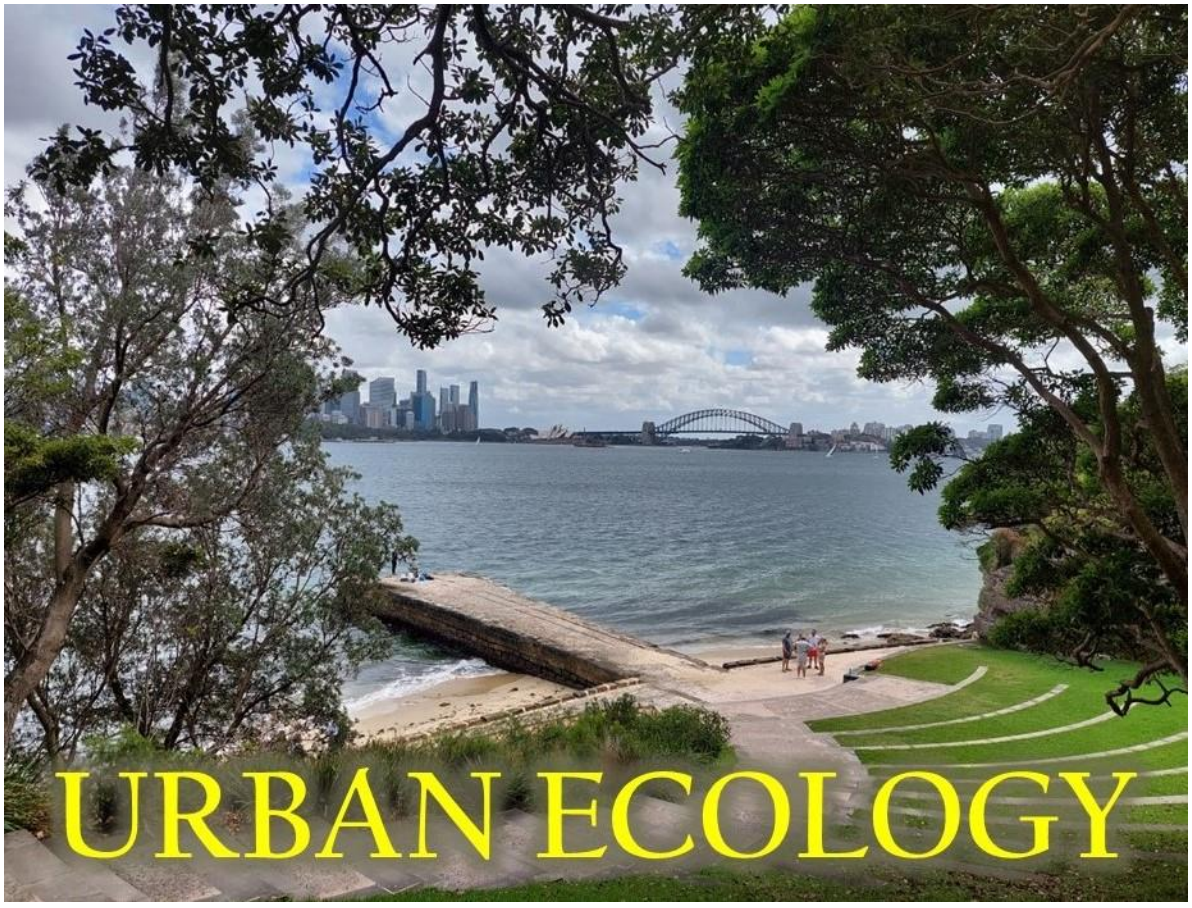
Ecological Consultants Association of NSW

Annual Conference 2024

Monday 5 – Tuesday 6 August, Mercure,
Hunter Valley Gardens, Pokolbin

Full Program



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Urban Ecology

Monday 5th August

8:30 - 9:00	***REGISTRATION***	***Tea and coffee available***
	TOPIC OF PRESENTER	PRESENTER
9:00 - 9.05	*Conference Welcome*	**Rebecca Hogan** ECA President
9.05 - 9.15	*Welcome to Country*	**Uncle Warren Taggart**
9.15 - 9.40	*Relocating Large Trunk Hollows for Owls*	**Corey Mead** *TreeHouse Ecology*
9.40 - 10.05	*Powerful Owl Nest Box: Success and Monitoring*	**Narawan Williams** *Fauna Field Ecology*
10.05 -10.30	*Managing Southern Myotis in Urban Habitats*	**Dr Vanessa Gorecki** *Research Fellow (Wildlife Management) University of Southern Queensland*
10.30 - 11.00	***MORNING TEA***	
11.00 - 11.25	*Habitat use and roost selection of eastern cave bat (Vespadelus troughtoni) and large-eared pied bat (Chalinolobus dwyeri)*	**Lachlan McRae** *Macquarie University*
11.25 - 11.50	*Bats, boxes and hollows: trialling artificial habitat for microbat conservation*	**Selina Kosak** *Macquarie University*
11.50 - 12.15	*Habitat enhancement in urban ecosystems: landscape design and planting considerations*	**Dr Caragh Threlfall** *Macquarie University*
12.15 - 12.40	*Can Industry and Frogs Live Together? A case study in business AND biodiversity at Kooragang*	**Colin McHenry** *University of Newcastle*
12.40 - 12.50	*Acoustic survey methods and technology*	**Nicola Hanrahan** *Titley Scientific*
12.50 - 1.45	***LUNCH***	
1.45 - 2.10	*Dealing with the Fiddly Bits – The City of Moreton Bay's Green Infrastructure Guidelines*	**David Francis** *Francisii Ecology*
2.10 - 2.35	*Better biodiversity on solar farms*	**David Carr** *Stringybark Ecological*

2.35 - 3.00	*Design and Management of Wetlands in an Urban Environment*	**Elaway Dalby-Ball** *Ecological Consultants Australia* *Kingfisher Urban Ecology and Wetlands*
3.00 - 3.25	*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*
3.25 - 3.55	***AFTERNOON TEA***	
3.55 - 4.20	*Green and Golden Bell Frog Habitat Pond, Avoca*	**Ben Cuerel** *Central Coast Council*
4.20 - 4.45	*Meeting the Challenges of Urban Restoration: the Sydney Olympic Park Story*	**Jenny O'Meara** *Sydney Olympic Park Authority*
4.45 - 5.15	***ANNUAL GENERAL MEETING***	
6.00 - 9.00	*Conference Dinner and Trivia – Shiraz Room, Mercure Resort*	

Tuesday 6th August

8:30 - 9:00	***REGISTRATION***	***Tea and coffee available***
	TOPIC OF PRESENTER	PRESENTER
9:00 - 9.05	*Welcome to Day 2*	**Rebecca Hogan** *ECA President*
9.05 - 9.30	*Overcoming Green Roof reluctance in urban Sydney*	**Anne Clements** *Anne Clements & Associates Pty Ltd*
9.30 - 9.55	*Bush birds – town birds: strategies to support Glossy-black Cockatoos in the urban space*	**Dr Beth Mott** *DCCEEW*
9.55 - 10.20	*Conservation of the Squirrel Glider in Urban Landscapes*	**Dr David Sharpe** *Umwelt*
10.20 - 10.45	*What hope for Urban Ecosystems? Turning around the slow death of Status Quo.*	**Peter Dixon** *President, Australian Association of Bush Regenerators*
10.45 - 11.15	***MORNING TEA***	
11.15 - 11.40	*Ecology meets industrial design: creating artificial habitat for Australia's wildlife*	**Mick Callan** *Habitat Innovation & Management*
11.40 - 12.05	*In silico experiments for conservation decision support: showcasing the landscape management of a globally-notorious invasive toad #*	**Arman Pili** *Monash University*
12.05 - 12.25	*VegAssess App – A data collection tool for BAM, VQA and general flora surveys*	**James Garden** *Ecology Systems Pty Ltd*

12.25 - 12.50	*Birds in the 'burbs': How to improve habitat for native birds in residential areas #*	**Dr Jacinta Humphrey** *ICON Science, RMIT University*
12.50-1.35	***LUNCH and POSTER SESSION***	
1.35 - 2.00	*The Cat Conundrum: Balancing Love for Cats with Wildlife Conservation #*	**Pamela Gray** *Tweed City Council*
2.00 - 2.25	*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*
2.25 - 2.50	*Powerful Owl Project: How planning can improve habitat in the urban matrix #*	**Dr Annie Naimo** *Urban Bird Program Coordinator, Birdlife*
2.50 - 3.15	*Beyond Species Richness: Integrating functional diversity into private conservation programs*	**Joshua Lee** *Western Sydney University*
3.15 - 3.40	*Koala Management in the urban interface of Port Stephens*	**Kimberly Baker** *Port Stephens Council*
3.40 - 4.10	***AFTERNOON TEA***	
4.10 - 4.35	*Mitigation and conservation plant translocations: do perspectives of practice, funding and success vary between sectors #*	**Chantelle Doyle** *Centre for Ecosystem Science, UNSW*
4.35 - 5.00	*How Genomics Can Be Used for Restoration and Rehabilitation (and how consultants and developers can embed this in DA's)*	**Marlien van der Merwe** *Research Centre for Ecosystem Resilience, Botanic Gardens of Sydney*
5.00	***CONFERENCE CLOSE***	

Monday 5th August

9.15-9.40 *Relocating Large Trunk Hollows for Owls*

Corey Mead
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Abstract:
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.

Biography:
Corey Mead is a BAM accredited Fauna Ecologist located on the Central Coast with 20 years experience in threatened fauna target surveys and assessment. He rediscovered the Night Parrot in the initial expedition with John Young in 2013 as well as provided the first captures of a living Pygmy Mulga Snake and Rough-scaled Pythons for Discovery Channel in the remote Kimberleys in 2003. As Head Keeper of the Australian Reptile Park Corey ran the venom program providing Rattlesnake handling for Steve Irwin and crocodile assistance to Malcolm Douglas in the early 2000's. Corey is available to do various surveys, acoustic and ultrasonic analysis for eastern NSW vertebrates. He is also a qualified Cert III carpenter and tree climber and setup TreeHouse Ecology in 2021 with a passion to get lost in owl hollows, literally.

9.40-10.05 *Powerful Owl Nest Boxes: Success and Monitoring*

Narawan Williams
Fauna Field Ecology
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Abstract:
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 steel 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.

10.05-10:30 *Managing Southern Myotis in Urban Habitats*

Dr Vanessa Gorecki
Research Fellow (Wildlife Management), Centre for Sustainable Agricultural Systems, University of Southern Queensland
vanessa.gorecki@unisq.edu.au

Abstract:
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 non-reproductive 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.

Biography:
Vanessa is an ecologist who has been involved in wildlife management in the private, public and research sectors as a consulting ecologist, government adviser and research scientist since 2005. Vanessa has a PhD in the ecology and conservation of *Myotis macropus* focusing on colonies

roosting in road culverts in an urban environment. Vanessa co-chaired the first global symposium on the assessment and management of bat roosts in transport networks and is passionate about bat conservation.

11.00-11.25 *Habitat use and roost selection of eastern cave bat (Vespadelus troughtoni) and large-eared pied bat (Chalinolobus dwyeri)*

Lachlan McRae
Macquarie University
lachlan.mcrae@hdr.mq.edu.au

Abstract:
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.

11.25-11.50 *Bats, boxes and hollows: trialling artificial habitat for microbat conservation*

Selina Kosak
Macquarie University
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Abstract:
Many of Australia's hollow-dependent insectivorous bats are threatened due to the continued decline of hollow-bearing 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 (HollowHog) 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.

Biography:
Selina Kosak is passionate about understanding the complexities of tree hollow use by Australian species and identifying ways to supplement this critical, yet declining resource. She has recently completed a Master of Research at Macquarie University where she investigated the use of artificial habitat to support hollow-roosting insectivorous bats including species of conservation concern.

Monday 5th August

11.50-12.15 *Habitat Enhancement in urban ecosystems: landscape design and planting considerations*

Dr Caragh Threlfall
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Abstract:
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.

Biography:
Caragh is a Senior Lecturer at Macquarie University in Biodiversity, Conservation and Environmental Science. She holds a PhD on urban bat ecology and has been working on the ecology and management of urban biodiversity for 15 years, evaluating urban greening and habitat restoration approaches for native wildlife including insectivorous bats, bees, butterflies and birds. Caragh currently holds an Australian Research Council Fellowship, which focusses on understanding the impacts of urban expansion on bats across Australia and cities around the world, with findings informing evidence-based urban planning and design.

12.15-12.40 *Can Industry and Frogs Live Together? A case study in business AND biodiversity at Kooragang*

Colin McHenry
University of Newcastle
colmac39@gmail.com

Abstract:
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.

Biography:

Colin is the chief scientific officer and Project Lead for the Kooragang Green and Golden Bell Frog Island-Wide Survey Program. He has extensive experience in field research and project management, including long-term programs in Western Queensland (palaeontology) and the Kimberley (invasive species impacts upon native predator guilds). All of his major projects have combined conservation science outcomes with community values and involvement. The ongoing Kooragang GGBF program is carefully designed to help six industry and government research partners meet their respective compliance and conservation needs by providing high quality scientific data and advice; this allows industry to operate effectively while giving regulators and the wider community confidence that environmental goals are being met.

Other research interests include biomechanics, anatomy, education, and regenerative agriculture. Colin is the secretary of the Frogs Victoria Society, and lives on a small acreage in Gippsland where he spends as much time as he can surfing the beaches of Bass Strait.

1.45-2.10 *Dealing with the Fiddly Bits – The City of Moreton Bay's Green Infrastructure Guidelines*

David Francis
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david@francisiiecology.com.au

Abstract:

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.

Biography:

David Francis is Director of Francisii Ecology and has over 30 years' experience in environmental planning and ecological assessments across eastern Australia and PNG. Through this work David has been involved with a wide range of projects that grapple ecological and environmental conundrums. This has included several referrals under the Commonwealth's Environment Protection and Biodiversity Conservation Act 1999. He was convenor of the National Biodiversity Offset Conferences in Canberra in 2019, 2022 and 2024. Over the past two years David has been working in the City of Moreton Bay's Green Infrastructure team delivering wildlife movement infrastructure, designing offsets for internal projects and planning for better ecological outcomes on road projects through documenting best practice guidelines.

Monday 5th August

2.10-2.35 *Better biodiversity on solar farms*

David Carr
Stringybark Ecological
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Abstract:
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.

Biography:
David Carr is the Principal Ecologist with Stringybark Ecological, an ecological consultancy based in Armidale in northern NSW established in 2010. David has 35 years' experience working in the natural resource management area, as a botanist, ecologist, restoration practitioner, forester, knowledge broker, extension agent and project manager. This included 16 years as the National Technical Capacity Manager for Greening Australia. He has also worked for Landcare, Border Rivers Gwydir CMA and North West LLS in recent years.

2.35-3.00 *Design and Management of Wetlands in an Urban Environment*

Elaway Dalby-Ball
Ecological Consultants Australia, Kingfisher Urban Ecology and Wetlands
ecologicalca@outlook.com

Abstract:
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 bringing back, wetland ecology though influencing on-ground works. Drawing on works from a range of restoration specialists with many from Dragonfly Environmental.

3.00-3.25 *Impacts, assessment and management of Myrtle Rust affected threatened plants in NSW*

Craig Stehn
Threatened Species Officer, NSW DCCEEW
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Dr Kate Newman
Senior Team Leader BAM Operations, NSW DCCEEW
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Abstract:
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, genetics 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.

Biographies:
Craig Stehn
Craig Stehn is a Senior Threatened Species Officer with the NSW Department of Climate Change, Energy, the Environment and Water. Craig is based in Coffs Harbour and manages multiple threatened species projects, including several invertebrate and flora projects on Lord Howe Island and coordinates the Department's response to Myrtle Rust. He is the Species Project Coordinator for three Critically Endangered Myrtle Rust affected species and has responsibility for the Myrtle Rust Key

Threatening Process in NSW. Craig is a member of the National Myrtle Rust Working Group and works closely with partners in other states and territories to coordinate the national response to Myrtle Rust. Craig has been involved in extensive field surveys, germplasm collections, genetic studies, and the establishment of ex situ collections. He aims to identify rust-resistant lineages within these highly susceptible species and reintroduce them into wild populations to mitigate the disease's impact.

Dr Kate Newman

Kate Newman is the is the Senior Team Leader of the BAM Operations team in the Biodiversity Offsets Branch at NSW Department of Climate Change, Energy, the Environment and Water.

Kate started her working life in the Department of Land and Water Conservation, Far West region of NSW, reviewing impact assessments and investigating clearing compliance issues under SEPP No. 46.

Since then, she has worked in other government roles, consulting and completed a PhD investigating the building of soil from mine spoil using compost and plant-microbe interactions, to rehabilitate an endangered ecological community. She began working in the Biodiversity Offsets Scheme in 2019.

In the BAM Operations team, Kate oversees things like the management of BAM-related TBDC data, SAII assessment data and advice, updating operational manuals, preparing survey guides and important habitat mapping.

3.55-4.20 *Green and Golden Bell Frog Habitat Pond, Avoca*

Ben Cuerel
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Abstract:
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.

Biography:
Ben Cuerel holds a degree in Environmental Science and Management with a major in Marine Science. He completed his Honours project in Estuarine Ecology, utilising stable isotope analysis to estimate the benefits of saltmarsh restoration to estuary food webs. For the past 2.5 years, Ben has served as an Estuary Management Officer at Central Coast Council, where he has been involved in various projects aimed at improving the health of local waterways and wetlands.

4.20-4.45 *Meeting the Challenges of Urban Restoration: the Sydney Olympic Park Story*

Jenny O'Meara
Sydney Olympic Park Authority
jennifer.omeara@sopa.nsw.gov.au

Abstract:
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.

Tuesday 6th August

9.05-9.30 *Overcoming Green Roof reluctance in urban Sydney*

AnneMarie Clements and M Donald
Anne Clements & Associates Pty Ltd
mail@acabotanic.com

Abstract:
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 micorrhizal fungi developing.

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

Biography:
Dr AnneMarie Clements, a restoration ecologist with MSc. (Macquarie Univ.) and a Ph.D. (Univ. of Sydney) in ecology, and more than 30 years experience. Her major research interests include the re-establishment of native ecosystems, impacts of urban development on vegetation and soil, pattern analysis, effects of inundation and salinity on the plant communities, metal concentrations on plant growth and bioaccumulation. She has utilised her research in designing and implementing numerous rehabilitation / conservation programs as part of sustainable developments.

Tuesday 6th August

9.30 – 9.55 *Bush Birds- town birds: strategies to support Glossy-black Cockatoos in the urban space*

Dr Beth Mott
Saving or Species, DCCEEW
beth.mott@environment.nsw.gov.au

Abstract:
Despite its remarkable ability to adapt, the southeastern 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 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.

Biography:
Dr Beth Mott is a Threatened Species Officer who has worked for the Department of Climate Change, Energy the Environment and Water building corridors to recover post-fire landscapes and support Glossy Black-cockatoos, managing orchid decline, saving woodlands and restoring threatened rainforest ecological communities for three years. Beth has worked with threatened birds for eight years - spending five of these as “Mother of Owls” in urban Greater Sydney. Beth has worked as a Conservation Biologist for 30 years on evolutionary systems in fish, chytridiomycosis and decline in Wet Tropics frogs, improving production landscapes for herpetofaunal, mammal and invertebrate communities, quoll responses to pest baiting, feral cat impacts on desert uplands biodiversity and seabird responses to coastline urbanisation.

9.55-10.20 *Conservation of the Squirrel Glider in Urban Landscapes*

Dr David Sharpe
Umwelt
dsharpe@umwelt.com.au

Abstract:
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.

Biography:
Dr David Sharpe (BAppSci -Hons, PhD)
Current Position: Principle Ecologist, Umwelt Australia
Experience: 30 years consulting experience including major infrastructure projects (roads, rail, dams, sewage treatment), residential development, renewable energy, habitat assessment, conservation planning, population monitoring (including mark-recapture statistics). Worked extensively in NSW and Queensland.
Expertise: Threatened flora and fauna survey, assessment and management, glider specialist, mammals, frogs

10.20-10.45 *What hope for Urban Ecosystems? Turning around the slow death of Status Quo.*

Peter Dixon
President, Australian Association of Bush Regenerators
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Abstract:
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.

Biography:
Peter is currently avoiding retirement and works as a sole trader environmental consultant undertaking technical, policy, engagement, training, facilitation and evaluation projects. He also has a part time role with Landcare NSW to work on developing and improving working relationships and collaborations with government organisations and to help improve the impact of Landcare.

He has 35 years experience in ecological management, bush regeneration, community engagement, education and training, catchment management, governance, program design and grant program management.
Peter previously led the NSW Environmental Trust, the NSW Floodplain Management Grants Program and the NSW Coastal and Estuary Grants Program. He also helped design and delivered Catchment Action funding to LLS.

He also previously led the Sydney Metropolitan Catchment Management Authority and worked extensively in the Sydney region in Landcare/Bushcare facilitation and as a bush regenerator. In his voluntary capacity, Peter is a Landcarer on the Mid North Coast on NSW, runs a monthly food swap for the community at Wootton and is currently President of the Australian Association of Bush Regenerators.

11.15-11.40 *Ecology meets industrial design: creating artificial habitat for Australia's wildlife*

Mick Callan
Habitat Innovation & Management
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Abstract:
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.

Biography:
Director – Habitat Innovation and Management
Principal Terrestrial Ecologist

Mick is the Director and Principal Terrestrial Ecologist of Habitat Innovation and Management and is recognised as one of Australia's leading experts in hollow dependent fauna. Mick is also on half of the technical design team who have developed the Habitat Modular Nest Boxes and Habitat Marsupial Dens.
Mick has specialist skills in ornithology and is a recipient of Birdlife Australia's Gavin Jackson Memorial Prize for his academic achievements in ornithological studies, as well as his dedication to the field of ornithology. Additionally, Mick was the recipient of the Jo Ross Memorial Prize for his contribution to the environment of the Bathurst region.

Having worked in private consulting as well as with both State and Local Government agencies, Mick has a history of implementing award winning environmental projects including: "Racing to save the Mount Panorama Woodlands" and "Protecting and Connecting Bathurst Copper Butterfly Habitat".

Mick completed a Bachelor of Science (Honours) through Charles Sturt University, researching tree hollows and artificial habitat solutions for hollow obligate species which complement his Forestry, Management, and Ornithology qualifications. He continues to be an active researcher with a growing list of publications in scientific journals.

11.40-12.05 *In silico experiments for conservation decision support: showcasing the landscape management of a globally-notorious invasive toad*

Arman Pili
Monash University
arman.pili@monash.edu

Abstract:
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 hand-capturing 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.

Biography:
Arman Pili is a Postdoctoral Researcher at the University of Potsdam in Germany, and a Research Affiliate at Monash University in Melbourne, Australia. Arman's research obsession and passion is developing tools to guide scientists and authorities in making informed decisions to conserve biodiversity.

Tuesday 6th August

12.05-12.25 *VegAssess App- A data collection tool for BAM, VQA and general flora surveys*

James Garden
Ecology Systems Pty Ltd
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Abstract:
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.

Biography:
James is an ecological consultant with over 15 years' experience in the industry. He has extensive experience conducting ecological assessments across Victoria and interstate in NSW and South Australia. Prior to starting his own small business, James worked at several different environmental consultancies, the latest being as a Principal Ecologist at Eco Logical Australia. In recent years, he has specialised in habitat connectivity modelling, strategic advice, impact assessments and the ongoing development and support of VegAssess.

James has Bachelor degrees in both Science (Botany) and Commerce (Management) and completed a Master of Environment (Natural Resource Management) at the Australian National University in 2011.

James is a founding committee member of the Ecological Consultants Association of Victoria and is currently the organisations Treasurer.

Tuesday 6th August

12.25-12.50 *Birds in the 'burbs': How to improve habitat for native birds in residential areas*

Dr Jacinta Humphrey
ICON Science, RMIT University
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Abstract:
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.

Biography:
Dr Jacinta Humphrey (she/her) is an urban ecologist who recently completed her PhD at the Research Centre for Future Landscapes, La Trobe University. Her work explored the influence of housing cover and tree cover on the occurrence, abundance and diversity of bird species. Armed with this knowledge, she identified ways to improve urban design and management practices to benefit the birds that share our suburbs. Jacinta is now working on Biodiversity Sensitive Urban Design with the team at ICON Science, RMIT University. In this role, she works closely with urban designers, landscape architects and developers to find opportunities to create habitat for wildlife in new housing developments, urban parks, schoolyards and private gardens. She also monitors the Birrarung Trial Floating Wetlands, a series of artificial habitat islands installed in the Yarra River-Birrarung in the City of Melbourne.

1.35 – 2.00 *The Cat Conundrum: Balancing Love for Cats with Wildlife Conservation*

Pamela Gray
Tweed City Council
PGray@tweed.nsw.gov.au

Abstract:
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.

Tuesday 6th August

2.00 – 2.25 *Increasing the supply of in-demand biodiversity credits*

Dr Louisa Mamouney
Executive Director of the Nature Markets and Offsets Division, NSW DCCEEW
louisa.mamouney@environment.nsw.gov.au
Dr John Seidel
Director, Assurance & Biodiversity Stewardship, Nature Markets and Offsets, NSW DCCEEW
john.seidel@environment.nsw.gov.au

Abstract:
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.

Biography:

Dr John Seidel
John is Director of the Negotiation and Delivery Branch, Credits Supply Taskforce that sits within the NSW Environment and Heritage Group. In this role, John leads four teams charged with delivery of one the NSW Government's innovative conservation programs through engaging with landholders, ecological consultants and industry groups to establish Biodiversity Stewardship Agreements. Since 2008, John has played a lead role in the design and implementation of innovative approaches to biodiversity assessment and offsetting through the implementation of programs such as the NSW Biodiversity Offsets Scheme and Biodiversity Banking Offsets Scheme.

2.25-2.50 *Powerful Owl Project: How planning can improve habitat in the urban matrix*

Dr Annie Naimo
Urban Bird Program Coordinator, Birdlife
annie.naimo@birdlife.org.au

Abstract:
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 have 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.

Biography:
Dr Annie Naimo coordinates the Urban Bird Program for BirdLife Australia. Annie has a background in behavioural and evolutionary ecology and invasive species ecology. She now focuses on species and landscape conservation, and community engagement, to support the birds that live where people do.

Tuesday 6th August

2.50-3.15 *Beyond Species Richness: Integrating functional diversity into private conservation programs*

Joshua Lee
Western Sydney University
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Abstract:
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.

Biography:
Joshua Lee is a PhD student at the Hawkesbury Institute for the Environment, Western Sydney University, studying functional diversity metrics and their potential use in conservation programs. Joshua's research has previously involved bird responses to the 2019-2020 bushfires and trophic cascades in arid Australia. His work now involves plant functional traits and operationalising databases and diversity metrics for use in management. This work is in partnership with the NSW Biodiversity Conservation Trust.

3.15-3.40 *Koala Management in the urban interface of Port Stephens*

Kimberly Baker
Port Stephens Council
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Abstract:
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.

Biographies:
Kimberly has over 14 years' experience in the environmental industry, and is currently leading Port Stephens Council's Environmental Strategy Team in the delivery and management of Council's key environmental projects, management plans and strategies. Alongside her current position, Kimberly also provides an advisory role to Council on Koala matters, and project manages a number of Council's key Koala projects. Prior to working in NSW Local Government, Kimberly was an accredited

BAM assessor and ecological consultant/environmental scientist, provided on-site advisory roles, and most recently undertook an arid agricultural rangeland management role in the East Pilbara region of WA. Kimberly has a passion for natural resource management in Australia, and navigating balanced, ethical and practical environmental solutions for land managers.

4.10-4.35 *Mitigation and conservation plant translocations: do perspectives of practice, funding and success vary between sectors?*

Chantelle Doyle
Centre for Ecosystem Science, UNSW
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Abstract:
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 between 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 longer-term 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.

Biography:
Chantelle has very nearly completed a PhD focused on all aspects of plant translocation, including working on a case study species *Hibbertia spanantha*, as well as reviewing Australia's legislative process, understanding practitioner experiences, grappling with setting global standards, and sharing learnings via podcast and video content. Prior to and during undertaking her PhD, Chantelle worked with NRM organsisations and as an ecological consultant. She has enormous respect for the knowledge base and passion in the sector, and wishes to champion greater collaboration between academia and consulting ecology. She intends to continue in the field translocation as a Research Associate at the University of New South Wales, with the aim of ensuring Australia becomes a global leader, both in the conservation and mitigation spheres, and hopes to lead the creation of a national public translocation database so that knowledge can be more freely shared.

Tuesday 6th August

4.35-5.00 *How Genomics Can Be Used for Restoration and Rehabilitation (and how consultants and developers can embed this in DA's)*

Marlien van der Merwe
Research Centre for Ecosystem Resilience, Botanic Gardens of Sydney
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Abstract:
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 add to the Restore and Renew webtool.

Biography:
Marlien van der Merwe is a senior research scientist at the Research Centre for Ecosystem Resilience, Botanic Gardens of Sydney. She completed her PhD a long time ago on the population genetic diversity of the common Juniper in the UK and has since gained over 20 years' experience in molecular ecology. She most enjoys when research outputs can be applied to conservation and restoration outcomes. Currently, a large part of her work focusses on optimising genetic diversity in germplasm collections.

POSTERS

Strategic Conservation Planning: filling a gap in the biodiversity offset puzzle

Martin Fallding
Environmental Planner, Lake Macquarie City Council
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Much of the work of ecological consultants relates to development impact assessment and biodiversity offsetting. Strategic conservation planning can provide the context for improving the effectiveness of site specific development and offsets.

This poster highlights the benefits of strategic conservation planning and how this complements site specific biodiversity assessment and offset provision. The Lake Macquarie Conservation Planning Framework illustrates a conservation planning approach that seeks to support landscape scale conservation across a local government area with extensive areas of high biodiversity value land.

Local guidelines and a biodiversity toolkit complement and are consistent with legislative requirements. They support more effective planning and management of biodiversity at the local scale.

Detailed population monitoring of a Myotis macropus maternity colony over four seasons during a bridge repair project in south-eastern Australia

Anna McConville
Echo Ecology and Surveying
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Myotis macropus (Large-footed Myotis), is a small echolocating bat with a specialised trawling foraging strategy, that is listed as Vulnerable under the NSW Biodiversity Conservation Act 2016. It is often found roosting in artificial structures such as bridges, where it is required to be protected during bridge repair or replacement projects. We used infrared CCTV cameras to facilitate the emergency construction monitoring of a large (~150 individuals) colony of Myotis macropus in a high bridge with no roost access. The CCTV cameras provided live and recorded footage of the colony and were coupled with noise logging equipment for a period of 10 months. We recorded the time of dusk first bat emergence daily and full emergence counts at weekly intervals. Construction activities were undertaken mostly outside an 20m exclusion buffer and were subject to noise limits. The Myotis macropus population increased from 145 bats (115 adults, 30 juveniles) during the first breeding event to a maximum of 199 bats during the second weaning period. The number of bats in the roost then steadily declined to 133 bats when the project concluded at the end of winter. The monitoring period included three substantial heavy rainfall and flood events. Overall, the colony appeared to be tolerant of construction activities and severe weather. The infrared CCTV cameras proved to be extremely useful tools for bat population monitoring and should be considered for future construction projects.

POSTERS

The fine art of doing nothing: a non-interventionist approach to managing a threatened species

Nicholas Yu, Simon Brown, Rowena Chong
Willoughby City Council

The Red-crowned Toadlet (Pseudophryne australis) is a small, threatened frog species endemic to New South Wales, Australia, recognisable by its distinctive red head markings. In the Willoughby City Council (WCC) Local Government Area (LGA), the toadlet inhabits various bushland reserves, including Explosives Reserve, North Arm Reserve, and Harold Reid Reserve. These habitats provide essential conditions such as rock ledges, water seeps, and vegetative cover for the species' survival and breeding.

In October to December 2018, a consultant hired by WCC conducted a survey to assess the presence and health of the Red-crowned Toadlet populations. The survey revealed ongoing populations in previously recorded locations and new individuals in additional sites, with the highest concentrations around Castle Cove. Council's non-interventionist approach aims to minimise habitat disturbance while maintaining urban infrastructure. Sustained conservation efforts and adaptive management are critical to ensure the long-term viability of this threatened species in an urban environment.

Restore Trees NSW app

Bob Denholm
Senior Team Leader Vegetation and Biodiversity Mapping
Science Economics and Insights Division
Department of Climate Change, Energy, the Environment and Water (DCCEEW)
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DCCEEW will be introducing and demonstrating the new Restore Trees NSW app, which is a great tool to help users inspire and plan their restoration projects to deliver the best biodiversity outcomes.

The app uses publicly available environmental information including the State Vegetation Type Map. The app also contains a host of information about seed supply, funding opportunities, citizen science and connecting with Country.

The app can inform land managers about what native plants are best suited to the location of their project.

Using the app will help land managers and community groups deliver better biodiversity outcomes at individual sites, but also on a landscape scale.

Where can I get it?

You can download the app at the Apple app and the Google Play stores. A desktop version is available at: https://restoretreesnsw.app/info

DCCEEW will also be presenting Trees Near me NSW. This app was launched in 2022 and shows users what plant community types occur anywhere in NSW. The app already has over 20,000 worldwide downloads.

POSTERS

Roost selection and movement of a Large-eared Pied Bat Chalinolobus dwyeri maternity colony at Pilchers Mountain Reserve, Wallarobba, NSW

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Pilchers Mountain, near Dungog in the Hunter Region in NSW, consists of a series of deep, narrow gorges. One of these gorges contains a sheer rock face, where slabs of rock have fallen from the sides of this deep cavern to form caves beneath. Bats have been recorded to use this cave system over many years, with known presence of Eastern Horseshoe Bats, Large Bentwing bat and Little Bentwing Bat. Recent surveys also detected the presence of Large-eared Pied Bat.

Our aim was to investigate the use of Pilchers Gorge by the Large-eared Pied Bat during the maternity season and determine if they were breeding in the vicinity and describe their maternity roost. We captured and radio-tracked six individuals in late December 23, confirming breeding in the area. The colony of 30 individuals consisted of adults and flying juveniles. We located six maternity roost sites with almost nightly movements to a new roost. All roosts were located in holes and deep depressions in the sheer rock face rather than in the caves.

Pilchers gorge is a fairly isolated, and relatively small area of exposed rock that is not visible from aerial imagery. The maternity colony roost sites differed from previously documented maternity roosts for this species described as sandstone caves with a domed roof. Development of the juveniles was earlier than expected and we missed being able to identify the sites that were used when juveniles were non-flying. This study does however demonstrate the need to conserve a group and variety of potential roost sites in an area and not just focus on one cave structure that may be assumed to be 'the maternity roost'.