to the original description by botanist Robert Brown in 1810. This rediscovery is particularly exciting because *Diuris pedunculata* has long been a source of taxonomic confusion. This delicate orchid had not been documented in the wild since a collection in Wallacia, western Sydney, in August 1961. Of note was when it was seen on site – at the end of August and first few days of September – much earlier than was suggested in the tools that identify when to look for that species (being September and October), which is driven by the confusion with *Diuris pallens* from the Northern Tablelands.

The orchid commonly referred to by this name in the Northern Tablelands is now understood to align more closely with *Diuris pallens*, described by George Bentham in 1873. The recent find near Rylstone confirms the distinctiveness *of D. pedunculata* as described by Brown, ending years of botanical query. This is even flagged in the TBDC under 'General Notes' – and once confirmed, the species can be added to the Central West (Capertee Valley subregion and possibly Inland Slopes subregion) for investigating its occurrence.

The orchid was found growing in Box-Gum Grassy Woodland, a critically endangered ecological community, near a stream—a habitat type consistent with other members of the golden moth orchid group. Two other species of which also occur in this property – *D. amabilis* (a northern range extension) flowering in October and *D. chryseopsis*, which was growing among and near the *D. pedunculata* plants but flower period peaks two weeks later with a very slight overlap. The Box-Gum Grassy Woodland is known for its rich biodiversity and provides vital habitat for numerous threatened species, making this rediscovery even more significant in terms of conservation.

Distinguishing the three species of subgenus *Xanthodiuris* on the property relies on relatively few characteristics – plant size, count of basal leaves and when they flower. *Diuris pedunculata* consistently has only 2 leaves. These are slender and can be as long as the inflorescence in smaller-statured plants. These plants generally are less than 30 cm tall, often only 20 cm tall, and bear 1 to 3, 25 mm wide flowers that are not particularly nodding. Flowers and recently-set fruit were observed and suggest flowering occurs mid to late August and the earliest days of September. *Diuris chryseopsis* is similar in stature, with more than 2 leaves at the base of the flowering stem. It also often only has 2 flowers, with the most floriferous individuals seen still only reaching 3 flowers, each about, or



less than, 30 mm across. The leaves are reasonably fine, to no more than 5 mm wide about 5 cm above the ground surface, and generally 3 to 4 in number in the plants observed. Some flowers were evident in early September, but the bulk of flowering was in mid-September and appeared to be persisting until near the end of that month. Diuris amabilis (although usually identified as the South Australian species D. behrii for NSW still) is a much larger plant, stem of well over 30 cm in height and of robust stature. The leaves are broad, usually more than 4 mm wide about 5 cm above the ground and number 3 to 6 on the few plants seen. Flowers are much larger, well over

Diuris pedunculata (left) and *Diuris chryseopsis* (right)

30 to 35 mm, with a very 'wide' form and richly coloured, coming out in October. The biggest problem in NSW is that PlantNet has an entry for many of these species with scant text and rolls all of the *Xanthodiuris* species in the key into either *D. pedunculata* or *D. lanceolata*, which is now known to be endemic to Tasmania.

This extraordinary find underscores the importance of frequent ecological surveys by people with experience in the 'what's different' factor of our native plants and animals. It also shows the habitat importance of protection, management and restoration. particularly in areas of high biodiversity significance. The find provides hope that other 'lost' species might yet be of preserving and understanding Australia's unique natural heritage.



rediscovered, reaffirming the importance of preserving and understanding Australia's unique natural heritage. *Diuris amabilis* (left) and *Diuris pallens* (the '*D. pedunculata*' from the northern tablelands) (right). Note that the image of *D. pallens* is taken looking into the flower, which has a distinctly nodding presentation (downwards at 30 to 50 degrees).

As a future stewardship, this site will be subject to ongoing sympathetic management and control of weeds and feral animal pressures. It will also have the chance to return to a more 'natural' grazing regime dominated by marsupials.

The Roadblock of Resilience; How Flawed Mapping is Derailing NSW Development

Karl Robertson - Biodiversity Australia

As an ecological consultant working up and down the east coast of NSW, I have encountered (like so many others) the substantial short-comings of the baseline mapping for Coastal Wetlands and Littoral Rainforests. This mapping forms the foundational triggers for the application of the State Environmental Planning Policy (Resilience and Hazards) 2021 and as such, can have significant implications in the approval pathway, particularly for seemingly small and straightforward Development Applications that happen to fall within the mapping.

There is no debate about the sensitivity and importance of Coastal Wetlands and Littoral Rainforest. There is however much conjecture about the accuracy of the mapping and the inability to review and amend the mapping.

History

The origins of the current RH SEPP date back to 1979 where the *Coastal Protection Act* 1979 (CP Act) provided strategic policy framework for coastal issues in NSW. The CP Act was supported by;

- SEPP 14 (Coastal Wetlands),
- SEPP 26 (Littoral Rainforest), &
- SEPP 71 (Coastal Protection).

In 2016 the CP Act was replaced by the *Coastal Management Act 2016* (CM Act) with commencement of the CM Act occurring on 3rd of April 2018. From a planning perspective, the CM Act was implemented through the State Environmental Planning Policy (Coastal Management) 2018. The Coastal Management SEPP now forms Chapter 2 of the current Resilience and Hazards SEPP (RH SEPP) officially commenced on 1st or March, 2022.

The Mapping

Throughout the state, there are countless examples of incorrect mapping forming the trigger for a Designated Development and subsequently requiring an Environmental Impact Statement (EIS), where a Statement of Environmental Effects (SoEE) would be more appropriate. The examples below provide some context as to the occasionally nonsensical nature of this trigger.

Case Study 1;

Charlesworth Bay, Coffs Harbour – Six Lot Subdivision.

Why is this proposal Designated Development?

The proposed subdivision is Designated Development and requires an Environmental Impact Statement (EIS) rather than a Statement of Environmental Effects (SoEE) because a small part of the subject land is incorrectly mapped as Littoral Rainforest. As shown in the images below, the mapped area actually presents as heavily derived exotic grassland and domestic landscaping.





In March 2024 a formal request was made to the Department of Planning Housing and Infrastructure (DPHI) to amend the Coastal Wetlands and Littoral Rainforest Area (CWLRA) map, who provided the following response:

There is currently no formal process in place to amend the Coastal Wetlands and Littoral Rainforest Area (CWLRA) map in the Resilience and Hazards SEPP 2021 (R&H SEPP), previously known as the Coastal Management SEPP. However, the Department does from time to time undertake a broader review of the coastal wetlands and littoral rainforest mapping. To date, we have undertaken two map review programs since the maps were first published in 2018. The most recent map review program occurred in October 2022. You may lodge a request for our team to review the coastal wetland mapping. However, please be aware that there is currently no timeframe for when the next map review will take place.

As there is no formal route to review Littoral Rainforest mapping, the polygon affecting the subject land unfortunately cannot be removed and the proposed subdivision is deemed by Clause 2.7(1) of *SEPP Resilience and Hazards 2021* to be "other development" within land that is mapped as Littoral Rainforest. Clause 2.7(2) declares "other development" within land mapped as Littoral Rainforest to be designated development.

Case Study 2

Phillip Drive - South West Rocks - Subdivision

In this case, the Coastal Westland mapping encroached the Subject Land by 1m with a total area within the Subject Land of 3m². No direct impacts were proposed within the Coastal Wetland mapped area. A detailed

analysis of the wetland boundary was developed by the team at Australian Wetlands Consulting which determined that the actual wetland boundary was some 20m further east than the RH SEPP mapping indicated, falling well beyond the Subject Land. Whilst this justification was accepted by the Department of Planning and Environment – Water and was used to determine the appropriate buffers, it was not able to be used to review and amend the Coastal Wetlands mapping and thus the subdivision was found to be a Designated Development and an EIS was required.



In both of these cases, the mapped area of Coastal Wetland or Littoral Rainforest were incorrect. Substantial evidence was able to be produced to support this conclusion. Nonetheless, the nonsensical mapping was required to be used, changing the assessment pathway and resulting in significantly more work and cost to the proponent. Perhaps even more detrimental, is the lack of integrity in the mapping and inability to amend the mapping. In my experience, this often produces a sense of "box ticking" to the proponent which can then lead to similar views in other pathways in the ecological assessment process.

Recent Caselaw - Investments NQ Pty Ltd v Tweed Shire Council [2024]NSWLEC 1108

In March 2024, the Court considered a Development Application to subdivide a single lot into two lots. The Subject Land had an area of 1,888m². Part of the Subject Land, being 0.051m², was mapped as 'littoral rainforest' on the RH SEPP. This mapped area accounted for just 0.003 % of the Subject Land. No works were proposed over this land. In the matter, all issues, including biodiversity issues, had been resolved. However, the Tweed Shire Council argued that development consent could not be granted for two legal reasons, only one of which is relevant to RH SEPP;

1) The council argued that any subdivision of a lot that includes land mapped as 'littoral rainforest' on the 'Coastal Wetlands and Littoral Rainforests Area Map' must be 'designated development'. The argument was based on section 2.7 of the Resilience and Hazards SEPP. This provision states that any development (other than environmental protection works) that is carried out 'on' land identified as 'coastal wetlands' or 'littoral rainforest' in the 'Coastal Wetlands and Littoral Rainforests Area Map' is 'designated development'. The applicant argued that the proposed subdivision was not being carried out directly 'on' the 'littoral rainforest' land — as that land itself was not proposed to be divided. The council argued that when a single lot is to be subdivided, the subdivision is carried out on all of the land that comprises the lot. It did not matter that the actual new lot boundary would not divide the land mapped 'littoral rainforest'. The Court accepted the Council's argument and would not approve the subdivision (as an environmental impact statement had not been prepared and exhibited. (Aaron Gadiel, Mills Oakley)

This caselaw, further exacerbates the potential planning roadblocks that could occur from land which is incorrectly mapped.

The Solution

Nobody expects perfection. There will always be mistakes. Like the PCT mapping, the Biodiversity Values mapping and so many others. Broadscale mapping should be used as a baseline tool for due diligence and particular assessment. When these baseline maps provide a trigger for additional assessment, a proponent should always be afforded the right to request an amendment to the mapping, based on merit.

This concept is evident in the NSW Biodiversity Values Map, developed by the Environmental Agency Head in accordance with Section 7.3 of the *Biodiversity Conservation Regulation* 2017. When a proponent feels that their land has been unduly mapped on the Biodiversity Values Map, they can make an application to the Map Review Team which is supported by evidence, to have that mapping reviewed and amended.

Section 2.6 of the RH SEPP, provides provisions relating to "Maps". Section 2.6 (1b) states as amended or replaced from time to time by maps declared by environmental planning instruments to amend or replace that map, and approved by the Minister when the instruments are made. Supported also by Section 2.6 (2). Herein, providing a mechanism for individual proponents to produce merit-based mapping amendments that are incorporated into the Coastal Wetlands and Littoral Rainforests Area Map. Provided, of course, that they are accepted by the Minister (RH SEPP Section 2.6(1)) similarly to amendments to the Biodiversity Values Map which must be approved by the Environmental Agency Head (BC Reg Section 7.3 (2)).

I am of the belief that the establishment of a Mapping Review Team for the RH SEPP, or perhaps, the incorporation of RH SEPP mapping reviews into the existing Mapping Review Team, would provide a logical and appropriate mechanism for proponents to request mapping amendments when they are justified.

In a time of housing affordability crisis, subdivision opportunities within low environmentally constrained land should be prioritised. I believe that this will provide a small yet necessary avenue to amend inaccuracies and allow this to happen.

In pursuit of this outcome, I will be working with clients and local members of parliament across eastern NSW to lobby for the establishment of the RH SEPP Mapping Review Team. If you have any examples that are similar to those provided above, please send them through to <u>Info@Biodiversityaust.com.au</u> Attn: Karl Robertson.

Poor Gains from Revegetation Built into the BOS

David Carr - Stringybark Ecological

One of my concerns with the Biodiversity Offsets Scheme (BOS) under the NSW Biodiversity Conservation Act, is the concept of "no net loss". According to this concept, an area of native vegetation can be cleared for a development and this loss is offset by permanently protecting a different area of similar vegetation. The protected vegetation (under a Biodiversity Stewardship Agreement) will improve in condition as a result of the protection, thereby offsetting the impact of the cleared vegetation.

The obvious flaw in this system is that the vegetation that was protected under the BSA was probably not going to be cleared anyway, so while there may be a gain in condition (fewer weeds, better regeneration, less damage by pest animals), there is still a net loss in extent of the vegetation. This reduction in extent will often equate to a loss in connectivity, a local loss in habitat for fauna and flora, loss of social values and loss of ecosystem services provided by that ecosystem to surrounding land.

I am based on the Northern Tablelands of NSW, in an area that has been substantially modified by agriculture over the last 180 years. Vegetation has been significantly reduced in extent, due to clearing of trees to encourage more pasture growth for livestock. Modifications in condition have included: clearing of the ground layer and replacement with exotic grasses; introduction of weeds; changes in soil nutrient regimes due to fertiliser application; unfavourable grazing regimes; and changes in relative abundance of predators and parasites. In the 1970's and 80's each of these factors further contributed to a decline in extent of vegetation due to 'New England Dieback' (a.k.a ecosystem collapse) which saw the death of millions of eucalypts. The vegetation that remains is often confined to steep, rocky country or areas with poor soils.

The BOS includes the option to use revegetation or assisted regeneration, to put missing vegetation strata back into a stewardship site. Revegetation can be used, for example, to plant trees into areas where the ground layer is relatively intact, and over time, restore the full structure of grassy woodlands – most of the Threatened Ecological Communities in this region. In the BAM Calculator, the number of species and the final cover (at 20 years) can be manually entered into the Future VI scores, reflecting expected gains in these attributes.

I recently built tree-planting into the design of two stewardship projects on the Northern Tablelands, to add a tree strata to cleared areas between larger patches of remnant vegetation. The aim was to increase the extent and connectivity of the vegetation to get the best ecological outcome possible.

However, when the expected gain in cover was added to the BAM-C (based on conservative estimates from 40 years of revegetation in this region), the gain in VI, and therefore credits, was insufficient to cover the cost of the revegetation. Further investigation showed that this was due to the 0.3 weighting given in the calculator to gains due to revegetation. That means that an increase in cover from 0 to 20% was automatically reduced to <7% by the weighting. I presume that this is to allow for the risk of revegetation failing. However, I had already factored in risk-reduction measures such as pre-plant weed control, deep ripping, post-planting watering and weed control and included these costs in the TFD. As a Certified Ecological Restoration Practitioner (SER) and with 40 years of experience, I know how to plant trees and get them to survive and grow.

Table 1 shows the number of credits for two vegetation zones at each of the two BSA properties. The numbers in the vegetation zones refer to the PCTs, both of which are part of Critically Endangered Ecological Communities.

At the time of planning, these credits were worth around \$4500 each. None of the scenarios were able to cover the cost of the revegetation. This was due to the lost gain due to the risk weighting. Table 2 shows the same calculation with the risk weighting removed in the BAM – C (actually the final cover and number tripled to allow for the weighting). The gains are now significant for these zones and the cost of revegetation per credit is well covered by the expected credit price. This means that revegetating these zones is financially viable for the land owner.

Veg zone	Credits – no revegetation	Credits – with revegetation	Gain from revegetation	Revegetation cost	Cost per credit gained
BSA 1					
510 Low	15	21	6	\$77342	\$12890
510 Mod	233	266	33	\$263943	\$7998
BSA 2					
533 Poor	84	93	9	\$147600	\$16400
510 Poor	63	89	26	\$177120	\$6812

Table 1: Credit gain and cost per credit for two BSA sites

Table 2: Credit gain and cost per credit without risk weighting

Veg zone	Credits – no revegetation	Credits – with revegetation	Gain from revegetation	Revegetation cost	Cost per credit
BSA 1					
510 Low	15	31	18	\$77342	\$2495
510 Mod	233	330	97	\$263943	\$2721
BSA 2					
533 Poor	84	110	26	\$147600	\$5677
510 Poor	63	133	73	\$177120	\$2426

We are about to go through a new wave of vegetation clearing as part of the New England Renewable Energy Zone (REZ), which will affect areas previously left by agriculture, as wind turbines, roads and transmission lines are built on steep and rocky hills. If there is no incentive for offset projects to include revegetation to maintain or improve extent of vegetation, this region will lose large areas of our remaining bushland, with subsequent loss of connectivity and habitat for both threatened and common species.

I think we can design revegetation into BSA projects to increase the net vegetated area, using low-risk methods developed here, and elsewhere in NSW, over the last 50 years. I would like to see a review leading to a scrapping or change to the risk weighting for revegetation and I think ECA NSW can play a leading role in such a review.

David Carr is the owner and Principal Ecologist with Stringybark Ecological based in Armidale, NSW. He has 15 years-experience as a consulting ecologist and prior to that was the Technical Director for Greening Australia, working on revegetation and vegetation management projects across Australia.

An upcoming study looking at raptor populations in northwest NSW

Geoffrey Coates- Ecoplanning

One of the most important problems in ecology is determining how fauna communities are assembled and maintained (Fuentes et al., 2024). Top predators have been proposed as reliable biodiversity signposts, so-called "umbrella" species that can either promote species richness or are spatio-temporally associated with it (Sergio et al., 2008). A recent meta-analysis supported the potential of top predators as biodiversity indicators and suggested that prioritisation of conservation actions based on their occurrence is likely to provide broader ecosystem benefits (Natsukawa & Sergio, 2022).

Raptors provide an excellent subject for the study of community ecology since, in addition to typically being top predators of their ecosystems, they are generally large and conspicuous, allowing for ease of observing feeding and habitat selection relative to other taxa (Jaksic, 1985). Most Australian raptors face threats that ultimately stem from prevailing human attitudes to land, water and wildlife. National reporting rates of Nankeen Kestrel and Brown Falcon, two of the most abundant and adaptable species, declined nationally between two national bird atlases in 1977-1981 and 1998-2001 (Debus, 2019). Several other species – Black Falcon, Brown Goshawk, Spotted Harrier, Wedge-tailed Eagle and Little Eagle – have declined nationally or regionally in the 20 years to 2006 (Debus, 2019).

In Australia, there are two major datasets, one from Northern Territory and the other from Victoria, which have contributed to comparative studies on breeding (Aumann, 2001b; Baker-Gabb, 1984a) and diet (Aumann, 2001a; Baker-Gabb, 1984b) in raptor guilds. The dataset from Northern Territory also produced a study investigating species assemblages in riparian environments (Aumann, 2001c). Despite providing important information on the dynamics of Australian raptor communities, both datasets are from arid areas, and there remains scope for studies focusing on raptor communities in non-arid environments.

This year, I will be commencing a Masters project to investigate the structure of raptor communities in north-west NSW, a region that has been subject to widespread and frequent disturbances via agricultural activity. The study will provide data on species assemblages, breeding success and dietary preferences of top order predators across an anthropogenically modified landscape. Data will be collected using road-based transects, monitoring of breeding pairs and analysis of regurgitated pellets.

The main question I hope to answer is "does anthropogenic land use influence the species assemblages, breeding and foraging of diurnal raptors in north-west NSW?" The region I will be conducting the study in is notable for the presence of many threatened raptors, including Little Eagle, Square-tailed Kite, White-bellied Sea-eagle, Spotted Harrier and Black Falcon. Observations of these species may shed light into their interactions with more common raptor species, potentially yielding data useful for their conservation. I anticipate that the findings of the study will also contribute to our understanding of fauna community responses in areas that have undergone widespread anthropogenic disturbance.

Last year, I undertook my own pilot study to see what raptor species were prevalent in my local area. The study went from May to October and consisted of transects across 3 stretches of road within the Gunnedah LGA. The roads traversed through three land-use types – livestock grazing, broadacre cropping and irrigated cotton. Each survey period was conducted around the 2nd weekend of each month, within a few hours after sunrise. The roads were approximately 50 km long and were traversed by car at a speed of approximately 50 km/h. Each raptor species seen was recorded.

In total, 252 raptor individuals were observed across the 6 months. Of these, Nankeen Kestrels and Blackshouldered Kites were by far the most common species sighted (46.8% and 34.9% of sightings, respectively). The next most common species were Brown Falcons (6.7%), Whistling Kites (3.6%) and Black Kites (2.8%). The only threatened species positively identified was the Spotted Harrier (0.8%). The main behaviour observed across all species was perching (86.9% of individuals); other behaviours observed included general flight, hovering, nesting and feeding.

The results from this small study shed some light on the potential habitat and dietary preferences of species

found in my local area. For example, Whistling and Black Kites were more commonly observed in areas subject to irrigation. Also, while Black-shouldered Kites made up a large percentage of sightings, I would expect their numbers to dip significantly in years where mouse population experience a decline. I intend to explore further observations like these during my Masters project.

I'd like to thank my Masters supervisors, Professor Paul McDonald and Dr Stephen Debus, for their guidance and advice given so far.



Photo 1: Pair of Wedge-tailed Eagles southeast of Gunnedah.



Photo 2: Juvenile Whistling Kites north of Gunnedah



Photo 3: Australian Hobby with prey north of Mullaley.

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The Urgent Need for a National Database of Bird and Bat Mortality at Australian Wind Farms

Bill Wallach—Umwelt

Executive Summary

Australia has set ambitious renewable energy targets to transition towards a more sustainable energy system. The national goal is to achieve 82% renewable electricity by 2030 (CEC 2023a). While there is not a specific national target for 2025, projections indicate that Australia is on track to generate around 50% of its electricity from renewable sources by 2025 (CEC 2023a).

The targets set from Australia's state and territories are listed below:

- New South Wales is working toward net zero emissions by 2050, with a focus on increasing renewable energy capacity but no commitment of proportion of renewable energy generation.
- Victoria has set targets of 40% renewable energy by 2025; and 50% by 2030.
- Queensland aims for 50% renewable energy by 2030.
- South Australia is on track to achieve 100% renewable energy by 2027.
- Western Australia does not have a specific renewable energy target; however it is actively increasing its renewable energy capacity and has committed to a whole-of-government 2030 greenhouse gas emissions reduction target of 80% below 2020 levels.
- Tasmania achieved its goal of 100% renewable energy in 2022.
- Northern Territory has set targets of 50% renewable energy by 2030.
- Australian Capital Territory achieved 100% renewable electricity in 2020.

Almost 40 % of Australia's electricity is supplied by renewables, of which almost 36 % comes from wind projects (CEC 2023b). According to the Clean Energy Council's Wind Industry Recycling Report, as of 2023 there were 110 wind farms operating across Australia (CEC 2023b). As Australia continues to expand its renewable energy projects, with wind projects being a main contributor, the need for a national database of bird and bat mortality from operational wind projects has never been greater. This database is essential for the protection of biodiversity, even as the industry acknowledges the unavoidable impacts of wind farms on bird and bat populations.

The creation of a national database for all bird and bat mortalities at every wind farm in Australia is crucial. It would provide accurate, reliable, and contemporary data on the impacts for birds and bats that are being realised across the country. Pleasingly, this mortality data is being collected as part of post-approval monitoring programs, however it is not currently being collated and is therefore not accessible. It is strongly considered that up to date access to this dataset is vital for the wind industry to accurately assess its cumulative impacts on wildlife. While the Commonwealth Government has committed to establishing a Biodiversity Data Repository as part of their Nature Positive agenda, it is not understood to be tailored around mortality data from wind farms specifically.

This opinion piece seeks to present a case as to why such a database is required sooner rather than later.

Understanding the Impacts

While impacts on birds and bats from wind farms are largely unavoidable, it is important to distinguish between reasonable and unreasonable impacts. Knowledge and data on the realised impacts of wind projects are the only ways the renewable industry can make informed decisions and mitigate negative impacts.

A scientific paper from Victoria collated available mortality records from 15 Victorian wind farms up to 2018 (DELWP 2019). The study found a total of 1,011 bats and birds were found dead at these wind farms, with bats

representing 44% and birds 56% of the total (DELWP 2019). Based on a small subset of operational wind farms in Australia, this indicates the impact wind farms can have on local populations of bird and bat species with Australia.

Currently, there is no mechanism to assess the realised impacts on birds and bats comprehensively. This potentially creates a perception for the public, conservationists, and ecologists that both industry and governments are not transparent about the impacts, and that data are often withheld. Furthermore, it could be stimulating unnecessary debate for or against wind projects with fuelling the perception that mortality results are over or under stated; depending on which side of the argument one sits. Complete openness is key to addressing these concerns.

The substantial level of scrutiny of impact assessments for wind projects in Australia, particularly regarding potential impacts on birds and bats from turbine strikes and barotrauma, as well as cumulative impacts from multiple wind projects in the same region, is warranted. However, the necessary information on the mortality impacts across the industry is not collated, known, or public. Wind farm operators and consultants may have knowledge of individual projects, but there is no industry-wide database. In the current situation within the industry, the extent of impacts that wind projects in Australia are having on bird and bat species is simply not known. Nor it is it even close to known.

Drawing on the statutory review of the *Biodiversity Conservation Act 2016* in July 2024, Dr. Ken Henry AC emphasised the importance of data. He stated, "You can't protect biodiversity if you don't know what you have to protect." Our current data sets of impacts of wind projects on birds and bats are disconnected and are therefore not fit for purpose to understand cumulative or comprehensive impacts. For the appropriate management of biodiversity, it is considered critical to see, in close to real time, what is causing the damage. A national database of bird and bat mortality from wind projects would enable this understanding, if not significantly bridge the gap.

The Commonwealth has committed to establishing a data division, overseeing the Biodiversity Data Repository, to provide clear and authoritative sources of high-quality environmental information (Commonwealth DCCEEW 2022) through its Nature Positive Plan. The Plan states that better data will help track, understand, and adjust impacts, leading to faster decision-making and reduced costs for industry and governments. Furthermore, the objective of the Nature Positive Plan is to track and adjust impacts; the proposed national database would track impacts and allow for the adjustment of approvals to respond to cumulative unacceptable impact levels. The repository is a good step forward for the management of biodiversity in Australia, however it is not understood to include the collation of mortality records specifically. While the repository could capture such data if submitted, it is highly likely that, unless future wind farm consent conditions are updated to mandate the provision of all mortality records to the Biodiversity Data Repository, these records will not be submitted.

Bird and Bat Adaptive Management Plans

Bird and Bat Adaptive Management Plans (BBAMPs) are post-approval plans that aim to minimise the impacts of wind turbines on birds and bats. These plans include bird and bat utilisation monitoring surveys, detailed and regular carcass searches, impact triggers, and adaptive mitigation measures. The vast majority of, if not all, currently operating wind projects have had a BBAMP prepared and implemented. With active monitoring requirements during the first 0-5 years of the operating life of the wind project, this is generally the period where most mortality impacts are recorded on wind projects. Beyond these first 0-5 years, mortality impacts are generally only recorded opportunistically by wind project staff, unless the lifespan of the BBAMP is extended beyond those initial years. Certainly, every future wind farm in Australia will have a BBAMP prepared and implemented.

While the general components of a BBAMP are standard across every wind project, the specific methodology, frequency, lifespan, and reporting requirements vary considerably. This presents a situation that is challenging to directly compare results, particularly in a scientific manner. It is clear that the vast majority of wind projects do not publish their annual monitoring reports publicly. However, mortality events for threatened species are required to be communicated to the relevant State and Commonwealth agencies; and in some cases non-threatened species that are highly susceptible to wind turbine strike, such as the wedge-tailed eagle, may also be required to be notified to State agencies.

Developers invest hundreds of thousands of dollars per year, per project, for the implementation of their BBAMPs. It is concerning that the data from these monitoring projects are not being made available, especially since the monitoring is taking place and data does exist. It is occurring, at substantial cost, but simply is not being used in a collective, cumulative manner. The data that would be collated by the proposed national database could certainly have some access limitations to protect developers and wind projects. It's use could be restricted to authorised members and agencies alike.

Why is a National Database Important?

The national database is important to accurately analyse or assess the impacts of wind projects on bird and bat species. Currently the only way to get any indication of mortality impacts from wind projects is to manually search for publicly available annual monitoring reports for individual wind projects and process the documented data. This method is inefficient and prone to inaccuracies, making it difficult to collate critical data. A national database would streamline this process, ensuring that data are accurately assessed, and no projects are overlooked. However, it is noted that unless future wind farm development consents are written to mandate the provision of mortality records then a database will also not serve its purpose.

Australia's commitment to renewable energy is driving substantial growth in wind farm projects across the country. A national database is essential for enhancing impact assessments, including cumulative impacts, ensuring that the most suitable projects are approved. Additionally, it will support the development of effective mitigation strategies for both new and existing wind projects. Accurate and updated data are essential to prevent the industry from inadvertently and unintentionally contributing to new threatened species listings or exacerbating the survivability of currently listed threatened bird and bat species.

What would the database deliver?

- Transparency of Impacts Across the industry, allowing for the assessment of reasonable and unreasonable impacts, and analysis by third parties.
- Cumulative Impact Assessment For regions and the industry as a whole.
- Strengthened Social Licence For the wind industry to continue to operate responsibly and transparently.
- Minimal Additional Investment The database would use already collected data, requiring minimal additional investment from proponents, though some investment from government agencies or the renewable industry itself is likely for creation and management of the databases.

The challenges that are foreseen with the concept of a national database are presented below:

- Time and Resources Required within government agencies or an industry body (e.g. Clean Energy Council) to develop the database.
- Confidentiality Concerns Developers would be naturally concerned about the data being used prior to proper analysis, to rally against proposed projects. However the collated data could certainly have some access limitations to protect developers and wind projects. It's use could be restricted to authorised members and agencies alike.
- Hard Truths The industry would be facing and potentially be forced to address the previously unknown broader impacts of wind projects on birds and bats.

Conclusion

The establishment of a national database for bird and bat mortalities at Australian wind farms is a critical step towards balancing renewable energy development with biodiversity protection. By having access to accurate and comprehensive data, the wind industry can better understand and mitigate its impacts on wildlife, ensuring that project approval decisions and operating conditions are based on the best available knowledge.

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Request for activity data of *Austronomus australis* White-striped Freetail Bat and *Saccolaimus flaviventris* Yellow-bellied Sheathtail Bat

Over the last 6 years, I have been studying migration in tree-roosting microbats in Australia. *Austronomus australis* and *Saccolaimus flaviventris* are two species that have previously been suggested as long-range migrators in Australia.

Existing records of these species from across the country, providing presence data only is not enough to successfully paint a picture on how these species may be moving. Individuals appear to remain present over much of their range all year, however activity levels vary seasonally suggesting partial seasonal migration. I am currently trying to collate seasonal activity data for at least these two species. But, this seasonal data is rare and difficult to acquire. With all of the seasonal bat monitoring surveys being conducted for the many wind farms that have been and are being constructed this data is now being collected. But this data is not accessible, as records entered into BioNet do not include activity levels.



For those of you who are involved in wind farm monitoring, I am currently seeking data that has been collected on a seasonal basis, that includes activity levels (number of passes per time period). I will accept raw data or summaries, for just these two species, but also happy for data on other species as well. I understand that acquiring client permission to share this data is required and can be time consuming, but letting this data go to waste would be a shame. Understanding the migratory movements of these species is vital to understanding the overall impact of wind farms to these species.

Please contact me on <u>a.rowles@westernsydney.edu.au</u> or <u>amy@corymbiaecology.com.au</u> if you are keen to share this amazing data resource.



Above: *Austronomus australis* Whitestriped Freetail Bat.

Left: Saccolaimus flaviventris Yellow-bellied Sheathtail Bat

Amy Rowles

Advocating for threatened orchids: How Accredited Assessors can improve orchid survey and protection under the NSW Biodiversity Offset Scheme

Chani Wheeler, Simon Tweed, Amanda Griffiths - Niche

Orchids are a highly specialised group of plants that attract the interest of horticulturalists and conservationists alike. Of approximately 1,304 Australian orchid species, 95% are endemic and around 17% nationally threatened¹. Given many existing populations occur within private lands subject to ongoing land use pressures such as housing and infrastructure development, it is likely that this trajectory of orchid species decline will continue in the absence of effective conservation measures.

Current challenges with effective survey methods and data availability are leading to poor outcomes for the protection of threatened orchid species and high offset costs for project proponents under the NSW Biodiversity Offset Scheme (the Scheme). Urgent change is required to address these concerns, starting with an industry forum for this critical feedback to be conveyed from expert ecologists working on the ground to the NSW Biodiversity Conservation and Science Division (BCS).

Supporting threatened orchid species under the Scheme

In NSW, the Biodiversity Offsets Scheme (the Scheme) is intended to support threatened orchid conservation through the adoption of measures to avoid, minimise and offset impacts associated with land clearing. Under the Scheme, Accredited Assessors apply the Biodiversity Assessment Method (BAM) to calculate the number of biodiversity credits required at a development site for any impacted entities and explore options for offset delivery; such as through the establishment of private land conservation agreements, purchasing existing credits via the open market or paying into the Biodiversity Conservation Fund (the Fund). Given many threatened orchid species are considerably rare, payment into the Fund is the only viable offset delivery method for many development projects. Particularly now that use of the offset variation rules will be restricted.

When paying into the Fund, threatened orchid species credits can be considerably expensive - around \$13,000 per credit. This equates to an offset cost of around \$195,000 per hectare for low condition habitats² and up to \$877,000 per hectare for high condition habitats³. For large developments that have the potential to impact multiple threatened orchid species over large areas of habitat, an offset liability of tens to hundreds of millions of dollars is not uncommon. Whilst significant biodiversity offset delivery costs such as these can be a strong driver for impact avoidance and minimisation, Accredited Assessors are finding it difficult to effectively apply the BAM to reduce a project's threatened orchid impact and offset liability. There are three key factors at play as discussed below.

Issue 1: Poor scientific knowledge and data is inflating threatened orchid impact estimates

Threatened orchid species habitat preferences are poorly documented. Very little scientific knowledge or data is available to inform the microhabitat features or disturbance thresholds necessary to support threatened orchid species, despite active monitoring programs within known sites. For the majority (i.e. 86%)⁴ of threatened orchid species in NSW, broad plant assemblages (PCTs) are the only habitat feature that may be confidently applied to a BAM assessment. As a result, large expanses of land are typically flagged as potential habitat, inflating project impact estimates and significantly impairing early design avoidance opportunities that could otherwise be achieved with discrete habitats that are more characteristic of known sites.

Issue 2: Threatened orchids are difficult to effectively survey

Where potential habitat for threatened orchid species cannot be avoided, targeted surveys can be undertaken to confirm if a species is present or absent. However, threatened orchids are extremely difficult to survey due to their complex phenotypic characteristics and life history (e.g. much of their lifecycle occurs underground). Mature flowers are typically required to distinguish threatened orchid species from other sympatric genera, meaning field surveys must be timed to coincide with local flowering periods. However, information on seasonal flowering events is poorly circulated and difficult to obtain in a timely manner from the NSW Biodiversity

Conservation and Science Division (BCS). As a result of these delays, critical survey windows can easily be missed. In the absence of more effective data sharing methods, Accredited Assessors are required to visit the limited number of publicly accessible sites each season to confirm flowering. This places existing populations at considerable risk of trampling.

It should also be noted that only a proportion of an orchid population is generally observable in any one season, and for many orchid species (such as *Caladenia montana*), an environmental disturbance such as wildfire is actually required to trigger a flowering event. This suggests that targeted surveys over multiple seasons and in suitable conditions may be the only effective way to delineate the extent of occupied habitats within a site. This level of survey effort is not required under the BAM and would have considerable implications for development timeframes and survey costs where mandated.

Issue 3: There is a shortage of approved species experts

Under the BAM, a proponent may engage an approved species expert as an alternative to commissioning costly and potentially ineffective targeted surveys. A species expert, typically the most knowledgeable and respected within the industry, applies their knowledge of a species and region to inform the risks and requirements of a project. This approach could be considered the most effective BAM method for addressing cryptic species, such as threatened orchids. Yet species experts have only been approved for seven of the 77⁵ threatened orchid species listed in NSW. Despite this shortfall, it is becoming increasingly difficult for industry experts to be approved under the Scheme. Furthermore, the BAM does not provide guidance on suitable methods and data standards for species expert reports. As such, BCS feedback is often inconsistent and may cause project delays due to additional survey requirements or rework.

Advocating for change

At Niche, we believe the current approach to threatened orchid assessment under the BAM is (1) employing inefficient and potentially sub-optimal survey practices; (2) limiting opportunities for proponents to avoid and minimise their project impacts; (3) significantly inflating threatened orchid survey and offset costs for projects due to overly conservative and inappropriate assessment processes and (4) placing a significant offset delivery burden on the Biodiversity Conservation Trust, who are tasked with management of the Fund.

We are advocating for meaningful improvements to the BAM to address these issues. Given Accredited Assessors hold considerable working knowledge and experience in the implementation of the BAM, they are best placed to advise on strategies to address shortfalls such as these. Yet despite this, there is no formal forum by which Accredited Assessors can raise these critical issues with BCS. We believe establishment of an industry forum is the first and most critical step necessary to facilitate meaningful improvements to Scheme implementation, ensuring our threatened orchid populations persist into perpetuity.

References and Notes

¹ Jones, DL. 2006. A complete guide to native orchids of Australia including the island territories, New Holland Publishers, Chatswood. Department of Climate Change, Energy, the Environment and Water, 2024, EPBC Act list of threatened flora, accessed via: <u>https://www.environment.gov.au/cgi-bin/sprat/public/publicthreatenedlist.pl?wanted=flora</u>.

² Assuming a vegetation integrity [VI] score of 20 and a Biodiversity Risk Weighting (BRW) of 3.

⁵ Based on a review of the NSW BioNet database on 24 December 2024.

³ Assuming a VI score of 90 and a BRW of 3.

⁴ 66 of the 77 threatened orchid species listed within the BioNet database do not have a listed habitat constraint.

Along the Prostanthera trail

Jack Talbert - Lodge Environemental

On an assignment for the NSW Department of Climate Change, Energy, the Environment and Water (DCCEEW), Max de Beer, Olivia Gobran, James Lidsey and I were on the *Prostanthera* trail, a search for the rarest mint bush in all of Australia:

P. discolor, last recorded at Baerami in 1988. Our task was simple yet daunting: three days of hiking through rugged terrain to confirm whether this elusive mint bush still existed.

Before even hitting the road, it was clear that this trip would not be defined by what we did or did not find. It was a trip that brought about connections. We were so lucky to be able to make contact with Col Gibson and Robert Miller, the original ecologists who first located the Baerami Creek population on their 1988 expedition. They were an inspiration, treasure trove of knowledge, and a reminder that our elders have so much wisdom and experience and taking time to listen can be invaluable.

Thanks to Max's resourcefulness, we connected with Col, who immediately corrected a key detail: the location DCCEEW had provided was off by 10 kilometres. A visit to Col's home became our first top, where we were unexpectedly joined by Robert Miller—carrying a 40-yearold specimen from their original find in 1988.



Figure 1: The 1988 topographic map, annotated by Col Gibson, revealing their tracks and the locations of their P. discolor sightings

What a start – we had already found the plant, albeit a near 40-year-old sample, we viewed it along a green fringe of suburbia in Western Sydney. The catch-up with Col and Robert yielded possibly the most important finding of the background research so far – an inspection of their original topo map from 1988, with not just one x marks the spot, but two. A mission that was initially assumed as being worse than the proverbial "needle in a haystack", we now had two exact target locations.

It's also worth a mention that Oliva was able to align some stars during an advanced plant identification course at the University of NSW. In attendance at UNSW was Guy Taseski, who just so happened to specialize in *Prostanthera* and had *P. discolor* growing on a balcony. This plant was grown from a cutting from the known reference population at Honeysuckle Creek. Olivia didn't let the opportunity go to waste, and a sample was taken for our herbarium to allow for cross identification in the field. Another great start.

Alex Pescud also leant his expertise in the lead up and provided 3D interpretation of the microhabitat for *P. discolor* at Honeysuckle Creek, which was felt when we were delving into the gullies, homing in on where to search. It has been said that the species is a shadow dweller, lurking out of sight, preferring the shadow lands.

A largely chance encounter and eaves drop put us in touch with Jacob Ellis, a First Nations representative and local of the Baerami area, bringing a deeper meaning to our journey and taking the story of *Prostanthera* back quite a few more millennia than the written records we had. Jacob was ever so humble in his offering to welcome us to walk on his Country through a transcendental smoking ceremony near the reference population of *P. discolor* at Honeysuckle Creek. Time stood still as he welcomed us, bathing in the fragrant smoke of acacia and hearing of the cultural significance of the area we were standing in. Jacob left enough hints of some scary stories

of wild dogs, just enough lack of detail to put us on alert that night.

The reference population of *P. discolor* was located shortly after commencing our search within a side tributary of Honeysuckle Creek. The species was confirmed to be flowering and easily identifiable.

As far as starting off on the right foot can go, we were feeling pretty good with the information gathered so far.

Our mission would next take us into the labyrinth of the Wollemi National Park. We struck basecamp in the dark alongside lower Baerami Creek and went about a cooking frenzy to fill the hungry bellies after a long first day of travel from the South Coast. The curry and naan was what we needed to fuel us for the early start the next day, either that, or the cacophony of birds from 5am telling us it was time to get moving. We set off in aim of the pass between Gibber Peaks and Crypt Hill. Going was slowed by the dense vegetation, but enough progress was made and we were over the saddle and being pulled towards Cols first *P. discolor* point. The excitement was building.



Figure 2: *P. discolor* at Honeysuckle Creek

Max, being the formidable ecologist that he is, dove headfirst into the gully, closely followed by James heading in the opposite direction upstream. Olivia, sharp-eyed and determined, scanned the slopes for any sign of our mint bush.

As we pressed into the gully, Jamie, camera in hand documenting the expedition, joked that it couldn't possibly be this easy. Fanned out in silent anticipation, all we found were false leads—*Dampiera*, *Hardenbergia*, *Patersonia*, *Solanum*, *Indigophera* — purple flowers taunting us at every turn. It seemed that purple was in vogue this season along Baerami Long Arm.

After over an hour of searching in vain, we had to make the call to move on. We made the joint conclusion that the creek had evidence of recent severe fire, and was undergoing a rather messy succession of regrowth that would likely not favour *Prostanthera*. Rough barked trees were scarred to the canopy, with some entirely consumed by fire. Devils twine and *Kennedia* were smothering much of the vegetation in what may otherwise have been ideal gully habitat.

This fruitless search cost us most of the morning, although we did start to gather information on the state of vegetation at the first location. Signs of severe bushfire, and some pretty clapped-out regrowth. We felt now obligated to investigate the nearby highpoint of Crypt Hill – so named due to the presence of *P. cryptandroides*. Time did not allow for a long search of this side mission, and the nearest *Prostanthera* was sampled in hope. Alas, Max would confirm the identification as *P. prunelloides* once back at the office. From Crypt Hill we were able to glimpse the tops of the canyons hiding the next target location towards Miller Peak.



Figure 3: Slow going, through the dense twine



Figure 4: Max descends towards Location 1 44

We stopped for lunch under a profusely flowering and fragrant *Commersonia* along Baerami Left Hand. This was soon followed by an awkward encounter with a small Red-bellied Black Snake in a rush to get away, running straight between my legs and into the creek. As the day was moving faster than we were, an adjustment to the planned route was made and we dismissed an attempt to summit Miller Peak, and instead made our way upstream into the lower reaches of the canyon that contained the second target point. We made it about halfway to the confluence we were aiming for. The habitat looked decent for P. discolour. In some areas, we were finding Westringia patches, very similar as the co-occurrence at Honeysuckle Creek. Again, specks of purple were prolific, giving false leads from a distance. But we were running out of daylight, so we decided against continuing to the target location, instead saving it for the next day. We jumped boulders, slid down rocks, and made our way back to basecamp. Hiking boots were swapped for sandals and we made our way to the rockpools for a pre-dinner swim.

We planned for a longer next day of hiking and made the call to waken with the birds for an earlier start before taking a different route to the second point. We opted for the highline, straight up towards the high point of Rowan Smith Hill. The climb got the blood pumping, with some of us (myself) mistakenly leaving their thermals on to really feel the heat. Midway up Max spotted a Brush-tailed Rock-wallaby on the prominent north facing slope. A timely find as Max would soon need to turn back and make tracks for his next mission, surveying Redlored Whistlers at Nombinnie.

From here, it was a skeleton crew of Olivia, James and myself, with the most exposed terrain left to the three of us. We deviated from the known route mapped out by Col and Robert, and instead rolled the dice on a gully that would drop us closer to the target point. To get there, we crossed a knife-edge ridge line covered in wildflowers and chest high Stypandra in full bloom.

As we navigated the ridgeline, our eyes scanned for the shape of another rock wallaby flashing past. Although we saw no more there was an uncanny sensation of their presence, like the shadows of the sandstone were alive, their watchful eyes hidden just beyond our sight, silently observing our every step.



Figure 5: Wildflowers on ascent to Rowan **Smith Hill**

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Once across the ridge, we were greeted by some sun relief within system of sandstone caves, and the friendly company of a Marbled Gecko. We pushed on, deciding the likelihood of crystal-clear swimming holes in the canyon, would make the smartest lunch pit stop.

The gully we gambled on was thick with *Backhousia* and *Acacia* regrowth, much of which was dead and matted together by the evil combination of Devils Twine and Kennedia. Rough barked eucalypts showed signs of fire with burned trunks, and high slopes covered by pea flowers. The signs of bushfire disturbance were not welcome as we were getting warmer on location two.

The naturally formed pools in the canyon, coined onsens by James, were a sound reward for the bushbashing it took to drop down into the shadowland. Boots were off and the aeropress was out for a late lunch swim and americano. Spirits were high as we dined no more than 200m from the second and final validation point.

Figure 6: Coffee at an onsen



The final point was within the upstream armpit of the confluence of a short and sharp gully dropping into the main canyon system. A shadowland indeed. There were numerous positive signs, with the side gully looking very similar to the side tributaries of Honeysuckle Creek. Co-occurring species were present. It was time to fan out and walk lines up and down at our final target point. We were silent in our acknowledgement of the fire regrowth and burnt trunks, opting to optimistically scour the area in hope. We did not manage to find *P. discolor*, again concluding that the area had been burnt too fiercely, too recently.

It is a hard thing to swallow when a trip is so successful until the last minute. With so much preparation and the planning going so smoothly we were perhaps overly optimistic that we would be successful in our hunt. Olivia put it well – that everything we were in control of went great, with the only thing we were weren't in control of – the actual presence and persistence of *P. discolor*, evading us. With heads held less high we realised we would not be finding the much- coveted mint bush this time, and by virtue, there would be no celebratory floral tattoos on the drive home.

We made our way downstream further into the canyon, eyes peeled for hopeful glimmers of purple on the creek sides. We made the most of the onsens with some afternoon sun swims to raise spirits once more as we came to terms with the enigmatic plant no longer persisting in the target locations.

The trip back to the South Coast was all that remained for the final day, and we were content in that we achieved our objective as far as possible, having reached the target points, loaded up with the memories of a weeks' worth of adventure.

If it weren't for the wildfires ripping through the Baerami labyrinth I am sure we would have found *Prostanthera discolor*.

Though we didn't find the elusive mint bush, our journey unveiled critical insights into the species' vulnerability to severe fires and the precariousness of its habitat. It reinforced the urgency of conservation efforts, especially at Honeysuckle Creek, where the only known population remains.

We were also lucky enough to bag a bunch of threatened fauna species, with a Powerful Owl heard crooning camp on night two, likely attracted to the simmering eggplant curry and naan. The next morning on the climb up towards Crypt Hill, pushing through spiky *Bursaria* and Devils Twine we passed under a pair of Little Lorikeets to get things started. Later this same day, while descending back into Baerami Left Hand, Jamie our videographer spotted wallabies overhead in the low lying caves and mid-cliffs. Max was quick on the binoculars to confirm two Brush-tailed Rock-wallabies, and not the last for the trip either, with a final sighting on day 3. This being possibly one of the more prominent findings. A total of 73 fauna species for the trip.

It was great to get out into the field to try to solve a few old mysteries – and possibly to discover a few new ones.



Figure 7: The assembled team from Lodge Environmental; left to right Max de Beer, James Lidsey, Jack Talbert and Olivia Gobran

ECA TRIVIA QUIZ 2024 — Answers

1)		
1)	Yellow-tailed Black-Cockatoo - D	Calyptorhynchus banksia - C
	Palm Cockatoo - B	Probisciger atterrimus -B
	Glossy Black-Cockatoo - A	Calyptorhynchus lathami- A
	Red-tailed Black-Cockatoo - C	Calyptorhynchus funereus - D

- Eucalyptus

- Pomaderris

2) i) Emu		9) Nothofagus gunnii			
ii) Swan					
111) Piping Shrike	e-PeeWee	10) A) Eucalyptus longifolia			
3) Mosquito		B) Melaleuca styphelioides			
5) Wosquito		C) Ajuga australis			
4) A		D) Panicium effusum			
5) A		11) Posidonia australis is an ancient and incredibly			
		resilient seaweed that has been discovered in Shark Bay			
6) B		Western Australia.			
7) A) Lace Monitor	· - Varanus varanus	12) The stinkhorn, Aseroe rubra was the first species			
B) Heath Monito	r - Varanus rosenbergi	of fungus to be collected and described from Australia.			
C) Sand Monitor	- Varanus gouldi				
		13) Acmena smithii, Littoral Rainforest and Coastal			
8) - Boronia	- Themeda	Vine Thickets of Eastern Australia.			
- Corymbia	- Banksia				
- Lomandra	- Eremophila				
- Melaleuca	- Grevillea				



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ECA PHOTO COMPETITION ENTRIES



LEFT: Blandfordia nobilis. *Isaac Mamott*

RIGHT: Whitebrowed Scrubwren. *Isaac Mamott*





ABOVE: Grevillea beadleyana. Isaac Mamott



ABOVE: 2ND PLACE. Eriochilus cucullatus. Isaac Mamott



LEFT: Satin Bowerbird. Isaac Mamott







LEFT: Grevillea caleyi. Isaac Mamott

RIGHT: Storms and saltbush at Menindee Lakes. *Shelomi Doyle*



ECA PHOTO COMPETITION ENTRIES



LEFT: Young crocodile stalking through shallow murky water. Clayton Woods

RIGHT: Urban Ecology:Sulphurcrested cockatoo surveying the Central Coast. *Shelomi Doyle*

RIGHT: Brown Thornbill. Isaac Mamott







LEFT: Spiranthes australis. *Isaac Mamott*



LEFT: Galah. Isaac Mamott

RIGHT: Cassowary. Clayton Woods. BELOW: Little Corellas. Isaac Mamott



