



Joint Conference of the Australian Mammal Society and Australasian Bat Society

Shine Dome, Canberra, 6–9 July 2026



Program and Abstracts

Joint Conference of the Australian Mammal Society and Australasian Bat Society

Shine Dome, Canberra, 6–9 July 2026

Organising Committee

Garry Jolley-Rogers, Lindy Lumsden, Jacqui Marlow, Emily Scicluna, Leroy Gonsalves, Euan Ritchie, Marissa Parrott, Aviya Naccarella and Anthony Rendall

Acknowledgements

The Organising Committee would like to thank the following people for their assistance with the organisation of various components of the conference:

- Chris Dickman for facilitating the hiring of the Shine Dome as a Fellow of the Australian Academy of Science
- Sam Girvan for assistance with ECR events and workshops
- Robbie Eres, Julie Broken-Brow and Nicola Hanrahan for leading the mental health workshop at the ECR day
- Jason Cummings from Mulligans Flat for hosting the ECR day and running the spotlighting field trip
- Jen Martin for hosting the Science Communications panel discussion, and for panel members Andrea Wild, Ashley Bunce, Danielle Clode and John Reid
- Clare Holleley and Andrea Wild for leading the tours and talk on the Australian National Wildlife Collections
- Shandiya Balasubramaniam and Cam Slatyer for leading the Atlas of Living Australia workshop
- Fred Ford for leading the Eden field trip
- Sarah May and Cynthia Jolley-Rogers for facilitating and assisting with the Tidbinbilla field trip
- Student awards judges (for presentations and travel awards)
- Karly Fowler for designing the conference logo and the Bats and Windfarm tshirt design, and Kasey Price (Mousewren) for the Dasyurid tshirt design
- Arabella Eyre for uploading information to the AMS website
- Catherine Seabrook, Mark Santos and Huw Ollerenshaw from the Australian Academy of Science for event support at the Shine Dome
- Jake Willis from the National Film and Sound Archives for event support for the Bats and Wind Farm Symposium
- Juliet Ratchford for event support for the conference dinner at Old Parliament House
- Special thanks to Andrew Pask, TIGRR lab, for sponsoring the Monday symposiums to enable students to attend for free.

Sponsors & Supporters

Platinum: Thylacine Integrated Genomic Restoration Research Lab

Silver: Advanced Telemetry Systems Australia

Faunatech

Saffron Aid

Super Sensory Technologies Pty. Ltd.

Titley Scientific

Bronze: Hollowhog

Supporters: CSIRO Publishing

Sarah Allen

Student Awards

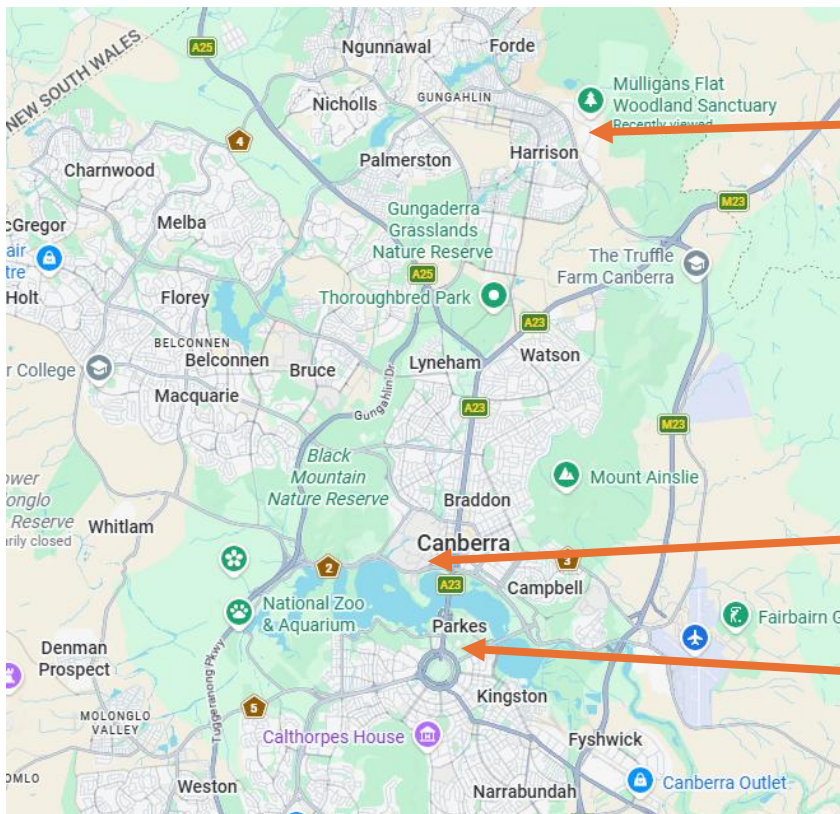
The ABS Student awards have been generously donated by EcoAerial Environmental Services (Rob Gration).

Two new AMS Student Awards have been generously donated by The Foundation for Australia's Most Endangered Species Ltd (FAME), and Georgeanna Story (Scats About) for the Bruno (Barbara Triggs) Award in honour of Barbara Triggs's dedication to Australian wildlife and conservation.

Acknowledgement of Country

This conference is being held in Ngunnawal Country. We acknowledge the Ngunnawal peoples as the traditional owners of the land on which we are gathering, and pay our respects to their Elders past, present and emerging. We acknowledge and pay respect to their continuing culture and connections to land, water and community. We also acknowledge and pay our respect to all Indigenous and Torres Strait islander peoples who may be attending this conference, and to those of the lands and waters on which our research is conducted.

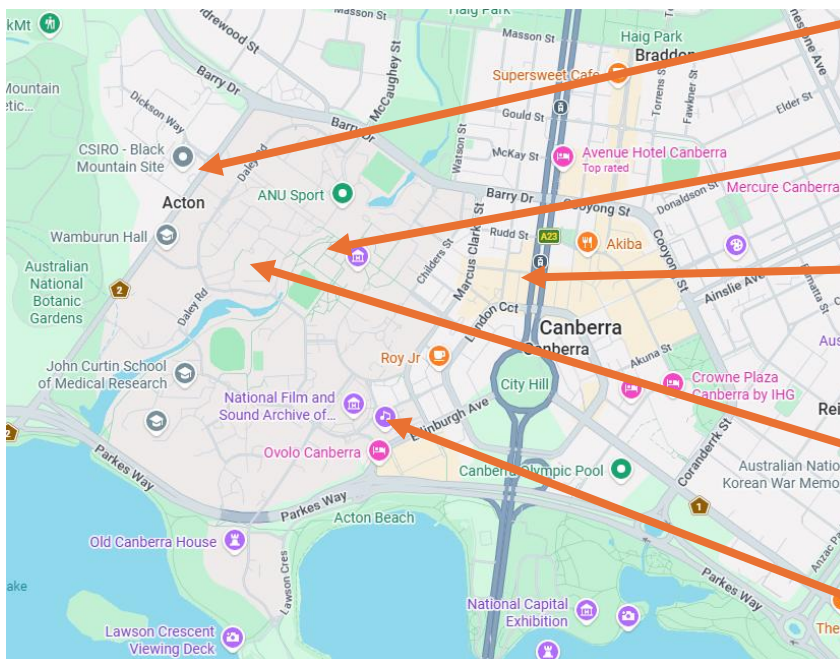
Maps



Mulligans Flat –
Sunday's ECR day, and
spotlighting on
Thursday night

Shine Dome conference
venue

Old Parliament House,
Wednesday's
conference dinner



CSIRO Black Mountain site
for Australian National
Wildlife Collections tour and
talk on Friday

Badger and Co, Tuesday's
ECR dinner

Smith's Alternative
Bookshop and Café, Sunday
night Welcoming Function,
and Tuesday's OB dinner

Australian National
University, Slatyer Room for
Friday's Animal Monitoring
and ALA workshops

Shine Dome and National
Film and Sound Archives
conference venues

Monday's Bats and Wind Farm
symposium at the National
Film and Sound Archive



Monday's Dasyurid symposium and
Tuesday-Thursday main conference at
the Shine Dome, Ian Wark Theatre

Tuesday-Thursday main conference
additional seating in the Ballroom in
Ian Potter House

Social events

Welcome Function – Smith’s Alternative Bookshop and Cafe, Sunday 5th July 2026, 18:30–20:30.

76 Alinga St, Canberra ACT [Smith’s Alternative Book shop and Cafe](#)

The Welcome Function will be held at Smith’s Alternative Bookshop and Cafe, in the upstairs function rooms. Please join us to start the conference off at this informal get-together to catch up with old friends and colleagues and make new ones. A range of finger foods will be provided, and you will be able to purchase alcohol and soft drinks at the bar. There are plenty of restaurants nearby if you want a more substantial meal following the Welcome Function.

Note that parking is difficult in this area. Many car parks nearby have been closed due to major roadworks for the tram extension. Nearby car parks include Hobart Place (limited) and Secure City West (\$\$). Parking in front of the venue is currently a bus stop. The venue is within metres of the tram terminus. Public transport or walking is recommended.

Your registration pack will be available for collection at this function, or at the conference venue from Monday. Due to space limitations, tshirts will not be distributed at the Welcome Function but will instead be available from Tuesday at the Shine Dome. For people who have ordered a tshirt and are only attending the Monday symposiums, these will be provided individually.

Informal dinner: ‘Old buggers’ - Smith’s Alternative Bookshop and Cafe, Tuesday 7th July 2026, from 18:30.

76 Alinga St, Canberra ACT

This is an optional informal dinner with payment due on the night. Drinks will be available at the bar, and food will be collectively ordered in (e.g. pizzas). Special dietary requirements will be factored in.

Informal dinner: Students and ECRs - Badger and Co (a student pub on ANU campus), Tuesday 7th July 2026 from 17:30.

This is an optional informal dinner with payment due on the night. Food platters will start being served at 19:00.

Conference Dinner – Old Parliament House, 8th July 2026, 19:00–22:00

If you have purchased a ticket to the Conference Dinner, please join us in the Member’s Dining Room at Old Parliament House in Parkes. **Note that entry is via the back entrance off Queen Victoria Terrace (not the front entrance of 18 King George Terrace).** If arriving by taxi or uber, ask to be dropped at the back entrance. There is also parking nearby (see map below).

Note there are roadworks on Commonwealth Bridge at the moment so please allow extra time for travel. Journey Planner with further info on public transport can be found [here](#).

Dinner will consist of a two-course meal (entre and mains), followed by chocolates. Special dietary requirements will be catered for. Three free drinks will be provided per person, with further drinks available for purchase from the bar.

During the dinner there will be the usual Australian Mammal Society battle of brains and creativity in the form of the annual AMS limerick contest, and the prestigious Scruffy Award will be awarded. Note that we won’t be holding the usual ABS auction this year.

Welcome to the Members' Dining Rooms, Old Parliament House



HOW TO FIND THE MEMBERS' DINING ROOMS

Workshops

Pre-conference Early Career Researcher Workshop at Mulligans Flat – Sunday 5th July 2026, 11:00–16:00

This workshop is for AMS and ABS members who are post-graduate students and early career researchers (ECRs). It is limited to those who have registered for the session. It will be held at Mulligans Flat Woodland Sanctuary, 15 km north of the centre of Canberra. This will be a great opportunity to network with other ECRs. Lunch will be provided. Detailed information has been emailed to all registrants.

The focus of the workshop will be a session called **‘Going Batty? A practical mental health and wellbeing workshop for students and early career researchers’**. This will be facilitated by Dr Robert Eres, a psychologist and leading Australian neuroscientist, and ECRs Dr Julie Broken Brow and Dr Nicola Hanrahan. This will be followed by a walk through Mulligans Flat to spot wildlife.

Science communications panel discussion, Ian Wark Theatre, Shine Dome – Monday 6th July 2026, 18:30–20:00

Great science alone won’t solve the biodiversity and climate crises. For research to make a real difference, it has to reach the people who shape decisions: our politicians and policy makers, industries, and broader communities. So how can scientists communicate their work in ways that cut through, build trust, and drive change?

Join us for a panel discussion on science communication for real-world impact, featuring speakers with experience engaging audiences across government, industry, and the public. Together, we’ll explore practical strategies for making conservation science resonate beyond academia.

Hosted by A/Prof Jen Martin (*Head and founder of the University of Melbourne’s Science Communication Teaching Program, author and broadcaster*), this session will include plenty of time for audience questions and discussion.

Panel members include Andrea Wild (*science communicator, author and Communications Manager, National Collections and Marine Infrastructure, CSIRO*), Dr Ashley Bunce (*ACT Commissioner for the Environment and Federal Inspector General appointed to oversee animal welfare and live animal exports*), A/Prof Dr Danielle Clode (*prolific author, Whitely Award winner, teaches academic and creative writing, and zoologist*), Dr John Read (*Arid Zone Ecologist, inventor of the Felixer, floppy top fence and other key technologies for exclosures, prime troublemaker and author*) and Prof. Euan Ritchie (*Ecologist, Biodiversity Council Member, President AMS and also a prime troublemaker of the best kind*).

This event is open to all delegates (even if you didn’t indicate you would be attending when you registered). No catering is provided, so organise your own dinner either before or after the event. Note that food is not allowed into the Ian Wark Theatre.

Thursday night spotlighting at Mulligans Flat, starting at 18:30

For those who have registered for the spotlighting night at Mulligans Flat, meet up at the start of lunchtime on Thursday to connect with others and coordinate transport. **Note that the start time has been changed to 18:30 (not 18:00 as it says on their website) to enable more time to get there after the end of the conference.** You can get to Mulligans Flat by public transport - see below - however it is likely to take about 90 mins, so you might want to book taxis/ubers instead. Take your own food and water, sturdy shoes and warm clothing.

It is still possible to register if you want to go: <https://wildbarkatmulligansflat.rezdy.com/734412/private-event-tour-invite-only>

How to get to Mulligans Flat

Address 25 Rosenberg St Throsby ACT 2914
[Google Maps](#)

By Public Transport from the Shine Dome (conference location)

- Walk to Alinga Steet Tram stop (~1km)



- Tram to Gungahlin Place (~24 min)
- Walk to Gungahlin Place platform 4 (~200m)
- Bus 22 Harrison Loop (~25 min)
- Get off at Harrison Av after Shingleback St
- Walk to Mulligans Flat (~350m)



MULLIGANS FLAT
WOODLAND SANCTUARY

Mulligans Flat is Australia's largest single Box-gum Grassy-woodland area managed for conservation. Two contiguous fenced sanctuary areas (485 ha original Sanctuary and 800 ha expansion area) are home to an array of species including:

- Eastern bettong
- Pookila
- Spotted-tail quoll
- Eastern quoll
- Agile antechinus
- Common dunnart
- Short-beaked echidna
- Bush stone-curlew
- Shingleback
- Superb parrot
- Golden sun moth
- Striped legless lizard

Check out Mulligans Flat Sanctuary Map [HERE](#)

Friday workshops and weekend field trips

The Animal Monitoring workshop, Atlas of Living Australia workshop and Australian National Wildlife Collections tours are all at full capacity. All delegates who have secured a place for these events, and those remaining on the waiting lists, have been emailed individually with the details.

Due to the interest in the Australian National Wildlife Collections tours an additional event has been put on, in the form of a talk on the collections. The information for this talk has been emailed out to delegates.

Information on the weekend field trips has been emailed to those who have registered for these trips.

If you have not received these emails, please contact amsabs26@gmail.com

Program

Monday 6th July 2026

**Concurrent Symposium
Dasyurids of the Past, Present and Future
Shine Dome – Ian Wark Theatre**

08:00 – 08:30	Registration and pre-symposium coffee and tea
08:30	Emily Scicluna: Symposium opening and Acknowledgement of Country
Session 1. Chair: Emily Scicluna	
08:45 Plenary	Tim Churchill / Mike Archer: Dasyurids of the Past: fossil record, phylogeny, and evolutionary history of an Australian radiation
09:20	Erin Thomas: Quollified for release? Age and pre-release experience predict success for translocated eastern quolls (<i>Dasyurus viverrinus</i>) [AMS student]
09:35	Emily Scicluna: Genetic and morphological distinction between arid and grassland fat-tailed dunnarts
09:50 Speed talk	Ryan Sauermann: Population-level whole genome sequencing reveals patterns of population decline in endangered grassland fat-tailed dunnart (<i>Sminthopsis crassicaudata crassicaudata</i>) [AMS student]
09:55 Speed talk	Sarah Vauvert: Quoll-apse: reconstructing the demographic history of Australia's "native cat" [AMS student]
10:00-10:30	Morning Tea
Session 2. Chair: Amy Edwards	
10:30	Andrew Baker: Dassies by the dozen: Dasyurid systematics in the 21st century
10:45	Julie Old: Dasyurid immune systems
11:00	Marlon Taylor: Range and niche dynamics in small dasyurids from southern Australia
11:15	Matthew Brun: Aridity drives multi-channel feeding in the crest-tailed mulgara of the Strzelecki desert [AMS student]
11:30	Justine Barker: Living in a patchwork: seasonal home range patterns of chuditch (western quoll) in the northern jarrah forest of Western Australia
11:45	Marissa Parrott: Visible and invisible impacts of emergencies: additional considerations to aid mammal conservation and management after disasters
12:00-13:00	Lunch
Session 3. Chair: Andrew Baker	
13:00 Plenary	Diana Fisher: Dasyurids of the Present: Why are Australian dasyurids special? The evolution of male die-off
13:35	Rachael Bartlett: Gippsland spot-tailed quoll (<i>Dasyurus maculatus maculatus</i>) recovery – is translocation the next step?
13:50	Emma Gray: The utility and relative cost of using detection dogs compared to traditional methods for surveying small, cryptic mammals: a case study on the threatened Julia Creek dunnart, <i>Sminthopsis douglasi</i>

14:05	Cameron Charley: Modelling the distribution of the genus <i>Antechinus</i> (Dasyuridae) under current and future climatic conditions [AMS student]
14:20	Patrick Bragato: Using historical records to understand species range collapse and inform future rewilding attempts [AMS student]
14:35 Speed talk	Prithul Chaturvedi: Remote animal microchip scanner (RAMS) [ABS student]
14:40 Speed talk	Kathryn Cooper: Investigating morphology, behaviour and reintroduction success in captive-bred common planigale (<i>Planigale maculata</i>) [AMS student]
14:45 – 15:15	Afternoon Tea
Session 4. Chair: Marissa Parrott	
15:15 Plenary	Andrew Pask: Dasyurids of the Future: Bringing back the past to protect our future; the next generation of conservation tools for dasyurids
16:00	Pierre Ibri: Assisted evolution of cane toad toxin resistance in northern quolls
16:15	Aliesha Dodson: Life beyond the fence
16:30	Brittany Brockett: Factors influencing multiple paternity: insights from the eastern quoll (<i>Dasyurus viverrinus</i>) [AMS student]
16:45 Speed talk	Katarzyna Filimonow: ART (Assisted Reproductive Technologies) in service for Dasyuridae conservation
16:50 Speed talk	Naomi Tappe: Challenges in marsupial fertilisation: adapting IVF and ICSI for the dunnart
16:55 Speed talk	Alexandria Bullen: Taking the ‘pulse’ of wildlife populations: development of a veterinary population health assessment framework for a marsupial carnivore [AMS student]
17:00 Speed talk	Steph Williams: Holy quolly – a significant range extension for the northern quoll in Western Australia
17:05	End of Symposium
Science communication panel discussion Shine Dome – Ian Wark Theatre	
18:30 – 20:00	Join us for a panel discussion on science communication for real-world impact, featuring speakers with experience engaging audiences across government, industry, and the public. Together, we’ll explore practical strategies for making conservation science resonate beyond academia. Hosted by A/Prof Jen Martin and including a great panel of speakers, this session will include plenty of time for audience questions and discussion.

Monday 6th July 2026

Concurrent Symposium

Bats and Wind Farms: Research to Inform Risk Reduction

National Film and Sound Archive, Arc Theatre
(across the road from the Shine Dome)

08:00 – 08:30	Registration and pre-symposium coffee and tea
08:30	Lindy Lumsden: Symposium opening and Acknowledgement of Country, notices and housekeeping
Session 1: Assessing risk – Chair Lindy Lumsden (Slido Ben Lawrence)	
08:45 Plenary	Michael Whitby: A whirlwind tour of global lessons in bat and wind conflict and the path to coexistence
9:30	Carissa Harris: Vulnerability of bats in Australia to wind turbine mortality: a trait-based assessment [<i>ABS student</i>]
9:45	Julia Ryeland: Assessing collision risk likelihood of Australian bats at wind farms
10:00	Pia Lentini: Analysis of a large-scale telemetry dataset to quantify wind turbine collision risk for the Grey-headed Flying-fox
10:15	Felicity Williams: What height do microbats fly? Using stereo-thermal imaging and ultrasonics to measure species-specific flight heights for wind energy impact assessment
10:30-11:00	Morning Tea
Session 2: Ecology to inform risk assessments – Chair Emmi van Harten (Slido Anna Langguth)	
11:00	Kyle Armstrong: Pioneering the application of micro-doppler radar to the classification of Australian bats
11:15	Trish Fleming: Radar revealing flight height for Pilbara bats
11:30	Elizabeth Williams: Tracking Ghost Bats and other threatened cave-dwelling bats in southern Cape York
11:45	Laura Ruykys: Home range and movement of the Ghost Bat (<i>Macroderma gigas</i>) in the Katherine region, Northern Territory
12:00	Sarah Grundy: Site fidelity and inferred colony inter-connectivity in <i>Rhinonicteris</i> from pit tagging
12:15 Speed talk	Angus Dempster: Bat activity patterns of the inland Pilbara region: baseline data for renewable energy assessment
12:20 Speed talk	Brandi Simmons: Searching for Pilbara Leaf-nosed Bat roosts - lessons from the field
12:25-13:30	Lunch
Session 3: Informing risks and assessing impacts – Chair Emma Bennett (Slido Amanda Bush)	
13:30	Amy Rowles: Seasonal migration of <i>Austronomus australis</i> (White-striped Freetailed Bat) [<i>ABS student</i>]
13:45 Speed talk	Meagan Underdown: Using machine learning transformers to explore bioacoustic niche separation in bat sonotypes: a case study with a critically endangered South Australian bat [<i>ABS student</i>]
13:50 Speed talk	Michael Pennay: Dinner conversations: how feeding sequences can solve ID headaches – buzz for answers!
13:55 Speed talk	Tenaya Duncan: Dinner or decay? Seasonal carcass persistence at a proposed Pilbara wind farm

14:00	Tracy Lyten: Reassessing monitoring effort and carcass persistence: insights from intensive bat mortality surveys at a Victorian wind farm
14:15	Lindy Lumsden: Species-specific mortality estimates of bats at wind turbines in Victoria, including spatial and temporal patterns
14:30	Julia Ryeland: Environmental and climatic drivers of echolocating bat fatality at Australian wind farms
14:45	Rachel Leihy: Assessing collision impacts on threatened bat populations
15:00 – 15:30	Afternoon Tea
Session 4: Mitigations and future directions – Chair Michael Whitby (Slido Tomás Villada-Cadavid)	
15:30	Stevie Florent: Testing the efficacy of acoustically triggered curtailment in Australia
15:45	Amanda Bush: Bat activity patterns in relation to wind speed and other weather variables in southwest Victoria
16:00	Kyle Armstrong: Trialling tech for application in windfarm assessments and mitigations
16:15	Jayden O'Brien: Roost, reincarnated: the journey from concept to commissioning of an artificial roost in the Pilbara
16:30 Plenary	Emma Bennett: Punished for looking: detection-driven regulation and the failure of bat protection at Australian wind farms, and where to from here
16:55	Lindy Lumsden: Summing up and thanks
17:00	End of Symposium
Science communication panel discussion Shine Dome – Ian Wark Theatre	
18:30 – 20:00	Join us for a panel discussion on science communication for real-world impact, featuring speakers with experience engaging audiences across government, industry, and the public. Together, we'll explore practical strategies for making conservation science resonate beyond academia. Hosted by A/Prof Jen Martin and including a great panel of speakers, this session will include plenty of time for audience questions and discussion.

Tuesday 7th July 2026

Joint AMS/ABS conference

Shine Dome – Ian Wark Theatre, with additional seating in the Ballroom

07:30 – 08:30	Registration and pre-conference coffee and tea
08:30	Euan Ritchie: Conference opening and Welcome to Country Notices and housekeeping
08:50 Plenary	Ellis Troughton Memorial Award (2025) plenary presentation: Prof. David Lindenmayer: The importance of long-term monitoring in tracking the trajectory of mammal populations across their distributions
Session 1. Chair: Meg Edwards (Slido assistants: Grace Holland, Jack Le Fevre)	
9:20	Katherine Warwick: PFAS in the platypus: a growing dataset and its implications for freshwater contamination monitoring [AMS student]
9:30	Nyssa Braid: Bats & belonging: arts role in facilitating connection [ABS student]
9:40	Hannah Christensen: Who's top dog? Individual identification reveals female dominance in apex predator social networks around a shared resource [AMS student]
9:50	Oli Ayleen: Arid zone bats and fenced conservation reserves [ABS student]
10:00 Speed talk	Campbell Mole: Development of a viable GPS tracking method for Leadbeater's possum (<i>Gymnobelideus leadbeateri</i>) [AMS student, ABS student]
10:05 Speed talk	Sarah Yong: Bright lights, loud noise: how does a light festival impact microbats? [ABS student]
10:10 Speed talk	Ella Loeffler: Dingo Starr: identifying individual dingoes to estimate population size and density in East Gippsland using SECR analysis [AMS student]
10:15 Speed talk	Fabian Sauchelli: The evolutionary history of Australasian bats and their environmental context [ABS student]
10:20	Question time for speed talks
10:30-11:00	Morning Tea
Session 2. Chair: Pat Finnerty (Slido assistants: Kelsey Graham, Lachlan McRae)	
11:00	Melissa Walker: Energetic costs of extreme heat: high temperatures elevate daytime activity and suppress nighttime foraging in flying-foxes
11:10	Katherine Best: Den and now: a before–after assessment of nest box adoption in southern greater gliders
11:20	Sanjeev Baniya: Bridging the gap: integrating physiology, ecology and biophysics to investigate overwinter energy budgets of an Australian bat [ABS student]
11:30	Meg Farmer: Investigating the movement ecology of long-nosed potoroo within the context of a feral cat eradication program [AMS student]
11:40	Kathryn Bugler: From zoo to roo: Developing an accelerometer-based behavioural classifier for red kangaroos [AMS student]
11:50	Jasmin Annett: Linking biomechanics and ecology: resonance as one of the drivers of movement efficiency in large kangaroos [AMS student]
12:00 Speed talk	Tiah Bampton: Boring as bat ... poo: stable isotopes of bat guano and potential applications for conservation biology

12:05 Speed talk	Matthew Houston-Francis: The FaunaHealth Index: a holistic approach to mammal community health [AMS student]
12:10 Speed talk	Loren Howell: Investigating human impacts on fruit bat populations in the past by applying morphometric, multivariate, and palaeoproteomic techniques to Lapita midden assemblages from Vanuatu [AMS student, ABS student]
12:15 Speed talk	Nicholas Handros: How critical weight range mammals persist in fragmented landscapes [AMS student]
12:20 Speed talk	Lorien Watts: The original mammal fauna of the Nullarbor [AMS student]
12:25 Speed talk	William Terry: Performance and trade-offs in artificial hollow designs across three installation cohorts [AMS student]
12:30	Question time for speed talks
12:40-13:40	Lunch
Session 3. Chair: April Reside (Slido assistants: Oil Aylen, Nicholas Wu)	
13:40	Ava Thomas: The impact of nutrition on koala tree revisitation [AMS student]
13:50	Emmet Mulcahy: Social dimensions of invasive species management: a global systematic review [AMS student]
14:00	Selina Kosak: Long-term monitoring to determine the suitability of artificial habitat for insectivorous bats [AMS student, ABS student]
14:10	Jack Le Fevre: The role of nutrition in shaping koala abundance [AMS student]
14:20	Cinthia Pietromonaco: Evaluating the effects of storage, preservation and filtering thresholds on repeatability in faecal metabarcoding studies of flying fox (<i>Pteropus</i>) diets [ABS student]
14:30	Annie Kraehe: Climate-informed species distribution models as a framework for targeted discovery of Pleistocene stick-nest rat middens in arid Australia [AMS student]
14:40	Kushini Kularatne: What drives female dominance in a social rodent: the spinifex hopping mouse (<i>Notomys alexis</i>) [AMS student]
14:50 Speed talk	Rohan Bilney: Boom and bust in a temperate forest ecosystem: long-term changes in terrestrial mammal occurrence in response to climatic variability and wildfire in Eden, NSW.
14:55 Speed talk	Emma Godfrey: Predators removed, behaviours retained? A trans-Tasman test in common brushtail possums [AMS student]
15:00 Speed talk	Charlie Dobe: From Quolls to `Coots: camera-based density estimation in a multi-species reintroduction program [AMS student]
15:05 Speed talk	Isabella Picone: Assessing small mammal diversity and relative abundance six-years after the 'Black Summer' drought: have small mammals at Springbrook National Park in south-east Queensland recovered? [AMS student]
15:10 Speed talk	Lauren Sandy: In the shadow of light and music: the response of insectivorous bats to nighttime recreational events [ABS student]
15:15 Speed talk	Greta Frankham: Taxonomic revision of the eastern pygmy possum, <i>Cercartetus nanus</i> (Desmarest 1817) and resurrection of <i>Cercartetus unicolor</i> (Krefft 1863)
15:20	Question time for speed talks
15:30 – 16:00	Afternoon Tea

Session 4: Poster Session

16:00-17:30	Adam Fawcett: Current management of the bush-tailed rock-wallaby (<i>Petrogale pennicillata</i>) within Warrumbungle NP Adam Reade: The effect of vorticity on the heat budgets of flying animals [ABS student] Alison Hoeger: Sobering stats on the cat catastrophe facing Australian bats Anna Langguth: Seasonal changes of white blood cell counts in the southern bent-wing bat (<i>Miniopterus orianae bassanii</i>) [ABS student] Caragh Threlfall: The demographic costs of urban habitat use in a widespread insectivorous bat Catriona Campbell: Applying MassARRAY® genotyping to wild, non-invasively collected scats for an endangered species – the broad-toothed rat (<i>Mastacomys fuscus mordicus</i>) Doug Gimesy/Matthew Mo: On both sides: photographs demonstrating flying Grey-headed flying-foxes vary the side on which they carry their pups Emily Simpson: Recovery after the Black Summer bushfires: are mammals' functional contributions changing in the Blue Mountains World Heritage Area, NSW, Australia? [AMS student] Emma Heath: Supplementary use of acoustic lure in targeted microbat trapping survey indicates increased trapping success Erin Scase: Application of assisted reproductive technologies for the derivation of bufotoxin resistant marsupials [AMS student] Fabian Sauchelli: Character displacement in arid sheath-tailed bats Fernanda Tique Bernal: Rapid acoustic assessment of bat assemblages across multiple habitats: an ecological baseline for the Hunter Wetlands Centre, NSW [AMS student, ABS student] Fraser Smith: Turn it up! <i>Ozimops</i> love this station [AMS student, ABS student] Gemma O'Brien: Does postnatal growth and reproductive development of <i>Pteropus scapulatus</i> align with age classes? George Madani: Size does matter: detectability of arboreal mammals using thermal cameras and spotlighting Hayley Stannard: Kultarr behaviour in captivity Jasmine Kasper: Dinner for two (species): the diets of feral cats and ghost bats [AMS student, ABS student] Jo Isaac: How do location and landscape features influence occupation rates in artificially created tree hollows Kai Walker: Thermal physiology of urban insectivorous bats in different roosts [ABS student] Kelly Sheldrick: Hidden in the forest: insights into the western falsistrelle bat Kyle Armstrong: Quantifying value and roost use in Pilbara bats of conservation significance Levi MacDonald: Do European and Australian Vespertilionidae share social call similarities? Investigating Finlayson's cave bat [ABS student] Maree Treadwell Kerr: Bats in FNQ backyards: citizen science empowering communities to assist bat research and conservation
-------------	---

	Mason Visser: Picky teds: day-time habitat use and tree preference of translocated koalas in south-east Queensland [<i>AMS student</i>] Meg Edwards: How do you conserve what you cannot find? A case study from a threatened Australian rodent Melissa Jensen: Assessing stress during reintroduction: faecal glucocorticoid metabolite analysis as an indicator of stress during reintroduction and acclimation of a threatened Australian marsupial [<i>AMS student</i>] Melissa Walker: Aquatic and terrestrial heart rates in fur seals: evidence for delayed metabolic processing Nicholas Wu: Local climate and genetic influence on the torpor physiology of a cave-roosting bat Rochelle Steven: Insights into the urban ecology of the critically endangered western ringtail possum and limitations of short-term citizen science projects Ryan Ellis: Ghosts of mining's past, present, and future: the importance of abandoned mine workings for the threatened ghost bat Ryan Sarre: Rapid assessment of mouse abundance across Australia to predict house mouse outbreaks Sophie Compton: Identification and palaeoecology of the Pleistocene bat assemblage from Cathedral Cave, Wellington [<i>ABS student</i>] Tracy Lyten: Conservation detection dogs as a survey methodology for locating active kowari (<i>Dasyuroides byrnei</i>) burrows in an arid pastoral landscape Trish Fleming: BushGuardian: a smart trap for feral cats Willow Bourke: Genetic rescue of the southern brush-tailed rock-wallaby Yamila Gurovich: The oral shield as a trigeminal mechanosensory navigation organ in newborn dasyurids: a new hypothesis for marsupial teat-finding
--	--

Wednesday 8 th July 2026	
Joint AMS/ABS conference	
Shine Dome – Ian Wark Theatre, with additional seating in the Ballroom	
08:00 – 08:30	Registration and pre-conference coffee and tea
Session 1. Chair: Leroy Gonsalves (Slido assistants: Meg Farmer, Sujatha Mayadunnage)	
08:30 Plenary	ABS President's Early to Mid-career Researcher Award: Emmi van Harten: Review of effectiveness of wind farm collision risk avoidance and mitigation measures for bats
9:00	Tomas Villada-Cadavid: Intrinsic and environmental drivers of torpor and arousal during hibernation in the critically endangered southern bent-winged bat [<i>ABS student</i>]
9:10	Kelsey Graham: Global fur traits: from Arctic thick to desert slick [<i>AMS student</i>]
9:20	Brad Law: Forest voices: landscape-scale monitoring of forest fauna using acoustic sensors, artificial intelligence and robust analytics

9:30	Lachlan McRae: Genetic structure emerges at different spatial scales in two co-occurring threatened bats, <i>Chalinolobus dwyeri</i> and <i>Vespadelus troughtoni</i> [ABS student]
9:40	Robin Rowland: Physiological tools for monitoring urban impacts at the roost level in insectivorous bats [ABS student]
9:50	April Reside: Global bat pest suppression services - state of knowledge
10:00	Graeme Coulson: Fertility control of female bare-nosed wombats with levonorgestrel implants
10:10 Speed talk	Michelle Ryan: The Hawkesbury-Nepean platypus project: tracing metal contaminant pathways in an urban river system
10:15 Speed talk	Shana Ahmed: Talking bats
10:20	Question time for speed talks
10:30-11:00	Morning Tea
Session 2. Chair: Alicia Dimovski (Slido assistants: Kushini Kularatne, Lauren Sandy)	
11:00	Imogen Dumville: The interaction of diet, nutrition, and the microbiome: long-term non-invasive sampling of the koala [AMS student]
11:10	Mei-Ting (Magic) Kao: Investigating links between roost density, social networks, and vocal variation in a common urban-dwelling bat [ABS student]
11:20	Sujatha Mayadunnage: Investigation of animal-vehicle collisions: incidents, consequences, mitigation, and human dimensions [AMS student]
11:30	Eliza Stott: Treatment of sarcoptic mange in wombats using moxidectin [AMS student]
11:40	Ruvi de Mel: Going places: population differences in sensitivity to climate warming revealed by virtual transplants in a widespread bat [ABS student]
11:50	Grace Holland: Assessing the reliability of current scoring systems for detecting sarcoptic mange in free-ranging wombats [AMS student]
12:00	Kirstie Starr: Shrinking forests, shifting fauna: urbanisation and changing occupancy of arboreal mammals in Southeast Queensland, Australia [AMS student]
12:10 Speed talk	Damian Milne: A new species of bat for Australia – the coastal wattled bat (<i>Chalinolobus orarius</i>)
12:15 Speed talk	Anne Musser: Residence and resilience of platypuses through multiple desedimentation works in the Blue Lake, Jenolan Karst Conservation Reserve (JKCR)
12:20 Speed talk	Kenny Travouillon: The skull of <i>Wanburoo hylarous</i> , an early sthenurine kangaroo from middle Miocene deposits of the Riversleigh World Heritage Area, Queensland, Australia
12:25 Speed talk	Alison Martin: Effective bat box monitoring: a case study in some ‘do’s’ and ‘don’ts’ for both bat ecologists and project managers
12:30 Speed talk	Anthony Rendall: Feral cat foraging on Phillip Island reveals prey selectivity
12:35	Question time for speed talks
12:45-13:45	Lunch
Session 3. Chair: Marissa Parrott	
13:45	AMS President’s Early Researcher award: Emily Roycroft: Genomic insights on the evolution and extinction of Australian mammals

Session 3. Chair: Linette Umbrello (Slido assistants: Campbell Mole, Melissa Walker)	
14:15	Abby Dennien: Are Pookila leaving a trace? Trialling eDNA as a survey method [AMS student]
14:25	Cate Oldham: Hidden coastal corridors: drainage culverts for wildlife road crossing in the Otways
14:35	Maddison Randall: Navigating the night: ecomorphological adaptations in the inner ears of bats [AMS student, ABS student]
14:45	Bonita Mendel: Integrating multiple species traits into population viability analysis for rewilding success [AMS student]
14:55	Rika Nakagawa: Evolutionary adaptations of the axial musculoskeletal system underlying bipedal hopping in macropodid kangaroos
15:05	Samantha Smith-Kemp: Breaking the limits: inclusion of extinct marsupials increases the cranial diversity of marsupial mammals [AMS student]
15:15 Speed talk	Diana Prada: Filling the gap: genetic characterisation of the Kimberley ghost bat population
15:20 Speed talk	Kerryn Fox: Designing a robust monitoring program for seemingly trap un-happy Woylies (<i>Bettongia penicillata ogilbyi</i>)
15:25 Speed talk	Ben Lawrence: Ghost bats and anthropogenic noise: a multidisciplinary approach to develop noise effects criteria
15:30 Speed talk	Elizabeth Eyre: Using science to link community knowledge and advance our understanding of the oceanic cetacean fauna of Sydney, NSW
15:35 Speed talk	Ana Gracanin: Seeing inside the hollow: 3D modelling of tree hollows used by greater gliders and other hollow-dependent mammals
15:40 Speed talk	Helena Bender: The Flattened Fauna Index
15:45	Question time for speed talks
15:55 – 16:20	Afternoon Tea
16:20 – 17:45	Concurrent Annual General Meetings Australian Mammal Society AGM – Ian Wark Theatre, Shine Dome Australasian Bat Society AGM – Ian Potter House Ballroom, Shine Dome

Thursday 9th July 2026	
Joint AMS/ABS conference	
Shine Dome – Ian Wark Theatre, with additional seating in the Ballroom	
08:00 – 08:30	Registration and pre-conference coffee and tea
Session 1. Chair: Tiah Bampton (Slido assistants: Emmet Mulcahy, Jasmine Annett)	
08:30	Euan Ritchie: The conservation of Victoria's mammals
08:40	Nicola Hanrahan: Nocturnal rhythms: emergence and return patterns of ghost bats at Kohinoor Adit

08:50	Ben Wagner: Implications of active forest management for arboreal mammals
9:00	Linette Umbrello: Lonely ghosts: conservation genomics of a threatened bat (<i>Macroderma gigas</i>) confirms low gene flow and high roost fidelity across northern Australia
9:10	Thomas Newsome: Mammals as scavengers in Australia
9:20	Linda Neaves: Reintroduced eastern bettong diet and changes in fungal composition
9:30	Elsa Kohane: Bats in backyards: using citizen science to monitor insectivorous bats across NSW
9:40	Zenon Czenze: Let's talk about sex ... and how it affects thermal physiology
9:50	Fred Ford: Range expansion or re-discovery? The long-footed potoroo in NSW
10:00 Speed talk	Matthew Rees: Remodelling a national monitoring program to forecast rodent outbreaks
10:05 Speed talk	Joanne Connolly: Post-release fate of rehabilitated swamp wallabies
10:10 Speed talk	Linda Broome: Emergency feeding of mountain pygmy-possums after the Black Summer fires in January 2020 and subsequent responses
10:15 Speed talk	Vera Weisbecker: Of babies and bathwaters: determining how much variation coincides with phylogenetic structure in comparative analyses
10:20	Question time for speed talks
10:30-11:00	Morning Tea
Session 2. Chair: Ruvi de Mel (Slido assistants: Hannah Chistensen, Robin Rowland)	
11:00	Amy Edwards: Evaluating non-target risk in baiting programs
11:10	Catherine Kemper: 45 years of monitoring cetacean mortalities in South Australia: can this shed light on the 2025 harmful algal bloom?
11:20	Harry Rust: PACBAT – uniting the Pacific Islands in bat conservation [<i>ABS student</i>]
11:30	Ashley Dungan: Loss of microbial functional diversity under captivity may undermine reintroduction success
11:40	Benjamin Walker: Evolution and drivers of long-distance vocal communication in mammals
11:50	Sonja Elwood: Life in the big city – identifying bandicoot presence in the Sydney urban matrix
12:00	Kelly Sheldrick: Autumn swarming-like behaviour in Australia's chocolate wattled bat
12:10	Jemma Cripps: Fire severity and habitat quality shape post-fire densities of the southern greater glider
12:20	Tyrone Lavery: On the hunt for a better catalogue of mammal diversity in the Trans-Fly region of Papua New Guinea
12:30 Speed talk	Matthew Mo: A status update on the coordination of flying-fox monitoring in New South Wales
12:35 Speed talk	Kate Bryant: Enhancing monitoring and identifying critical habitat values for an urban bandicoot
12:40 Speed talk	Peter Shaughnessy: Vagrant Subantarctic fur seals in southern Australia from 2005 to 2024
12:45 Speed talk	Emma Fitzsimmons: Response of extant small desert mammals to feral predator exclusion fencing
12:50	Question time for speed talks

13:00-14:00	Lunch
Session 3. Chair: Nicola Hanrahan (Slido assistants: Lorien Watts, Willian Terry)	
14:00	Alicia Dimovski: When ghosts ghost you: using non-invasive hormone monitoring to study ghost bat physiology
14:10	Patrick Finnerty: Emerging tools for rewilding beyond-the-fence
14:20	Maree Treadwell Kerr: Enhancing the experience of a flying-fox roost
14:30	Nell Glover: 10 species in 10 years: a review of the Mt Gibson Mammal Restoration Project
14:40	Matthew Lott: Comparative genomics reveals insights into the speciation of four Australian flying-foxes
14:50	Tim Henderson: Movement ecology of brushtail possums reintroduced to a desert environment
15:00	Dan Lunney: An historical perspective (1980–2005) on bat research in State Forests during woodchip operations in south-east NSW
15:10	Sarah Curran: To help or to harm in the heat: principles for guiding intervention thresholds to minimise harm in flying-fox heat stress events
15:20	Leroy Gonsalves: Seeing and hearing the bigger picture: landscape-scale monitoring of fauna in NSW timber production forests
15:30 Speed talk	Rachel Ladd: Assessing reintroduction success: an overview of brush-tailed bettong establishment at Mallee Cliffs National Park, NSW
15:35 Speed talk	Steve Griffiths: Evaluating the pros and cons of mechanically carved tree hollows for habitat restoration and wildlife conservation programs
15:40 Speed talk	Nadia Nieuwhof: Understanding pookila subpopulation baselines in New South Wales and Tasmania
15:45 Speed talk	Damian Milne: The ABS and AMS Australian mammal mapping project – an update
15:50	Question time for speed talks
16:00 – 16:30	Afternoon Tea
Session 4. Chair: Euan Ritchie	
16:30 Plenary	Plenary presentation: Prof. John Woinarski: Changing status of Australia's mammal fauna: past and future
17:00 – 17:20	Student Awards
17:20 – 17:30	Close and thanks

Note that students who are members of either the Australian Mammal Society or the Australasian Bat Society are eligible for the student awards from the two societies. This is indicated in the program above using [AMS student] and [ABS student]. These awards will be presented in the final session of the conference on Thursday.

Abstracts

Monday 6th July 2026

**Concurrent Symposium
Dasyurids of the Past, Present and Future
Shine Dome**

Session 1: 08:30 – 10:00

Plenary: Dasyurids of the Past

DASYURIDS OF THE PAST: FOSSIL RECORD, PHYLOGENY, AND EVOLUTIONARY HISTORY OF AN AUSTRALIAN RADIATION

Timothy Churchill and Michael Archer

School of Biological, Earth and Environmental Sciences, University of New South Wales, Kensington 2052 NSW

Dr Timothy Churchill Bio: Timothy Churchill is a palaeontologist and archaeologist whose research explores the evolutionary history of Australia's marsupials, with a particular focus on carnivorous taxa (Dasyuromorphia). His work centres on fossils from the Oligo–Miocene deposits of the Riversleigh World Heritage Area, where he investigates how climate change, environmental shifts, and biogeography have shaped the diversity and ecological roles of marsupials through time. His research integrates taxonomy, phylogenetics, morphometrics, and functional morphology to link extinct faunas with modern ecosystems and to better understand the broader evolutionary history of metatherians. In addition to his academic research, Churchill works as a Senior Archaeologist and Fauna Specialist on the Juukan Gorge project in the Western Pilbara, collaborating closely with Traditional Owners to examine human–fauna interactions and demonstrate the value of integrating cultural knowledge with scientific approaches. Email: timothy.churchill@unsw.edu.au; social media: @timbomarsupialman



Professor Michael Archer Bio:

Prof. Mike Archer AM has been Curator of Mammals at the Queensland Museum, Director of the Australian Museum and Dean of the Faculty of Science and Professor at UNSW. His research focuses on the deep past such as the World Heritage fossil deposits at Riversleigh, conservation through sustainable use of native resources including native mammals as pets, using the fossil record to help conserve endangered living species (e.g. the Burramys Project) and trying to deExtinct species (e.g., the Lazarus Project focused on the Mountain Pygmy-possum). He has supervised >90 research students, produced >400 publications, has Fellowships in e.g. the Academy of Science, Royal Society of NSW, Royal Zoological Society NSW, recipient of the 2019 Romer/Simpson Medal (Society of Vertebrate Paleontology) and 2025 Robert Etheridge Jr Medal (Australian Geological Society). More info: <https://www.unsw.edu.au/staff/michael-archer>. Email: m.archer@unsw.edu.au



Dasyuridae, the most speciose family within Dasyuromorphia, represents a diverse radiation of carnivorous marsupials whose evolutionary history and diversity have had a long history of transformational understanding by, among others, Zimmermann in 1777, to Goldfuss, Owen, Waterhouse, Thomas, Bensley, Tate, Troughton, Ride, Archer, Wroe, Woolley, Westermann and now Churchill. Extant taxa span over three orders of magnitude in body size, from the hypercarnivorous *Sarcophilus harrisii* to the diminutive *Planigale ingrami* and retain a tribosphenic dentition closely resembling that of early metatherians. This morphology historically led to the interpretation of dasyurids as “primitive,” but fossil and total-evidence phylogenetic

analyses instead indicate a relatively recent radiation. The earliest confirmed dasyurids occur in the Early Miocene (18 – 17 Ma) deposits of the Riversleigh World Heritage Area in northwestern Queensland where they are rare relative to other dasyuromorphians such as thylacinids and malleodectids. These early dasyurids show affinities with extant New Guinean taxa, which also live in mesic, rainforest environments like those preserved at Riversleigh. Following the Middle Miocene Climatic Transition (~14.5 Ma), the decline of these wet forest ecosystems coincided with a reduction of competing clades as well as ecological expansion into more open habitats. Divergence estimates indicate that major dasyurid lineages radiated during the Middle to Late Miocene (~16.0 – 5.3 Ma), with most modern genera arising in the Pliocene (5.3 – 2.6 Ma) and Pleistocene (2.6 – 0.01 Ma). Today, dasyurids dominate small- to medium-bodied carnivorous niches across Australia. Despite recent advances, key questions remain regarding early fossil history, phylogenetic relationships, and past diversity. This synthesis highlights current understanding and outlines priorities for future research.

QUOLLIFIED FOR RELEASE? AGE AND PRE-RELEASE EXPERIENCE PREDICT SUCCESS FOR TRANSLOCATED EASTERN QUOLLS (*DASYURUS VIVERRINUS*)

Erin Thomas¹, David Hamilton², Menna Jones¹, Morrigan Guianne², Rowena Hamer¹

¹ Biological Sciences, University of Tasmania, Sandy Bay, Tasmania 7005, Australia

² Tasmanian Land Conservancy, Hobart, Tasmania 7000, Australia

Bio: Erin Thomas (she/her) is currently undertaking a PhD at the University of Tasmania researching the impact of behaviour, genetics, and intrinsic traits on eastern quoll (*Dasyurus viverrinus*) translocations. Her work focuses on using applied field ecology to further mammal conservation. Pronouns: She/her. Email: erin.thomas@utas.edu.au



Eastern quolls (*Dasyurus viverrinus*) are a small marsupial carnivore (700 – 1,900g) once abundant across much of Australia, however unfenced wild populations are now restricted to the island state of Tasmania. Within Tasmania, populations have reduced significantly within the past 20 years, subject to predation, disease, habitat loss and changing climatic conditions. This work is part of a large early intervention project for eastern quolls, using replicated translocations to quantifiably identify optimal translocation methods. Using survival, dispersal and genetic data from four translocations we have determined that sex, age-at-release and pre-release conditions are critical factors for short-term post-release success.

Limiting dispersal is key for translocation success, as hyper-dispersal exposes individuals to greater risk, energy expenditure, and isolates them from breeding opportunities. Additionally, individuals cannot be monitored or benefit from management actions such as supplementary feeding and/or predator control. Juvenile animals exhibit natal dispersal, which is often more apparent in males, reflected in our results of high juvenile male dispersal. While juvenile females did not disperse as far, there were more susceptible to predation, likely due to their size.

Adult animals displayed high survival and low dispersal, however adults that were not exposed to breeding in their first reproductively active year in captivity did not successfully produce offspring. No difference in offspring production was detected between adult females that had previously reproduced and juvenile females. Through this work we have identified that not only age-at-release, but pre-release experiences in captivity are pivotal to the ongoing success of translocations of these marsupials.

GENETIC AND MORPHOLOGICAL DISTINCTION BETWEEN ARID AND GRASSLAND FAT-TAILED DUNNARTS

Emily L Scicluna^{1,2,*}, Ryan W Sauermann^{1,2*}, Katherine L Moon^{1,2,3}, Charles Y Feigin^{1,3}, Tyrone H Lavery¹, Andrew J Pask^{1,2,3}

¹School of BioSciences, University of Melbourne, Victoria, Australia

²Colossal Australia, School of BioSciences, University of Melbourne, Victoria, Australia

³Museums Victoria, Carlton, Victoria, Australia.

⁴Department of Environment and Genetics, School of Life Sciences, La Trobe University, Victoria, Australia

*Emily L Scicluna and Ryan W Sauermann contributed equally to this study.

[^]Correspondence to: emily.scicluna@unimelb.edu.au

Fat-tailed dunnarts are a small carnivorous marsupial, widely occurring across Australia. With analyses in whole body morphology, skull morphometrics and molecular analysis (subset from whole-genome resequencing data), we show conclusively that the species is made up of genetically distinct subspecies. These subspecies genetically separated ~3 million years ago, have significantly different morphological characteristics, and occupy distinct ecosystems. Fat-tailed dunnarts that occur south of the Murray River (occurring in southeastern South Australia and Victoria) are for the most part geographically isolated from those occurring across the rest of Australia, predominantly dependent on grassy ecosystems, and we describe this group as *Sminthopsis crassicaudata crassicaudata*. We describe *Sminthopsis crassicaudata centralis* as the fat-tailed dunnart occupying arid ecosystems, predominantly occurring north of the Murray River and occurring in almost every state of Australia. Acknowledging these differences is integral to future conservation and management of this species, particularly when fat-tailed dunnarts in the state of Victoria (the majority of *Sminthopsis crassicaudata crassicaudata*'s extant population) has already been classified as Threatened.

POPULATION-LEVEL WHOLE GENOME SEQUENCING REVEALS PATTERNS OF POPULATION DECLINE IN ENDANGERED GRASSLAND FAT-TAILED DUNNART (*SMINTHOPSIS CRASSICAUDATA CRASSICAUDATA*)

Ryan Sauermann¹, Emily Scicluna¹, Katherine Moon¹, Andrew Pask¹

¹ School of Biosciences, The University of Melbourne, Victoria 3010, Australia

Correspondence to: rsauermann@student.unimelb.edu.au (he/him)

With biodiversity declining across the globe, species are disappearing at an alarming rate. These species are often understudied, and little is known about their population structure, demographic history, or effective population sizes prior to their extirpation. In Australia, mammals are increasingly affected by this trend and the disappearance of >99% of basalt grasslands in Victoria has left the survival of its inhabitants, including the grassland fat-tailed dunnart (*Sminthopsis crassicaudata crassicaudata*), at risk. To better understand the conservation status of this species and its population genetic health, we have re-sequenced whole genomes of 67 individuals across the species' range, including arid fat-tailed dunnarts (*Sminthopsis crassicaudata centralis*). This includes sequencing museum samples spanning between 1884 and 2024. With this sample size, this paper contains the largest and most comprehensive whole-genome resequencing dataset for any Australian mammal, allowing for comparisons of measures of genetic health through time and space. Fat-tailed dunnarts in Victoria are shown to have experienced significant population declines and loss of genetic diversity over the past decades, with inbreeding and population fragmentation presenting significant threats to this subspecies' future. Arid fat-tailed dunnarts, on the other hand, show no significant decrease in measures of genetic health over time, indicating that the loss of habitat experienced by fat-tailed dunnarts in Victoria may be driving their population decline. Additionally, we have found genomic signatures of local adaptation that indicate putative parapatric speciation. This paper, and the unique dataset it contains, significantly contributes to our understanding of fat-tailed dunnart population structure and conservation status, leading to real-world implications for conservation practice.

QUOLL-APSE: RECONSTRUCTING THE DEMOGRAPHIC HISTORY OF AUSTRALIA'S "NATIVE CAT"

Sarah Vauvert, Damien Fordham, Jamie Wood and Jeremy Austin

School of Biological Sciences, Adelaide University, Adelaide SA 5000

Bio: Sarah Vauvert (she/her) is a PhD candidate at Adelaide University, within the Global Change Ecology and Conservation lab and the Australian Centre for Ancient DNA. She analyses ancient DNA from bulk bone deposits to understand pre-European mammal communities in Australia, with a conservation perspective. Part of her PhD takes a population genomics approach to quolls.

Quolls have experienced large range contractions and population declines since 1788. Consequently today, they are classified under the EPBC act as either vulnerable: chuditch (Noongar) (*Dasyurus geoffroii*) and spotted-tail quoll (*D. maculatus*); or endangered: eastern (*D. viverrinus*) and northern quoll (*D. hallucatus*). Yet the spatiotemporal patterns of these population declines, and the extent of genomic diversity loss, remain virtually unknown.

Using whole genomes sequenced from historical (soon after European colonisation) and recent (last 50 years or close to extirpation time) quoll specimens, we aim to resolve current uncertainties in the phylogenetic relationships of quoll taxa and reconstruct population structures for the chuditch, eastern quoll and spotted-tail quoll. We aim to reconstruct the demographic history of these species across the Holocene and examine how populations responded following the first arrival of dingoes (~ 4,000 years ago) and Europeans (~ 230 years ago). Lastly, we will compare genomic diversity and runs of homozygosity among historical versus recent samples to characterise levels of genomic erosion and inbreeding variations resulting from post-European range contractions.

More generally, this study seeks to provide new pre-European baseline information on the demography of quolls, to help inform conservation management strategies such as translocation programs and range recovery monitoring.

Session 2: 10:30 – 12:00

DASSIES BY THE DOZEN: DASYURID SYSTEMATICS IN THE 21ST CENTURY

Andrew M. Baker^{1,2}, Linette S. Umbrello³, Cameron S. Dodd^{3,4}, Kenny J. Travouillon³ & Michael Westerman⁵.

¹School of Biology and Environmental Science, Queensland University of Technology, Brisbane, Queensland, Australia. Email: am.baker@qut.edu.au

²Biodiversity and Geosciences Program, Queensland Museum, South Brisbane, Queensland, Australia

³Collections and Research, Western Australian Museum, Welshpool, Western Australia, Australia

⁴School of Biological Sciences, University of Western Australia, Perth, Western Australia, Australia

⁵Department of Environment and Genetics, La Trobe University, Melbourne, Victoria, Australia

Bio: Andrew Baker (he/him) researches and teaches in Ecology and Environmental Science (@ QUT) and is Adjunct Senior Research Fellow (@ Qld Museum). His group researches the taxonomy, evolution, ecology and conservation of Australasian mammals, especially dasyurids.

The dasyurids are a spectacularly diverse group of marsupials cumulatively found across all environments in Australia and New Guinea. They range in size from minute planigales to fearsome Tasmanian devils. While dasyurid diversity has long been recognised, taxonomic research has seen a steady stream of new species named over time. In particular, over the last quarter century integrative taxonomic approaches have combined evidence from new molecular and morphological methods, which has aided the discovery of cryptic species of dasyurids and other mammals. Here, we synthesise advances in our understanding of dasyurid systematics in the 21st Century, which has thus far resulted in 30 taxonomic changes, and counting. This includes new taxa of antechinuses, dasyures, dunnarts, kultarrs, mulgaras, phascogales and planigales. Taxonomic updates are tracked by the Australasian Mammal Taxonomy Consortium (AMTC) and added to the AMS website annually. Accurate species lists are important, but as our understanding of dasyurid systematics changes, so too does our knowledge of species biology, distribution and ecology, which in turn drives conservation programs of both existing and newly described taxa. We discuss new dasyurid species that may need conservation attention, ongoing research trajectories, and how best to resolve still unanswered questions, with the aim of providing a more complete understanding of dasyurid taxonomy in the years to come.

DASYURID IMMUNE SYSTEMS

Julie M. Old

School of Science, University of Western Sydney, NSW 2751, Australia
Hawkesbury Institute for the Environment, University of Western Sydney, NSW 2751, Australia
Translational Health Research Institute, University of Western Sydney, NSW 2751, Australia

Bio: Associate Professor Julie Old is a School of Science-based member of HIE and THRI at WSU. She has expertise in comparative and developmental immunology, native mammal biology, wildlife management, conservation and citizen science. Her research on wildlife health and disease, especially marsupials, has lead to over 130 research publications. She established and managed a Small Native Mammal Teaching and Research Facility at WSU, and is the CI of the Citizen Science project, WomSAT. Julie is a Director on many boards and committees and been recognised internationally as a Senior Fellow by the Higher Education Academy for her excellence in teaching. Email: j.old@westernsydney.edu.au Twitter: @dasyuridae

Dasyurids have short gestation periods with dunnarts being the record holders at around twelve days. Like other marsupials, their developmental stage at birth is similar in appearance to an eight week old human foetus. They lack mature immune tissues and the key immunological cells required to mount a specific immune challenge against pathogens in the external environment, and yet remarkably they survive. Furthermore, in contrast to eutherian mammals, their immune tissues develop in a pathogen-rich environment.

The newborn dasyurid liver is actively haematopoietic, unlike in eutherian mammals, where liver haematopoiesis has ceased and its role in haematopoiesis replaced by the bone marrow. The thymus, a key immunological tissue essential for T-cell development, is the first primary immune tissue to develop and mature in marsupials. Along with the bone marrow, the secondary immune tissues, including the spleen, lymph nodes and mucosal-associated lymphoid tissues, appear next and mature shortly thereafter.

The developmental milestones of dasyurid immune tissue development, and the timing of when young first become immunocompetent will be discussed, along with other immunological insights of dasyurids. The role of marsupials as key immunological models, and their importance in providing phylogenetic insights into the development of the immune system will be discussed.

RANGE AND NICHE DYNAMICS IN SMALL DASYURIDS FROM SOUTHERN AUSTRALIA

Marlon Taylor, Ben Scheele and Geoffrey Heard

Fenner School of Environment and Society, The Australian National University, Canberra, Australian Capital Territory 0200
Email addresses: Marlon.Taylor@anu.edu.au; Ben.Scheele@anu.edu.au; Geoff.Heard@anu.edu.au

Larger-bodied dasyurids have suffered extensive declines, including the extinction of the Thylacine, widespread population crashes in the Tasmanian Devil due to disease and significant range contractions in Spotted-tailed Quoll, Eastern Quoll and Northern Quoll due to invasive species. Widespread declines have not been reported among small-bodied dasyurids, yet rigorous empirical assessments of range dynamics through time are lacking. This study sought to estimate range changes for 5 species of *Antechinus* and 2 species of *Sminthopsis* in southern Australia, and to test for systematic changes in their niche occupancy. We used a novel dynamic occupancy model fitted to presence-only records to estimate changes in range occupancy through time. When then used estimates of occupancy change to examine changes in species realised niche characteristics through time. We found no indication of substantial range or niche shifts for any of the focal species. However, there was some evidence for population losses for *A. agilis*, *A. flavipes*, *A. minimus*, *S. leucopus* and *S. murina*. Apparent local extinctions occurred primarily on the range edges, with a tendency for declines in hotter and drier regions of the historical range for some species. Our analyses support the inference of relative stability for these small-bodied dasyurids, each of which are listed as Least Concern. Nevertheless, some incremental population losses are apparent. Landscape-scale

studies will be vital for understanding the factors driving these population losses and maintaining range-edge populations, or enabling reintroductions to areas from which these species have been lost.

ARIDITY DRIVES MULTI-CHANNEL FEEDING IN THE CREST-TAILED MULGARA OF THE STRZELECKI DESERT

Matt Brun, Mike Lentic, Adrian Fisher, Kylie Cairns

Evolution and Ecology Research Centre, University of New South Wales, Sydney, 2052, Australia

Bio: **Matt Brun** (he/him) is a passionate ecosystem scientist seeking to increase our understanding of how it all works and what we can do to better our natural world. Currently I am studying my PhD at the University of NSW investigating the role that the brown food web plays in the functioning of desert ecosystems. I have been working and studying all matter of things across Australia; primarily desert ecosystems for the past nine years and never get tired of flies. <https://www.unsw.edu.au/science/our-schools/bees/about-us/our-people/postgraduate-research-students/Matt-Brun-grs-profile>



Multichannel feeding offers species the strategy to consume energy derived from autotrophs and detritus; effectively coupling green and brown food webs. Deserts are by nature energy limited environments. Species which can bridge the gap between locked up energy in the form of detritus such as termites can facilitate the survival of consumers throughout desert food webs. This strategy can offer stability to food webs and the persistability of species through time. Yet, the specific mechanisms of multichannel feeding and how the dynamics of nature affect them are still largely unknown. Therefore, Dasyurids which can persist in deserts through boom-and-bust periods can potentially illuminate some of the mechanisms behind multichannel feeding in a dynamic system. Here, we look at multi-channel feeding in the Crest-tailed mulgara, a generalist predator in the Strzelecki desert of South Australia. We compared the frequency of dietary items to pulses in primary productivity and the abundance of vertebrate prey taxa during scat sampling over a ten-year period. We found that resource pulses influenced the dynamics of their multichannel feeding. During boom phases mulgaras frequently consumed taxa from the green food web dependent on availability. In the bust phases they had to increasingly switch to consuming brown food web taxa. Consequently, the level of multichannel feeding in the crest-tailed mulgara is driven by their dynamic environment. Therefore, the brown food web may be vital in the overall functioning of desert ecosystems in Australia and vital for the persistence of species such as the Crest-tailed mulgara through periods of low productivity.

LIVING IN A PATCHWORK: SEASONAL HOME RANGE PATTERNS OF CHUDITCH (WESTERN QUOLL) IN THE NORTHERN JARRAH FOREST OF WESTERN AUSTRALIA

Justine M. Barker¹, L.E. Commander^{1,2} and M.A. Jensen³

¹Alcoa of Australia, Perth, Western Australia, 6154

²School of Agriculture and Environment, The University of Western Australia, Perth, Western Australia, 6009

³School of Biological Sciences, Adelaide University, Adelaide, South Australia, 5005

Bio: **Justine** is a fauna ecologist with a background spanning academia, consulting and the mining sector. Justine now leads the fauna protection and return pillar at Alcoa's Forest Research Centre, developing strategies to protect and restore biodiversity. With a passion for wildlife conservation, she explores the complex interactions between fauna and human-modified landscapes, working to mitigate the ecological impact of development on Australia's native fauna.



The Northern Jarrah Forest (NJF) in the south west of Western Australia has a long history of disturbance since European settlement including logging, altered fire regimes, and mining. Such loss and modification of habitat can influence wildlife behaviour and persistence. Alcoa's bauxite mining operations in the NJF create a mosaic of small, shallow pits interspersed with unmined jarrah forest, with progressive rehabilitation occurring as mining concludes. This study examined how chuditch (*Dasyurus geoffroii*) navigate this post-mining landscape. Previous estimates of chuditch home range have been calculated using VHF

telemetry, which infers space use based on daytime shelter sites alone. In this study, we used GPS collars to track chuditch movements across all seasons, generating the most comprehensive fine scale data set for the species to date. We found that chuditch home ranges were substantially larger than previously reported and incorporated both unmined forest and areas under rehabilitation. Seasonal variation was evident, with males more than doubling their home range during breeding season compared to the preceding season.

VISIBLE AND INVISIBLE IMPACTS OF EMERGENCIES: ADDITIONAL CONSIDERATIONS TO AID MAMMAL CONSERVATION AND MANAGEMENT AFTER DISASTERS

Marissa L. Parrott

Wildlife Conservation and Science, Zoos Victoria, Victoria 3052, Australia
School of Biosciences, University of Melbourne, Victoria 3010, Australia

Bio: Dr Marissa Parrott (she/her), email: mparrott@zoo.org.au, X: @drmparrott Marissa is the Senior Conservation Biologist in the Wildlife Conservation and Science Department at Zoos Victoria, an Honorary Research Associate in the School of Biosciences at the University of Melbourne, and the Vice President of the Australian Mammal Society. The major focus of Marissa's research is captive breeding, reintroduction, emergency response and conservation of some of Australia's most critically endangered species, with a focus on marsupials, rodents, bats and frogs. Marissa has studied and worked extensively across Australia, Africa, Asia and Antarctica with wildlife and community conservation.



Emergencies are increasing in frequency, magnitude and severity, impacting wildlife populations on a global scale. In Australia, disasters, including droughts, heat waves, bushfires and floods impact mammal populations and the survival of species, with issues expected to increase due to climate and other anthropomorphic changes. Many impacts from disasters are obvious, including animal injury, mortality and displacement, habitat destruction and fragmentation, resource loss, and increased risks from introduced predators. However, many impacts which could significantly affect health and recovery potential for individual animals to entire species, including behaviour change, stress, genetic loss, increased competition, and impacts outside declared emergency areas, are less visible and thus may receive reduced focus and investment. For example, during heat waves and droughts, migratory endangered Bogong Moth (*Agrotis infusa*) populations may collapse, impacting critically endangered Mountain Pygmy-possums (*Burramys parvus*) which rely on them as a key spring food source; and changes in reproductive health and mate choice behaviours in semelparous marsupials, such as Antechinuses (*Antechinus* spp.), may impact offspring success and survival, and future population genetic diversity. I will discuss both visible and less visible impacts of disasters on Australia's mammals, and mitigation strategies required to protect and recover species. Long-term surveys and monitoring, evidence-based actions, adaptive management, and preparation for emergencies, underpinned by increased and ongoing investment, are required to meet the challenges of increasing disasters. Greater support to promote healthy wildlife populations and habitats and improve their resilience *now* will help to protect Australia's diverse and remarkable species into the future.

Session 3: 13:00 – 14:45

Plenary Dasyurids of the Present:

WHY ARE AUSTRALIAN DASYURIDS SPECIAL? THE EVOLUTION OF MALE DIE-OFF

Diana Fisher

School of Environment, University of Queensland

Three genera of dasyurids have obligately semelparous males - all of the males in a population die synchronously after a single brief mating period, at eleven and a half months old. Few animals have evolved mechanisms of reproductive death, in which reproduction always lethally and rapidly depletes body tissue

as it does in male *Antechinus*, *Phascogale* and *Dasykaluta*, and a handful of species have evolved such mechanisms only in males. About five thousand semelparous animal species (that breed only once in a lifetime) exist. These species are mainly invertebrates and fishes, and semelparity is typically facultative. Theoretical frameworks to explain the evolution of adaptive semelparity are based on the premise of a survival cost of reproduction. Trade-offs between reproduction and survival reflect a continuum in which organisms disperse or concentrate reproductive effort throughout life. Individuals in species at the extreme semelparous end of this continuum benefit from enormous, concentrated reproductive effort at the expense of survival. The classic reason proposed by theory is that reserving energy for future reproduction is not worthwhile for these species, because they have such a high risk of death between first reproduction and their next opportunity. In other words, some form of environmental driver of extreme mortality risk in post-reproductive adults drives the evolution of semelparity. We show that this explanation is very well supported and explains virtually all cases of female semelparity in animals- but does it apply to male-only semelparity in dasyurids? I will discuss what we now know about the evolutionary drivers of male-only semelparity. I will consider the central role of energy dispersion through the year in constraining female life history and therefore male strategies in dasyurids, the causes and consequences of male die-off for dasyurid ecology and behaviour, and the implications of this special feature of Australian biodiversity for dasyurid conservation.

GIPPSLAND SPOT-TAILED QUOLL (*DASYURUS MACULATUS MACULATUS*) RECOVERY – IS TRANSLOCATION THE NEXT STEP?

Willow Bourke (she/her) and **Rachael Bartlett** (she/her)

Wildlife Unlimited, Bairnsdale VIC 3875, Australia

Bio: Rachael Bartlett (MSc, BSc) is a Project Manager and Senior Field Ecologist co-leading the Spot-tailed Quoll recovery project. She has spent the last 8 years conducting ecological surveys targeting threatened species and habitats in East Gippsland and beyond. As well as her work on quoll, she is involved in recovery efforts for the southern Brush-tailed Rock-wallaby.

In recent decades STQ has disappeared from most of its former range in Victoria, amounting to a significant contraction in the southern extent of its mainland range. One last Victorian stronghold remains in remote wilderness along the NSW border/Kosciuszko National Park around the Snowy River in East Gippsland. Recent sightings outside the core area have often been individual males, thought to have travelled large distances looking for a mate. While males disperse widely, population extent is linked to female home ranges, which are established adjacent to their natal home range. Natural re-establishment of STQ across East Gippsland, where conditions remain suitable, could take several decades. Despite long-term fox control across much of East Gippsland via the Southern Ark program since the 1990s, and an observed decline in the fox population and subsequent recovery of a range of other species, the STQ has not recovered.

Wildlife Unlimited and Biodiversity Legacy secured funding from DEECA's Nature Fund with matched philanthropic contribution from Rendere Environmental Trust to re-survey the core population, investigate outlier detections, investigate drivers of decline, convene a working group of experts, and explore translocation and captive breeding as potential recovery options. Sourcing of animals, cultural sensitivities, management of disease and genetics, post-release monitoring and release site requirements including threat management are all crucial factors in what would be a complex cross-sector, cross-border and multi-agency collaborative program. Lack of data for this elusive meso-predator presents a major challenge, however the risks of inaction are also considered.

THE UTILITY AND RELATIVE COST OF USING DETECTION DOGS COMPARED TO TRADITIONAL METHODS FOR SURVEYING SMALL, CRYPTIC MAMMALS: A CASE STUDY ON THE THREATENED JULIA CREEK DUNNART, *SMINTHOPSIS DOUGLASI*

Emma L. Gray^{1*}, Amanda Hancock², Ayesha Tulloch¹, & Andrew M. Baker^{1,3}

¹School of Biology and Environmental Science, Queensland University of Technology, Brisbane, Queensland, Australia.

²Wompoo Farm Pty Ltd, Carnarvon Canines - Wildlife Detection Dog Team, Cooran, Queensland, Australia.

³Biodiversity and Geosciences Program, Queensland Museum, South Brisbane, Queensland, Australia.

Bio: Emma Gray (she/her) is a field ecologist who completed her PhD at QUT, where she undertook foundational autecological research on a new species of antechinus, the Endangered *Antechinus arktos*. She has worked as an Ecological Consultant in Qld and NSW. However, since 2023 she is back to working on dasyurids as a Postdoctoral Research Fellow, investigating aspects of the ecology of the threatened Julia Creek dunnart. She is passionate about utilising traditional and new survey techniques to answer fundamental ecological questions and has expertise in live-trapping, camera trapping, detection dogs, species distribution modelling, owl pellet analysis and airborne eDNA analysis. Email: e8.gray@qut.edu.au Word Press: <https://bakerecologylab.wordpress.com/welcome-to-the-mammal-ecology-research-group-led-by-andrew-baker/>



Accurate information about a species' presence and distribution is required to ensure timely conservation. However, it is often difficult to detect species that occur at low densities using traditional live-trapping survey methods, especially if they are small and cryptic. Here, we assessed the utility and cost efficiency of detection dogs as a rapid detection strategy by modelling a threatened Australian dasyurid, the Julia Creek dunnart (*Sminthopsis douglasi*). The detection dogs were trained to discriminate the odour of *S. douglasi* from co-occurring small mammals and were able to accurately detect the target species during trials and under field conditions. Compared to live-trapping surveys, detection dogs had a higher upfront cost but became more cost effective after multiple surveys due to rapid detection rates. Qualitative comparisons also suggested that detection dogs were more sensitive than live trapping at detecting the target species when it was present. When we predicted the costs of undertaking surveys according to the Australian Government survey guidelines for *S. douglasi*, detection dogs were predicted to be more cost efficient under paid labour scenarios when moderate-large areas required survey but less cost efficient for small assessment areas, or where surveys could be undertaken with unpaid volunteers. Final choice of detection method will therefore depend on the budget and purpose of the surveys, the size of the area and/or the number of surveys required. However, we emphasise that for detection dog surveys, an experienced dog trainer with an understanding of the target species' ecology is paramount for successful implementation.

MODELLING THE DISTRIBUTION OF THE GENUS *ANTECHINUS* (DASYURIDAE) UNDER CURRENT AND FUTURE CLIMATIC CONDITIONS.

Cameron L. Charley¹, Emma L. Gray¹ & Andrew M. Baker^{1,2}

¹School of Biology and Environmental Science, Queensland University of Technology, Brisbane, Queensland, Australia.

²Biodiversity and Geosciences Program, Queensland Museum, South Brisbane, Queensland, Australia.

Bio: Cameron Charley (he/him) is a PhD candidate based at the Queensland University of Technology, where he studies the distribution of the whole genus *Antechinus*, with a particular focus on *Antechinus mysticus* and *Antechinus subtropicus*. He has a BSc (Hons) from QUT where he used owl pellets to monitor the Julia Creek dunnart (*Sminthopsis douglasi*) throughout a native rodent plague. He has a keen interest in all things dasyurid. Email: cameron.charley@hdr.qut.edu.au @camcharley.bsky.social



Despite being a mainstay of most small mammal communities, distributions of many species within the dasyurid genus *Antechinus* are poorly understood, particularly at a local scale. With the onset of the human-driven sixth mass extinction event, and a rapidly changing climate, many antechinuses are potentially vulnerable to habitat change or loss, which may lead to population declines and extinctions.

Comprehensive surveying of all antechinus species is logistically and financially unfeasible. Instead, by developing tuned single-species MaxEnt species distribution models, this project aims to clarify the distribution of all 15 members of the genus *Antechinus* under current and future climatic conditions. Preliminary results, modelled at ~90m² resolution, have provided enhanced detail compared to prior models (typically ~1km² resolutions) and/or range maps. A lack of high-quality occurrence records for some species has likely weakened the predictive capacity of their models. However, most models indicate that antechinus are confined to (typically wet) mesic habitats, and these distributions broadly reflect prior knowledge.

Future climate models (where completed) demonstrate drastic declines in suitable habitat, especially for some threatened species. Refinement and analysis are ongoing, with finalised models intended to support on-ground monitoring and conservation initiatives via production of detailed, fine-scale habitat suitability maps. These models may ultimately support a reassessment of the conservation priorities for several members of the genus.

USING HISTORICAL RECORDS TO UNDERSTAND SPECIES RANGE COLLAPSE AND INFORM FUTURE REWILDING ATTEMPTS

Patrick Bragato¹, Rob Brewster², Francesca Roncolato², Mathew Crowther¹, Patrick Finnerty¹, Thomas Newsome¹

¹ School of Life and Environmental Sciences, The University of Sydney, NSW, 2050

² Invasive Species Council, Katoomba, NSW, 2718

Bio: Patrick (he/him) is a PhD candidate within the Global Ecology Lab at the University of Sydney. He is studying a reintroduced population of luaner (eastern quoll) within a feral predator free area. He is interested in understanding the various factors that impact the success of reintroductions. His goal is to develop management practices that will support future reintroductions outside of fenced areas. Patrick is also investigating the restoration of ecosystem function following the reintroduction of luaner and the impact of reintroducing a carnivore into a fenced reserve on *in situ* wildlife. Email: Patrick.bragato@sydney.edu.au



Since colonisation Australia has averaged 2 extinctions of mammal species per decade, with many extant species have also suffered large range contractions. The decline of many native species was often rapid, across remote areas and prior to systematic fauna surveys. Therefore, our understanding of many species' natural range and the patterns of their decline is limited. By better understanding how species declined over time we can better identify the factors that drove this decline, in turn improving species recovery by controlling these factors. We can also identify areas where species remained for longer, highlighting possible strongholds that may be potential candidates for future rewilding attempts. Quolls (*Dasyurus sp.*) offer an interesting case study as they are easily identifiable and often referred to within archival records (newspapers, letters etc.), they have also experience large-scale range contractions, for example, chuditch (*Dasyurus geoffroii*) were once found across 70% of Australia and are now restricted to south-west Western Australia. We utilise archival records, museum records, ALA records, modern surveys, and the scientific literature to create a database containing records of quolls. Utilising the collated quoll records we reconstructed the historic distribution of all quoll species and then modelled their decline over time. Our modelling indicated differences in the distribution of quolls compared to previously accepted distributions. We also identified future rewilding areas based on persistence of a species within this area. We anticipate this database can be utilised for further research on quolls and also propose the use of this methodology, particularly, the utilisation of archival records, in developing distribution maps of other threatened species.

REMOTE ANIMAL MICROCHIP SCANNER (RAMS)

Prithul Chaturvedi¹, William M. Connelly², Soyeon Caren Han³, Andrew S. Flies¹

¹Menzies Institute for Medical Research, University of Tasmania, Hobart, Tasmania, Australia

²Tasmanian School of Medicine, University of Tasmania, Hobart, Tasmania, Australia

³School of Computing and Information Systems, The University of Melbourne, Melbourne, Victoria, Australia

Bio: Prithul Chaturvedi (he/him). Email: prithul.chaturvedi@utas.edu.au; BlueSky: [@prithulchaturvedi.bsky.social](https://bsky.app/profile/prithulchaturvedi.bsky.social); LinkedIn: <https://www.linkedin.com/in/prithulchaturvedi>

Declining populations of Tasmanian devils (*Sarcophilus harrisii*) and Eastern quolls (*Dasyurus viverrinus*) in the past two decades have disrupted ecosystems of the island state of Tasmania, Australia. This can primarily be attributed to climate change, habitat loss, disease, and introduced pest species. Much of our knowledge on native animals depends on trapping trips. Here, trapped individuals are assessed for health and microchipped before release. However, these trips are labour-intensive and costly to organise and hence are only conducted annually at each selected site. Re-capture of individuals in subsequent trips is challenging, leading to gaps in studying health and disease progression. We have developed a remote animal microchip scanner (RAMS) to monitor tagged wild animals for an extended period. This system comprises of a microchip scanner and a smart bait dispenser with an artificial intelligence-enabled camera fitted to a standard devil trap made using polyvinyl chloride pipe. The dispenser can target individuals for vaccination and supplemental feeding based on microchip scanning. Alongside this, the onboard camera captures images with the tube's standard white background. These images can be used in training a facial recognition model for untagged individuals. Field scientists can remotely receive updates on activities from RAMS on an online dashboard using long-range wide area network of the smart dispenser. We have successfully trialled RAMS on captive and wild individuals.

INVESTIGATING MORPHOLOGY, BEHAVIOUR AND REINTRODUCTION SUCCESS IN CAPTIVE-BRED COMMON PLANIGALE (*PLANIGALE MACULATA*)

Kathryn Cooper¹, Emily Scicluna¹ and Andrew Pask¹

¹TIGRR Lab, The School of BioSciences, University of Melbourne, Parkville, VIC, Australia.

Over recent decades, many of Australia's carnivorous marsupials (dasyurids) have undergone significant population declines due to threats including invasive species predation and competition, habitat loss and climate change. Many conservation attempts have focused on captive breeding programmes and the establishment of captive insurance populations to prevent further population declines and loss of genetic diversity. While successful captive breeding programmes have been demonstrated for many threatened species, including the dasyurid group, reintroduction attempts designed to directly bolster wild populations often yield opposing results and can lack long-term success. This lack of success can often be attributed to increased predator naivety and reduced reproductive fitness in captive-bred dasyurids, highlighting the adverse effects that captivity can have on the phenotype and, consequently, reintroduction success.

This project aims to address these potential limitations to successful reintroduction by investigating how captivity may have altered the behaviour and morphology of the common planigale (*Planigale maculata*). Phenotypic comparisons will be made between the skull morphology, vigilance and neophobic behaviour, gut microbiome and endocrinology of captive and wild planigale. By assessing the survival of released captive-bred planigale and how they use the environment, as well as behaviourally and genetically integrate with wild populations, a direct correlation between captivity-induced phenotypic changes and reintroduction success can be derived. This in turn will inform recommendations to improve dasyurid captive breeding and reintroduction strategies to maximise successful conservation outcomes.

Session 4: 15:15 – 17:05

Plenary: Dasyurids of the Future

BRINGING BACK THE PAST TO PROTECT OUR FUTURE; THE NEXT GENERATION OF CONSERVATION TOOLS FOR DASYURIDS

Andrew J. Pask^{1,2}, Rachel O'Neill³, Emily Scicluna^{1, Jun Liu¹}, Deidre Mattiske¹, Sara Ord², Axel Newton^{1,2}, Stephen Frankenberg^{1,2}, Pierre Ibri¹ Gerard Tarulli^{1,2}

¹ The University of Melbourne

² Colossal BioSciences

³ The University of Connecticut

The primary objective of our research group is to increase the tools for marsupials in our conservation toolkit to ensure their conservation, preservation and even restoration (including deextinction) of cornerstone species. Here I will discuss and update our progress on the thylacine deextinction project, highlighting how tools developed for this project have led to the genetic fortification of the Northern quoll, advances in marsupial assisted reproductive technologies, development of marsupial stem cell technologies and biobanking. Given the high levels of threats to many of our marsupial species, these tools will inform a critical new framework for species conservation in our rapidly changing world.

ASSISTED EVOLUTION OF CANE TOAD TOXIN RESISTANCE IN NORTHERN QUOLLS

Pierre Ibri¹, Gerard Tarulli¹, Sara Ord², Ben Lamm², Andrew J Pask^{1,2}, and Stephen R Frankenberg¹

¹ School of BioSciences, The University of Melbourne, Parkville VIC 3010, Australia

² Colossal Biosciences, Dallas, Texas, USA

Bio: Pierre Ibri (He/Him) I am currently in the final year of my PhD at the Pask lab at the University of Melbourne working on engineering bufotoxin resistance in northern quolls. p.ibri@unimelb.edu.au; Bluesky: [@pierre-ibri](#); Instagram, and X accounts: [@pierre_ibri](#); LinkedIn: [Pierre Ibri](#)

The introduction of the bufotoxin-secreting cane toad, *Rhinella marina*, to Queensland in 1935 had a destructive impact on the Australian ecosystem. Many Australian native predators have seen their numbers plummet due to toad ingestion, such as freshwater crocodile, northern death adder, and northern quoll. The cane toad toxin includes a cardiotoxic glycoside that inhibits the Na⁺/K⁺ ATPase enzyme present on the plasma membrane of animal cells. However, genetic resistance to cardiotoxic steroids have evolved in multiple animals that co-evolved with species secreting steroid-based toxins.

Here, we aim to use CRISPR gene editing technology to introduce cane toad toxin resistance into northern quolls, one of Australia's worst impacted species from the introduction of cane toads. To this end, CRISPR prime editing was used to introduce small modifications into the Na⁺/K⁺ ATPase-encoding gene *ATP1A1* of fat-tailed dunnart fibroblasts, a marsupial model from the same, Dasyuridae, family of northern quolls. In a dose-response experiment, these modifications were shown to improve the bufotoxin tolerance in dunnart fibroblasts by over 500-fold compared to the wildtype. This work demonstrates the viability of using modern gene editing techniques to minimize the impact of an invasive species, representing a novel approach in conservation biology.

LIFE BEYOND THE FENCE

Aliesha Dodson, Louis O'Neill, Nell Glover, Arnika Thorbjornsen, Robin Sinclair, Amanda Bourne

Australian Wildlife Conservancy, 322 Hay Street, Subiaco WA 6008.

Aliesha Dodson (she/her) has been an ecologist with the Australian Wildlife Conservancy for six years. Has worked on sites with large-scale mammal reintroduction programs in the Northern Territory and Western Australia. Has experience in translocations, monitoring extant species, working with indigenous rangers and traditional owners and several methods of trapping (cage, Elliot, Thomas, pitfall, funnel and camera traps). She has worked with a variety of species including small to medium sized mammals, reptiles, frogs and birds. She is passionate about conservation and trying to protect our Australian wildlife. email: Aliesha.Dodson@australianwildlife.org, Instagram: aliesha.dod



Mt Gibson Wildlife Sanctuary on Badimia country is the site of a large-scale mammal reintroduction project in Western Australia. Over the past ten years, ten species have been reintroduced to Mt Gibson both inside and outside a 7,838 ha feral predator-proof fenced area. Initial reintroductions were completed inside the fenced area. Recent reintroductions have focused on releasing species outside the fenced area into the wider landscape, where feral predators are present in low numbers due to an extensive feral predator control program. Species released outside the fenced area are the Brushtail Possum (*Trichosurus vulpecula*), Chuditch (*Dasyurus geoffroii*) and Woylie (*Bettongia penicillata*). 83 Chuditch were released to Mt Gibson in 2023 and 2024 from various source sites and, to date, we have seen recruitment of at least 26 Mt Gibson born individuals detected from cage trapping and camera trapping. To date, this translocation has met short- and medium-term success criteria, with over 50% survival of radio-tracked individuals and translocated individuals remaining on the property to breed and establish home ranges. In 2025, following the successes with Chuditch, we released 147 Woylies outside the fence, and a second release is planned for this year. To date, this translocation has also met the short-term success criteria. Releasing species beyond the fence are allowing us to investigate what conservation actions are possible in the presence of feral predators. Lessons learned from Mt Gibson will inform future translocations at this site and other sites and provide insight to landscape-scale conservation programs.

FACTORS INFLUENCING MULTIPLE PATERNITY: INSIGHTS FROM THE EASTERN QUOLL (*DASYURUS VIVERRINUS*)

Brittany M. Brockett^{1*}, Linda E. Neaves^{1,2}, Maldwyn J. Evans¹, Iain J. Gordon^{1,3,4,5}, Jennifer C. Pierson^{1,6,7}, Belinda A. Wilson¹, Claire Wimpenny⁸, & Adrian D. Manning¹

¹Fenner School of Environment and Society, The Australian National University, Canberra, ACT, 2060, Australia.

²School of Environmental and Conservation Sciences, Murdoch University, Perth, WA, 6150, Australia

³James Hutton Institute, Dundee, DD2 5DA, United Kingdom.

⁴Central Queensland University, Townsville, Qld 4810, Australia.

⁵College of Science & Engineering, James Cook University, Townsville, Queensland, 4810, Australia.

⁶Australian Wildlife Conservancy, Subiaco East, WA, 6008, Australia.

⁷Centre for Conservation Ecology and Genomics, Institute for Applied Ecology, University of Canberra, Canberra, ACT, 2617, Australia.

⁸Office of Nature Conservation, ACT Government, Dickson, ACT 2602, Australia

Bio: Brittany Brockett (she/her) is a PhD candidate living and working on Ngannawal land in Canberra. She researches the integration of genomics into mammal translocation and reintroduction science; based in part on data from the reintroduction of murungun (Ngannawal) eastern quoll (*Dasyurus viverrinus*) to Mulligans Flat Woodland Sanctuary. She is an advocate for pragmatic, context-driven conservation and wants to help avoid 'perfect being the enemy of the good'. In her spare time, Brittany is a full-time public servant working in environmental regulation. Brittany is also a passionate birder, cried when she saw her first numbat, and loves tea. Instagram @Brittbrockers



Breeding systems influence population dynamics and genetic diversity, especially when a population is small or isolated. To examine population-level drivers of multiple paternity we combined long-term demographic data and 1,745 single nucleotide polymorphisms from a reintroduced population of eastern quolls (*Dasyurus viverrinus*). We also conducted a cross-species comparison of multiple paternity occurrences within the Dasyuridae (including the eastern quoll) to look for taxonomic patterns.

Pedigree reconstruction revealed high rates of multiple paternity, with 47–85% of litters sired by more than one male (depending, respectively, on whether all litters or only those with >1 offspring were assessed). Reconstructed litters contained up to three sires. Trait-based generalised linear mixed-modelling showed individual reproductive success was significantly correlated with higher bodyweight, lower age, and having a fawn, rather than black, colour-morph. Across the Dasyuridae family, higher rates of multiple paternity were associated with shorter lifespans, but not sexual size-dimorphism or greater intersex aggression. Our findings indicate that individual traits predict reproductive success in the eastern quoll, and that within a polyandrous taxonomic family the likelihood of multiple paternity can depend on the evolutionary life history of the species (e.g., lifespan).

ART (ASSISTED REPRODUCTIVE TECHNOLOGIES) IN SERVICE FOR DASYURIDAE CONSERVATION

Katarzyna Filimonow, Erin Scase, Naomi Tappe, Stephen Frankenberg and Andrew Pask

School of BioSciences, The University of Melbourne, Parkville, Victoria, Australia

Bio: Dr. Katarzyna Filimonow (She/Her), Pask Lab, University of Melbourne. Katarzyna (Kasia) is an animal embryologist with expertise in early mammalian development. She completed her PhD through a collaboration between the University of Warsaw and the University of Manchester, followed by a postdoctoral position at DanStem (University of Copenhagen). Her research investigates lineage specification in mouse, rat and rabbit embryos, with particular focus on the molecular mechanisms governing cell fate decisions. Having recently moved to Australia, she now works in the Pask lab on assisted reproductive technologies for marsupial conservation.



Among the different technologies that have been rapidly developing in the last decades, ART (Assisted Reproductive Technologies) are in the scientists' scope not only for human reproduction, but also for conservation purposes. Developing effective next generation conservation strategies can support protection and conservation of marsupials. Considering that Australia faces an unprecedented rate of extinction, developing ART seems to be critical for particular species.

Marsupial embryos develop without implantation during most of the gestation period, and the majority of species produce multiple embryos in one cycle. However, because marsupials are such a unique group existing mainly in Australia, there is not much literature about their embryo development. Moreover, many species do not breed in captivity, which makes development of ART protocols challenging.

Here, we outline how specific ART approaches can be applied to the conservation of Dasyuridae species. Key techniques under development include oocyte in vitro maturation (IVM), in vitro fertilization (IVF), intracytoplasmic sperm injection (ICSI), incorporation of induced pluripotent stem cells (iPSCs) into embryos, surrogacy, and gamete cryopreservation. These advances in marsupial ART can provide important complementary tools that can enhance current conservation strategies.

CHALLENGES IN MARSUPIAL FERTILISATION: ADAPTING IVF AND ICSI FOR THE DUNNART

Naomi Tappe¹, Erin Scase¹, Jun Liu¹, Namdori Mtango², Jane Fenelon², David Potter¹, Bethany Finger¹, Katarzyna Filimonow¹, and Andrew Pask¹

¹ Colossal Australia, School of BioSciences, The University of Melbourne, Melbourne, Victoria, Australia.

² Colossal Biosciences, Dallas, Texas, USA.

Bio: Naomi Tappe (she/her) is a reproductive biologist at The University of Melbourne, specialising in marsupial fertility, assisted reproductive technologies and their application to wildlife conservation and de-extinction. Combining micromanipulation techniques with other laboratory techniques she is part of the team of researchers in Pask Laboratory aimed at scalable conservation tools for dasyurids. Naomi completed a Masters of Clinical Embryology at Monash University, has previously worked in human clinical embryology, and IVF laboratory automation. She has since changed her focus to the use of reproductive technologies in conservation. Contact: naomi.tappe@unimelb.edu.au

Australia has the highest rate of native mammal extinctions worldwide. To slow these declines, a range of conservation tools will be needed; assisted reproductive technologies such as in vitro fertilisation (IVF) could play an important role for marsupials.

Previous work has reported progress in the tammar wallaby, common brushtail possum, common wombat and eastern grey kangaroo. Here we discuss the application of several IVF approaches — including conventional insemination and intracytoplasmic sperm injection (ICSI) — to the fat-tailed dunnart (*Sminthopsis crassicaudata*).

Marsupial gametes present distinct technical challenges compared with eutherian laboratory mammals (for example, the mouse). Marsupial oocytes possess a mucoid and shell coat around the zona pellucida, and contain a substantial internal yolk mass. Marsupial spermatozoa are markedly larger than mouse or human spermatozoa, complicating micromanipulation and penetration techniques.

Because most marsupials occur in Australia and prior research is limited, the literature on marsupial fertilisation is scarce. We aim to establish the fat-tailed dunnart as a reproducible model species to develop and refine IVF and ICSI protocols that can support assisted breeding and genetic management of threatened marsupials.

TAKING THE ‘PULSE’ OF WILDLIFE POPULATIONS: DEVELOPMENT OF A VETERINARY POPULATION HEALTH ASSESSMENT FRAMEWORK FOR A MARSUPIAL CARNIVORE

Alexandria Bullen^{1,2}, James W. Macgregor^{1,3}, Wayne S. J. Boardman² & Todd J. McWhorter²

¹ UVC Wild, Ulverstone Veterinary Clinic, 54 Alexandra Rd Ulverstone, Tasmania 7316, Australia, uvcwild@outlook.com

² School of Animal and Veterinary Sciences, Adelaide University, South Australia 5371, Australia

³ Conservation Medicine Program, School of Veterinary Medicine, Murdoch University, Western Australia 6150, Australia

Bio: Dr Alexandria Bullen BSc DVM (she/her). Alexandria is a veterinarian with a strong passion for veterinary ecology and conservation. She is based in regional Tasmania, where she works for Ulverstone Veterinary Clinic in a private mixed-animal practice and researching the health of local wildlife populations. She is currently a PhD student with Adelaide University, studying the impact of anthropogenic landscapes on the health of wild quolls.



Veterinary practice has traditionally focused on the “physician model,” centred on diagnosis and treatment of individual animals. However, veterinarians also play a critical role in assessing health at the population level, particularly in wildlife. In free-ranging systems population health cannot be understood without accounting for environmental and anthropogenic influences. This aligns with the principles of One Health, which recognise the interconnectedness of animal, human, and ecosystem health. Despite this, relatively few wildlife health studies incorporate environmental drivers, and many remain focused on single pathogens, limiting their utility for conservation decision-making.

This presentation proposes a structured methodological framework for the population health assessment of marsupial carnivores, using the example of the spotted-tailed quoll (*Dasyurus maculatus*). By defining population health as the capacity for long-term persistence, clear outcome-based goals—such as population stability or growth—can be established. Key parameters of health, spanning demography, individual health, environment, and genomics, are then used to develop measurable benchmarks. Use of standardised frameworks offer a pathway to more repeatable and multidisciplinary assessments of health, enabling timely and targeted management interventions before severe declines occur.

HOLY QUOLLY – A SIGNIFICANT RANGE EXTENSION FOR THE NORTHERN QUOLL IN WESTERN AUSTRALIA

Steph Williams¹, J. Dunlop², and M.A. Jensen¹

¹Stantec Australia, 226 Adelaide Terrace, Perth, WA 6000, Australia

²Curtin University, Kent St, Bentley, WA 6012, Australia

Steph Williams (she/her) Stephanie.Williams2@stantec.com

The northern quoll (*Dasyurus hallucatus*) is an endangered marsupial found in four genetically disjunct populations, from Western Australia to Queensland. The species has undergone substantial range contraction since the mid-20th century, with a decline further accelerated by the more recent spread of cane toads (*Rhinella marina*) across northern Australia. Fauna surveys conducted in Western Australia investigated the potential occurrence of northern quolls south of the recognised range boundary for this species.

In 2022 and 2023, lured remote camera traps were deployed in potential northern quoll habitat and targeted searches for northern quoll scat were conducted. Scat samples were collected for environmental DNA (eDNA) analysis, to confirm species presence.

Survey work recorded new localities for the northern quoll in the Gascoyne Bioregion (approximately 100 km south of Newman) via camera trap and in Gulali (Collier Range) National Park via camera trap sites and eDNA scat analysis. These detections represent a 140 km southern range extension from the previously accepted Pilbara distribution of this species. They also constitute the first northern quoll records for Gulali National Park and the southernmost verified occurrence of the species in Western Australia.

These findings suggest the possible persistence of a previously unrecognised, low- density population at the species' southern range edge. Given the increasing threats facing the species, including the impending arrival of cane toads, ongoing habitat disturbance, and predation by feral animals – accurately defining the full extent of the northern quoll's current distribution is critical for informing effective conservation and management.

Monday 6th July 2026

Concurrent Symposium

Bats and Wind Farms: Research to Inform Risk Reduction

**National Film and Sound Archive theatre
(across the road from the Shine Dome)**

Session 1: Assessing risk 08:30 – 10:30

Plenary

A WHIRLWIND TOUR OF GLOBAL LESSONS IN BAT AND WIND CONFLICT AND THE PATH TO COEXISTENCE

Michael Whitby

Bat Conservation International, Austin, TX USA

The United States began extensive research into the intersection of bats and wind energy in 2004 with the formation of the Bats and Wind Energy Cooperative (BWEC)— a coalition uniting conservationists, industry leaders, government agencies, and academics. For fifteen years, Bat Conservation International (BCI) coordinated this diverse stakeholder group to prioritize, fund, and conduct critical research into turbine-related bat fatalities. BCI eventually transitioned BWEC leadership to the National Renewable Energy Laboratory, allowing BCI to pivot toward targeted, international research.

BCI's long history of wind research in the United States has led to a deep understanding of common pitfalls associated with gathering and analyzing post-construction fatality monitoring, including the need for inclusive data sharing practices and compatibility to understand cumulative impacts. We will also highlight BCI's efforts to develop and research minimization techniques, especially curtailment, with particular focus on the importance of rigorous and relevant evaluation of efficacy for strong conclusions.

Reflecting on more than two decades of global field studies, data aggregation, and experimental mitigation trials, this plenary presentation explores the critical lessons learned along the way. We will rapidly examine the evolution of minimization measures, the development of robust fatality monitoring practices, and the common ecological and operational challenges shared by wind facilities worldwide. We will also highlight emerging issues of offshore wind energy, which may have unexpected impacts on bat species.

By highlighting past mistakes and cross-border commonalities, this session aims to provide actionable insights for navigating the ongoing balance between renewable energy growth and global bat conservation.

VULNERABILITY OF BATS IN AUSTRALIA TO WIND TURBINE MORTALITY: A TRAIT-BASED ASSESSMENT

Carissa V. Harris¹, Christopher Turbill^{1,2}

¹School of Science, Western Sydney University, Hawkesbury Campus, Richmond, NSW 2753, Australia. (she/her; 22137943@student.westernsydney.edu.au)

²Hawkesbury Institute for the Environment, Western Sydney University, Hawkesbury Campus, Richmond, NSW 2753, Australia.

Bio: Carissa Harris (she/her) is an undergraduate student in Zoology at Western Sydney University. During the early stages of her degree, she began volunteering on various bat research projects, which sparked a strong interest in bat ecology. Her current research interests include movement ecology and conservation, with a particular focus on the interactions between bats and wind energy development and their implications for conservation management.

Wind turbine collisions are a leading cause of bat mortality globally, yet the vulnerability of Australian bat taxa remains poorly understood. Trait-based assessments offer a valuable method for evaluating mortality risk in the absence of data on species- and region-specific turbine interactions. Behavioural and morphological traits are strongly associated with bat fatalities at wind farms globally. Here, we use a trait-based approach to identify the relative vulnerability of bat genera to the increasing threat of wind turbine fatalities in Australia. Through a global literature review, we identified three traits associated with increased mortality rates: foraging guild, movement distance, and wing morphology. For each trait we estimated the level of sensitivity at the genus level based on available published data. Sensitivity scores were summed to produce an overall vulnerability score. Our assessment identified *Saccolaimus* and *Taphozous* (Emballonuridae); *Austronomus*, *Chaereophon*, *Micronomus*, *Ozimops*, and *Setirostris* (Mollosidae); *Falsistrellus* (Vespertilionidae); *Miniopterus* (Miniopteridae); and *Pteropus* (Pteropodidae) as the most vulnerable genera. We also attributed a confidence score to trait estimates, which reflected data availability. Confidence was rated as relatively high for foraging guild (68% genera rated as high) and wing morphology (50% high), and lowest for maximum movement distance (11% high). Our framework provides a timely foundation for predicting mortality risk from the rapid expansion of wind energy infrastructure in Australia, which requires urgent conservation assessment and implementation of management actions to minimise the impacts. Our trait-based assessment also provides direction for targeted research to better understand and quantify the threat of wind turbine mortalities to populations of Australian bats.

ASSESSING COLLISION RISK LIKELIHOOD OF AUSTRALIAN BATS AT WIND FARMS

Eliza Thompson and Elizabeth Stark, **Julia Ryeland**

Symbolix, 3 Queensberry Pl, North Melbourne VIC 3051

Quantifying the impacts of wind energy facilities is core to managing biodiversity loss, particularly from collision. For birds, this is typically done through collision risk models (CRMs), providing pre-construction predictions of the number of individuals of a species likely to be struck each year. Although many CRM exist internationally, all require an estimate of the number of flights across the site in a given time frame – a difficult metric to obtain for bats, given their nocturnal nature and individuals being difficult to differentiate from commonly used technology (e.g. ultrasonic detectors). Currently there is no established method for estimating bat collision for a proposed site. Despite this, a CRM for state and federally listed bat species is often requested for site approval, a problem addressed by the DCCEE funded Australian Collision Risk Framework (ACRF). The ACRF, in part, provides a structured, qualitative assessment of bat collision risk likelihood using ranked criteria. The Collision Likelihood Score (CLS) is calculated based on metrics internationally recognised to predict for collision risk (e.g. species activity, flight height, suitable nearby habitat, seasonal exposure, and collision history). To improve the consistency and transparency in which collision risk likelihood is assessed across Australia, an online tool has been produced to allow consultants, proponents and regulators to calculate a CLS for the site and species of interest. This tool aims to not only provide a robust method for assessing bat collision risk, but to identify components driving the risk and enable users to assess alternate design and mitigation options to reduce biodiversity impacts.

ANALYSIS OF A LARGE-SCALE TELEMETRY DATASET TO QUANTIFY WIND TURBINE COLLISION RISK FOR THE GREY-HEADED FLYING-FOX

Jessica Meade¹, **Pia E. Lentini**², Eliane D. McCarthy¹, John Martin^{1,3}, Justin A. Welbergen¹

¹The Hawkesbury Institute for the Environment, Western Sydney University, Richmond, NSW 2753

²Arthur Rylah Institute for Environmental Research, Department of Energy, Environment and Climate Action, 123 Brown Street, Heidelberg, VIC 3084

³Royal Botanic Gardens and Domain Trust, Sydney, NSW, 2000

The Grey-headed Flying-fox (*Pteropus poliocephalus*; EPBC Act Vulnerable) is highly mobile across eastern and southern Australia, and has been assessed as high risk for wind-turbine collision, but empirical evidence to inform mitigation is limited. We analysed a large telemetry dataset for this species (109 individuals fitted with ARGOS satellite tags, 80 fitted with GPS collars with accelerometers, and a further 13 fitted with high-resolution GPS tags) to quantify flight heights, the impacts of wind speed on flight behaviours, and any avoidance behaviours around wind infrastructure. Mean night-time flight height above ground was 34.4 m (high-resolution GPS; n=13,706 filtered fixes) and 43.4 m (GPS/accelerometry; n=5,308 flying fixes). A substantial proportion of flight activity (58% of high-resolution and 51% of GPS/accelerometry flying fixes) occurred within current turbine rotor-swept heights (23–285 m). This broadly aligns with the national aircraft strike records, which report a mean strike height of 47 m for flying-foxes (all species). Flying fixes occurred at only slightly higher near-surface wind speeds than stationary fixes, and flight height decreased with increasing wind speed; at the nightly scale, higher wind, temperature and rainfall were associated with shorter maximum foraging distances. Across 631 animal-nights within 30 km of wind farms, we found no evidence that operational status influenced nightly foraging area or cumulative distance, and roost occupancy did not differ before versus after nearby wind farms became operational. These results indicate frequent exposure to rotor-swept heights and limited turbine avoidance, supporting development of evidence-based mitigation for flying-foxes at wind facilities.

WHAT HEIGHT DO MICROBATS FLY? USING STEREO-THERMAL IMAGING AND ULTRASONICS TO MEASURE SPECIES-SPECIFIC FLIGHT HEIGHTS FOR WIND ENERGY IMPACT ASSESSMENT

Felicity Williams, Emma Heath, John Martin

Biosis Pty Ltd, Unit 14, 17 – 27 Power Avenue, Alexandria NSW 2015 (she/her) fwilliams@biosis.com.au

Bio: Felicity began working with microbats in 2008 during her Honours thesis. She has since worked as an ecologist across Victoria, Western Australia, New South Wales, and Tasmania. Now based in Hobart, Felicity has led the design, implementation, analysis and reporting of microbat surveys at Biosis for the past five years, playing a key role in strengthening the rigour, transparency and consistency of the company's in-house bat assessment capability. More recently, Felicity's work has focused on integrating innovative survey technologies and analytical approaches to address critical knowledge gaps in microbat risk assessment, particularly for wind energy projects.

Assessing microbat collision risk associated with wind energy planning and operation represents a global challenge. In Australia, a key knowledge gap is species-specific ecology, including flight heights and flight behaviour. Ultrasonic bat call detectors are effective for documenting species presence and relative activity, but they cannot reliably quantify flight height, movement trajectories, number of individuals, or behavioural responses to turbines. These parameters are critical for understanding collision risk, and without this information there is substantial uncertainty for impact assessment and operational mitigation.

Results are presented from a pilot deployment at a proposed wind farm in southeastern Australia that combines stereo-thermal cameras with co-located ultrasonic detectors mounted on a meteorological mast. Machine-learning algorithms were applied to stereo video streams to derive three-dimensional flight paths, flight heights, object classification and numbers of individuals per video frame. Bat calls identified to species level were matched to time-aligned 3D detections, allowing estimation of species-specific flight heights.

Preliminary results revealed vertical stratification of microbat activity from ground level to approximately 120 metres. Flight height data are presented for five species, including the White-striped Free-tailed Bat *Austronomus australis*, which is known to be susceptible to wind turbine collision. This integrated approach provides a method for addressing critical knowledge gaps during pre-construction bat surveys and offers a data-driven, site-specific method for defining operational mitigation thresholds to support effective adaptive management. Future applications may also include post-construction collision monitoring.

Session 2: Ecology to inform risk assessments: 11:00 – 12:25

PIONEERING THE APPLICATION OF MICRO-DOPPLER RADAR TO THE CLASSIFICATION OF AUSTRALIAN BATS

Kyle N. Armstrong^{1,2}, Richard Morgans², and Erin Westerhuis³

¹ Supersensory Technologies Pty Ltd, Adelaide, South Australia 5000, Australia; kyle.armstrong@supersensory.com.au

² School of Biological Sciences, Adelaide University, Adelaide, South Australia 5000, Australia

³ Orion Ecology Pty Ltd, Tasmania, 7310, Australia

Bio: Kyle Armstrong is bat specialist research and consultant zoologist with a keen interest in research topics that address critical knowledge gaps that limit conservation efforts; and the discovery of the multi-million year old stories of our bat species.

The expansion of wind energy projects across Australia requires improved methods to quantify bat activity within the rotor-swept zone of wind turbines and underpin collision risk assessments. As part of the Commonwealth Government's Renewables Environmental Research Initiative (RERI), this study applied micro-Doppler radar to characterise bat flight behaviour across multiple Australian biomes and assess its utility as a sensor for monitoring and mitigation. Field deployments were conducted in the Pilbara (Western Australia), the Atherton Tablelands and Cairns (Queensland), and the Hunter region (New South Wales). Radar data consistently resolved four recurrent bat target classes defined by wingbeat frequency and radar cross-sectional area, forming a clear size–wingbeat scaling gradient. These classes were reproducible across regions, demonstrating biologically meaningful groupings. Flight behaviour varied with altitude, with higher-altitude detections associated with faster, straighter trajectories, consistent with shifts from foraging to commuting flight modes. Medium-sized open-air foragers (emballonurids and molossids) were frequently recorded above 100 m and occasionally to c. 1 km, indicating extensive use of the high-altitude airspace. Small bats were also detected within and above the rotor-swept zone, suggesting their contribution to collision risk may be underestimated. The Ghost Bat *Macroderma gigas* was distinguishable in radar data and showed activity within the rotor-swept zone. Windspeed–activity relationships varied among regions and classes (median thresholds 3.1–7.3 m s⁻¹), supporting site-specific curtailment strategies. Micro-Doppler radar will provide a robust sensory for quantifying aerial bat activity and improving collision risk assessment and mitigation in wind energy developments.

RADAR REVEALING FLIGHT HEIGHT FOR PILBARA BATS

Trish Fleming¹, Angus Dempster¹, Kerryn Hawke¹, Kelly Sheldrick¹, Jesse Harper², Lazaro Roque-Albelo²

¹ Harry Butler Institute, Murdoch University,

² Fortescue Ltd.

Bio Trish Fleming: Over the last 2 years, Trish has been leading a team of researchers at the Harry Butler Institute, Murdoch University, working on projects examining the impact of the rapid growth in green energy in Australia — including solar and wind generation. Working with industry partner Fortescue, the research has highlighted knowledge gaps in how we can manage and mitigate the potential impacts on native bird and bat species.

A common limitation for bat collision risk models (CRM) is the lack of available observational flight height data collected for bat species. To identify potential risks for each bat species, predicted risk profiles have therefore typically been based on the known foraging ecology of broad taxonomic groups, with subjective qualification where these may apply to particular species. At Fortescue's Nullagine Wind Farm, currently under construction in the Pilbara, Western Australia, the geographic ranges of half of the 10 microbat species present do not overlap with existing wind farms, and therefore there are no collision data available for these species. There is also flight height data available for only one species. Developing a CRM is therefore important for predicting potential biodiversity impacts of the wind farm on these species. To

address missing data for bat flight height, we have deployed acoustic recorders around two Robin Radar MAX units, to collect species-specific flight paths across the site. Temporal and spatial joining of radar traces with acoustic records and weather data has been carried out to quantify (1) radar cross-sectional areas, (2) species' flight height and speed, and (3) compare flight behaviour with environmental factors (wind speed, temperature and direction, air pressure, temperature). This work is building research and industry collaboration towards managing and mitigating the balance between green energy development and the conservation challenges that it represents. Understanding species-specific flight patterns will inform turbine collision mitigation choices.

TRACKING GHOST BATS AND OTHER THREATENED CAVE-DWELLING BATS IN SOUTHERN CAPE YORK

Elizabeth R. Williams^{1, 2, 3}, Roger Coles^{1, 4}, Bruce Thomson³, Jasmine Vink¹, Jannico Kelk¹, George Madani⁵, Tim Hughes¹

¹South Endeavour Trust

²BAAM Ecology

³The University of Queensland

⁴Nanobat Systems

⁵University of Newcastle

Bio: Dr Elizabeth Williams (she/her) is a wildlife ecologist with more than 20 years of applied experience in fauna ecology and land management. Her work spans microbats, birds and insects, with a focus on how species use habitats and landscapes, and how these patterns inform practical conservation and management. She has undertaken research across multiple taxa to address key knowledge gaps, improve ecological understanding, support on-ground decision-making and conservation planning. Elizabeth's experience includes extensive fieldwork and ecological assessment across northern and eastern Australia. Email: DrElizabeth.R.Williams@gmail.com



Ghost Bats (*Macroderma gigas*), Australia's largest echolocating bat, are listed as threatened throughout their distribution due to the loss and disturbance of natural and artificial roosts, degradation of above-ground habitat, and severe population fragmentation.

We used GPS tracking to investigate the movement patterns and foraging habitat preferences at South Endeavour Trust's reserves near Cooktown, to inform land management and species conservation. This area of southern Cape York Peninsula is considered to support approximately 500-1000 Ghost Bats within a relatively undisturbed landscape.

Tracked individuals showed extensive nightly movements, episodic long-distance commutes, rapid sustained flight, and strong short-term fidelity to specific commuting routes and foraging areas. Habitat selection analyses indicated that riparian corridors were preferentially selected for both commuting and foraging, with alluvial woodlands also used for foraging. Roosts occurred in elevated exposed rock formations, including two granite boulder fields and one limestone karst.

Commuting distances of up to 26 km to foraging areas and short-term individual foraging ranges up to 15,000 ha indicate that landscape-scale extents must be considered when assessing habitat use. Strong commuting route fidelity highlights that disturbance to preferred flyways could disrupt established movement patterns and result in species impacts. These findings also emphasise the need to maintain connectivity across key movement corridors. The contrasting requirements for foraging/commuting versus roosting habitats highlight the need to protect structurally complex roosting landscapes alongside productive foraging substrates.

Current research on other threatened cave-dwelling species at South Endeavour Trust's reserves (*Rhinolophus robertsi*, *R. 'intermediate' sp.* and *Doryrhina semoni*) will also be summarised.

HOME RANGE AND MOVEMENT OF THE GHOST BAT (*MACRODERMA GIGAS*) IN THE KATHERINE REGION, NORTHERN TERRITORY

Laura Ruykys¹, Nicola Hanrahan², Ian Leiper¹, Leroy Gonsalves³

¹ Flora and Fauna Division, Department of Lands, Planning and Environment, Northern Territory Government, Palmerston, Northern Territory.

² Research Institute for the Environment and Livelihoods, Charles Darwin University, Brinkin, Northern Territory, Australia.

³ Forest Science Unit, Department of Primary Industries and Regional Development, New South Wales Government, Parramatta, New South Wales, Australia.

Bio: Laura Ruykys is an ecologist with a background in threatened species research and management. She currently works as a threatened fauna scientist for the Northern Territory Government.

GPS/VHF tag attachment methods and tag size have, until recently, limited our knowledge on the movement of the ghost bat (*Macroderma gigas*). We aimed to document this threatened species' home range and movement parameters in an anthropogenically altered landscape in the monsoon tropics of the Northern Territory. Forty-four ghost bats were tagged using 32 VHF/GPS tags and a dataset of 521 fixes was obtained across two reproductive seasons: mating and maternity. Our results show that the ghost bat is physically capable of flying long distances but has high fidelity to both its roost site and foraging areas. Our research also adds to the limited literature on the use of GPS tags for non-pteropodid bats and, specifically, for a cave-roosting bat species. Our insights on the performance of VHF/GPS tags are therefore informative for researchers of other cave-dwelling species, while our results on home range and movement parameters have implications for conservation of the ghost bat.

SITE FIDELITY AND INFERRED COLONY INTER-CONNECTIVITY IN *RHINONICTERIS* FROM PIT TAGGING

Sarah Grundy¹, Kyle N. Armstrong^{2,3}, Richard Morgans², Alan Hitch⁴, Erin Westerhuis⁵, Heather North², Emmi van Harten^{6,7} and Jayden O'Brien¹

¹ Fortescue Ltd, Perth, Western Australia, 6000, Australia

² Supersensory Technologies Ltd, Adelaide, South Australia 5000, Australia

³ School of Biological Sciences, Adelaide University, Adelaide, South Australia 5005, Australia.

⁴ School of Data Analytics and Computational Sciences, Harrisburg University of Science and Technology, Harrisburg, PA 17101, USA

⁵ Orion Ecology Pty Ltd, Tasmania, 7310, Australia

⁶ Arthur Rylah Institute for Environmental Research, Department of Energy, Environment and Climate Action, 123 Brown Street, Heidelberg, Victoria 3084, Australia

⁷ Research Centre for Future Landscapes, Department of Environment and Genetics, La Trobe University, Bundoora, Victoria 3083, Australia

Bio: Sarah Grundy is an environmental professional with experience across consulting and client-side roles in the resources sector and has developed a strong interest in threatened species management in the Pilbara. Within Fortescue's Nature and Science team, she coordinates on-ground threatened species monitoring programs including quolls, pythons and bats. Whilst she does not love bats flying at her face, she's fully committed to working with them, just preferably when they're hanging still.

Knowledge of the movements of individual bats amongst colonies in a network of roosts provides information on how gene flow occurs in panmictic population units. PIT tagging bats is an efficient way to track the movements of individuals amongst roosts, and characterise aspects of their behaviour. A study of the Pilbara Diamond-faced Bat *Rhinonictoris aurantia* around Iron Bridge in the Pilbara region of Western Australia revealed how bats used Priority 1 permanent diurnal roosts. The tendency for bats to switch roosts in the local area was quantified, and several long-range movements (c. 65 km in a single night) were detected. It revealed high site fidelity in most tagged individuals, but also a tendency for bats to temporarily emigrate to destinations unknown for short periods. The method also showed how bats use the roost at night, allowing calculation of foraging bout duration and comparisons of this amongst sexes and seasons. While population genetic studies define structure and connectedness in populations over long time scales, a focus on the movement of individuals in the short term reveals useful detail about the biology of a species.

BAT ACTIVITY PATTERNS OF THE INLAND PILBARA REGION: BASELINE DATA FOR RENEWABLE ENERGY ASSESSMENT

Angus W. Dempster¹, Patricia A. Fleming^{1,2}

¹ Terrestrial Ecosystem Science and Sustainability, Harry Butler Institute, Murdoch University, Perth, 6150, Western Australia, Australia.

² School of Environmental and Conservation Sciences, Murdoch University, Perth, 6150, Western Australia, Australia.

Email: angus.dempster@murdoch.edu.au

Context: With the rapid increase in renewable energy projects, there is major concern for bat species affected by the emerging wind industry in Australia. To effectively mitigate collision risk, trends and patterns in bat presence and activity must be understood. However, little research has been published, and there are knowledge gaps across much of the country, including in the Pilbara region of northern WA, the site of recent developments.

Aims: To identify patterns in the presence and activity of bat species in the central Pilbara across a multi seasonal period.

Methods: Between October 2023 and August 2025, SM4BAT-FS acoustic recorders were deployed across 40 sites at a proposed wind farm site in the Pilbara. Surveys were conducted by Ecologia over eight trips spaced across the study period, with recorders operating for one to three consecutive nights per site. Echolocation calls were identified to species in Kaleidoscope Pro.

Results: Preliminary results show nine species present, including the vulnerable Pilbara Diamond-faced Bat (*Rhinonictis aurantia*). Records capture seasonal and nightly variation in activity patterns, highlighting how bat species in the region respond to local climate and environmental conditions.

Conclusions: This study provides critical baseline data on bat presence, activity, and temporal trends in the Pilbara. The findings support future wind energy assessments in the region and contribute to an area of research that remains poorly represented in the published literature.

SEARCHING FOR PILBARA LEAF-NOSED BAT ROOSTS - LESSONS FROM THE FIELD

Brandi Simmons

Stantec Australia, 226 Adeliade Terrace, Perth, WA 6000, Australia

Bio: Brandi Simmons (she/her) brandi.simmons@stantec.com

Bat acoustic monitoring is widely used to assess species presence and activity, however, interpretation of acoustic data can be influenced by field conditions, survey design, and underlying ecological assumptions. A number of practical lessons have been learnt from Stantec field-based acoustic monitoring and roost search efforts in the Pilbara, with a focus on the Pilbara leaf-nosed bat (*Rhinonictis aurantia*). Key insights include the importance of integrating acoustic data with supporting information such as habitat characteristics and roost availability, as well as the value of revisiting previously surveyed sites to refine interpretations. Case examples demonstrate how additional survey effort and re-evaluation of existing data can influence understanding of roost use. The presentation also highlights the need to critically assess assumptions regarding species behaviour, including activity patterns and habitat use, and to apply species-centric reasoning when planning and interpreting survey results. These observations emphasise that while acoustic monitoring provides a powerful tool for bat assessment, robust interpretation relies on combining data with ecological context and adaptive field approaches.

Session 3: Informing risks and assessing impacts: 13:30 – 15:00

SEASONAL MIGRATION OF *AUSTRONOMUS AUSTRALIS* (WHITE-STRIPED FREETAILED BAT)

Amy Rowles¹, Brad Law², Christopher Turbill^{1,3}

¹Hawkesbury Institute for the Environment, Western Sydney University, Richmond, NSW, 2753, Australia;
A.Rowles@westernsydney.edu.au

²NSW Primary Industries, 10 Valentine Avenue, Parramatta, NSW, 2124, Australia

³School of Science, Western Sydney University, Richmond, NSW, 2753, Australia

Bio: Amy Rowles (she / her) has worked in the ecological consulting industry for the last 30 years, specialising in microbats. After completing a B.Sc., Amy studied habitat use, diet and roosting ecology of insectivorous bats in the Simpson Desert for Honours in 2001. She spent 8 years managing a small wildlife rehabilitation sanctuary in Dural before moving to Hilldale 17 years ago to bring up her four kids in the bush. In recent years Amy has returned to research, currently completing a PhD 'Seasonal migration of Australian tree-roosting microbats', assisting with an urban bat project and a study of cave bats using Pilchers Reserve.

It is vital to understand the seasonal movements of highly mobile species to successfully manage their habitat and threats for conservation. *Austronomus australis* (white-striped free-tailed bat), Australia's only confirmed long distance migratory tree-roosting insectivorous bat, is recorded to suffer more fatalities from wind turbine strikes than any other Australian insectivorous bat, however little is known about their movement ecology.

We have used species distribution models to identify seasonal shifts in habitat suitability and stable isotope (H, C, N) analysis of fur and wing membrane to predict the spatial origin of captured bats to better understand the migration of *A. australis*.

Our results suggest that a large proportion of the population breed in the southern and eastern coastal regions of the country during warmer months, spreading out into central Australia, Northern Territory and northern Western Australia for winter. Migration is partial, with records occurring throughout the species range in all seasons. Stable isotope analysis used an isoscape created from fur collected from presumed sedentary bat species trapped throughout eastern Australia and predicted a high proportion (80%) of the *A. australis* captured in central Australia in late autumn as likely to have originated from up to 1500km to the south in Victoria and South Australia.

This evidence to support large-scale partial migration of *A. australis* has conservation management implications. With favoured breeding regions and potential migrating paths overlapping with the highest density of wind farms, a larger proportion of the overall population is encountering turbines increasing the number of fatalities, possibly at a mortality rate that is not sustainable.

USING MACHINE LEARNING TRANSFORMERS TO EXPLORE BIOACOUSTIC NICHE SEPARATION IN BAT SONOTYPES: A CASE STUDY WITH A CRITICALLY ENDANGERED SOUTH AUSTRALIAN BAT

Meagan Underdown¹, Stefan Podgorski², and Kyle N. Armstrong¹

¹ School of Biological Sciences, Adelaide University, South Australia 5005, Australia

² Australian Institute for Machine Learning, Adelaide University, South Australia 5005, Australia

Bio: Meagan Underdown (she/her); I am a first-year PhD student at Adelaide University studying the bioacoustic information content of echolocation emissions and echoes from bats with different noseleaf types. I have a bachelor's degree in marine and wildlife conservation and completed an honours degree in 2025. My honours project explored the separability of echolocation sonotypes using deep learning transformer architectures. I am interested in the interplay between the ecological, morphological, and sensory aspects of bat echolocation systems and how novel interdisciplinary approaches to bat bioacoustics can promote effective conservation outcomes. Email: meagan.underdown@adelaide.edu.au



The occurrence of apparently identical bat echolocation sonotypes occurring in sympatry can be observed within many assemblages, suggesting a shared acoustic niche among species. This is unexpected under classical niche theory, prompting the question of whether sonotypes are truly indistinguishable. For the first time, this study explored the capabilities of a vision transformer architecture to detect imperceptible patterns of structural variation in bat echolocation pulses and represented a novel approach for distinguishing between highly similar calls from multiple South Australian bat species. A reliable automated method is lacking for distinguishing the calls of the Critically Endangered Southern Bent-winged Bat (*Miniopterus orianae bassanii*) from those produced by several co-existing *Vespadelus* species, which together comprise the '45 kHz FM' sonotype. This study compared the performances of several traditional classification techniques to that of an advanced deep learning approach for separating the sources of this sonotype. Application of the transformer model achieved an overall predictive accuracy of 98.25% and a mean F1 score of 98.26%, outperforming the next best classification method by a margin of 15.36%. The high degree of separability achieved by the transformer supports the notion that subtle discriminatory features—not readily apparent from a visual inspection of signal structures—are present in the echolocation pulses of the sonotype members. The implication is that subtle acoustic specialisations facilitate their ecological co-existence and suggests that each species senses aspects of their flight space and prey differently. The applications of vision transformer architectures will lead to higher robustness of identification in ecological and environmental impact studies.

DINNER CONVERSATIONS: HOW FEEDING SEQUENCES CAN SOLVE ID HEADACHES – BUZZ FOR ANSWERS!

Michael Pennay

NSW National Parks and Wildlife Service, Queanbeyan NSW 2620

Bio: Michael Pennay is an ecologist working for NSW National Parks and Wildlife Service. Michael has more than 20 years' experience in applied ecology with a focus on establishment of new protected areas, survey, identification, and assessment of the distribution and conservation status of numerous species and ecological communities in Australia, Papua New Guinea and Solomon Islands. michael.pennay@dcceew.nsw.gov.au



Bat echolocation calls are not a single sound, but a sequence of signals that change as bats navigate, interact, and engage with prey. As bats move through the landscape, they switch between search-phase calls for navigation, social calls, and feeding sequences during prey capture. Acoustic identification of bats has traditionally focused on search-phase calls because they are the most commonly recorded. However, unlike the calls of other mammals, birds or frogs, which often convey species-specific social or breeding information, bat search-phase calls are shaped primarily by functional and environmental constraints. As a result, species with similar habitats, morphology, and prey may exhibit convergent call structures, leading to substantial acoustic overlap and making some Australian species difficult or impossible to distinguish acoustically.

I analysed over 200,000 bat call recordings from diverse habitats across New South Wales to test whether feeding sequences offer additional taxonomic resolution. Preliminary results show that feeding sequence structure varies consistently between species and is particularly distinctive at the genus level, enabling reliable discrimination among some overlapping groups such as *Miniopterus*–*Vespadelus* and *Setirostris*–*Scotorepens*. These findings highlight feeding sequences as an underused but powerful tool that could improve manual identification and automated or AI-based acoustic classifiers.

DINNER OR DECAY? SEASONAL CARCASS PERSISTENCE AT A PROPOSED PILBARA WIND FARM

Tenaya A. Duncan¹, Patricia A. Fleming^{1,2}, James R. Tweedley²

¹Terrestrial Ecosystem Science and Sustainability, Harry Butler Institute, Murdoch University, Perth, 6150, Western Australia, Australia.

²School of Environmental and Conservation Sciences, Murdoch University, Perth, 6150, Western Australia, Australia.
Email: Tenaya.Duncan@murdoch.edu. Twitter: @Talk2tt182

Context: Wind energy is rapidly expanding in Australia, but turbine-related bird and bat fatality remains a key concern. Accurately estimating fatalities requires accounting for scavenger removal of carcasses, yet post-construction monitoring in the Pilbara presents a unique challenge due to its distinct climatic conditions. Applying scavenging rates derived from other regions, such as southern Australia, is likely to under- or overestimate fatalities, highlighting the need for region-specific persistence estimates.

Aims: To determine carcass persistence rates across seasons and carcass types in the Pilbara.

Methods: At each of the 39 monitoring sites, one standardised rodent and one quail carcass were used as surrogates for bat and bird species. Carcass persistence was monitored using camera traps.

Results: Preliminary results show that for the wet season, there was no effect of carcass type on carcass persistence ($p = 0.36$). Rodent carcasses persisted for an average of 7.5 days, while quail carcasses persisted for an average of 8.3 days. Carcass removal involved multiple taxa, with avian scavengers comprising most recorded events. Torresian crows ($n=9$) and Whistling kites ($n=6$) were most frequently observed, followed by ants ($n=5$), dingoes ($n=4$) and single detections of Nankeen kestrel and Perentie.

Conclusions: This early, single-season analysis suggests comparable carcass persistence between rodent and quail carcasses in the Pilbara. While these findings provide an initial baseline for scavenging rates, additional seasonal data are needed to assess seasonal variability.

REASSESSING MONITORING EFFORT AND CARCASS PERSISTENCE: INSIGHTS FROM INTENSIVE BAT MORTALITY SURVEYS AT A VICTORIAN WIND FARM

Tracy Lyten¹, Stevie Florent^{1,2}, Emma Bennett^{3,4}, Michael Whitby⁵, Fiona Jackson¹, Jesra Garcia¹

¹Skylos Ecology Pty Ltd, Victoria, Australia

²School of Biological Sciences, University of Canterbury, New Zealand

³Elmoby Ecology, Victoria, Australia

⁴School of Biological Sciences, Monash University, Victoria, Australia

⁵Bat Conservation International, Austin, Texas, USA

Bio: Tracy Lyten (she/her) tracy.lyten@skylosecology.com @skylos_ecology

This work was conducted on Wadawurrung Country. We acknowledge the Traditional Owners of the lands on which this research was undertaken and pay our respects to Elders past, present, and emerging.

Post-construction mortality monitoring at wind energy facilities is a critical component of understanding and mitigating impacts to bat populations. In Australia, monitoring programs are commonly undertaken at relatively low frequencies (e.g. monthly), despite international good practice guidance recognising that higher survey effort is required to accurately estimate mortality, particularly for small-bodied species with short carcass persistence times.

This talk presents findings from four years of conservation detection dog assisted mortality surveys at an operational wind farm in south-west Victoria, including a recent period of intensified monitoring associated with a federal RERI curtailment research program. During this phase, survey frequency increased from monthly to twice-weekly over a 4 month period, enabling a detailed observations of carcass persistence and temporal patterns in mortality.

Findings indicate that carcass persistence for microchiropteran bats, particularly smaller-bodied species such as *Vespadelus* and *Mormopterus*, is substantially shorter than we assumed. Plus we will also share our observations on bat activity trends and the impacts of environmental variables. Highlighting the limitations of infrequent monitoring and support a shift towards seasonally targeted, higher-frequency survey designs during peak activity times, aligned with international best practice, to generate robust datasets and inform effective mitigation strategies including curtailment.

SPECIES-SPECIFIC MORTALITY ESTIMATES OF BATS AT WIND TURBINES IN VICTORIA, INCLUDING SPATIAL AND TEMPORAL PATTERNS

Lindy Lumsden, Paul Moloney and Emmi van Harten

Arthur Rylah Institute for Environmental Research, Department of Energy, Environment and Climate Action, 123 Brown St Heidelberg, 3084 VIC.

Bio: **Lindy Lumsden** is a Principal Research Scientist at the Arthur Rylah Institute for Environmental Research, where she has been conducting ecological studies on insectivorous bats for over 40 years. Her research focuses on improving understanding of threatened and non-threatened species to inform conservation management, with recent work focusing on the impacts of renewable energy on bats and evaluating effectiveness of mitigations. Email: Lindy.Lumsden@deeca.vic.gov.au

Mortality rates of bats due to collisions with wind turbines have been well-studied in the northern hemisphere, however relatively little is known for Australia. Post-construction mortality monitoring is critical for identifying the species at greatest risk, understanding the level of impact and informing appropriate responses. We aimed to estimate annual mortality rates for each species of bat at wind farms in Victoria and investigate temporal and spatial patterns. We used post-construction monitoring data collected from 23 operating wind farms (1,137 turbines). Mortality estimates incorporated search effort (spatial and temporal), carcass persistence and searcher efficiency rates. Overall, 11.4 (95%CI 10.0–13.0) bats were estimated to be killed per turbine per year, with bats killed at almost twice the rate of birds. White-striped Freetail Bats *Austronomus australis* were recorded most frequently (49% of all bat mortalities). The threatened species most frequently killed were Southern Bent-wing Bats *Miniopterus orianae bassanii* and Grey-headed Flying-foxes *Pteropus poliocephalus*. Most species in the region were recorded as mortalities, indicating that even species with traits suggesting lower risk can be killed. There were marked seasonal patterns in the mortalities, with a peak from January to April. There were high levels of variability among wind farms, and also significant variation in mortality rates between individual turbines. We were unable to distinguish between true zeros (where no individuals were killed) and false zeros (where individuals were killed but not found) with all the extrapolations based on surveys where a carcass of that species was found. Therefore, these mortality rates are likely under-estimates. These results can be used to target mitigations to reduce impacts to bat populations from the transition to renewable energy.

ENVIRONMENTAL AND CLIMATIC DRIVERS OF ECHOLOCATING BAT FATALITY AT AUSTRALIAN WIND FARMS

Julia Ryeland, Alex Jackson, Peggy Yandell and Elizabeth Stark

Symbolix, 3 Queensberry Pl, North Melbourne VIC 3051

Internationally, it is well established that wind farms have a substantial impact on echolocating bats through direct collision and fatality. The high fatality rates recorded, including in Australia, highlights the need for improved risk prediction and understanding of risk drivers. However, suitable, data-driven risk reduction measures for Australian bat species are unknown, limiting our ability to transition to this sustainable method of energy production without potentially significant biodiversity loss. Using nearly a decade of post-construction fatality monitoring data from 41 wind farms, we investigated the differences in pre-construction risk predictions and evidence from post-construction fatality monitoring and estimation. Additionally we investigated environmental and climatic factors might mediate echolocating bat fatality,

extending existing findings based on season. We modelled the driving factors of estimated microbat fatality at wind farms across eastern Australia, finding both climatic (long term and seasonal) and habitat predictors (such as distance from habitat features as well as vegetation composition and complexity) can influence overall and genus-level fatality. We highlight the key genus' at risk of collision in Australia, and at which locations and in which periods they are most at risk. Our models can be applied during wind farm development, informing wind farm and turbine siting, and during operation, optimising mitigation measures such as curtailment. This work has been conducted under the DCCEW Renewables Environmental Research Initiative.

ASSESSING COLLISION IMPACTS ON THREATENED BAT POPULATIONS

Rachel Leihy¹

¹Arthur Rylah Institute for Environmental Research, Department of Energy, Environment and Climate Action, Heidelberg, Victoria, 3084, Australia

Bio: Dr. Rachel Leihy (she/her) is a senior scientist with the Arthur Rylah Institute for Environmental Research, the Victorian government's biodiversity research institute. She is a community ecologist, with an interest in understanding spatial and temporal biodiversity patterns to support conservation and management decisions. She is currently leading research into the population-level effects of wind turbine collisions on threatened bird and bat species.

Climate change is driving Australia's rapid transition to renewable energy, with onshore wind expected to play a major role in achieving net-zero emissions by 2050. While this shift offers environmental benefits, wind farms pose ecological risks to bats and birds through turbine collisions that can cause population-level impacts, especially for threatened species. Adequate consideration of these effects is often a major gap in environmental impact assessments. To address this gap, we have developed an online decision support tool that applies population viability modelling to assess collision impacts for 30 threatened species (5 bats and 25 birds). The tool focuses on the forecast relative impact of user-specified collision impact scenarios, compared to reference scenarios without these impacts. The tool has flexible functions to update existing models with new information or build new populations models for additional species. It can be used to assess the impact of a single wind farm and the cumulative impact of multiple wind farms over time. The aim of this tool is to provide a transparent, data-driven and reproducible analysis framework for industry and regulators to help better anticipate, avoid and mitigate potential impacts on threatened species.

Session 4: Mitigations and future directions: 15:30 – 17:00

TESTING THE EFFICACY OF ACOUSTICALLY TRIGGERED CURTAILMENT IN AUSTRALIA

Stevie Nicole Florent¹, Michael Whitby², Emma M. Bennett³

¹School of Biological Sciences, University of Canterbury, Ōtautahi Christchurch, Aotearoa New Zealand

²Bat Conservation International, Austin, Texas, USA

³Elmoby Ecology, Victoria, Australia

Operational curtailment of turbines, i.e., the feathering of blades to limit rotation during normal operating conditions, is the only effective mitigation method to reduce wind farm related bat mortality. However, traditional 'blanket' curtailment, which typically takes place from dusk to dawn at low wind speeds (<6.0 m/s), can lead to extended periods of turbine downtime when bats are not present. Incorporating real-time bat activity data into curtailment operations offers an opportunity to maximise mitigation whilst reducing bat fatalities, but this method has not yet been tested in Australia. Here, we present learnings of the first trial of acoustically triggered curtailment in Australia and compared bat fatality rates and turbine downtime between blanket curtailment and acoustically triggered curtailment approaches, relative to no curtailment. Eighteen turbines were randomly allocated to three treatments: blanket curtailment (turbines curtailed 30

mins before sunset to 30 mins after sunrise), acoustically triggered curtailment (turbines curtailed 30 mins before sunset to 30 mins after sunrise, when wind speeds were <6.0 m/s and a bat was detected), and control (no curtailment). We found evidence that both blanket curtailment and acoustically triggered curtailment reduced echolocating bat fatalities when compared to control turbines. Our results agree with an increasing body of both national and international literature that demonstrate operational curtailment of turbines (both blanket and acoustically triggered) reduces turbine-related bat fatalities, and that acoustically triggered curtailment offers a viable option for wind farm proponents looking to reduce curtailment-associated turbine downtime.

BAT ACTIVITY PATTERNS IN RELATION TO WIND SPEED AND OTHER WEATHER VARIABLES IN SOUTHWEST VICTORIA

Amanda Bush, Lindy Lumsden, Peter Griffioen and Paul Moloney

Arthur Rylah Institute for Environmental Research, Department of Energy, Environment, and Climate Action, 123 Brown Street, Heidelberg, Victoria 3084.

Renewable energy generation is becoming an increasingly used solution for reducing carbon emissions to minimise human mediated climate change. Wind turbines are part of this solution; however, they can also cause impacts to individual bats and bat populations. Multiple studies have reported a reduction in mortalities by increasing the wind speed at which turbines start to rotate (low wind speed curtailment), as bats are often more active at lower wind speeds. These settings can be refined by incorporating other weather variables like temperature and rainfall, but this requires site- and species-specific data. Our study aimed to investigate bat activity in southwest Victoria in relation to these variables. Acoustic recorders were set in open paddocks in locations typical of wind turbine placement. Bat calls were recorded for approximately 12 months at 8 locations, with each recorder paired with either a weather station or wind meter to collect weather data at 15-minute intervals. An additional paired site (only operational for part of the year) was situated near a maternity roost of the Critically Endangered Southern Bent-wing Bat to specifically target activity levels for this subspecies. Calls were identified to species level where possible using the bespoke bat call program ARISA, a one-dimensional neural network model developed from regional-specific training data. Using a Bayesian hierarchical generalised additive mixed modelling framework, we explored the wind speeds over which most bat activity occurred for each bat species, and how these relationships were influenced by other weather variables. These findings can be used to inform future smart curtailment settings to reduce mortalities while minimising energy production loss.

TRIALLING TECH FOR APPLICATION IN WINDFARM ASSESSMENTS AND MITIGATIONS

Kyle N. Armstrong^{1,2}, Richard Morgans¹, William Winkel-Davis¹ and Erin Westerhuis³

¹ Supersensory Technologies Pty Ltd, Adelaide, South Australia 5000, Australia

² School of Biological Sciences, Adelaide University, Adelaide, South Australia 5000, Australia

³ Orion Ecology Pty Ltd, Tasmania, 7310, Australia

A greater level of technical sophistication is required in windfarm assessments to adequately inform bat collision risk models. And we need a better understanding of how Australian bat species respond to mitigation technologies designed to reduce turbine strike risk. We deployed a tethered helium balloon system ('Helikite') equipped with an ultrasonic recorder and custom altimeter system to assess whether several threatened bat species forage at heights of approximately 80–100 m above ground level. Medium-sized bats exhibited behavioural responses to the Helikite consistent with neophilia, indicating attraction to novel structures and suggesting an elevated collision risk for this group. A structured pilot experiment using an ultrasonic deterrent (NRG Systems) produced a statistically significant result, with several species showing avoidance of the broadcast field. These findings provide a foundation for more comprehensive, well-replicated studies to quantify behavioural responses and foraging altitudinal range.

ROOST, REINCARNATED: THE JOURNEY FROM CONCEPT TO COMMISSIONING OF AN ARTIFICIAL ROOST IN THE PILBARA

Jayden O'Brien¹, Damien Cancilla¹, Kyle Armstrong^{2,3}, Rick Morgans³ and Sarah Grundy¹

¹Fortescue Ltd, Perth, Western Australia, 6000, Australia

²School of Biological Sciences, Adelaide University, Adelaide, South Australia, 5005, Australia

³Supersensory Technologies Pty Ltd, Lot Fourteen, Space Lab Building, Adelaide, South Australia, 5000, Australia

Bio: Jayden has 15 years' experience in environmental management across the mining and construction sectors, and in recent years has found himself spending an increasing amount of time thinking and talking about bats. Since joining Fortescue in 2019 to help deliver approvals for the budding Iron Bridge Project, he moved to a dedicated role within the Nature and Science team in 2021, working predominantly on threatened bat programs. His work spans monitoring, research and approvals, with a particular interest in applied science, complex problem-solving, and translating new knowledge into practical conservation outcomes.

Artificial roosts are often proposed as a conservation solution for threatened cave-roosting bat species, however very few have moved beyond theoretical concept into real-world operation, especially for species with specific microclimate needs. One such species is the Pilbara Leaf-nosed Bat (*Rhinonicteris aurantia*), which depends on warm, humid caves for breeding and permanent roosting in the Pilbara. These caves are difficult to locate, and closely associated with areas of mineralised geology in a region of major economic significance, making their protection a complex conservation challenge.

To explore whether engineered habitats could support this species, we designed and constructed an artificial roost, *Warramurrungka-ku jurnti maya*, on Nyamal Country in the East Pilbara. Developed as a proof-of-concept, the project tested whether a purpose-built artificial cave structure could replicate the thermal and humidity conditions of natural caves and contribute to long-term conservation and species resilience, including under a changing climate.

Site selection aimed to balance the species ecological requirements (including access to foraging habitat), cultural heritage considerations, constructability and long-term operational requirements. The design aimed to replicate the structure and microclimate of nearby natural caves, with the final design utilising buried culvert modules to create stable internal microclimate. Construction was completed in August 2025, and following verification of internal conditions, the roost was commissioned and opened to bats in January 2026. It is now being monitored using a suite of techniques, including ultrasonic detectors, thermal imaging and remote telemetry.

This presentation traces the journey from concept to commissioning, shares early operational insights, and reflects on lessons from one of the few artificial bat roosts built in Australia to date. It highlights both the potential and the practical challenges of using engineered refuges to support threatened bats in arid landscapes, while offering insights to help inform and improve future projects.

PUNISHED FOR LOOKING: DETECTION-DRIVEN REGULATION AND THE FAILURE OF BAT PROTECTION AT AUSTRALIAN WIND FARMS, AND WHERE TO FROM HERE

Dr Emma Bennett

Elmoby Ecology, Studio 23, Suburban St, Clunes, Victoria 3370

Regulatory frameworks for wind energy in Australia commonly rely on observed mortality to trigger mitigation for threatened bat species. However, carcass detection is inherently imperfect and strongly influenced by survey effort, searcher efficiency, and carcass persistence. This creates a perverse incentive: proponents who invest in rigorous monitoring are more likely to detect rare events—such as mortality of EPBC-listed bats—and therefore more likely to trigger costly mitigation. In contrast, proponents employing lower survey effort or less effective methodologies are less likely to detect these events, even when mortality occurs, and may avoid regulatory consequences. In this detection-driven system, the probability

of action is tied not to the probability of impact, but to the probability of detection. This systematically underestimates impacts on threatened species while penalising best-practice operators. The reliance on detected mortality as a primary trigger for mitigation is fundamentally flawed. Drawing on examples from Australian wind farms and contrasting international approaches, I explore alternative frameworks—including risk-based thresholds, precautionary curtailment, and standardised monitoring requirements—that better align regulatory incentives with conservation outcomes. We’ve built a system where protection depends on detection—and detection depends on effort. Where the absence of evidence is being operationalised as evidence of absence. Until then, those who look hardest may continue to be punished for what they find, while those who do not look may be rewarded for what remains unseen. Therefore, the safest strategy for the industry is not to look too hard—and that should concern all of us.

Tuesday 7th July 2026

Joint AMS/ABS conference

Shine Dome – Ian Wark Theatre, with additional seating in the Ballroom

Session 1: 08:50 – 10:30

Ellis Troughton Memorial Award (2025) plenary presentation

THE IMPORTANCE OF LONG-TERM MONITORING IN TRACKING THE TRAJECTORY OF MAMMAL POPULATIONS ACROSS THEIR DISTRIBUTIONS

David Lindenmayer

Fenner School of Environment and Society, The Australian National University

Populations of almost all species of mammals fluctuate over time. Long-term monitoring is often critical for documenting such temporal patterns as well as for quantifying the reasons underpinning these trends. Indeed, long-term monitoring can provide insights often overlooked in short-term (cross-sectional or snapshot) studies. In this talk, I outline some of the key temporal trends in populations of arboreal marsupials across five large-scale, long-term monitoring and research studies in south-eastern Australia. These studies span a range of ecosystems (forests, exotic plantations, woodlands and heathlands) and land use types (forestry, domestic livestock grazing, and strict protected areas). Analyses of datasets gathered over 20+ years provide important insights into trends in patterns of detection of the same or similar species in different ecosystems. They also enable identification of species for which there was evidence of synchrony across different studies versus those where there was evidence of non-stationarity; that is, where there was between-study spatial variation in detection trends for a given taxon. Documenting synchrony and non-stationarity is critical for a range of conservation and management reasons. These include assessing the conservation status of a species, determining the drivers of decline (or increase) of species, and where it is most appropriate to concentrate management interventions (which are likely to be most effective). Studies of synchrony and non-stationarity also have major implications for the design and implementation of robust monitoring programs throughout the distribution of a species or suite of species.

PFAS IN THE PLATYPUS: A GROWING DATASET AND ITS IMPLICATIONS FOR FRESHWATER CONTAMINATION MONITORING

Katherine G Warwick¹, Ian A Wright¹ and Michelle M Ryan¹

¹School of Science, Western Sydney University, Richmond, NSW 2753, Australia

Bio: Katherine Warwick (she/her); Email: K.Warwick@westernsydney.edu.au; @freshwater_Kat

The platypus (*Ornithorhynchus anatinus*) faces mounting pressures from habitat degradation, bycatch mortality, and anthropogenic chemical contamination. Per-and-polyfluoroalkyl substances (PFAS) are highly persistent synthetic chemicals that bioaccumulate through aquatic food chains; however, their presence in platypuses had not been investigated prior to this work. This study aimed to characterise perfluorooctane sulfonate (PFOS) accumulation in platypus liver tissue and assess the utility of this species as a bioindicator of freshwater PFAS contamination across eastern Australia.

Liver tissue was collected from deceased platypuses across New South Wales and a broader geographic range of eastern Australia. PFOS concentrations were quantified and analysed in relation to individual body condition, sex, and proximity to known PFAS point sources including airports, firefighting training facilities, and wastewater treatment infrastructure.

Liver PFOS concentrations across the full dataset spanned several orders of magnitude, reflecting heterogeneous PFAS contamination across catchments. Proximity to known PFOS point sources was associated with elevated concentrations in some individuals. Consistent with initial findings from the nine-individual pilot study, platypuses in better body condition tended to carry higher PFOS burdens, likely reflecting greater daily foraging intake.

These findings substantially expand the evidence base for PFOS accumulation in platypuses and, situated within the broader context of PFAS contamination in aquatic species globally, highlight the value of wildlife carcasses as bioindicators of freshwater PFAS pollution in Australian ecosystems. The study has implications for freshwater ecological monitoring design and identifies priorities for future research into the health consequences of PFAS exposure in this species.

BATS & BELONGING: ARTS ROLE IN FACILITATING CONNECTION

Nyssa Braid¹, Dr. Adam Cardinili¹, Dr. Belinda Christie¹, Dr. Kaori Yokochi¹

¹School of Life and Environmental Sciences, Deakin University, Melbourne 3125, Australia

Bio: **Nyssa Braid** (she/her) is an honours student at Deakin University and ceramic artist who explores the intersection of art and science. Drawing on conservation, care theory, and arts, she is interested in themes of societal perception and human-animal relationships. Email: nyssa.braid@deakin.edu.au

As cities increasingly function as multispecies spaces, fostering respectful human–wildlife coexistence is critical, yet creative engagement strategies remain limited. This research asked: can art facilitate feelings of connection and care towards non-human animals? Using the grey-headed flying-fox (*Pteropus poliocephalus*) as a study species in Geelong, Victoria, *Bats & Belonging* was a free community exhibition inviting artists to explore their relationship with flying-foxes through artmaking. A qualitative, phenomenological approach was employed to explore participants' lived experiences, with data collected via semi-structured interviews and analysed using inductive thematic analysis. Findings indicate that participants commonly reported increased empathy, curiosity, and attentiveness towards flying-foxes. Engagement processes - including artmaking, facilitated field visits, and mindful observation - supported participants in recognising flying-foxes as individuals and as contributors to place. These findings suggest that art can function as an affective and relational pathway for reimagining human–animal relationships, highlighting the potential of creative, community-based approaches to foster more compassionate and context-sensitive conservation practices in urban environments.

WHO'S TOP DOG? INDIVIDUAL IDENTIFICATION REVEALS FEMALE DOMINANCE IN APEX PREDATOR SOCIAL NETWORKS AROUND A SHARED RESOURCE

Hannah C. Christensen¹, Emma E. Spencer¹, Niraj Y. Meisuria^{1,2}, Katie A. Barton², Rhys J. Cairncross¹, Patrick B. Finnerty¹, Thomas M. Newsome¹

¹ School of Life and Environmental Sciences, Faculty of Science, The University of Sydney, Camperdown, NSW, Australia.

² Sydney School of Veterinary Science, The University of Sydney, Camden, New South Wales 2570, Australia.

Bio: **Hannah Christensen** (she/her) completed a Bachelor of Advanced Studies (Honours) in Wildlife Conservation at the University of Sydney, where her research focused on dingo scavenging behaviour and social interactions at carcasses. She is currently a Research Assistant with the Global Ecology Lab at the University of Sydney, contributing to alpine fieldwork on scavenger dynamics and supporting small mammal reintroduction through an urban rewilding project. Her interests centre on carnivore ecology, social behaviour, and applied conservation.



Competition and environmental conditions shape access to shared resources and are central to understanding social organisation in group-living animals, yet fine-scale interaction patterns in wild

carnivores remain poorly understood. This study quantified individual-level social interactions in a free-ranging Warrigal (*Canis dingo*) population to examine how dominance and season influence access to carrion. Camera traps monitored 40 experimentally placed gangurru (*Macropus giganteus*) carcasses in south-eastern Australia across summer and winter. Individual dingoes (n = 32) were identified, and co-feeding interactions, including aggression, were used to construct weighted social networks.

A total of 672 Warrigal visits were recorded, with 41 shared feeding events in summer and 132 in winter, representing a ~3.2-fold seasonal increase. Network structure was highly uneven in both seasons, with a small subset of individuals, often females, occupying central positions. These central individuals spent longer feeding both socially and solitarily. Aggressive interactions increased in winter and were associated with higher-ranked individuals, indicating intensified competition under resource limitation.

These findings demonstrate that Warrigal social organisation at carcasses is non-random and shaped by dominance, sex, and environmental context. Socially central individuals consistently gained greater access to resources, highlighting the role of hierarchical structure in mediating energy acquisition. This study provides rare quantitative evidence of fine-scale social dynamics in a wild canid and underscores the value of integrating individual identification with network approaches to understand resource competition and sociality in apex predators.

ARID ZONE BATS AND FENCED CONSERVATION RESERVES

Oli Aylen^{1*}, Katherine Moseby¹, Tanya Leary², Kylie M Cairns¹, Eve Slavich³, Reece Pedler¹, Hugh McGregor^{4,5}, Rebecca West¹.

¹University of New South Wales, Centre for Ecosystem Science, School of Biological, Earth and Environmental Sciences, Sydney, Australia.

²New South Wales National Parks and Wildlife Service, Department of Climate Change, Energy, the Environment and Water, Australia.

³Stats Central, Mark Wainwright Analytical Centre, University of New South Wales, Sydney, Australia.

⁴Arid Recovery, Olympic Dam, South Australia, Australia.

⁵Nature Foundation, PO Box 34, Prospect, SA, 5082, Australia.

Bio: Oli Aylen(He/Him) @olizology o.aylen@unsw.edu.au has worked with bats for the last 8 years primarily across the rainforests of Borneo, the savannahs of Northern Australia, and more recently the deserts of Central Australia. He is particularly interested in the use of bioacoustics as a non-invasive yet informative survey methodology, enabling large scale surveys. However, he has utilised an array of methods from canopy mist-netting, harp trapping, and radiotelemetry to DNA metabarcoding as part of his PhD project. Alongside his PhD he also works with Australian Wildlife Conservancy, and as a consultant bat specialist for windfarm projects.



Fenced conservation reserves are a vital conservation method to safeguard species from the impacts of introduced predators and other anthropogenic impacts. The benefits of these projects are largely well documented for non-volant species that are confined to the fenced areas. However, for highly mobile volant species such as bats, that can leave managed areas with ease, the benefits are harder to assess and have received very little research attention. We aimed to assess how bats interact with these reserves, and if there is evidence of reduced predation and/or increased resources for bats in the Australian arid zone, such as food availability, water retention and future potential roosting sites. Utilising bioacoustics we monitored bat activity over seven years, comparing sites inside and outside a new fenced reserve during boom-and-bust conditions (2019 - 2025). We further monitored bats at a larger spatial scale during La Niña conditions for evidence of a halo effect at an established and a new fenced reserve. Lastly, we investigated the impact of cats in the Australian zone using DNA-metabarcoding diet analysis. Bioacoustic monitoring showed little evidence of increased activity inside reserve sites, though clutter-adapted species had a slight trend towards reserve sites. Longterm monitoring suggested that bats may leave the area during drought conditions, returning once vegetation had responded to 12-month rainfall, highlighting potential nomadism which requires further investigation. We found no evidence of bat predation by cats with either morphological or molecular methods, however, molecular analysis found higher prey species diversity

suggesting the impact of cats on arid-zone fauna may be underrepresented with morphological analysis alone.

DEVELOPMENT OF A VIABLE GPS TRACKING METHOD FOR LEADBEATER'S POSSUM (*GYMNOBELIDEUS LEADBEATERI*)

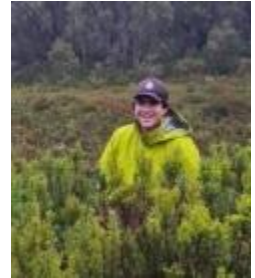
Campbell Mole¹, Anthony R Rendall¹, Dan Harley², Amanda Lo Cascio¹, Desley Whisson¹

¹School of Life and Environmental Sciences, Deakin University, Burwood, Australia 3125

²Wildlife and Conservation Science, Zoos Victoria, Parkville Australia 3052

Bio: **Campbell Mole** is a current PhD candidate working with Deakin University and Zoos Victoria investigating the spatial ecology of Leadbeater's Possum. Email: cmole@deakin.edu.au

Leadbeater's possum (*Gymnobelideus leadbeateri*) (LBP) is a small (110-160 g), arboreal marsupial that has been the subject of extensive research focus since the 1980s. However, limited information exists on the movement ecology of the species due to logistical and methodological challenges associated with VHF radio tracking and GPS tracking, owing to the species' size, cryptic nocturnal behaviour, and densely vegetated habitats. For this study, we aim to investigate if any current GPS or geolocator technology can be small, light, and accurate enough to deploy on the LBP. We extensively tested two GPS tracking systems and one geolocator system to assess their efficacy in the challenging habitats generally occupied by the LBP. We found the geolocator system, to be the most suitable device. It can record accurate location fixes over 8,000 times per night for up to 10 nights in a single deployment and is small and light enough (4.9g) to be customised to fit a LBP collar. The development of an applicable method to GPS track LBP will assist in understanding more about this elusive arboreal mammal, especially in sub-alpine environments where the species' ecology is virtually unknown. This technology also has applicability for a range of small arboreal mammals for which detailed movement data has previously been unobtainable.



BRIGHT LIGHTS, LOUD NOISE: HOW DOES A LIGHT FESTIVAL IMPACT MICROBATS?

Sarah Yong, Desley Whisson, Amanda Lo Cascio, Terry Coates and Kaori Yokochi

School of Life and Environmental Sciences, Deakin University, Burwood 3125, Victoria, Australia

Bio: **Sarah Yong** (she/her) completed her Bachelor of Environmental Science (Honours) at Deakin University in 2025 investigating the impact of temporary and acute disturbances on microbat communities. With a strong passion for protecting wildlife we share our cities with, Sarah hopes to pursue a career in urban ecology, with a focus on habitat connectivity, improving biodiversity and diverse stakeholder involvement in ecological projects.

Light festivals are growing in popularity internationally and within Australia; however, their impacts on wildlife are poorly understood. Microbats are a diverse and ecologically important mammal order living within urban areas yet still face novel and unpredictable challenges that arise from anthropogenic disturbances. Microbats are particularly sensitive to habitat disturbance, with varying degrees of sensitivity shown across species, making them great bioindicators to study the effects of sensory pollutants such as light and noise. In this study, we investigated the impact of a Melbourne light and sound festival on microbat communities, using acoustic surveys to record microbat species richness and activity levels before, during and after the light festival across 12 detector sites. Over a total of 594 detector nights, we recorded 12 microbat species/complexes across 99,460 calls. Our results revealed clear spatial and temporal effects of the festival on microbat species richness and activity levels. At the light festival site, species richness and total activity levels reduced during the light festival and did not immediately recover after the light festival had concluded. For open- and edge-guild activity, this response was contained within the festival area. However, clutter-guild activity levels were negatively affected, even 1000m away from the festival area. Our results highlight the potential for light festivals to



impact microbat communities and emphasise the importance of more research to inform ecologically-focused festival management practices.

DINGO STARR: IDENTIFYING INDIVIDUAL DINGOES TO ESTIMATE POPULATION SIZE AND DENSITY IN EAST GIPPSLAND USING SECR ANALYSIS

Ella Loeffler¹, Amanda Lo Casico¹, Euan Ritchie¹

¹School of Life and Environmental Sciences, Deakin University, 221 Burwood Hwy, Burwood VIC 3125

The dingo (*Canis dingo*) is listed as vulnerable in Victoria due to restricted population size and extent. Evidence of decline includes reduced genetic diversity and inbreeding. As an apex predator, its conservation depends on clear insights into distribution and density, and the environmental factors shaping these. We applied a spatially explicit capture–recapture (SECR) model to camera trap data collected across East Gippsland, identifying 147 individual dingoes from 9,000 photos. This approach provided estimates of population size and density, alongside insights into individual activity and movement patterns. By linking these patterns to ecological conditions, we examined dingo responses to diverse environmental variables at multiple scales. We also examined population structure, social interactions and spatial overlap between individual dingoes. These findings advance our understanding of dingo populations in Victoria and provide an evidence base for policy and conservation strategies for this iconic species.

THE EVOLUTIONARY HISTORY OF AUSTRALASIAN BATS AND THEIR ENVIRONMENTAL CONTEXT

Fabian Sauchelli¹ and Kyle Armstrong²

¹ School of Biological Sciences, Adelaide University, Adelaide SA 5005 (He/Him, fabian.sauchelli@adelaide.edu.au)

² School of Biological Sciences, Adelaide University, Adelaide SA 5005 (He/Him, kyle.armstrong@adelaide.edu.au)

Bio: Fabian Sauchelli is a PhD student at Adelaide University researching the evolutionary history of Australasian bats. His work focuses on phylogenomics, species boundaries and the role environmental factors have in driving diversification. His honours research examined character displacement in *Taphozous* bats using morphological comparisons.

Reconstructing the phylogenetic history of Australian organisms, especially the timing of speciation events, allows an understanding of how the diversification of genera corresponded with major environmental change across the continent. Since the early Miocene, processes such as aridification and the formation of biogeographic barriers between mesic regions have driven diversification in numerous taxonomic groups within Australia; however, bats are under-represented in these analyses. This study is comparing the timing of speciation events in several bat genera (*Chalinolobus*, *Nyctophilus*, *Scotorepens*, *Vespadelus*) and aligning their patterns with other fauna and flora, plus the historical environmental change of the continent.

Phylogenetic topologies and divergence times were reconstructed using mitochondrial (cytochrome-*b*) and genomic-scale exon capture datasets. Time-calibrated gene trees and species trees were inferred using BEAST2 and ASTRAL. Temporal congruence in speciation events was assessed across genera to evaluate phylogeographic concordance and the correspondence of these patterns with major phases of landscape change.

Preliminary analyses indicate that topology within *Vespadelus* is consistent with roosting ecology and exhibits a broad north–south partition. Divergence events are concentrated in the Miocene–Pliocene, with limited speciation during the Pleistocene, aligning with patterns observed in other arid-adapted Australian taxa. Recovering the evolutionary stories of our fauna helps engage public interest, a critical component of successful conservation.

Session 2: 11:00 – 12:40

ENERGETIC COSTS OF EXTREME HEAT: HIGH TEMPERATURES ELEVATE DAYTIME ACTIVITY AND SUPPRESS NIGHTTIME FORAGING IN FLYING-FOXES

Melissa J. Walker^{1,2*}, Justin A. Welbergen¹, Jessica Meade¹, Wayne S. J. Boardman³, John M. Martin^{1,4}, and Christopher Turbill^{1,5}

¹Hawkesbury Institute for the Environment, Western Sydney University, Richmond, NSW 2751, Australia

²School of Life and Environmental Sciences, Faculty of Science, Engineering and Built Environment, Deakin University, Burwood, VIC 3125, Australia

³Department of Pathobiology and Population Health, School of Animal and Veterinary Sciences, University of Adelaide, Roseworthy, SA 5371, Australia

⁴Conservation and Ecology Institute, Ecosure, Brisbane, Queensland 4006, Australia

⁵School of Science, Western Sydney University, Richmond, NSW 2751, Australia

Bio: Melissa is a Postdoctoral Research Associate in the Wu Ecological and Evolutionary Physiology Lab at Murdoch University. Her research focuses on the physiological mechanisms that allow animals to respond and adapt to environmental change, and how these responses influence behaviour, ecological function, and survival. Previously, Melissa was an Associate Research Fellow in the Marine Predator Ecology Lab at Deakin University, and she completed her PhD in the BatsLab and the Lab of Animal Ecology at Western Sydney University. Social Media Handles: LinkedIn  ResearchGate 

Extreme heat weather events can lead to energy deficits by increasing thermoregulatory energy costs while reducing energy intake because of limits to dissipating the metabolic heat generated by foraging activity. Understanding the consequences of exposure to extreme heat is increasingly important under ongoing climate warming. We measured acceleration forces using collar-mounted loggers to quantify the extent to which hot summer conditions alter activity levels and energy expenditure in the grey-headed flying-fox (*Pteropus poliocephalus*). Overall dynamic body acceleration (ODBA) is positively correlated with energy expenditure in a wide range of animals. During the daytime rest phase, air temperatures above 30 °C decreased low-level activity indicative of rest, whereas during the nocturnal active phase, temperatures above 21 °C reduced high-level activity indicative of flight. On hot days (maximum T_a : 40.6 ± 3.1 °C), ODBA increased threefold during the daytime and decreased by one-third during the first two hours of the night, compared to milder summer conditions. These patterns indicate that extreme heat simultaneously elevates energy expenditure and constrains foraging activity. Our data support the hypothesis that heat-induced energetic deficits are an important component of the negative effects of extreme heat exposure. Such energy deficits could reduce survival and population growth, especially as heat events become more frequent and severe under climate change.

DEN AND NOW: A BEFORE–AFTER ASSESSMENT OF NEST BOX ADOPTION IN SOUTHERN GREATER GLIDERS

Katherine Best¹, Ana Gracanin¹, Kara Youngengtob¹, John Evans¹, David Lindenmayer¹

¹Australian National University, Canberra, ACT 2601, Australia

Bio: Katherine Best (she/her) is a conservation ecologist interested in the landscape-scale restoration of threatened arboreal mammals. She is currently a PhD candidate in the Longterm Ecology Lab at Australian National University, where her research focuses on restoring habitat for the federally endangered southern greater glider (*Petauroides volans*) in Victoria's Central Highlands. Her work evaluates the effectiveness of artificial hollow supplementation in forests lacking natural hollows due to bushfire and logging and examines whether these interventions facilitate species recolonisation in regenerating landscapes. Email: katherine.best@anu.edu.au Instagram @ecology.kat

The southern greater glider (*Petauroides volans*) is a hollow-dependent marsupial listed as Endangered under Australian federal legislation. With a narrow thermal tolerance, strong site fidelity, and small stable home ranges, greater gliders are highly sensitive to reductions in hollow availability and increasingly vulnerable to thermal stress under climate change. Tree hollows are critical not only as den sites but as thermal refugia, buffering occupants against extreme ambient temperatures.

Artificial dens, including nest boxes and carved hollows, are increasingly deployed to supplement hollow availability in disturbed landscapes, yet little is known about how individual animals respond to their introduction. Key uncertainties include whether animals will incorporate novel structures into established den networks, whether nest boxes placed within existing home ranges will be detected and used, and whether artificial structures can replicate the thermal performance of natural hollows across a range of conditions.

This study investigated the spatial ecology, denning behaviour, and response to nest box installation of a high-density greater glider population at Badger Weir Picnic Area, within the Yarra Ranges National Park in Victoria. Using VHF radio-tracking of 15 individuals over five months, combined with camera trap and microclimate monitoring of nest boxes and natural hollows, we aimed to evaluate whether nest box installation altered space use and denning behaviour, whether resident animals adopted artificial structures over natural hollows, and whether nest boxes provided comparable thermal conditions to natural hollows.

BRIDGING THE GAP: INTEGRATING PHYSIOLOGY, ECOLOGY AND BIOPHYSICS TO INVESTIGATE OVERWINTER ENERGY BUDGETS OF AN AUSTRALIAN BAT

Sanjeev Baniya¹, Zenon Czenze¹

¹Centre for Behavioural and Physiological Ecology, School of Ecological and Rural Science, University of New England, Armidale, NSW 2351, Australia. Email: sbaniya3@myune.edu.au

Understanding species vulnerability to climate change requires a mechanistic approach that links physiological capacity, microclimate exposure, and behavioural decision-making. In mild Australian winters, the large-footed myotis (*Myotis macropus*) hibernates in thermally variable roosts and regularly arouses from torpor to forage on insects, thus providing a tractable system to examine how daily temperature interacts with physiological capacity and behavioral flexibility to shape energy and water balance in warm-temperate hibernators. To quantify the energetics of warm-temperate hibernation, we integrated data from temperature telemetry, laboratory respirometry, and biophysical modelling to link the expression of physiological states in the wild (*i.e.*, behavioral decisions to enter and arouse from torpor and forage) with their energetic and water costs across three known thermal environments (warm temperate, subtropical, and tropical). First, we found strong agreement between respirometry-derived measurements and endotherm model predictions for both metabolic rate and evaporative water loss. Daily energy expenditure (DEE) predicted from respirometry data differed by less than 7% than from estimates generated by the endotherm model. When examining DEE, days with arousals were six-fold more energetically costly than those without, and a ~2 h increase in euthermic duration resulted in 40 – 70% higher energy expenditure in males compared to females. In the warm-temperate site, DEE was positively correlated with warmer temperatures and was 2.6 – 3.6 times lower than tropical climates. Climate warming scenarios of +2 °C and +4 °C shifted mean energy expenditure beyond the 75th and 90th percentiles of the current daily energy expenditure distribution, respectively, highlighting the increasing energetic vulnerability of warm-temperate hibernators under future warming and the importance of reliable foraging opportunities to maintain energy balance.

INVESTIGATING THE MOVEMENT ECOLOGY OF LONG-NOSED POTOROO WITHIN THE CONTEXT OF A FERAL CAT ERADICATION PROGRAM

Meg Farmer¹, Amy Coetsee², Anthony Rendall¹, Desley Whisson¹ and Euan Ritchie¹

¹School of Life and Environmental Sciences, Faculty of Science, Engineering and the Built Environment, Deakin University, Burwood, Victoria, Australia

²Wildlife Conservation and Science, Zoos Victoria, Parkville, Victoria, Australia

Bio: Meg Farmer (she/her) is a PhD candidate at Deakin University. Her research examines changes in long-nosed potoroo ecology as predation pressure by feral cats is reduced on French Island. Specifically, her research aims to quantify potoroo habitat use and elucidate the spatial and temporal impacts of cats on potoroo populations and behaviors, exploring what environmental features may promote co-existence of native prey and feral predators in certain contexts. Her research reflects her interest in native species conservation in the presence of introduced predators, and her firm belief in the role science-informed management can play in facilitating the persistence of our native species. Email: s216121856@deakin.edu.au



Feral cats (*Felis catus*) have been implicated in 26% of animal extinctions worldwide and, in Australia, pose greatest risk to critical weight range (CWR) mammals (35-5500g). Understanding how feral cats impact wildlife, and solutions to promote the persistence of prey in their presence, remains a crucial conservation knowledge gap.

We aimed to investigate the activity range of long-nosed potoroo (*Potorous tridactylus trisulcatus*), a CWR marsupial, on French Island, with respect to habitat selection, corridor use and the effect of vegetation complexity and connectivity, within the context of a feral cat eradication program. We attached GPS devices to 51 potoroos at eight sites across two seasons, with sites representing a gradient of fragmentation and a mosaic of habitat types. Via comparison with pre- cat control data, we illustrate the impact of feral cat predation pressure and a 'landscape of fear' on movement behaviour of potoroos.

Our study identifies habitat features important for prey survival in the presence of feral cats, and the substantial conservation benefits that can be achieved along the path to feral cat eradication.

FROM ZOO TO ROO: DEVELOPING AN ACCELEROMETER-BASED BEHAVIOURAL CLASSIFIER FOR RED KANGAROOS

Kathryn Bugler¹, Patrick Taggart²⁻⁵, Stephan T. Leu³ and Thomas Prowse¹

¹School of Biological Sciences, Adelaide University, Adelaide, SA, 5005, Australia

²Bush Heritage Australia, Melbourne, Victoria, Australia

³School of Animal and Veterinary Sciences, Adelaide University, Roseworthy, SA, 5371, Australia.

⁴Vertebrate Pest Research Unit, Department of Primary Industries NSW, Queanbeyan, NSW, Australia

⁵School of Biological, Earth and Environmental Sciences, University of New South Wales, Sydney, NSW, Australia

The use of tri-axial accelerometers allows an understanding of what individual animals are doing, at any given point in time, without any direct observation or constant video surveillance. Many recent studies have used captive surrogates or closely related species to train behavioural classifiers for use on free-ranging individuals; however, validation in wild systems remains uncommon, and no accelerometer-based behavioural classifications have yet been published for macropods. We attached GPS collars with tri-axial accelerometers to five captive red kangaroos at Cleland Wildlife Park. We generated over 15 hours of video footage, creating 12 behavioural categories, which were matched to raw accelerometer outputs. Through random forest modelling and a leave one individual out (LOIO) approach, we created a behavioural classifier that will be further validated on data from wild free-ranging red kangaroos in the arid rangelands of South Australia, where direct behavioural observation is logistically impractical.

LINKING BIOMECHANICS AND ECOLOGY: RESONANCE AS ONE OF THE DRIVERS OF MOVEMENT EFFICIENCY IN LARGE KANGAROOS

Jasmin Annett¹ (She/Her), Christofer Clemente¹, Lauren Thornton, Joshua Gaschk

¹School of Science Technology and Engineering, University of the Sunshine Coast, Sippy Downs, Queensland, 4556, Australia.

Bio: Jasmin Annett (She/Her). I am a PhD student at the University of the Sunshine Coast (UniSC). My research applies a multidisciplinary approach to understanding fine-scale movement and behaviour in free-roaming kangaroos. I am particularly interested in evolutionary ecology, exploring how animals have adapted to their environments, as well as how modern anthropogenic structures influence movement, behaviour, and ecological function. My goal is to build a career focused on refining wildlife management strategies that better account for how animals respond to rapid urban expansion, with a goal of identifying ways to reduce human impacts on wildlife and improve coexistence in increasingly modified landscapes. Instagram: jasmin_rayne. Email: jasmin.annett@research.usc.edu.au

Locomotion underpins key aspects of an animal's fitness, yet it is constrained by trade-offs among speed, stability, endurance and energetic economy. Despite this, movement is often treated as a flexible behavioural outcome, with less emphasis on the biomechanical constraints that shape how animals can move. Large kangaroos are an unusual case, as their unique hopping locomotion confers substantial energetic advantages, effectively decoupling the linear relationship between speed and metabolic cost observed in most other vertebrates. While these benefits have largely been attributed to their musculoskeletal system, they are also embedded in the mechanics of their gait. Here we show that large kangaroos hop at frequencies closely aligned with their bodies natural resonant frequency, effectively behaving as a spring-mass system. This alignment suggests that energetic efficiency is restricted to a narrow range of speeds, rather than being freely selected across a broad continuum. As a result, movement behaviour in large kangaroos may be strongly constrained by biomechanical limits, with body form playing a central role in shaping locomotor decisions. More broadly, these findings highlight the value of incorporating biomechanics into ecological frameworks. Understanding the limits imposed by body design may improve our ability to predict movement patterns and inform management strategies for free-ranging animals.

BORING AS BAT ... POO: STABLE ISOTOPES OF BAT GUANO AND POTENTIAL APPLICATIONS FOR CONSERVATION BIOLOGY

Tiah L. Bampton¹, Amy Coetsee², Nicola Bail^{1,2}, Robert Kläbe³, Tony Hall³ & Elizabeth H. Reed¹

¹ School of Biological Sciences, College of Sciences, Adelaide University, SA 5005, Australia;

² Wildlife Conservation & Science, Zoos Victoria, Elliott Avenue, Parkville, VIC 3052, Australia;

³ M.A.S.S. (Mawson Analytical Spectrometry Services), College of Science, Adelaide University, SA 5005, Australia

Understanding diet and habitat preferences of threatened species can help elucidate extinction drivers and guide restoration and conservation management. Stable isotopic analysis of carbon, nitrogen, oxygen and hydrogen obtained from insectivorous bat guano is a useful tool for investigating diet and habitat preferences in a relatively non-invasive but informative way. Here we report on stable isotopic analysis of modern Southern Bent-wing Bat (*Miniopterus orianae bassanii*) guano from a cave in the lower southeast of South Australia. Our aim was to determine diet and foraging habitat preference for this critically endangered species using stable isotope mass spectrometry. The isotopic values were compared to published dietary studies and similar global insectivorous bat stable isotope studies. The results of this study indicate a dominance of woody plants surrounding the sample cave, which supports the herbivorous insects which are the main prey consumed by the bats. Preliminary oxygen and hydrogen isotope values indicate broader hydrological signals in the region, including rainfall events, derived from the isotopic composition of the prey species. Our results correlate with similar studies worldwide and previous dietary studies. The first isotopic guano studies of the Southern Bent-wing Bat highlights the potential for applying this approach further to inform rehabilitation of roost sites and the surrounding environment to conserve future communities of this critically endangered species.

THE FAUNAHEALTH INDEX: A HOLISTIC APPROACH TO MAMMAL COMMUNITY HEALTH

Matthew Houston-Francis¹, Dr. April Reside¹ and Professor Martine Maron¹

¹ School of the Environment, The University of Queensland, Queensland, 4072, Australia

Bio: **Matt** is a PhD student at UQ researching how species co-occur within Australia's landscape and the condition of these assemblages. Matt focusses on Australia's terrestrial mammals.

Australia's mammal fauna has undergone significant decline, yet conservation frameworks remain largely species-focused. This overlooks the importance of ecological communities, where interactions and processes drive biodiversity outcomes. While vegetation communities are well-defined and embedded in policy, comparable frameworks for mammal communities are lacking.

This project develops the *FaunaHealth Index*, a data-driven framework to define and assess the health of terrestrial mammal communities across Australia. It aims to (1) establish a typology of mammal communities analogous to vegetation classifications, and (2) generate scalable, quantitative health metrics for each community.

We integrate literature review, expert input, and species occurrence data to delineate community groupings. These are used to derive community-specific health equations capturing composition, function, and condition. Spatial analyses are then applied to assess community health from site to national scales and evaluate alignment with existing ecological community frameworks.

The FaunaHealth Index provides a practical tool to quantify biodiversity condition, detect change, and guide restoration. By shifting focus from species to communities, it enables more holistic conservation planning and supports integration of fauna into policy, monitoring, and biodiversity markets.

INVESTIGATING HUMAN IMPACTS ON FRUIT BAT POPULATIONS IN THE PAST BY APPLYING MORPHOMETRIC, MULTIVARIATE, AND PALAEOPROTEOMIC TECHNIQUES TO LAPITA MIDDEN ASSEMBLAGES FROM VANUATU

Loren Howell

College of Arts and Social Sciences, Australian National University, Canberra ACT 2601, Australia

Bio: **Loren Howell** (She/Her) Loren is currently a master's research student in archaeology at the Australian National University. Formerly working in conservation, she is now combining her passion of zoology and archaeology to investigate human-animal interactions in prehistory, palaeodiets, and palaeoenvironmental reconstructions. Over the past few years, she has been investigating early subsistence strategies of the Lapita Cultural Complex in Vanuatu, using a range of zooarchaeological techniques. Her work includes the first attempt to use palaeoproteomics for taxonomic identification of fruit bats in Lapita midden assemblages in Remote Oceania, which also involves developing a publicly available reference database for future proteomic research into bats in the Pacific.



Despite bat bones dominating Lapita midden assemblages, bat populations appear to have survived the intense predation responsible for the extinction of several other taxa when people arrived in Vanuatu around 3000 BP. Of the 4 extant pteropodid species in Vanuatu, 2 are commonly hunted due to their larger body size, however previous zooarchaeological analyses suggest Lapita People were consuming somewhere between 3 and 12 species. The aim of this ongoing research is to estimate species diversity and attempt taxonomic identification through the development protein biomarkers to better understand how people interacted with local ecosystems and the impact Lapita hunting practices on bat populations in the past. This is being achieved by comparing modern samples to archaeological samples using morphometric and multivariate analysis (MVA), as well as shotgun palaeoproteomic analysis via Liquid Chromatography Tandem-Mass Spectrometry (LC MS/MS). Morphometrics and MVA determined that there were three quantifiably distinct mandible morphologies present in archaeological assemblages across different sites, inferring at least 3 large pteropodid species were present. One morphological type was confidently attributed to the *samoensis* subclade, based on tooth morphology, and most likely represented *Pteropus anetianus*. The remaining two types were morphologically similar, sharing characteristics of the *griseus*

subclade and most likely representing subspecies of the Insular flying fox, *P. tonganus*. Further confirmation through palaeoproteomic analysis is ongoing, with protein sequences for a range of species currently being developed from museum samples for taxonomic identification within this study, and to serve as a reference database for future proteomic studies on bats.

HOW CRITICAL WEIGHT RANGE MAMMALS PERSIST IN FRAGMENTED LANDSCAPES

Nicholas Handros, Aviya Naccarella, Anthony R Rendall

School of Life and Environmental Sciences, Deakin University, Victoria, 3125

Bio: **Nicholas Handros** (He/Him) is an Honours student at Deakin University studying Wildlife and Conservation Biology. His research focuses on southern brown bandicoots and other critical weight range mammals in fragmented landscapes. Email: s221485682@deakin.edu.au

Habitat loss, degradation, and fragmentation have had a significant impact on the persistence of Australia's fauna, particularly critical weight range mammals. These processes reduce habitat extent and quality while simultaneously amplifying other threats. In fragmented landscapes invasive predators such as foxes and cats can more easily access and move through habitats, increasing predation pressure on native species. Despite these pressures, population persistence can vary across fragmented patches, even among nearby and seemingly similar habitats. The factors driving this variation remain unclear. This study aims to examine how landscape context, vegetation structure, and predator activity influence the occurrence and activity of southern brown bandicoot (*Isoodon obesulus obesulus*) across three sites in the Westernport Woodlands in south-eastern Victoria. Using downward and outward remote sensing cameras to detect predators and small mammals. This approach improves detection across species with differing body sizes. Vegetation surveys will be conducted at each site to assess habitat characteristics including structural complexity, ground cover, and shrub density. Our findings seek to understand where bandicoots are persisting, and how site characteristics and predator pressure differ across locations to explain differential occupancy across similarly fragmented reserves. The findings will inform predator management and habitat restoration supporting more targeted and active conservation actions. This work contributes to understanding how threatened species persist across fragmented landscapes and how local or landscape features might be influencing persistence.

THE ORIGINAL MAMMAL FAUNA OF THE NULLARBOR

Lorien Watts^{1,2}, Kenny J. Travouillon², and Alison J. Blyth¹

¹School of Molecular and Life Sciences, Curtin University, Bentley, 6102, Australia

²Collections and Research Centre, Western Australian Museum, Welshpool, 6106, Australia

Email: lorien.watts@student.curtin.edu.au

The caves across the Nullarbor Plain contain an extensive amount of fossil and subfossil material, which provides insight into the original (pre-European) community composition. Applying advances in taxonomy, we aim to create an up-to-date list of the original Nullarbor mammalian fauna and identify any patterns in geographic variation. Species lists were compiled using specimens in the WA Museum collected from the surface of Nullarbor caves according to presence/absence. Communities were characterised according to geographic variation, habitat preferences, and body size. Fauna was richer on the Hampton scarp than the Nullarbor Plain due to the presence of more woodland-adapted species. A high proportion of the original non-volant fauna no longer occurs on the Nullarbor Plain, including some species that were not previously known to occur on the Nullarbor. These insights into the Nullarbor mammal community and their ecology will inform future research and conservation actions to improve outcomes for Australian mammals.

PERFORMANCE AND TRADE-OFFS IN ARTIFICIAL HOLLOW DESIGNS ACROSS THREE INSTALLATION COHORTS

William Terry and Ross Goldingay

Faculty of Science and Engineering, Southern Cross University, Military Road, Lismore, NSW.

In lieu of natural hollow formation, artificial hollows provide important refuges for hollow-dependent fauna. Recently, chainsaw-carved hollows and drilled cavities (e.g. Hollow Hog) have been widely adopted. This study summarises outcomes from three artificial hollow programs installed in 2018, 2020 and 2023. A field survey in April 2026 evaluated the condition of these hollows and enabled comparison of hollow designs. After eight years, chainsaw carved hollows showed a 50% failure rate, while 100% of nest boxes still functioned and were frequently occupied by arboreal mammals. Chainsaw-carved hollows allowed precise tailoring of entrance and internal dimensions, whereas drilled hollows provided less control over fine-scale sizing. Callous regrowth over the entrance was common in earlier installations, though entrance modifiers may reduce this in drilled hollows. Sugar gliders were observed maintaining entrances by chewing callous tissue ensuring at some sites that chainsaw carved hollows remained open. Moisture accumulation was also noted as a major problem in drilled hollows but not so in chainsaw carved. Brush-tailed phascogales showed a preference for carved hollows but shifted to the nest box as the chainsaw carved hollows were closed. The selection of cavities by inland sugar gliders showed that use of hollows was likely not influenced by temperature suggesting that nest boxes are still a relevant tool for land managers. Artificial hollows involve trade-offs in durability and function, and no single design was universally optimal. Conservation of natural hollows remains the highest priority.

Session 3: 13:40 – 15:30

THE IMPACT OF NUTRITION ON KOALA TREE REVISITATION

Ava Thomas¹, Madison Fink¹, Mark Le Pla², Robert Clark³, Kara Youngentob⁴, Karen Marsh¹

¹ Research School of Biology, Australian National University, Canberra, 2601

² Conservation and Restoration Science, NSW Department of Climate Change, Energy, the Environment and Water

³ Research School of Finance, Actuarial Studies & Statistics, Australian National University, Canberra, 2601

⁴ Fenner School of Environment & Society, Australian National University, Canberra, 2601

Koalas (*Phascolarctos cinereus*) generally have well defined home ranges. Analysis of koala movement patterns has shown that within their home ranges they frequently return to particular tree patches. Understanding why koalas revisit these patches allows us to determine what resources koalas value and how these are distributed across landscapes.

Koalas eat almost exclusively *Eucalyptus* foliage and spend nearly all of their time in these trees. Although they are capable of eating from many species of eucalypts, observations of wild and captive koalas have shown that certain species are strongly preferred. In captive studies, foliar nutritional quality (including protein and toxin content) has been shown to impact koala tree choice, including within species preferences. Less is known about whether these factors drive reuse of trees in wild populations.

In this project we aimed to determine why koalas in Narrandera and the Southern Tablelands frequently revisit certain areas within their home range, with a focus on species composition and foliar nutritional quality. To test this, highly revisited and random points for each koala were surveyed and leaf samples were taken from each point for nutritional analysis. Results suggest higher proportions of browse species in highly revisited points, and higher foliar nitrogen concentrations. This effect was stronger in the Southern Tablelands than in Narrandera, suggesting that nutrition has a greater impact on movement decisions in some populations.

SOCIAL DIMENSIONS OF INVASIVE SPECIES MANAGEMENT: A GLOBAL SYSTEMATIC REVIEW

Emmet Mulcahy, Anthony Rendall, Lily van Eeden and Euan Ritchie

School of Life and Environmental Sciences, Deakin University, Victoria 3125, Australia.

Bio: Emmet Mulcahy (He/him) My PhD combines invasive species ecology with social science to investigate public perceptions of invasive species and their management. I'll be examining different values, opinions, and beliefs through interviews with practitioners, special interest groups, and First Nations land managers. I'll also conduct a wide-ranging survey of the Australian public to better understand how perceptions vary depending on the target species and control method used. My findings could help decision-makers in government and conservation develop management plans with greater social license to improve outcomes for biodiversity.



In recent decades, public opinion has become increasingly important in determining how invasive species are managed. While this shift could yield positive outcomes for biodiversity, it has also introduced new challenges to invasive species management. Decision-makers often must balance the conflicting preferences of various social groups, and failing to do this can lead to divided communities, delayed or ineffective management efforts, and negative outcomes for native species and ecosystems.

To better understand and overcome such problems, research on the social dimensions of invasive species management is essential. While the field has grown considerably in recent years, there has been no comprehensive effort to systematically summarise and synthesise the past decade of research. We conducted a systematic literature review assessing the existing research on perceptions of invasive species and their management. We aimed to determine which social groups and target invasive species are represented in the research, and which might be underrepresented. We also identified current knowledge gaps in the research, and several areas where further research could be beneficial. Our overall goal for this project is to help decision-makers develop management plans that have increased social license and enable more positive outcomes for wildlife and ecosystem conservation.

LONG-TERM MONITORING TO DETERMINE THE SUITABILITY OF ARTIFICIAL HABITAT FOR INSECTIVOROUS BATS

Selina Kosak¹; Leroy Gonsalves²; Aaron Greenville³; Dieter Hochuli³; Brad Law²; Narawan Williams⁴; Meiting Kao³; Caragh G. Threlfall¹

1 School of Natural Sciences, Macquarie University, Australia;

2 Fisheries and Forestry, Department of Primary Industries and Regional Development, Australia;

3 School of Life and Environmental Sciences, The University of Sydney, Australia;

4 Fauna Field Ecology Pty Ltd, Australia

Bio: Selina Kosak (she/her) @countinghollows @selinakosak.bsky.social

Many of Australia's hollow-dependent, insectivorous bats are threatened by the continued decline of hollow-bearing trees. As a conservation strategy, tree hollows are often supplemented with generic artificial habitat despite poor species-specific outcomes. This project evaluated the efficacy of four treatments of artificial roosts targeting species-specific design preferences. Artificial roosts (n=120) were installed across semi-urban locations in greater Sydney, Australia. The study used a before-after-control-impact experimental design to assess species-specific activity and roost occupancy. Following roost installation, acoustic activity for common species (*Chalinolobus gouldii*) increased significantly, while threatened species (*Scoteanax rueppellii*, *Micronomus norfolkensis*) activity declined. Detection at roosts varied seasonally and peaked during the mating season. Roost occupancy was highest at the 'cube' box (enclosed base, narrow, front entrance), while predator visits were highest at the 'generic' box (large, open base). The internal temperature of the Hollow Hog was significantly less variable compared to the three box treatments. Following installation, the Hollow Hog humidity was significantly higher and then declined over time. Occupancy of this design commenced once humidity dropped. This research highlights the

shortcomings underpinning current bat box applications in Australia and reinforces the urgent need for design protocols that facilitate uptake by a diversity of bat species.

THE ROLE OF NUTRITION IN SHAPING KOALA ABUNDANCE

Jack Le Fevre¹, Kara Youngentob², Tim Jessop³, Robert Clark⁴, Karen Marsh¹

¹Research School of Biology, Australian National University, Canberra, ACT, 2601, Australia

²Fenner School of Environment and Society, Australian National University, Canberra, ACT, 2601, Australia

³Science and Insights Division, Department of Climate Change, Energy, the Environment and Water, Parramatta, NSW, 2124, Australia

⁴Research School of Finance, Actuarial Studies & Statistics, Australian National University, Canberra, ACT, 2601, Australia

Bio: Jack Le Fevre (he/him) Email: u6951091@anu.edu.au

Across landscapes herbivores can be found in uneven patchy distributions. Understanding the mechanisms driving this variation is important for managing wildlife populations, particularly for threatened species. One aspect that can influence herbivore distribution and abundance is variation in forage quality between and within plant species. The suitability of forage for herbivores is largely determined by the concentrations of nutrients and plant secondary metabolites (PSMs). However, there is a relatively poor understanding of which nutritional variables are meaningful for most herbivores, so studies on how nutritional variation influences herbivore distributions are lacking or one dimensional. The koala (*Phascolarctos cinereus*) provides an ideal opportunity to address this question because factors influencing their foraging decisions are well understood. My project therefore aimed to investigate how nutrition shapes koala abundance by analysing the nutritional composition of tree leaf samples from six sites across NSW with known between- and within-site variation in koala densities. At each site, six plots spanning the koala density gradient were surveyed, with one transect conducted per plot (n = 36). The surveys conducted indicated strong relationships between nutritional constituents and koala abundance. This work highlights the significance of nutritional ecology for the future of koala population management as it may allow for better identification and conservation of high-quality habitat.

EVALUATING THE EFFECTS OF STORAGE, PRESERVATION AND FILTERING THRESHOLDS ON REPEATABILITY IN FAECAL METABARCODING STUDIES OF FLYING FOX (*PTEROPUS*) DIETS.

Cinthia Pietromonaco^{1,2}, Rachele S Wilson², Peggy Eby³, Devin N Jones-Slobodian⁴, Adrienne S Dale⁵, Raina K Plowright⁶, Helen M Wallace⁷, Ido Bar², BatOneHealth Team, and Alison J Peel¹

¹ School of Veterinary Science, University of Sydney, Camperdown 2050, Australia. (she/her) cinthia.pietromonaco@sydney.edu.au

² School of Environment and Science, Griffith University, Nathan 4111, Australia

³ School of Biological, Earth, and Environmental Sciences, University of New South Wales, Sydney 2033, Australia

⁴ Department of Microbiology and Cell Biology, Montana State University, Bozeman 59717, USA

⁵ Department of Biological Sciences, Texas Tech University, Lubbock 79409, USA

⁶ College of Veterinary Medicine, Cornell University, Ithaca 14853, USA

⁷ School of Biology and Environmental Science, Queensland University of Technology, Brisbane 4001, Australia

Metabarcoding has emerged as a powerful tool for characterising flying fox (*Pteropus* spp.) diets, capable of detecting a broad range of dietary plants at fine taxonomic detail. However, the extent to which methodological choices affect results in flying foxes, with their distinct gut physiology, rapid transit times, and diverse frugivorous diets, remains largely untested.

To address this, we collected faecal samples from individual flying foxes across five roosts in southern Queensland (July 2018 - July 2020) and used DNA metabarcoding to identify consumed plant species. We evaluated how methodological choices, including DNA preservatives, storage conditions, selection of replicates and bioinformatic filters, affected sample throughput and ecological metrics within alpha and beta diversity.

Bioinformatic filtering thresholds had strong effects on diversity patterns across all metrics. When filtering out species contributing <14% of a sample, archived DNA and aliquots demonstrated a small but detectable effect on species composition (<2% of variation), likely reflecting threshold-specific sensitivity where moderately abundant species are most susceptible to technical variation. Using archived (frozen/thawed) DNA significantly reduced species richness and Shannon's diversity, particularly at lower filtering thresholds (0% and 1%). This was likely influenced by the significant decrease in sample throughput in archived samples. Diversity metrics were generally resistant to subsampling variation and repeated sampling within individuals, as well as preservation treatments, across filtering thresholds. These findings can support establishing standardised protocols for the robust and reproducible use of DNA metabarcoding in bat diet and ecological studies with implications for improved species management, conservation and one health efforts.

CLIMATE-INFORMED SPECIES DISTRIBUTION MODELS AS A FRAMEWORK FOR TARGETED DISCOVERY OF PLEISTOCENE STICK-NEST RAT MIDDENS IN ARID AUSTRALIA

Annie Kraehe (she/her)^{1, 2}, Janelle Stevenson (she/her)², July Pilowsky (they/them)³, Alexander Baynes (he/him)⁴, Frédéric Saltré (he/him)⁵, Vera Weisbecker (she/her)¹

¹College of Science and Engineering, Flinders University, South Australia 5042, Australia. krae0008@flinders.edu.au

²School of Culture, History & Language, Australian National University, Australian Capital Territory 2601, Australia.

³Cary Institute of Ecosystem Studies, Millbrook, New York 12545, USA

⁴Collections and Research Centre, Western Australian Museum, 49 Kew Street, Welshpool, Western Australia 6106, Australia

⁵School of Life Sciences, University of Technology Sydney, New South Wales 2007, Australia

Bio: **Annie Kraehe** (she/her) is a PhD candidate at the Australian National University and Flinders University. Her research focuses on the late Quaternary fossil record of arid Australia, with an emphasis on how meaningful ecological inference can be drawn from records that are inherently sparse and unevenly distributed. Much of her work centres on stick-nest rat (*Leporillus*) middens, which preserve plant macrofossils in arid environments where other palaeoecological archives are rare. She is particularly interested in how quantitative, model-based approaches can be used to interpret existing records and identify where additional ones are most likely to be found.



Stick-nest rat (*Leporillus*) middens are a source of rare Quaternary palaeoenvironmental data in arid Australia, but most known examples are Holocene-aged, limiting their relevance for understanding Pleistocene ecosystems. We evaluated whether climate-informed species distribution models (SDMs) could identify regions likely to yield older middens by reconstructing late Quaternary habitat suitability for the greater (*L. conditor*) and lesser (*L. apicalis*) stick-nest rats. Ensemble SDMs were trained on historical and subfossil occurrence records and hindcasted from 40,000 years ago to the present at 1,000-year intervals. Model performance was evaluated against 75 dated midden sites independent of model training. Both species showed southward range shifts following the Last Glacial Maximum, differing in extent and climatic responses: *L. apicalis* exhibited broader thermal tolerance and a more continuous east–west distribution, while *L. conditor* remained more restricted but persisted under lower rainfall. For *L. apicalis*, the timing of midden appearance in each region closely matched the onset of predicted suitability. The Pilbara showed uniquely persistent habitat suitability throughout the Last Glacial Maximum for both species, consistent with its role as a glacial refugium and explaining the discovery of Pleistocene-aged middens on Puutu Kunti Kurrama and Pinikura and Banjima Country. These results demonstrate how palaeo-informed SDMs can guide targeted survey efforts for middens in arid regions and provide a framework for identifying climatically suitable regions for *L. conditor* conservation translocations under current and projected climates.

WHAT DRIVES FEMALE DOMINANCE IN A SOCIAL RODENT: THE SPINIFEX HOPPING MOUSE (*NOTOMYS ALEXIS*)

Kushini Kularatne, Kylie Robert

School of Agriculture, Biomedicine and Environment, La Trobe University, Bundoora, Victoria 3086, Australia

Bio: **Kushini Kularatne** is a current PhD student at La Trobe University working alongside Dr Kylie Robert in the Robert lab. Her field of research is in Animal behaviour and reproduction, with a particular interest in sexual behaviour. This current research is part of her larger PhD project exploring female dominance in three Australian species, with her work on the Spinifex Hopping mouse being her first study species. Email: k.kularatne@latrobe.edu.au

Aggressive interactions between members of the same species often produce dominance hierarchies, with individuals who win these encounters becoming dominant, gaining better access to resources/mates, while losers become subordinate. Current research on dominance has predominately centred on males, while female dominance has received little attention. Thus, we investigated female dominance in the Spinifex Hopping mouse (*Notomys alexis*), a highly social Australian rodent, where females are described to be larger and more aggressive than males. Dominance-related behaviours in adult female *Notomys alexis* were examined using five behavioural assays: Open field, Mirror-image-stimulation, Resident-intruder, Tube and Palatable-food tests. We also measured body composition and circulating testosterone and assessed their independent and interactive effects on behaviour in the assays. Larger body size was associated with reduced movement and altered behaviour in the resident-intruder test. Body composition emerged as a significant negative predictor of social engagement, with heavier females spending less time interacting with intruders and displaying reduced aggressive and submissive behaviours. Testosterone and body composition each independently predicted increased locomotor activity and boldness within the Open Field and Mirror-image-stimulation tests, consistent with their predicted roles in dominance-related behaviour. However, a significant negative interaction between body composition and testosterone was observed when both traits were elevated, suggesting that the behavioural benefits associated with each trait may be attenuated when both are elevated simultaneously. Overall, these findings highlight a complex relationship between morphology, endocrinology, and behaviour in female Spinifex Hopping mice, and indicate the potential to analyse alternative physiological drivers, such as estrogen, for future research.

BOOM AND BUST IN A TEMPERATE FOREST ECOSYSTEM: LONG-TERM CHANGES IN TERRESTRIAL MAMMAL OCCURRENCE IN RESPONSE TO CLIMATIC VARIABILITY AND WILDFIRE IN EDEN, NSW

Rohan Bilney¹, Meg Clery¹, Peter Kambouris^{1,2}, Brad Law³ and Leroy Gonsalves³

¹Forestry Corporation of NSW, Eden, NSW, 2551.

²Department of Energy, Environment and Climate Action, Ballarat, Vic, 3350.

³Department of Primary Industries and Regional Development, Parramatta, NSW, 2150.

Bio: **Rohan Bilney** (he/him) is a Senior Field Ecologist with Forestry Corporation of NSW, working on monitoring and surveying a broad range of threatened species on State Forest. He is particularly interested in the conservation and management of forest fauna. Email: Rohan.Bilney@fcnsw.com.au



Understanding species responses to climatic variability and wildfire are critical for their conservation and management. Here we present data on changes in occurrence of terrestrial mammal species over 17-years within a forested ecosystem south of Eden, NSW. This forest supports a diverse mammal community including several threatened species, providing a unique opportunity to study a broad range of responses. The study comprises 40 sites within Yambulla, Nadgee and East Boyd State Forests, covering an area approximately 100,000ha, with a history of timber harvesting and predator control. In every autumn and spring, two remote cameras, spaced approximately 100m apart, are deployed at each site. The program commenced in 2009 at the end of the Millennium Drought, followed by high to average rainfall 2010-2016, the Tinderbox Drought of 2017-2019, the Black Summer wildfire in 2020, 3-years of high rainfall 2020-2023 and 3-years of oscillating dry-wet periods 2024-2026. While formal analysis has been undertaken for only a subset of species, some trends are apparent. For most small mammals (<1.5kg), naïve occupancy was influenced by rainfall, while species with high fecundity responded rapidly to favourable

post-fire conditions (e.g. Southern Brown Bandicoot *Isodon obesulus*). Most medium-large sized mammals showed relatively stable occurrence, irrespective of rainfall patterns and wildfire. The rapid recovery of most small mammals peaked 2-4 years post-fire, followed by a severe crash, likely related to a combination of carrying capacity being exceeded, competition, declining and variable rainfall patterns and a similar but delayed boom in exotic predators, particularly cats (*Felis catus*).

PREDATORS REMOVED, BEHAVIOURS RETAINED? A TRANS-TASMAN TEST IN COMMON BRUSHTAIL POSSUMS

Emma J. Godfrey¹, Elissa Z. Cameron¹, Graham J. Hickling² and Stevie N. Florent¹

¹School of Biological Sciences, University of Canterbury, Private Bag 4800, Christchurch 8041, New Zealand

²Wildlife Ecology and Management, Manaaki Whenua Landcare Research, PO Box 69040, Lincoln 7640, New Zealand

Emma J. Godfrey (she/her), email: emma.godfrey@pg.canterbury.ac.nz

Elissa Z. Cameron (she/her), Graham J. Hickling (he/him), Stevie N. Florent (she/her)

Bio: Emma Godfrey (she/her): I am a doctoral candidate at the University of Canterbury's School of Biological Sciences in Ōtautahi Christchurch, Aotearoa New Zealand. My current research investigates individual behavioural variation, focusing on how risk-sensitive behaviours, learning and infection may contribute to conservation and control contexts. Common brushtail possums (*Trichosurus vulpecula*) are my focal study species, and I am particularly interested in underexplored areas of their behaviour and the implications further understanding can hold across geographic regions. Previously, during my Master's research, I provided the first documented evidence of social learning in this species.



Understanding how animals perceive and respond to environmental risk is central to behavioural ecology, with these insights most effective when communicated across contexts. A key environmental risk is predation, which can vary for individual species across geographic locations. Australian common brushtail possums have co-existed with snakes (predators) throughout their evolutionary history, yet New Zealand populations have been free from this risk since their introduction almost 200 years ago. However, they are exposed to an artificial predation pressure with control methods, such as trapping and baiting. This situational context thus provides a natural experiment to examine the persistence or loss of anti-predator behaviour.

This research investigates risk-sensitive behaviours in possums by comparing responses to a model snake between Tasmanian and New Zealand populations. On an evolutionary timescale, the introduction of possums to New Zealand is relatively recent, so any behavioural differences between populations are likely driven by learning and experience rather than genetic change. Australian possums are expected to show an aversion to the snake model, while New Zealand possums, having experienced no predation pressure from snakes, may show reduced or absent avoidance behaviours, indicating behavioural loss without reinforcement.

This trans-Tasman comparison will advance understanding of how quickly behavioural adaptations can shift, providing a unique opportunity for insights to be applied towards both conservation and control contexts for this dichotomous species. This highlights the importance of clearly communicating ecological insights across regions, and in doing so, aligns with the principle that science is not complete until its implications have been shared.

FROM QUOLLS TO `COOTS: CAMERA-BASED DENSITY ESTIMATION IN A MULTI-SPECIES REINTRODUCTION PROGRAM

Charlie Dobe, Emily Hoffmann, Amanda Bourne, Aliesha Dodson, Louis O'Neill and Nicki Mitchell

School of Biological Sciences, The University of Western Australia (M470), 35 Stirling Highway, Perth 6009 Australia
Australian Wildlife Conservancy, 322 Hay Street Subiaco 6008

The Australian Wildlife Conservancy's Mt Gibson Wildlife Sanctuary supports the ambitious decade-long "Mammal Restoration Project", involving the re-introduction of ten locally extinct threatened mammals. Most species have been reintroduced inside a fenced area where feral predators have been removed, with additional species reintroduced into the adjacent landscape where feral predators are controlled. Establishing an efficient method to monitor both reintroduced species and extant invasive species is essential to track population trends and understand threatening processes. Camera trapping provides a non-invasive approach to fauna monitoring, and is particularly suited to species that are elusive, occur at low densities, and that possess individual markings. Here we deployed 150 camera traps across two arrays at Mt Gibson Wildlife Sanctuary with the aim of estimating densities of multiple species simultaneously. Specifically, we 1) tested Camera Trap Distance Sampling (CTDS) as a method to compare species density inside and outside the fenced area; and 2) investigated the use of Spatially Explicit Capture Recapture (SECR) methods to estimate density of individually identifiable species. Here, we will compare density estimates generated across methodologies and suggest how camera trapping could be optimised to determine population trends in large-scale multi-species restoration programs.

ASSESSING SMALL MAMMAL DIVERSITY AND RELATIVE ABUNDANCE SIX-YEARS AFTER THE 'BLACK SUMMER' DROUGHT: HAVE SMALL MAMMALS AT SPRINGBROOK NATIONAL PARK IN SOUTH-EAST QUEENSLAND RECOVERED?

Isabella A. Picone¹, Emma L. Gray¹ & Andrew M. Baker^{1,2}

¹School of Biology and Environmental Science, Queensland University of Technology, Brisbane, Queensland, 4000

²Biodiversity and Geosciences Program, Queensland Museum, South Brisbane, Queensland, Australia

Bio: Isabella Picone (she/her) is completing her Bachelor of Science (Honours) in Ecology at the Queensland University of Technology and is passionate about small mammal conservation across Australia. Email: bellapicone02@gmail.com | LinkedIn: <https://www.linkedin.com/in/isabella-picone-099560223>

Small mammals play a critical role in ecosystem function, yet their populations are increasingly threatened by climate-driven disturbances such as bushfire and drought. The 2019–2020 'Black Summer' drought/fires had a major impact on forested ecosystems in south-eastern Australia. At Best of All Lookout in Springbrook National Park, which straddles the coastal border of Queensland and New South Wales, the small mammal population crashed during and just after the drought. This long-term monitoring site is important because it contains relict Gondwanan Rainforest and is the paratype location for the Endangered black-tailed dusky antechinus (*Antechinus arktos*). The present study will use a combination of mark-recapture live trapping and camera trapping during three consecutive trapping events (May–August 2026), allowing us to estimate diversity and relative abundance of small mammals at the site. These data will be compared with a historical dataset collected before, during and immediately after the drought period, to evaluate recovery after several years of above average rainfall. Preliminary observations from camera surveys deployed during March–April 2026 indicate the presence of bush rats (*Rattus fuscipes*), fawn-footed melomys (*Melomys cervinipes*) and brown antechinus (*Antechinus stuartii*), in relatively low densities. *Antechinus arktos* was not detected, but several juveniles were caught in pit traps deployed in the neighbouring Border Ranges during January of 2026, giving hope of the species' continued presence at Springbrook. This research represents one of the few longer-term assessments of small mammal recovery following a major drought/fire event in southeast Queensland.

IN THE SHADOW OF LIGHT AND MUSIC: THE RESPONSE OF INSECTIVOROUS BATS TO NIGHTTIME RECREATIONAL EVENTS

Lauren Sandy¹, Kaori Yokochi¹, Desley Whisson¹, Amanda Lo Cascio¹, Stephen Griffiths²

¹School of Life and Environmental Science, Deakin University, Burwood, Victoria, Australia.

²Department of Energy, Environment and Climate Action, Arthur Rylah Institute for Environmental Research, Heidelberg, Victoria, Australia.

Bio: Lauren Sandy (she/her) is a PhD candidate at Deakin University researching the response of insectivorous bats to anthropogenic disturbances in urban green spaces. She completed her Honours in 2021 at La Trobe University which explored the impact of artificial light at night on the physiology of urban Gould's wattled bats, during which she established a non-invasive method to monitor stress in Australian insectivorous bats. Lauren is also a demonstrator at Deakin University and has worked in ecological consulting for nearly four years. Email: l.sandy@deakin.edu.au

Chronic light and noise pollution (e.g. traffic noise, street lighting) are well-documented to negatively affect nocturnal wildlife. Despite posing a significant threat to Australia's predominantly nocturnal mammals, acute light and noise pollution (e.g. loud music, stadium lighting, fireworks) from nighttime recreational events has received comparatively little research attention. Insectivorous bats are a critical, diverse and particularly sensitive component of Australia's native mammalian fauna, making them useful bioindicators for understanding the ecological effects of anthropogenic disturbance. My PhD research uses a multiple before-during-after control-impact approach to examine how recurrent and acute light and noise pollution from nighttime recreational events impacts urban insectivorous bats. Bat activity and species richness during and outside of events are captured via passive ultrasonic detectors deployed in urban green spaces (e.g. football fields, tennis courts, parks) across Greater Melbourne. My research will enhance our understanding of species- and guild-specific responses of insectivorous bats to acute light and noise pollution from nighttime recreational events. The findings from my PhD will inform practical recommendations and guidelines for ecologically sensitive event management that balance the expansion of human entertainment and recreation in urban green spaces with conserving native wildlife that rely on these critical habitat features.

TAXONOMIC REVISION OF THE EASTERN PYGMY POSSUM, *CERCARTETUS NANUS* (DESMAREST 1817) AND RESURRECTION OF *CERCARTETUS UNICOLOR* (KREFFT 1863)

Greta J Frankham¹, Matthew J Lott¹, Jennifer Anson², Ross Goldingay³, Andrew Lothian⁴, Anna J MacDonald⁵, Linda E Neaves⁶, Sally Potter^{7,1}, Emily Roycroft^{8,5}, Cassie Thompson⁹, Mark D. B Eldridge¹.

¹Australian Museum Research Institute, Australian Museum, Sydney NSW 2010.

²Australian Wildlife Conservancy, Everleigh, Sydney NSW, 2015.

³School of Environment, Science and Engineering, Southern Cross University, Lismore, NSW 2480.

⁴Biodiversity Monitoring Services, South Bowenfels, Lithgow, NSW 2790.

⁵Division of Ecology & Evolution, Research School of Biology, The Australian National University, Canberra, ACT, 2601.

⁶School of Environmental & Conservation Sciences, Murdoch University, Murdoch, WA, 6150.

⁷School of Natural Sciences, Macquarie University, Sydney, NSW, 2109.

⁸School of Biological Sciences, Monash University, Clayton, Vic, 3800.

⁹School of Life and Environmental Sciences, University of Sydney, Sydney, NSW 2006.

Bio: Dr Greta Frankham (she/her) is a conservation geneticist and wildlife forensic scientist at the Australian Centre for Wildlife Genomics (ACWG) at the Australian Museum Research Institute. Dr Frankham was part of the team that established the ACWG as the first ISO17025 accredited wildlife forensics lab in Australia and regularly carries out casework for a range of state and federal agencies involved in wildlife and biosecurity compliance in Australia. Her research interests now span conservation, evolutionary genetics and forensic science, working on species including long nosed potoroos, eastern pygmy possums, microbats, shingleback lizards and marine turtles. Email: greta.frankham@australian.museum, LinkedIn: Greta Frankham



There is still a great deal of undescribed diversity in Australia's small mammals. The Eastern Pygmy Possum (*Cercartetus nanus*) has a wide distribution from southern Queensland to South Australia and Tasmania spanning several known biogeographic barriers. This, along with their semi-specialised habitat requirements and limited dispersal capabilities makes them an ideal candidate for further investigation for biogeographic structuring and possible cryptic species.

We carried out phylogenetic analyses of the genus *Cercartetus* using sequence data generated from the mitochondrial control region (n=262) and nuclear RAG1 gene (n=163), as well as exon capture data

generated from over 1000 independent genes (n= 57, from 5 species). We also generated a Single Nucleotide Polymorphism dataset (n=128) using DArTSeq to further investigate phylogeographic structure within *C. nanus*.

All these data were concordant and provided strong evidence for cryptic speciation in *C. nanus*. Here we present a revision of this taxon; *Cercartetus nanus* (Desmarest 1817), is distributed south of Sydney Harbour (Royal National Park) on the Australian mainland and Tasmania, including the Bass Strait islands. The name *Cercartetus unicolor* (Krefft 1863) is available for the newly recognised species distributed north of Sydney Harbour (Sydney's northern beaches suburbs) on the Australian mainland. The distribution of the species across the Blue Mountains west of Sydney is still unknown and warrants further investigation. Both putative species have been identified in sympatry across the Newnes Plateau (Gardens of Stone National Park) with no evidence of hybridisation, further supporting this species split.

Session 4: Poster session: 16:00 – 17:30

CURRENT MANAGEMENT OF THE BUSH-TAILED ROCK-WALLABY (*PETROGALE PENNICILLIATA*) WITHIN WARRUMBUNGLE NP

Adam Fawcett¹, May Whittall² and Kirsten Skinner³

¹NSW National Parks and Wildlife Service, 83-85 Faulkner Street, Armidale NSW 2350, Australia

²NSW National Parks and Wildlife Service, 30 Little Timor Street, Coonabarabran NSW 2357, Australia

³NSW National Parks and Wildlife Service, 100 Mailand Street, Narrabri NSW 2390, Australia

Bio: Adam Fawcett has been working professionally in wildlife and land management for over 25 years. Adam has a background in wildlife survey, pest and threatened species management across NSW. Between 2002 and 2015 he was lecturer in wildlife survey techniques at Macquarie University. Since 2016 Adam has been working as Threatened Species Project Officer with the NSW National Parks and Wildlife Service, delivering the NSW Saving Our Species program and other threatened species initiatives within North-west NSW. He is the NSW representative and current Chair of the National Recovery Team for the Brush-tailed Rock-wallaby. Email: Adam.Fawcett@dcceew.nsw.gov.au

Management of the Brush-tailed Rock-wallaby (*Petrogale penicillata*) within the Warrumbungle Ranges has been ongoing for ~60 years. Impacts from feral predators, competition with feral goats, drought and wildfires has seen local populations of the Brush-tailed Rock-wallaby decline to three extant colonies by 2016, with an estimated population of 15 to 20 animals.

Ongoing monitoring as part of the of the NSW Saving Our Species program recorded the loss of two of the remaining colonies between 2021-22, despite extensive ongoing management actions in place to manage critical threats. The extirpation of these two colonies prompted the construction of a feral predator free area around one of the recently extirpated colonies. An assisted movement of the remaining population within the Square Top Mountain colony, estimated to be between 12-15 animals, was undertaken in September 2024.

The assisted movement successfully captured and moved 12 Brush-tailed Rock-wallabies, with an additional two pouch young removed into care before also being released into the feral predator free area. Ongoing monitoring of the free-ranging population within the fenced area has confirmed 20 animals are now present, following two successive breeding seasons.

Camera monitoring on Square Top Mountain indicated that not all Brush-tailed Rock-wallabies had been captured and suggested a higher population than originally estimated. Trapping was undertaken in April 2026 to mark and release animals on Square Top Mountain in an effort to gain a better understanding of the population size, genetic diversity and distribution across the mountain. An additional 15 animals were trapped across Square Top Mountain, with indications of a more extensive population across the site.

Ongoing monitoring and management of the two populations is now underway. The long-term aim of this project is the re-establishment of extirpated colonies of the Brush-tailed Rock-wallaby across the Warrumbungle Ranges.

THE EFFECT OF VORTICITY ON THE HEAT BUDGETS OF FLYING ANIMALS

Adam Reade

The University of Melbourne

Flight generates substantial metabolic heat that must be dissipated to maintain activity. Current biophysical models typically represent convective cooling using steady-state airflow assumptions, despite flapping flight producing complex unsteady aerodynamic structures such as leading-edge vortices (LEVs). Recent fluid dynamics studies suggest that LEVs may enhance convective heat transfer by accelerating airflow across moving surfaces, yet the magnitude of this effect under biologically realistic flight conditions remains unknown.

This project investigates the contribution of vorticity to wing heat dissipation using biomimetic robotic bat wings. Robotic models representing a small bat (*Chalinolobus gouldii*) and a large bat (*Pteropus poliocephalus*) will be constructed with species-specific wing geometries and kinematics and operated within a wind tunnel under ecologically relevant flight conditions. Wings will contain embedded heating elements that maintain a constant surface temperature, allowing total heat dissipation to be quantified from power requirements. Thermal imaging will be used to partition radiative and conductive heat fluxes, enabling isolation of the convective component of heat transfer. Experimental measurements will then be compared against both conventional steady-state heat transfer models and vortex-explicit predictions.

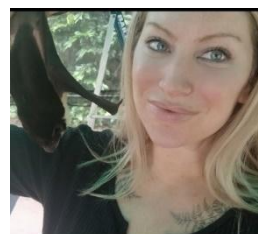
We hypothesise that LEVs contribute substantially to wing cooling and that vortex-enhanced heat transfer will be proportionally greater in smaller species due to their higher wingbeat amplitudes and stronger vortex development. By quantifying the thermal consequences of unsteady aerodynamics, this study will provide the first direct experimental assessment of vortex-driven cooling in animal flight and improve the mechanistic basis of biophysical models used to predict thermal constraints on flying animals under climate change.

SOBERING STATS ON THE CAT CATASTROPHE FACING AUSTRALIAN BATS

Alison Hoeger

North Star Biodiversity and Biosecurity, Mitchelton QLD Australia 4053
Bat Conservation and Rescue QLD, Capalaba QLD Australia 4157

Bio: Dr. Alison Hoeger completed her PhD on Australian Bat Lyssavirus and holds a Master of Public Health. She has worked across wildlife and livestock infectious diseases and is an active member of Brisbane-based Bat Conservation and Rescue QLD, particularly involved with education and advocacy.



The decimating impact of cats on native fauna is widely understood; however, their degree of interaction with bats specifically has yet to be quantified.

Stemming from research on Australian Bat Lyssavirus, this work aims to provide a summary of the impact of cat interaction with bats while emphasising animal welfare and biosecurity risks. Data is drawn from carer organisation and wildlife hospital records, anecdotal reports, as well as molecular work on bat carcasses. Results indicate that not only are cats responsible for significant numbers of bats coming into care, but those with cat injuries are more likely to require euthanasia. Bacterial infections associated with the feline oral cavity, combined with injuries consistent with cat attacks, in bats with no known cat interaction, indicate that contact is underestimated. A shift towards cat exposures in the global epidemiology of rabies and related lyssaviruses highlights the tangible biosecurity risks, particularly in a country without widespread animal vaccination.

SEASONAL CHANGES OF WHITE BLOOD CELL COUNTS IN THE SOUTHERN BENT-WING BAT (*MINIOPTERUS ORIANAE BASSANII*)

Anna Langguth¹, Laura A Brannelly¹, Christopher Turbill^{2,3}, Lindy Lumsden⁴, Nicola Bail^{5,6,7}, Nicholas C Wu^{2,3,8,9}, Tomás Villada-Cadavid², Gábor Á. Cziráj¹⁰ and Jasmin Hufschmid¹

¹ Melbourne Veterinary School, The University of Melbourne, Werribee VIC 3030, Australia

² Hawkesbury Institute for the Environment, Western Sydney University, NSW 2753, Australia

³ School of Science, Western Sydney University, Sydney, NSW 2751, Australia

⁴ Arthur Rylah Institute for Environmental Research, Department of Energy, Environment and Climate Action Victoria, Heidelberg VIC 3084, Australia

⁵ School of Biological Sciences, The University of Adelaide, Adelaide, SA 5000, Australia

⁶ Southern Bent-wing Bat National Recovery Team, Australia

⁷ Zoos Victoria, Parkville VIC 3052, Australia

⁸ Centre for Terrestrial Ecosystem Science and Sustainability, Harry Butler Institute, Murdoch University, WA 6150, Australia

⁹ School of Environmental and Conservation Science, Murdoch University, WA 6150, Australia

¹⁰ Department of Wildlife Diseases, Leibniz Institute for Zoo and Wildlife Research, Berlin 10315, Germany

The southern bent-wing bat (*Miniopterus orianae bassanii*) is a critically endangered Australian insectivorous bat endemic to South Australia and Victoria. Over recent decades, the species has undergone substantial declines, prompting efforts to identify and mitigate threats.

This study forms part of a larger project funded by the Commonwealth of Australia investigating the susceptibility of Australian bats to white-nose syndrome (WNS), a bat-specific disease predicted to reach Australia before 2030. At present, our understanding of Australian bats' ability to combat novel pathogens such as WNS, and how hibernation interlinks with this, remains limited. This study therefore assessed seasonal variation in immune parameters across different hibernation phases. Southern bent-wing bats were sampled over two years during early, mid-, and late winter, as well as summer, at a reference population in Portland, Victoria. Blood samples were analysed for total and differential white blood cell counts and plasma bacterial killing ability.

Immune function varied strongly with season, body condition, and year of sampling, indicating sensitivity to interannual environmental conditions. Total white blood cell counts were lowest in mid-winter, declining by up to 46% relative to summer. Humoral immunity showed a similar pattern, with bacterial killing ability declining towards mid-winter.

These findings demonstrate a pronounced decline in both cellular and humoral immunity during mid-winter, suggesting increased vulnerability to disease during this period. Climatic variability such as decreased rainfall may further modulate immunity. This work has important implications for disease mitigation strategies and for understanding spatio-temporal drivers of pathogen susceptibility in endangered bat populations.

THE DEMOGRAPHIC COSTS OF URBAN HABITAT USE IN A WIDESPREAD INSECTIVOROUS BAT

Caragh G Threlfall¹, Chad T Berenak², Amy Rowles³, Brad Law⁴, Dieter F. Hochuli⁵

¹ School of Natural Sciences, Macquarie University, Macquarie Park, NSW, Australia caragh.threlfall@mq.edu.au @CaraghThrelfall

² Conservation Leaders Pty Ltd, 21 Coonong Rd, Gympie Bay NSW 2227 Australia chad@conservationleaders.com.au

³ Corymbia Ecology Pty Ltd, 415 Parish Rd, Hilldale, NSW 2420 amy@corymbiaecology.com.au

⁴ Fisheries and Forestry, Department of Primary Industries and Regional Development, 6PSQ Locked Bag 5022 Parramatta NSW 2150 brad.law@dpi.nsw.gov.au

⁵ School of Life and Environmental Science, The University of Sydney, Camperdown, NSW, Australia dieter.hochuli@sydney.edu.au

Bio: Caragh (she/her) is a Senior Lecturer at Macquarie University in Ecology 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.

Global urban expansion creates novel environmental conditions that force species to adjust and adapt or face local extinction. While often perceived as hostile to nature, many species show higher densities and apparent success in urban compared to non-urban areas. However, empirical tests of the demographic processes underlying this pattern remain limited. We examined these processes in Gould's wattled bat, *Chalinolobus gouldii*, a species showing high activity levels in many Australian cities. Using a mark-recapture approach, we tested how habitat context and body condition indicators influence two key demographic processes: apparent survival and recruitment, comparing urban, suburban and forested sites.

From 2021-2025, we trapped and individually marked 772 *C. gouldii* individuals across 10 sites. Utilising GLMMs and Jolly-Seber superpopulation model implemented in openCR, we found no difference in body condition between habitat types, but urban bats showed higher ectoparasite loads and greater wing damage. Recruitment of new individuals, and the probability of breeding females, were higher in urban sites than in forest sites. In contrast, the effect of habitat context on apparent survival was weak, although it declined with increasing ectoparasite load.

Overall, these results suggest urban populations may persist and even thrive despite individual-level costs such as increased ectoparasite load, because elevated recruitment into urban habitats may partially offset survival constraints. Understanding habitat-mediated variation in demographic processes for this widespread species helps clarify whether urban environments function as demographic sources, sinks, or dynamic mosaics, and can inform management guidance for wildlife-friendly cities.

APPLYING MASSARRAY® GENOTYPING TO WILD, NON-INVASIVELY COLLECTED SCATS FOR AN ENDANGERED SPECIES – THE BROAD-TOOTHED RAT (*MASTACOMYS FUSCUS MORDICUS*)

Catriona D. Campbell¹, Mellessa Schroder¹, Andrew Weeks⁵, Anthony van Rooyen⁵, Desley Whisson⁴, Sally Fuik-Burgemeestre⁴, Wendy Ruscoe³ and Stephen D. Sarre²

¹NSW National Parks and Wildlife Service, Jindabyne

²University of Canberra

³CSIRO Canberra

⁴Deakin University

⁵Cesar Australia

Once widespread throughout South-East Australia, the broad-toothed rat is listed as endangered at the Commonwealth level (mainland only) and is now most common in higher elevation areas. The species occupies a range of habitats including heathlands, grassland adjacent to boulder fields, swamps, riparian zones, sedgeland and sometimes forest with a dense grassy understorey. Currently, monitoring of broad-toothed rat populations involves Elliott trapping and timed scat searches. Both can be problematic. The species is difficult to capture in Elliott traps, reducing the effectiveness of this approach, and scat surveys, which provide an excellent index of presence (given the distinctive green colour of the scats), do not provide critical information on population size, dispersal or genetic diversity. Here, we report on a new eDNA approach aimed at maximising the value obtained from scat surveys. Our team has developed two SNP panels using MassARRAY® technology and can now generate individual genotypes from wild collected scats. We will present a comparison of genotypes obtained from high quality tissue samples and low-quality scat samples, and the results of a park-wide broad-toothed rat scat survey conducted in Kosciuszko National Park. Integration of this approach into the routine monitoring of the species would reduce the need to capture animals for population size estimates and allowing mark-recapture analysis. It will also enable us to estimate rates of dispersal across the species broader distribution of the species and determine how broad-toothed rat populations may be impacted by stochastic events such as fire or drought.

ON BOTH SIDES: PHOTOGRAPHS DEMONSTRATING FLYING GREY-HEADED FLYING-FOXES VARY THE SIDE ON WHICH THEY CARRY THEIR PUPS

Doug Gimesy, Justin A. Welbergen and **Matthew Mo**

Behavioural lateralisation, expressed as consistent left–right biases in sensory or motor behaviour, is widespread in animals and is often discussed in relation to motor efficiency, sensory processing, and parent–offspring interactions. In mammals, mother–infant positioning often shows side biases, including in humans. In bats, laterality has been documented primarily in roosting interactions; for example, Indian flying-fox mother–infant pairs show a population-level left visual-field bias during close contact. By contrast, although pup-carrying in flight is common, individual-level consistency in the side of pup attachment during flight has rarely been assessed.

This poster presents photographic evidence from the grey-headed flying-fox (*Pteropus poliocephalus*) of within-individual variation in pup attachment during flight. One individually identifiable female, recognised by a distinctive puncture in the wing membrane, was photographed with her pup attached on both the left and right sides on separate flight events. These observations indicate that, at least in some individuals, the side of pup attachment during flight may not be expressed as a consistent lateral bias, and they highlight the value of individual-level records for evaluating laterality in volant maternal care.

RECOVERY AFTER THE BLACK SUMMER BUSHFIRES: ARE MAMMALS' FUNCTIONAL CONTRIBUTIONS CHANGING IN THE BLUE MOUNTAINS WORLD HERITAGE AREA, NSW, AUSTRALIA?

Emily Simpson¹, Chris Dickman¹, Glenda Wardle¹ and Aaron Greenville¹

¹School of Life and Environmental Sciences, University of Sydney, NSW 2006, Australia

Bio: Emily (she/her) is an ecologist and PhD student at the School of Life and Environmental Sciences, University of Sydney. Her thesis is investigating biodiversity responses to changing fire regimes. Her work focuses on the Greater Blue Mountains World Heritage area (BMWHA), which experienced an extreme wildfire event in 2019/2020. Social media handles: www.linkedin.com/in/emily-simpson-ecologist



Natural disturbances are important drivers of ecosystem dynamics, but in our new geological epoch – informally, the Anthropocene - their increasing severity places habitats and constituent biota at risk. In Australia, fire regimes are changing. Fire seasons are lengthening, fires are becoming more frequent and more severe, and areas never previously burnt are now at risk.

The 2019/20 bushfire season was the worst on record in New South Wales, representing a major departure from formerly prevailing fire regimes. Notably, 79% of the Greater Blue Mountains World Heritage area (BMWHA) burned. To monitor changes to biodiversity in this study area, seventy-two camera traps were established in December 2021 across four burnt sites and four unburnt sites, each with a mixed range of fire severity-frequency classes.

Whilst many prior studies have assessed changes to species abundance post-fire, few, if any, have quantified functional loss. Here, we use an alternative ecosystem-energetics approach to assess how key functions such as carnivory, herbivory and scavenging have changed following fire. We draw preliminary conclusions regarding the influence of fire severity, historic fire frequency and vegetation structure in driving these functional shifts.

SUPPLEMENTARY USE OF ACOUSTIC LURE IN TARGETED MICROBAT TRAPPING SURVEY INDICATES INCREASED TRAPPING SUCCESS

Emma Heath, Felicity Williams, Mark Venosta

Biosis Pty Ltd, Unit 14, 17 – 27 Power Avenue, Alexandria NSW 2015

Bio: Emma Heath has over five years of experience in field ecology, working across a wide range of projects from small monitoring programs to large scale impact assessments, including wind energy. Emma is currently a Zoologist at Biosis based in Sydney, undertaking ultrasonic bat call analysis and reporting, and targeted survey across New South Wales and Victoria. Email: eh Heath@biosis.com.au. **Felicity Williams** began working with microbats in 2008 during her Honours thesis. She has since worked as an ecologist across Victoria, Western Australia, New South Wales, and Tasmania. Now based in Hobart, Felicity has led the design, implementation, analysis and reporting of microbat surveys at Biosis for the past five years, playing a key role in strengthening the rigour, transparency and consistency of the company's in-house bat assessment capability. More recently, Felicity's work has focused on integrating innovative survey technologies and analytical approaches to address critical knowledge gaps in microbat risk assessment, particularly for wind energy projects. Email: fwilliams@biosis.com.au. **Mark Venosta** (he/him) has worked with bats since the late 1990's, when he tested early versions of the Anabat system in the field. He has worked on bats throughout SE Australia and on Christmas Island. Mark is currently a Principal Zoologist at Biosis, where he has worked for 25 years, playing key roles in developing novel assessment methods, delivering large scale impact assessments, leadership and mentoring for staff. Wind Energy and bats have been a focus of his career to date. Email: mvenosta@eh Heath.com.au

Trapping presents many challenges, particularly in biodiversity assessments across large-scale project areas where vegetation is sparse, fragmented or heavily modified. Acoustic lures are increasingly being used to improve capture success under such constraints. During recent targeted surveys for threatened species in SE NSW, an *Apodemus* BatLure was deployed at Harp traps to enhance capture rates. Trap numbers and lure presence/absence were consistently recorded to explore capture success and inform future applications. Due to ethical considerations, lures were not used in close proximity to suspected roosts. Over 50 trap nights, 120 individuals were captured. Seven trap nights utilised acoustic lures, while 43 trap nights were conducted without lures. Lured traps accounted for 59 captures (29 females and 30 males), whereas non-lured traps accounted for 42 captures (21 females and 21 males). Sex was recorded for 101 individuals, with approximately equal representation of sexes observed during the survey period. Species richness was higher in lured traps, with a total of nine species recorded compared to seven species in non-lured traps. *Falsistrellus tasmaniensis* was detected twice during the survey, exclusively captured in lured traps. Results suggest that the use of acoustic lures may improve both capture rates and species detection during trapping surveys. Lured traps did have a 100 percent capture rate (of at least one individual), and an average capture rate of 8.71 captures, compared to 1.4 for non-lured traps. These preliminary trapping results indicate a notable increase in capture success associated with lure deployment.

APPLICATION OF ASSISTED REPRODUCTIVE TECHNOLOGIES FOR THE DERIVATION OF BUFOTOXIN RESISTANT MARSUPIALS

Erin Scase¹, Katarzyna Filimonow¹, Naomi Tappe¹, Pierre Ibri¹, Andrew Pask¹, Stephen Frankenberg¹

¹ School of BioSciences, University of Melbourne, Victoria, 3052, Australia

Marsupials are prominent Australian species group facing endangerment from a unique range of threats. This includes the endangered Northern quoll (*Dasyurus hallucatus*) whose populations have seen rapid declines highly correlated with the spread of invasive cane toads (*Rhinella marina*).

Previous work assessing species co-existing with cane toads in their native ranges has shown a small edit in the gene ATP1A1 to be responsible for a substantial increase cane toad toxin resistance. Although such resistance could evolve in northern quoll populations through natural mutation over time, this process is unlikely to occur rapidly enough to mitigate current population declines.

CRISPR-based gene editing has recently been used to introduce this modification into cells, demonstrating a significant increase in resistance to bufalin, a major active component of bufotoxin. Building on these findings, this project investigates how this genetic modification could be implemented in vivo to generate bufotoxin-resistant marsupials using assisted reproductive technologies (ART).

Protocols are first being developed in the emerging model marsupial species, the fat-tailed dunnart (*Sminthopsis crassicaudata*), belonging to the same family as the northern quoll, Dasyuridae. We aim to optimise the efficiency of introducing edits directly into early dunnart embryos/ zygotes by microinjection. During pilot trials we were able to successfully introduce the gene editing constructs into early embryos, and these embryos were able to remain viable in culture.

Overall, this work seeks to explore the best methodology for generating bufotoxin-resistant marsupials, offering a potential future strategy to aid in the conservation of the Northern quoll.

CHARACTER DISPLACEMENT IN ARID SHEATH-TAILED BATS

Fabian Sauchelli¹ and Kyle Armstrong²

¹ School of Biological Sciences, Adelaide University, Adelaide SA 5005 fabian.sauchelli@adelaide.edu.au

² School of Biological Sciences, Adelaide University, Adelaide SA 5005 kyle.armstrong@adelaide.edu.au

Bio: Fabian Sauchelli (He/Him) is a PhD student at Adelaide University researching the evolutionary history of Australasian bats. His work focuses on phylogenomics, species boundaries and the role environmental factors have in driving diversification. His honours research examined character displacement in *Taphozous* bats using morphological comparisons.

Character displacement describes the phenomenon of phenotypic divergence that occurs between closely related species only in areas of sympatry. It is driven by competition through their shared ecological niches. Evidence for this process has been identified in Australian sheath-tailed bats—*Taphozous troughtoni* and *T. georgianus*—which have similar morphology and overlapping distributions in the Mt Isa Inlier bioregion, but are fully separated genetically. The extent to which they diverge morphologically has not been fully characterised across their distributions. This study quantified shape and size differences in *T. troughtoni* in both allopatry and sympatry with *T. georgianus* to understand the spatial range of their ecological niche divergence.

A sample size of 114 3D micro-CT skull scans from museum collections was analysed using geometric morphometrics. Landmarking was applied to the cranium, mandible, and cochleae, the shape of which reflects their modes of prey detection and manipulation. Sympatric *T. troughtoni* were larger and distinct in terms of allometric pattern compared to their allopatric population, and also with *T. georgianus*. While differences in the cochleae were minimal, the shape of the cranium and mandible differed, suggesting functional differences related to mastication and prey handling, and the acquisition of larger prey for reduced competition by *T. troughtoni* in sympatry with *T. georgianus*. These results support character displacement as a driver of morphological differentiation through ecological niche partitioning.

RAPID ACOUSTIC ASSESSMENT OF BAT ASSEMBLAGES ACROSS MULTIPLE HABITATS: AN ECOLOGICAL BASELINE FOR THE HUNTER WETLANDS CENTRE, NSW

Fernanda Tique Bernal¹ and Brad Law²

¹ Galictis Biodiversity Management & Monitoring, Tunja, Colombia. Email: fernanda.tique29@gmail.com

² Forest Science Centre, NSW Department of Primary Industries and Regional Development, Postal Address: 4PSQ Locked Bag 5022, Parramatta, NSW 2124, Australia

Bio: Fernanda Tique (she/her) is a Colombian biologist with experience working in both Colombia and Australia. She has a strong interest in the ecology and conservation of mammals, particularly bats. Her work focuses on studying bat activity using ultrasonic acoustic methods to better understand their behaviour and habitat use. She is especially interested in how acoustic monitoring can support conservation in changing landscapes. Fernanda is also passionate about environmental education and enjoys engaging the public to foster appreciation and awareness of bats and their ecological importance.

www.linkedin.com/in/fernanda-tique https://www.instagram.com/_fercha29/



Insectivorous bats are highly responsive to habitat structure and are widely used as bioindicators of ecosystem condition. However, spatial variation in bat activity across heterogeneous wetland systems remains poorly documented, particularly in managed landscapes. This study aimed to assess bat activity and habitat use across multiple habitat types within the Hunter Wetlands Centre, New South Wales, using rapid acoustic monitoring.

Acoustic surveys were conducted over four consecutive nights in autumn 2026 at ten sampling sites distributed across six habitat types, including Casuarina/paperbark swamp, rainforest, freshwater wetlands,

and ironbark marsh systems. Bat activity was quantified as the number of call sequences (bat passes) recorded per site, and calls were identified to species or species complexes where possible.

A total of 4,952 bat passes were recorded, representing 13 species and 1 species complex. Activity was strongly dominated by three threatened species: *Myotis macropus* (2,789 passes), *Micronomus norfolkensis* (716) and *Miniopterus australis* (342). Bat activity varied markedly among habitats, with the highest levels recorded in freshwater swampland (2,065 passes) and ironbark marsh (1,699 passes), while lower activity was observed in Casuarina/paperbark swamp (117) and rainforest (319). Several species showed clear habitat associations, particularly with freshwater systems and structurally complex vegetation.

These findings provide a preliminary ecological baseline for bat assemblages within the Hunter Wetlands Centre that should consider further seasonal sampling. It highlights the importance of wetland and riparian habitats in supporting bat diversity and demonstrates the value of rapid acoustic monitoring for informing the site's 2026 Vegetation Management Plan and guiding habitat restoration in complex wetland systems.

TURN IT UP! OZIMOPS LOVE THIS STATION

Fraser R. Smith, Sanjeev Baniya, S., Ruvi K. de Mel, & Zenon J. Czenze

Centre for Behavioural and Physiological Ecology, School of Environmental and Rural Science, University of New England, Armidale, NSW 2351, Australia.

Emails: fsmith36@myune.edu.au, sbaniya3@myune.edu.au, wdemel@myune.edu.au, zczenze@une.edu.au

Despite 70% of Australia being classified as either arid or semi-arid, habitat use by bats in these ecosystems remains poorly understood. The aim of this research was to determine habitat use by the inland free-tailed bat (*Ozimops petersi*) across a mosaic semi-arid environment. We predicted that habitat use of *O. petersi* would be non-uniform, with highest activity closest to water resources where prey abundance is expected to be greatest. To measure bat activity, we used acoustic recorders for 66 consecutive days across four habitat types near Calperum Station, South Australia during summer between 16 December 2023 and 22 February 2024. We classified each habitat type based on vegetation and distance to water: Lake Woolpolol (unvegetated; 50 m), Floodplain (low open chenopod [*Atriplex sp.*] shrubland; 190 m), Station (open river red gum [*Eucalyptus camaldulensis*] woodland; 240 m), Mallee (low hop bush [*Dodonaea sp.*] shrubland; 3100 m). *Ozimops petersi* were most often recorded in the immediate vicinity of Calperum Station (46.3 ± 31.5 passes per night), compared to other habitats (Lake Woolpolol = 33.8 ± 22.8 , Floodplain = 19.0 ± 26.3 , Mallee = 9.7 ± 12.4). This pattern highlights the importance of fine-scale habitat features in shaping bat activity and suggests this high-flying, aerially-hawking bat concentrates its activity in a heterogeneous habitat characterised by large trees, buildings, and artificial lighting. We suggest further research aimed at disentangling the contributions of artificial lighting (concentrating insect prey) and structures (potential landmarks) on bat activity to inform management and conservation strategies in semi-arid environments.

DOES POSTNATAL GROWTH AND REPRODUCTIVE DEVELOPMENT OF *PTEROPUS SCAPULATUS* ALIGN WITH AGE CLASSES?

Gemma M O'Brien

University of Queensland, Pinjarra Hills Campus, Queensland 4069, Australia on the traditional lands of the Jagera and Turrbal people. Current address Central Coast 2259, NSW.

Bio: Gemma O'Brien (her) gemma4076@gmail.com

Four age classes have been proposed for *Pteropus* (Gramman, Yagera language): dependent, weaned, sexually immature and sexually mature. Their applicability has been tested in the present study of postnatal growth of maternal raised *Pteropus scapulatus*, Little Red Flying-foxes, in captivity, and the timecourse of their reproductive development. Monthly measurements of Forearm Length FAL (mm) and Body Mass BM

(g), were supplemented with visual inspection of reproductive characteristics which were then measured when appropriate. Standard husbandry included ad lib feeding and water, in flight enclosures with an adult breeding colony. Two cohorts of four animals each were available, with sexes represented equally. Skeletal growth was logarithmic, described as $FAL\ (mm) = 16.7 \ln(x) + 100.9$ with age in months. BM growth followed a polynomial pattern $BM\ (g) = 0.10x^3 - 4.7x^2 + 69.7x + 31.2$. Young animals were classified as “dependent” until approximately three months when they were “weaned” naturally by their mothers. Adult size (FAL/BM 139mm/366g) was achieved by approximately 10 months (FAL/BM 139mm/329g) but they were still “sexually immature”. Male testes were scrotal though small from 7 months onwards, so scrotal testes are not a good indicator of “sexual maturity”. By 13 months testes were entering the adult size range. Both sexes only mated occasionally during the mating season at 18 months and at 2 years there were no pregnancies; female nipples remained undeveloped. Describing 1 year old males as “sexually mature” overestimates that population by a year. Pregnancy and nipple development correctly characterise “sexually mature” females from 2.5 years.

SIZE DOES MATTER: DETECTABILITY OF ARBOREAL MAMMALS USING THERMAL CAMERAS AND SPOTLIGHTING

George Madani¹ and Leroy Gonsalves²

¹University of Newcastle, Callaghan, NSW 2308, Australia

²Department of Primary Industries and Regional Development, Parramatta, NSW 2124, Australia

This study compared thermal imaging and spotlighting for detecting two arboreal mammals in coastal sandstone heath-mallee habitat: the small eastern pygmy-possum (*Cercartetus nanus*) and the larger common ringtail possum (*Pseudocheirus peregrinus*). Across 353 mammal detections, researchers tested how survey method, season, and environmental conditions influenced detectability, and also estimated densities using distance sampling.

Thermal imaging clearly outperformed spotlighting for the smaller species, detecting *C. nanus* three to five times more often, especially in dense vegetation where spotlighting struggled. Its detectability also shifted with season, peaking in winter and summer, likely linked to food availability. In contrast, detection of *P. peregrinus* was consistent between methods and unaffected by environmental variation.

Overall, thermal imaging proved far more effective for small, cryptic arboreal mammals, offering a faster and more reliable way to survey them in complex habitats. The results suggest that combining thermal imaging with seasonal timing and repeat surveys can significantly improve accuracy in population monitoring and ecological assessments.

KULTARR BEHAVIOUR IN CAPTIVITY

Hayley J. Stannard¹, Lisa M. Goodchild¹ and Julie M. Old²

¹School of Agricultural, Environmental and Veterinary Sciences, Charles Sturt University, Wagga Wagga, NSW 2678.

²School of Science, Western Sydney University, Penrith, NSW 2751, Australia

Understanding behaviour of threatened animal species is an important component of conservation. This study assessed video and recorded data collected on a historical captive population of kultarrs (*Antechinomys laniger*) to describe their behaviour in captivity and develop an activity budget. The kultarr, a small dasyiurd marsupial listed as Least Concern on the International Union for Conservation of Nature Red List of Threatened Species. We describe key behaviours displayed, including grooming, nest building and use of shelter, predatory and feeding behaviour, and social behaviour. Gaining an understanding of kultarr behaviour in captivity will enhance and improve captive management of the species and provide insights into how kultarrs may behave in the wild. More research is needed that encompasses a larger data set to fully understand kultarr activity.

DINNER FOR TWO (SPECIES): THE DIETS OF FERAL CATS AND GHOST BATS

Jasmine Kasper^{1,2}, Trish Fleming^{1,2}, Nicholas C Wu^{1,2}

¹ Centre for Terrestrial Ecosystem Science and Sustainability, Harry Butler Institute, Murdoch University, WA 6150, Australia

² School of Environmental and Conservation Science, Murdoch University, WA 6150, Australia

Bio: **Jasmine Kasper** (She/her) is a first year PhD student at Murdoch University. Her project aims to investigate the impacts and management of feral cats in relation to ghost bats in the Pilbara region of Western Australia. This research is supported by the Commonwealth through an Australian Government Research Training Program Scholarship. Prior to commencing her PhD, Jasmine worked as an environmental consultant specialising in terrestrial fauna in WA for the past four years. In addition to her research and work, she has a passion for wildlife photography which can be found on Instagram at @enviro.jas and on [LinkedIn](https://www.linkedin.com/in/jasmine-kasper): jasmine.kasper@murdoch.edu.au Instagram: @enviro.jas LinkedIn: www.linkedin.com/in/jasmine-kasper



Worldwide, cats (*Felis catus*) are a significant threat to bats. However, the impact of cats on Australian bat species is less understood, let alone for highly threatened endemic species such as the ghost bat (*Macroderma gigas*). This literary review aims to collate and compare the information available regarding the diets of these two carnivores, ghost bats and feral cats, which will assist in providing context to the level of impact feral cats could have on this Vulnerable-listed bat species. Information regarding prey and diet has been collected from published literature and unpublished data from within 50 kilometres of the known range of the ghost bat across northern Australia. A total of eight published studies and two unpublished studies relating to cat diet and prey were identified within this spatial range, while 17 publications pertaining to ghost bat diet (12 of which pre-date 2000) were used in this review, in addition to two unpublished diet observations. Preliminary findings indicate that there is similarity between the diets of the two species. Given the seasonal fluctuations in prey availability and resource poor nature of this region, these initial findings highlight a concerning level of competition imposed by cats to ghost bat populations, as well as identifying the need for additional dietary studies for both species across northern Australia.

HOW DO LOCATION AND LANDSCAPE FEATURES INFLUENCE OCCUPATION RATES IN ARTIFICIALLY CREATED TREE HOLLOWES

Jo Isaac¹ and Alana Begg¹

¹ Ecology & Restoration Australia, 10 View Street, Avonsleigh, Vic. Australia

Bio: **Jo Isaac** has been studying mammals across the globe for the past 20+ years. Her adventures in arboreal marsupials began with a PhD on Common Brushtail Possums, and her passion for wildlife conservation shows no signs of abating. Jo is currently Principal Ecologist at Ecology & Restoration Australia, where she leads the habitat creation team to design and install high-quality, high-rise habitat for some of our most endangered mammals. Email: jo.isaac@eraus.com.au Instagram: e_r_au

Habitat creation in live standing trees is an emerging tool in mammal conservation initiatives worldwide, particularly in habitats where natural hollows have been lost through land-use change, timber harvesting and/or weather events. Over a period of two years, our team installed more than 200 artificial hollows in the Wombat State Forest, following significant storm damage in 2021, designed for a variety of species including the endangered Southern Greater Glider (*Petauroides volans*) and Tuan, or Brush-tailed Phascogale (*Phascogale tapoatafa*). Hollows have been monitored using both remote cameras and nest box cameras periodically since installation. Here we investigate the role of landscape and placement features, including estimated canopy cover, distance to forest edge, entrance aspect, and distance to a water source, on occupation rates in hollows of native mammals. The results have implications for future habitat creation efforts in order to maximise the potential for target species to occupy hollows.

THERMAL PHYSIOLOGY OF URBAN INSECTIVOROUS BATS IN DIFFERENT ROOSTS

Kai Walker¹, Clare Stawski², Robin Rowland³

The University of the Sunshine Coast, 90 Sippy Downs Dr, Sippy Downs QLD 4556 Australia;

Bio: Kai Walker (they/them), k.walks@outlook.com

Rapid urban expansion significantly influences biodiversity, often forcing species to adapt to new conditions to survive. Some insectivorous bat species have shown a high level of urban tolerance, partially due to flexible roosting strategies which allow them to exploit anthropogenic structures. Additionally, many insectivorous bats use torpor to offset their high energetic requirements, by reducing the metabolic cost of maintaining homeostasis. As torpor depth and duration can be regulated by a roost's thermal properties, these bats often select roosts based on their present energetic needs. This study aims to determine if insectivorous bats budget energy differently between anthropogenic and natural roosts, by using radiotelemetry to measure the skin temperature of insectivorous bats and observe torpor patterns in different roosts. Temperature-sensitive radiotransmitters were applied to insectivorous bats (*Scotorepens orion*, n=7; *Scotorepens sp. (parnaby)*, n=5) before release, which were then tracked to determine roost type and location. Custom multi-channel data loggers were deployed to record skin temperature data at 10-minute intervals, alongside additional loggers to record ambient temperature. Torpor bouts were identified by applying a model to skin temperature data. With thermal physiology quantified, linear models will be fitted to investigate the relationship between roost type and torpor use. Findings will contribute to our understanding of the species-specific roosting ecology of insectivorous bats, which is key to identifying habitat requirements for conservation purposes.

HIDDEN IN THE FOREST: INSIGHTS INTO THE WESTERN FALSISTRELLE BAT

Kelly Sheldrick^{1,2} and David Hill³

¹ Conservation Council of WA, Wadjuk Country, West Perth, Western Australia, Australia (she/her; kelly.sheldrick@ccwa.org.au)

² Murdoch University, Perth, Western Australia, Australia

³ Independent researcher, Devon, UK

Bio: Kelly Sheldrick (she/her; @kellysheldrick) is an ecologist and Citizen Science Program Manager at the Conservation Council of Western Australia. Passionate about bat conservation and bioacoustics, she has spent the past three years coordinating community-based surveys across southwest WA. Her work engages volunteers in collecting ecological and acoustic data to better understand local bat species, their roosting behaviour, and habitat use, while helping address misconceptions and support safe coexistence between people and bats.

The Western Falsistrelle (*Falsistrellus mackenziei*) is a poorly-studied endemic species of southwest Western Australia, listed as Near Threatened and thought to be declining due to dependence on forest habitats and vulnerability to climate change and habitat loss. We radio-tagged 5 Western Falsistrelles (3 females; 2 males) in the Warren region. Tracking success was limited by the extensive blocks of dense Karri forest with few access tracks. One male bat exhibited regular roost switching, including use of remnant vegetation within agricultural landscapes adjacent to intact forest. One maternity colony was found roosting ~50 m high in a mature karri tree with dense understorey. It included at least 64 individuals. As six pregnant females were caught at the same site 18 days earlier, none of the emerging bats could have been juveniles. To our knowledge, this is the largest maternity aggregation recorded for the species, more than double previous observations. Emergence video showed prolonged activity (~19:50–21:19), with bats repeatedly returning to the roost entrance. Across the broader survey area, the species was captured at very few sites, but where present, multiple individuals were often caught, suggesting a patchy and restricted distribution. These findings highlight critical knowledge gaps for conservation, including maternity roost habitat, roost tree availability, landscape connectivity, and foraging ecology. Filling these gaps will be essential to guide management and protect this southwest endemic species in the face of habitat loss and climate change.

QUANTIFYING VALUE AND ROOST USE IN PILBARA BATS OF CONSERVATION SIGNIFICANCE

Kyle N. Armstrong^{1,2}

¹ School of Biological Sciences, Adelaide University, Adelaide, South Australia 5000, Australia; kyle.armstrong@adelaide.edu.au

² Supersensory Technologies Pty Ltd, Adelaide, South Australia 5000, Australia; kyle.armstrong@supersensory.com.au

Habitat classification schemes for threatened bat species in the Pilbara are widely used in environmental impact assessments, yet existing frameworks are largely qualitative, inconsistently applied, and rely on ambiguous terminology. Multiple schemes are in use currently for the Ghost Bat *Macroderma gigas* and Pilbara Diamond-faced Bat *Rhinonictis aurantia*, but they lack explicit criteria, do not incorporate measurable variables, and provide limited guidance for consistent application across studies. A refined classification framework has been developed that retains compatibility with existing category structures while introducing a quantitative, evidence-based approach to roost and foraging habitat assessment. Roosts are assigned using a scoring system based on empirically measurable variables, including call-based activity levels, colony size, and reproductive observations, allowing transparent and repeatable categorisation. Clear terminology is defined to replace ambiguous descriptors, improving consistency in interpretation and communication. Importantly, the framework separates intrinsic roost value from spatial context and then incorporates proximity through a mathematical model of local roost networks. This approach explicitly accounts for redundancy, substitutability, and connectivity among roosts using distance-based clustering and weighting functions, producing an adjusted value that reflects both site-specific importance and landscape position. The resulting framework provides a structured, scalable basis for assessing habitat significance, supporting risk-based decision-making, and improving the consistency of environmental assessments. It represents a shift from descriptive categorisation toward quantitative, spatially explicit evaluation of bat habitat in development contexts.

DO EUROPEAN AND AUSTRALIAN VESPERTILIONIDAE SHARE SOCIAL CALL SIMILARITIES? INVESTIGATING FINLAYSON'S CAVE BAT.

Levi MacDonald^{1,3} and Kelly Sheldrick^{1,2}

¹Conservation Council of WA, Wadjuk Country, West Perth, Western Australia, Australia (he/him) (23721642@student.uwa.edu.au)

²Murdoch University, Perth, Western Australia, Australia

³University of Western Australia, Perth, Western Australia, Australia

Bio: Levi MacDonald (he/him) I am a mature age student completing my undergraduate in Wildlife Conservation at the University of Western Australia. Alongside my studies I have been privileged enough to take part in a range of volunteer opportunities, including the bat monitoring program with the Conservation Council of Western Australia. This sparked a passion for Australia's awesome bat species and led to my involvement in projects examining bat bioacoustics. I love being out in the field enjoying all of Australia's unique flora and fauna, but I get especially excited for working with the bats. Email: 23721642@student.uwa.edu.au



Echolocation in bats is well studied globally and provides information on species presence, foraging behaviour and habitat use. In contrast, bat social calls (used in mating, roosting and pup rearing), which may encode information regarding species, sex and individual distinction, remains understudied in Australian bat species, with limited research on their structure, classification, and behavioural function.

This study investigates social calls of Finlayson's Cave Bat (*Vespadelus finlaysoni*) recorded at a maternity roost in the Yalgoo area of Western Australia, with the aim of assessing similarities with social calls of European Vespertilionidae. Social calls were categorised into Types A – D as described for European species: Type A (aggressive/threatening), Type B (distress), Type C (contact/isolation/directional) and Type D (advertisement/agonistic). During five nights of passive acoustic surveys, 44 hours and 33 minutes of recordings were collected. Of 1,495 bat call recordings, 394 contained one or more *V. finlaysoni* social calls.

These aligned with call categories and showed structural similarities to social calls described for European species. These calls were dominated by in flight Type C calls, which aligns with expectations of recording outside the entrance of a maternity roost.

Social calls of European species have been used successfully as acoustic lures in trapping surveys and understanding of social calls specific to Australian species could have implications for surveys targeting specific species or sexes. Ultimately, further study of social calls can enhance understanding of behavioural ecology, resulting in improved conservation outcomes for Australian bat species.

BATS IN FNQ BACKYARDS: CITIZEN SCIENCE EMPOWERING COMMUNITIES TO ASSIST BAT RESEARCH AND CONSERVATION

Maree Treadwell Kerr¹, Emma Bartram¹, Talia Beaut², Denise Crew², Sera Steves¹ and Bryony Sumner¹

¹Bats and Trees Society of Cairns, PO Box 528, Kuranda, Qld 4881

²Jaragun EcoServices, Unit 2/102 Munro St, Babinda, QLD 4861

³Cattana Wetlands (Jabiru Volunteer), Dunne Rd, Smithfield, QLD 4878

Bio: Maree Treadwell Kerr and Sera Steves (She/her - both). Maree and Sera, president and vice-president of Bats and Trees Society of Cairns, initiated and developed the Bats in FNQ Backyards citizen science project. They recruited Emma and Bryony to manage the project, develop resources for participants and help develop and maintain relationships with partners. Talia and Denise represent partner organisations and oversee and conduct acoustic bat surveys on their lands to identify echolocating bat species and monitor bat activity to assist management and conservation and to help build a FNQ Bat Call Library. The project also includes a Spectacled Flying-fox Watch component to help conservation of this endangered species. [linkedin.com/in/maree-treadwell-kerr-91443a1a](https://www.linkedin.com/in/maree-treadwell-kerr-91443a1a) Instagram: @batsandtreessocietyofcairns FaceBook: @BATSOCinc

Bats play essential roles in ecosystems as pollinators, seed dispersers, and pest controllers. Understanding their biology and ecology is crucial for effective conservation and management. The Wet Tropics and Cape York Peninsula in Far North Queensland (FNQ) have the highest bat diversity in Australia, with half of the country's 80+ bat species. However, our knowledge of northern bat species, including five nationally threatened species, remains limited. Citizen science can significantly help close knowledge gaps. Citizen science empowers communities by involving people in scientific research, enhances data collection efforts, and fosters a greater appreciation for science and conservation issues. Increased community awareness and appreciation of bats and their threats can help build political will for the conservation of bat species.

Bats and Trees Society of Cairns (BatSoc) is a community conservation organisation dedicated to conserving bats in FNQ and assisting communities to coexist with bats. As part of our community education and engagement program, BatSoc is collaborating with conservation and community partners, including local schools, on citizen science projects to survey bats in FNQ. This comprises a Spectacled Flying-fox Watch Survey and a Discover-your-local-microbats project that involves recording calls of echolocating bats on participants' properties.

We will present preliminary data from bat surveys in Babinda and Cattana Wetlands in Cairns and discuss how collaboration with partners helps expand our community reach, fills fine-scale knowledge gaps on bat distributions, supports research into the diet, foraging, and roosting ecology of Spectacled Flying-foxes, and contributes to the development of an FNQ Bat Call Library.

PICKY TEDS: DAY-TIME HABITAT USE AND TREE PREFERENCE OF TRANSLOCATED KOALAS IN SOUTH-EAST QUEENSLAND

Mason Visser¹, Sean FitzGibbon¹, Benjamin Barth¹ and William Ellis¹

¹School of the Environment, The University of Queensland, St Lucia, Queensland, 4068, Australia.

Bio: Mason Visser (he/him) I'm a current third-year Bachelor of Science undergraduate at The University of Queensland in the Koala Ecology Group, working under the supervision of Bill Ellis and Sean FitzGibbon. My research career is only just beginning but I have a strong interest in koala behaviour and ecology, and plan to continue working on koalas as a HDR student into the future. Instagram: @masonvisser7



The value of translocation as a tool in koala conservation is the subject of research projects across eastern Australia. In south-east Queensland, loss and fragmentation of koala habitat has resulted in a network of poorly connected areas of vacant koala habitat, the recolonisation of which is seen as a key conservation objective. In order to successfully recolonise vacant habitat, we need to understand how koalas adapt to novel environments and what aspects of their ecology can be exploited in translocations. We investigated tree selection and habitat use by translocated koalas in Pooh Corner Bushland Reserve, Brisbane, Queensland, to determine whether koalas could reclaim this now vacant area of habitat. Seventeen translocated koalas were monitored with GPS enabled VHF radio-tracking collars for up to three years and their tree selections were also examined using 18 Spot Assessment Technique (SAT) plots distributed across the release site. Although there was some non-significant variation in tree preference between koalas and between seasons at the site, this did not result in failure of koalas to establish ranges and may reflect the heterogeneity of the site. The predominant known food species at the site was *Eucalyptus mollocana* (47% of trees within the SAT plots) and this species was also the most preferred for use by koalas. We found concordance between the SAT and radio-tracking results, suggesting that the SAT is an appropriate method to determine tree selection by koalas at our site.

HOW DO YOU CONSERVE WHAT YOU CANNOT FIND? A CASE STUDY FROM A THREATENED AUSTRALIAN RODENT

Meg Edwards¹, Abby Dennien¹, John Dearnaley¹

¹School of Science, Engineering, and Digital Technologies, University of Southern Queensland, Queensland 4350, Australia

Bio: Dr Meg Edwards (she/her) is a Senior Lecturer in Wildlife Science at the University of Southern Queensland. Her research focuses on threatened species conservation and wildlife behavioural ecology. meg.edwards@unisoq.edu.au @littlebitmeg



Effective species conservation depends on knowing where species occur and what habitats they require. Yet for many threatened taxa, this basic understanding remains unknown. The Pookila (New Holland mouse; *Pseudomys novaehollandiae*) is a threatened Australian rodent, and at the northern edge of its range in south-east Queensland, is exemplifying this challenge. Recent targeted surveys across historical Pookila locations in Queensland have yielded extremely low detection rates, despite substantial effort, highlighting the possibility of local declines or shifts in distribution. These results underscore the limitations of relying on detection-based data for rare species and the urgent need to draw on complementary approaches to inform conservation decision-making. In this context, we synthesised habitat suitability modelling and site-level habitat assessments to provide ecological information on the species in the absence of recent detection data.

Queensland-specific Maxent species distribution models revealed that Pookila habitat suitability is primarily driven by broad-scale climatic and topographic variables such as elevation, and suitable habitat may be concentrated in cooler, higher-elevation eucalypt woodlands. Field-based assessments identify consistent patterns with eucalypt-dominated woodlands, particularly at mid-high elevations. These results provide valuable information on potential new areas to investigate for Pookila occurrence in Queensland. More broadly, this work highlights a persistent problem in biodiversity conservation: without consistent approaches to locating and monitoring rare species, declines may remain unnoticed until recovery options

are severely constrained. Addressing this gap is essential for preventing further silent losses of Australia's threatened fauna.

ASSESSING STRESS DURING REINTRODUCTION: FAECAL GLUCOCORTICOID METABOLITE ANALYSIS AS AN INDICATOR OF STRESS DURING REINTRODUCTION AND ACCLIMATION OF A THREATENED AUSTRALIAN MARSUPIAL

Melissa Jensen¹, Katherine E. Moseby^{1,2}, David C. Paton¹, Kerry V. Fanson^{3,4}

¹School of Biological Sciences, Adelaide University, Adelaide, South Australia 5005, Australia

²School of Biological, Earth and Environmental Sciences, University of New South Wales, Sydney New South Wales 2052, Australia

³Centre for Integrative Ecology, Deakin University, Waurin Ponds, Victoria 3216, Australia

⁴School of Agriculture, Biomedicine and Environment, La Trobe University, Melbourne, Victoria 3086, Australia

Bio: Melissa Jensen (she/her) is a wildlife ecologist based in Boorloo (Perth, Whadjuk Noongar Country). She has a demonstrated history of working in the research, conservation and consultancy industries across Australia. Melissa's research interests include reintroduction biology and improving translocation outcomes, animal behaviour, stress physiology, threatened species ecology and management, threatened species use of post-mining and rehabilitated landscapes, and invasive predators. You can follow her work on social media using the handle @MelissaJensen_ Email: contactmelissajensen@gmail.com



Faecal glucocorticoid metabolite (FGM) analysis is a non-invasive method for assessing the physiological response of wildlife to stressors and can be used to help manage and monitor conservation efforts. Reintroduction is an important conservation tool for saving threatened species but can be potentially stressful for the animals involved due to the required capture, holding, transfer and release of animals into unfamiliar environments. Monitoring adrenal activity across different reintroduction phases and release methods is important. So too is understanding how FGMs affect post-release outcomes, including survival, site fidelity, and breeding success. We monitored FGMs in 74 idnya (Adnyamathanha) or western quolls (*Dasyurus geoffroii*) that were reintroduced to the Ikara-Flinders Ranges National Park in South Australia. Faecal samples were collected from quolls during each phase of the reintroduction, including at capture, during captivity, and following release. FGM concentrations were highest after major transition events, including capture from the wild and again following transfer to the release site, and lowest after quolls had been back in the wild for over 20 days. Quolls held in delayed-release pens showed elevated FGMs for longer than immediately released individuals, though concentrations converged once all animals were in the wild. Pre-release FGM levels did not predict survival or site fidelity. However, females with higher FGMs during captivity began breeding sooner after release. Results from this study may be used to improve the planning, implementation, and success of future reintroductions of this threatened species across its former range.

AQUATIC AND TERRESTRIAL HEART RATES IN FUR SEALS: EVIDENCE FOR DELAYED METABOLIC PROCESSING

Melissa J. Walker^{1*}, Daniel P. Costa², Stephen P. Kirkman^{3,4}, Andrew J. Hoskins^{5,6,7}, W. Herman Oosthuizen⁸, Deon Kotze⁸, Michael A. Fedak⁹, and John P. Y. Arnould¹

¹School of Life and Environmental Sciences, Deakin University, 221 Burwood Highway, Burwood, VIC 3125, Australia.

²Scripps Institution of Oceanography, University of California San Diego, 9500 Gilman Drive 0204, La Jolla, CA 92093, United States.

³Department of Forestry, Fisheries and the Environment: Oceans and Coasts, Branch, Cape Town 8000, South Africa.

⁴Institute for Coastal and Marine Research, Nelson Mandela University, Gqeberha 6031, South Africa.

⁵North Australian Indigenous Land and Sea Management Alliance, Brinkin NT 0810, Australia.

⁶School of the Environment, University of Queensland, Brisbane, QLD 4072, Australia.

⁷James Cook University, Townsville, QLD 4811, Australia.

⁸Oceans and Coastal Research, Department of Forestry, Fisheries and the Environment, Cape Town 8000, South Africa.

⁹Sea Mammal Research Unit, Scottish Oceans Institute, University of St Andrews, St Andrews, United Kingdom.

Bio: Melissa is a Postdoctoral Research Associate in the Wu Ecological and Evolutionary Physiology Lab at Murdoch University. Her research focuses on the physiological mechanisms that allow animals to respond and adapt to environmental change, and how these responses influence behaviour, ecological function, and survival. Previously, Melissa was an Associate Research Fellow in the Marine Predator Ecology Lab at Deakin University, and she completed her PhD in the BatsLab and the Lab of Animal Ecology at Western Sydney University.

Social Media Handles: LinkedIn



ResearchGate



A seal's heart rate is affected by their physiological adaptation to aquatic and terrestrial environments. At-sea, heart rate during dive bouts cycles between bradycardia during dives and tachycardia for oxygen replenishment on the sea-surface. While onshore, heart rate reflects apnoea and eupnoea. Intriguingly, complete sea-and-onshore heart rate traces and any relationship between sea and subsequent onshore heart rate, including any immediate or delayed physiological adaptation, remain unexamined. In this study, sea-and-onshore heart rate traces from female Cape fur seals (*Arctocephalus pusillus pusillus*; CFS, $N = 4$) and Australian fur seals (*A. p. doriferus*; AUFS, $N = 8$) revealed expected at-sea cycles of bradycardia (mean minimum beats·min⁻¹, CFS: 14.8 ± 1.3 SE; AUFS: 5.7 ± 1.6) and tachycardia (mean maximum beats·min⁻¹, CFS: 161.1 ± 1.5 ; AUFS: 163.8 ± 2.6), with interspaced periods where heart rate stabilized as the seal swam at the sea surface. Following haul-out, heart rate traces revealed peaks approximately 20 to 40 beats·min⁻¹ above the apparent minimum, reaching a maximum 6 to 8 hours following the seal's return to land. Potentially, this onshore heart rate trace reflects delayed compensation for at-sea debt, a scenario explored with multiple linear analyses of area under the heart rate curve, the results of which were all significant ($p < 0.05$) but varied in strength (R^2 range from 0.61 to 0.86). These findings underscore the complex interplay of heart rate across aquatic and terrestrial environments, highlighting the benefits of examining holistic physiological traces, and potentially revealing evidence for delayed metabolic processing.

LOCAL CLIMATE AND GENETIC INFLUENCE ON THE TORPOR PHYSIOLOGY OF A CAVE-ROOSTING BAT

Nicholas C. Wu^{1,2,3}, Tomás Villada-Cadavid¹, Christopher Turbill^{1,4}

¹ Hawkesbury Institute for the Environment, Western Sydney University, NSW 2753, Australia

² Centre for Terrestrial Ecosystem Science and Sustainability, Harry Butler Institute, Murdoch University, WA 6150, Australia

³ School of Environmental and Conservation Science, Murdoch University, WA 6150, Australia

⁴ School of Science, Western Sydney University, NSW 2753, Australia

Bio: Nicholas Wu (He/Him) earned his undergraduate degree at the University of Waikato in New Zealand, followed by a PhD at the University of Queensland. After completing his PhD, Nicholas was appointed to two postdoctoral positions in Sydney before landing a lecturer role at Murdoch University. His overall research program integrates physiological principles with ecological and evolutionary theory to understand how species respond to environmental and anthropogenic change across space and time. He combines experiments, field observations, data synthesis with simulation and statistical models to help inform conservation practices. Nicholas currently leads an active research group, which can be found here: www.nicholaswulab.com. Email: nicholas.wu@murdoch.edu.au. Twitter: @NicholasWuNZ. BlueSky: @nicholaswu.bsky.social. LinkedIn: <https://www.linkedin.com/in/nicholas-wu-6598a996/>

Many small endotherms employ torpor as a survival strategy to reduce energy expenditure during periods with low food availability and cold temperatures. The expression and physiology of torpor can vary substantially within species because of phenotypic plasticity and local adaptation. Understanding how plasticity and genetics influence intraspecific variation is fundamental to identifying the drivers of phenotypic variance in nature. Using a widely distributed bat species, the eastern bent-wing bat (*Miniopterus orianae oceanensis*), we exposed individuals from two thermally distinct sites to cold temperature regimes (ranging from 15 to 5°C). We measured oxygen consumption, and carbon dioxide production (proxies for torpor metabolic rate, TMR), and water loss during torpor (TEWL) using open-flow respirometry, and quantified skin surface temperature (T_{sk}) using temperature-sensitive telemetry. Analysis of the data using phylogenetically controlled, multilevel models indicated that bats from both sites exhibited a similar TMR at low T_{sk} , whereas bats from the colder site had a higher TMR at higher T_{sk} . We found no evidence of genetic differentiation of bats between the sites and estimates of heritability for TMR

and TEWL showed broad credible intervals, yielding high uncertainty in interpreting genetic effects. Differences in torpor physiology responses between warm and cold sites were likely driven by phenotypic plasticity, with among-individual variation in responses partially explained by genetic effects. Such flexibility in the expression of thermoregulatory strategies is important for a highly mobile and widely distributed endotherm to be successful across a large range of thermal climates.

INSIGHTS INTO THE URBAN ECOLOGY OF THE CRITICALLY ENDANGERED WESTERN RINGTAIL POSSUM AND LIMITATIONS OF SHORT-TERM CITIZEN SCIENCE PROJECTS

Rochelle Steven^{1,2,3} and Richard Fuller⁴

¹ School of Environmental and Conservation Sciences, Murdoch University, Perth, Western Australia, 6150, Australia.

² School of Biological Sciences, University of Western Australia, Perth, Western Australia, 6009, Australia.

³ Threatened Species Recovery Hub, University of Queensland, Brisbane, Queensland, 4072, Australia.

⁴ Centre for Biodiversity and Conservation Science, Faculty of Science, University of Queensland, Brisbane, Queensland, 4072, Australia.

The western ringtail possum (WRP) (ngawir) (*Pseudocheirus occidentalis*) is an endemic species to the southwest corner of Australia and continues to seemingly thrive in regional urban centres. The bulk of urban habitat matrix exists on private land. Therefore, community derived insights into how the species uses this novel ecosystem makes citizen science an ideal opportunity to learn more about the WRP's urban ecology. Urban habitat use of the WRP was explored via a citizen science data collection tool that integrated with an existing app focused on urban wildlife. Between 2019-2024, the community members shared 411 records of the species across its urban distribution. Approximately 25% of shared records documented the species feeding and 17% observed the species using man-made structures (roofs and fences) to navigate the urban environment. The reporting tool allowed observers to share records of dead WRP, usually on roads, and these accounted for 21% of all sightings. Sixty percent were observed in residential or other private lands. Reporting rates declined sharply when the project's funding ceased. Information shared by the community members about WRPs' urban ecology provides new insights into the importance of urban habitat for this critically endangered marsupial. It illustrates how despite the significant alteration urbanisation has on the environment, some species can and do persist in these habitats despite being listed as threatened. For cities and towns seeking to enhance their ability to support biodiversity, projects such as this can yield important insights into challenges and opportunities for urban planners and residents alike.

GHOSTS OF MINING'S PAST, PRESENT, AND FUTURE: THE IMPORTANCE OF ABANDONED MINE WORKINGS FOR THE THREATENED GHOST BAT

Ryan Ellis^{1,2}

¹ Biologic Environmental, Osborne Park, Western Australia, 6017 ryan.ellis@biologicgroup.com.au

² Department of Terrestrial Zoology, Western Australian Museum, Welshpool, Western Australia, 6106

Abandoned mine workings represent a critical but often overlooked component of subterranean habitat networks for bats, providing stable microclimates and structural complexity comparable, and sometimes preferential, to natural caves. Across northern Australia, and especially within the Pilbara, many of the largest and regionally important colonies of the threatened ghost bat (*Macroderma gigas*) occur in abandoned mines and associated infrastructure.

These structures have acted as essential refugia, and in many cases, supported critical maternity colonies and long-term occupancy. Importantly, in some areas abandoned mine workings have also enabled ghost bats to occupy areas of natural roost scarcity but surrounding foraging habitats are extensive, effectively expanding the species' realised distribution at a local and regional scale.

Despite their ecological importance, abandoned mine workings are frequently unmanaged or detrimentally modified due to difficulties associated with human safety concerns, maintenance of structural integrity, rehabilitation requirements associated with mine closure, or new mining activities encompassing or proximal to workings. Structural collapse, inappropriate closure, disturbance and land-use change pose significant risks to roost availability and colony viability. Given the species' reliance on a limited number of these important roosts, the loss of even a small number may result in disproportionate and immediate population declines locally and regionally.

Recognition and protection of abandoned mine workings for ghost bats is essential. Improved consideration in mine closure planning, historic mine protection, and localised land management is required to prevent the loss of important roosts and support the conservation of ghost bats.

RAPID ASSESSMENT OF MOUSE ABUNDANCE ACROSS AUSTRALIA TO PREDICT HOUSE MOUSE OUTBREAKS

Ryan Sarre, Eva Moore, Steve Henry, Peter R. Brown, Matthew W. Rees

CSIRO, Health & Biosecurity, Canberra, Australia

Bios: **Ryan Sarre and Eva Moore** are Research Technicians working within the rodent management team at CSIRO. Based at Black Mountain, ACT. Ryan Sarre (he/him): Ryan.sarre@csiro.au & Eva Moore (she/her) eva.moore@csiro.au

Outbreaks of invasive house mice (*Mus musculus*) pose a significant threat to the Australian grain industry, causing major socioeconomic damages. We have reasonable ability to forecast mouse plagues at a few sites with long-term live-trapping data, however, we need to provide forecasts across entire Australian grain growing regions. Accordingly, we have developed a 'rapid assessment' survey protocol to monitor mouse populations over broad spatial scales. This protocol includes active burrow counts and chew card assessments to detect mice, which we calibrate with higher-quality density estimates also conducted at three of the ~200 sites. Rapid assessments have allowed mice to be surveyed across a much greater area in five states with project partner, allowing spatially-explicit forecasts. Detection rates from these methods vary across space and time, meaning it can be challenging to separate observation and population-level processes. This resulting data and near-term forecast models are used to warn grain growers about mouse outbreak risk to guide their management decisions. These forecasts form the basis of a large-scale communication strategy with the National Mouse Group, deployed through farmers themselves, as well as media outlets, agronomists, community groups, government departments, agricultural and advocacy organisations. This project involves collaboration with a large and evolving network of farmers, agronomists, and Landcare groups, as well as partnerships with external contractors who complete monitoring to improve coverage. This mouse monitoring project is a large exercise in communication and network building and creates an effective network for monitoring, near-term ecological forecasting and timely dissemination of warnings.

IDENTIFICATION AND PALAEOECOLOGY OF THE PLEISTOCENE BAT ASSEMBLAGE FROM CATHEDRAL CAVE, WELLINGTON

Sophie Compton¹, Vera Weisbecker¹, Diana Fusco¹

¹College of Science and Engineering, Flinders University, South Australia 5042, Australia.

Bio: **Sophie Compton** (she/her) is a third year undergraduate at Flinders University, Adelaide, South Australia, studying Palaeontology and Animal Behaviour. Sophie has a great passion for the natural world and the ecology of many animals both in the past and the present, with a desire to conserve and protect those at risk due to the world's current environmental crisis. Sophie has been involved in fieldwork both zoological and palaeontological in nature. A microbat survey ignited her passion for Chiroptera, leading her to conduct a palaeoecological analysis on the bat fossil assemblage from the most recent excavation in Cathedral Cave, Wellington Caves. Email: sophie.compton@flinders.edu.au, Instagram: [sophie_compton](https://www.instagram.com/sophie_compton)

Australian bats have historically received little attention in palaeontology therefore knowledge on their diversity and palaeoecology is minimal. Cathedral Cave, Wellington Caves, central-east New South Wales (Wiradjuri Country) is located at a junction between three major Australian ecoregions. Fossils from the most recent excavation span the last ~800-69,000 years and the deposit records mammal responses to long-term environmental changes. There has been ~200 years of research on non-volant taxa, however, the fossil bat assemblage is yet to be thoroughly investigated. We conducted a palaeoecological analysis on the Late Holocene–Pleistocene bat fossil assemblage in Cathedral Cave to assess composition and structure changes in the fauna. Taxonomic identification was based on diagnostic cranial and dental features from previous Australian studies and extant reference material. Preliminary results of this study currently identifies four genera, three to species, among which the cave-dwelling Smaller horseshoe bat (*Rhinolophus megaphyllus*) and Common bent-wing bat (*Miniopterus schreibersii*) were most abundant. All taxa identified still occur locally in the Wellington region, however *R. megaphyllus* was not recorded in the most recent survey at Wellington Caves. Furthering the understanding of Quaternary bat composition and their response to environmental changes will help predict species response to current climate change, highlighting those that may need a protection focus.

CONSERVATION DETECTION DOGS AS A SURVEY METHODOLOGY FOR LOCATING ACTIVE KOWARI (*DASYUROIDES BYRNEI*) BURROWS IN AN ARID PASTORAL LANDSCAPE

Tracy Lyten¹, Fiona Jackson¹, William La Marca^{2,3}

¹Skylos Ecology Pty Ltd, Victoria, Australia (she/her) tracy.lyten@skylosecology.com @skylos_ecology

²School of Life and Environmental Sciences, University of Sydney, New South Wales, Australia

³Team Kowari

This research was undertaken on land important to the Wangkangurru, Ngamini, Karangura, and Yarluyandi peoples, among other First Nations peoples. We acknowledge the Traditional Owners and pay our respects to Elders past, present, and emerging.

The kowari (*Dasyuroides byrnei*) is a small carnivorous marsupial and the largest remaining dasyurid of Australia's arid interior. Recently uplisted from Vulnerable to Endangered under federal legislation, the species has experienced severe declines across stronghold populations in South Australia. Reliable detection of active burrow systems is fundamental to kowari research and recovery planning, yet the cryptic nature of the species and the remote landscapes it inhabits challenge conventional survey methods.

This presentation will share insights from a world-first trial deploying conservation detection dogs (CDDs) to identify active kowari burrows, undertaken in collaboration with the University of Sydney on a pastoral station in the Stony Desert bioregion, South Australia. We will discuss the unique training challenges of working with a rare, wild-only species, the extraordinary scenting capabilities that make CDDs suited to this task, and the journey of preparing dogs and handlers for a remote arid-zone deployment.

The trial was a success, with dogs locating active kowari burrows that subsequently enabled downstream ecological research by our University of Sydney collaborators. These findings demonstrate the significant potential of conservation detection dogs as a survey methodology for cryptic, low-density, arid-zone mammals, and open new possibilities for kowari monitoring and recovery efforts moving forward.

BUSHGUARDIAN: A SMART TRAP FOR FERAL CATS

Trish Fleming¹, Kenji Irie², Helen Blackie², Dave Algar³, Melissa Thomas¹

¹Harry Butler Institute, Murdoch University,

²Critter Solutions Ltd. New Zealand,

³Department of Biodiversity, Conservation and Attractions

Bio: Trish Fleming The work described in this talk is the culmination of 6 years of collaboration between Australian and New Zealander researchers towards developing a novel trap to target humane removal of feral cats. The trap represents a game changer for how we can protect native species from feral cat predation.

Predation by feral cats is one of the most significant threats to priority threatened species in Australia. Threatened species across Australia will therefore benefit from affordable smart technology that can improve introduced predator control. The BushGuardian is a fully automated smart camera based on the CSL Multi-trap™, which is configured specifically to identify cats using on-board 'edge' artificial intelligence (AI) species detection, and respond to the presence of feral cats in real time. The camera includes silent electronics to reduce the risk of scaring the cats, and novel methods for illuminating its field of view. The edge AI means that species identification is processed locally, on the device, and therefore the camera can make independent decisions in a matter of milliseconds without having to connect to the internet or cloud, providing the speed of response that is essential for its autonomous trigger mechanism. Pen trials have demonstrated that the traps can deliver a humane and immediate outcome, meeting the requirements of a Class B trap under the New Zealand Animal Welfare Advisory Committee (NAWAC) Guidelines. The BushGuardian will reduce potential non-target impacts and promises to be affordable and flexible in terms of where they can be deployed. On-board communications allow the camera to also send through notification of what it has seen and triggered on, which can therefore act as an incursion alert or notification of trap activation. Our next step is field trials in Australia.

GENETIC RESCUE OF THE SOUTHERN BRUSH-TAILED ROCK-WALLABY

Willow Bourke

Wildlife Unlimited, 351 Main Street, Bairnsdale, Victoria, 3875

Bio: Willow (she/her) is an experienced project manager and field ecologist with over 19 years of experience in the land management and biodiversity sector. In recent years, Willow has specialised in recovery work for two threatened marsupials of east Gippsland: the Spot-tailed Quoll and the southern Brush-tailed Rock-wallaby (sBTRW). She leads survey work, live trapping and captive-wild translocations for the sBTRW and holds a key technical role managing the remnant wild population in east Gippsland. Her employer, Wildlife Unlimited, partners regularly with government, land managers, traditional owners, universities and other not-for profit organisations in delivery of environmental projects.

Victorian southern Brush-tailed Rock-wallaby (*Petrogale penicillata*) (BTRW) populations are critically endangered and require specific and targeted management to survive, including predator control and genetic augmentation. The only remnant wild population is estimated to contain approximately 60 individuals and exhibits marked genetic decline and inbreeding. The population has been slow to increase in size, mainly due to predation of pouch-emerging young.

Recent conservation translocations to and from the eastern Victorian site are the subject of this discussion. With the goal of increasing genetic fitness of the wild Little River Gorge population and a genetically robust captive breeding program, the following steps were taken:

- Translocation of four sBTRW from the wild to the captive breeding program (TNR) during 2015-18
- Translocation of sixteen hybrid sBTRW from captive to wild occurred in winter-spring 2019, 2020, 2022 and 2025

Results for captive to wild translocations 2019-22 are as follows:

- survival and movement – 45% of translocated animals survived one year, 36% of translocated animals survived three years;
- reproduction – 45% of translocated animals bred successfully by the third year after release;
- population size – after plateauing after the 2019-20 bushfires due to lack of successful recruitment, the population increased by 13 animals in 2025
- genetic diversity – this measure of success is unknown but likely to be met, with allelic diversity of offspring increasing.

Future plans for the sBTRW include establishment of new sites in Victoria and continuing integrated predator control, monitoring and genetic sampling of the remnant population.

THE ORAL SHIELD AS A TRIGEMINAL MECHANOSENSORY NAVIGATION ORGAN IN NEWBORN DASYURIDS: A NEW HYPOTHESIS FOR MARSUPIAL TEAT-FINDING

Yamila Gurovich¹ and Kenneth W.S. Ashwell²

¹ UNSW College, UNSW Sydney, NSW 2052, Australia.

² School of Medical Sciences, UNSW Sydney, NSW 2052, Australia.

Bio: Yamila Gurovich (she/her), yamila@unsw.edu.au @yamila.arty (Instagram)

Newborn dasyurids are among the most altricial mammals. At birth, G1 neonates such as the Eastern quoll (*Dasyurus viverrinus*) and fat-tailed dunnart (*Sminthopsis crassicaudata*) have no functional vision, audition, olfaction or vestibular function, yet successfully locate and attach to the teat within minutes of birth using characteristic side-to-side head movements. How they navigate remains poorly understood. We propose that the oral shield, a perioral sensory epithelium bearing Merkel cell mechanoreceptors forming a raised ring surrounding the oral aperture of G1 neonates, functions as an active trigeminal mechanosensory organ guiding this scanning behaviour.

Evidence supporting this hypothesis converges from four independent lines: histological and genomic studies identifying Merkel cell mechanoreceptors concentrated in the perioral region of newborn dasyurids, with molecular confirmation of Merkel cell specification gene upregulation in dunnart facial tissue; neuroanatomical data showing the trigeminal sensory nuclear complex is the only mature CNS structure at birth in G1 marsupials; a cross-marsupial grade in which oral shield prominence is highest in G1 dasyurids, reduced in G2 species, vestigial in G3 and absent in monotremes; and filmed births confirming that characteristic head-scanning behaviour ceases at teat attachment, consistent with mechanosensory detection. These findings position the oral shield as the primary peripheral sensory structure mediating teat-finding in dasyurids, with implications for understanding the evolution of neonatal guidance systems across marsupials.

Wednesday 8th July 2026

Joint AMS/ABS conference

Shine Dome – Ian Wark Theatre, with additional seating in the Ballroom

Session 1: 08:30 – 10:30

ABS President's Early to Mid-career Researcher Award plenary

REVIEW OF EFFECTIVENESS OF WIND FARM COLLISION RISK AVOIDANCE AND MITIGATION MEASURES FOR BATS

Emmi van Harten, Simone Stevenson, Kasey Stamation, Tessa Mazor, Phoebe Macak, Pia Lentini, Inka Veltheim, Danny Rogers, Steve Griffiths and Lindy Lumsden

Arthur Rylah Institute for Environmental Research, Department of Energy, Environment and Climate Action, 123 Brown Street, Heidelberg, Victoria 3084

Bio: Dr Emmi van Harten (she/her) is a scientist at the Arthur Rylah Institute for Environmental Research and Adjunct Research Fellow at La Trobe University. Her PhD research developed novel monitoring methods for investigating population dynamics of threatened cave-dwelling bats. Since 2021, her work has focused on wildlife and renewable energy, including assessment of impacts to threatened bats and birds at wind farms, technical advice for policy development, and undertaking research relating to the impacts and mitigation of wildlife collisions at wind farms.



Wind energy is an important part of Australia's renewable energy transition to achieve net-zero emissions by 2050, however wind farms cause bat mortalities through turbine collisions. Avoidance and mitigation measures are vital for minimising these fatalities. We undertook a comprehensive review of scientific and grey literature on mitigating bat collisions at onshore and offshore wind farms. For each mitigation, we summarised: (1) how it was applied; (2) demonstrated efficacy; and (3) feasibility considerations. Because most available evidence originates from the northern hemisphere, findings were interpreted with caution for the Australian context. Site selection (macro-siting) and turbine placement (micro-siting) are important early design steps. Low windspeed curtailment is the most well-studied mitigation measure, consistently demonstrating statistically significant reductions in insectivorous bat mortality, and generally relatively low energy loss due to being applied in low wind speeds when less energy is being generated. 'Informed' curtailment options (including 'predictive' and 'acoustic-triggered' approaches) also show promise for minimising energy loss while reducing bat mortality, though these require local development and testing. Automated shutdown technology applies curtailment 'on-demand' and has been used for large diurnal raptors but may have applicability for flying-foxes (through radar, thermal or infra-red imaging). Evidence for the effectiveness of ultrasonic deterrents for echolocating bats is variable and conflicting, and constrained by how far high-frequency sound can be projected. Mitigation measures are largely untested in the offshore environment. Post-construction mortality monitoring remains critical due to the difficulty in accurately predicting risk to bats, to assess mitigation effectiveness and inform adaptive management.

INTRINSIC AND ENVIRONMENTAL DRIVERS OF TORPOR AND AROUSAL DURING HIBERNATION IN THE CRITICALLY ENDANGERED SOUTHERN BENT-WINGED BAT

Tomás Villada-Cadavid¹, Nicola Bail², Lindy F Lumsden³, Nicholas C Wu^{1,4,5}, Justin A Welbergen¹, Christopher Turbill^{1,6}

¹ Hawkesbury Institute for the Environment, Western Sydney University, Richmond, NSW, 2753, Australia

² School of Biological Sciences, The University of Adelaide, Adelaide, South Australia, Australia

³ Arthur Rylah Institute for Environmental Research, Department of Energy, Environment and Climate Action, Heidelberg, VIC, 3084, Australia

⁴ Centre for Terrestrial Ecosystem Science and Sustainability, Harry Butler Institute, Murdoch University, Murdoch, WA, 6150, Australia

⁵ School of Environmental and Conservation Science, Murdoch University, Murdoch, WA, 6150, Australia

⁶ School of Science, Western Sydney University, Richmond, NSW, 2753, Australia

Bio: Tomás Villada-Cadavid (He/Him). I am an ecologist and PhD candidate at Western Sydney University, specialising in the winter ecology of cave-roosting bats. My journey began in Colombia, where my undergraduate research focusing on bat diversity led to the establishment of an area of importance for bat conservation. After completing my MSc research on bat swarming in Catalonia, Spain, I transitioned to my current doctoral work, linking bat winter ecology and physiology to their vulnerability to white-nose syndrome and climate change. I am passionate about using technology to bridge the gap between physiological and ecological data and practical conservation strategies. tomasir012@gmail.com, Bluesky: @tomasvillada.bsky.social, X: @TomasVCphoto, Instagram: @tomasvcphoto, LinkedIn: <https://www.linkedin.com/in/tomas-villada-cadavid-b7a636179/>



Survival during cooler months is vital for long-lived insectivorous bats relying on energy-saving torpor and fat reserves. Changing climates and novel pathogens may further disrupt their energy balance. To predict the potential impact of climate change and disease on bat populations in seasonal environments, it is critical to understand the environmental factors influencing torpor patterns and fat use across winter. We recorded skin temperature of 58 individuals of the critically endangered southern bent-winged bat (*Miniopterus orianae bassanii*) across three caves over two winters to quantify torpor, arousal, and body mass patterns. Torpor bout duration was often < 24 h (mean $\pm$ SD: 23.3 $\pm$ 15.4 h) and up to 10.1 days, with most arousals synchronised with sunset. Bats spent on average 6 h per day in normothermia. Colder nights, higher body mass, and colder cave microclimates were associated with longer torpor bouts and lower daily arousal probability. Body mass was low during early winter, potentially indicating the absence of pre-winter fattening due to drought, limiting energy reserves and increasing winter activity as a strategy to avoid starvation. Torpor flexibility enables bats to adapt to fluctuations in resource availability, yet increasing climatic variability could still challenge winter survival. Given the long torpor periods observed, we also suggest potential sensitivity to white-nose syndrome, as fungal exposure may elevate arousal frequency and immune responses. Our findings highlight that protecting roosts from disturbance and maintaining foraging habitat are essential for increasing the resilience of threatened bat species in mild temperate climates, particularly under increasingly unpredictable conditions.

GLOBAL FUR TRAITS: FROM ARCTIC THICK TO DESERT SLICK

Kelsey Graham, Natalie Briscoe and Michael Kearney

School of Biosciences, University of Melbourne

Bio: Kelsey Graham (she/her). I am a PhD candidate studying the eco-physiology of feral cats and foxes in Australia. I am broadly interested in how environmental factors limit when and where these invasive predators can be active. Using a combination of biophysical modelling and empirical field data, I am hoping to further our mechanistic understanding of Australia's invasive predators to make predictions about how these species may respond to climate change and to inform future pest management. Email: graham.k@student.unimelb.edu.au



Fur is a characteristically mammalian feature that reflects a balance of competing biological interests, such as camouflage, locomotion, and heat exchange. Although costly to maintain, the fur coat is a key avenue through which mammals can adapt to novel thermal environments, rather than or in addition to physiological or body size adjustments. Fur traits directly influence the energy expenditure required to

maintain an appropriate body temperature; fur must both conserve heat in cooler conditions but allow for heat loss during periods of activity, such as foraging. The red fox (*Vulpes vulpes*) is the world's most widely distributed canid, occupying diverse biomes ranging from Arctic tundra to Australia's arid deserts. Its global success has been linked to its highly opportunistic and dispersive nature. However, variation in fundamental morphological traits, such as fur characteristics, has yet to be fully explored in understanding the ubiquity of this species. In this talk, I will present an analysis of how red fox fur traits vary across seasonal and climatic gradients, using measurements from museum specimens from across the species' global range in North America, Eurasia, and Australia. Applying thermodynamic principles of heat exchange, I will discuss how observed phenotypic variation in fur traits affects the heat budgets of this widespread species. Generally, this talk also provides an example of how biophysics can be applied to understand, and potentially predict, biogeographic patterns of phenotypic variation.

FOREST VOICES: LANDSCAPE-SCALE MONITORING OF FOREST FAUNA USING ACOUSTIC SENSORS, ARTIFICIAL INTELLIGENCE AND ROBUST ANALYTICS

Brad Law, L. Gonsalves, T. Brassil, C. O'Loughlin and G. Villanueva

Forest Science, NSW Primary Industries and Regional Development. brad.law@dpi.nsw.gov.au

Landscape-scale monitoring is needed to assess the changing status of fauna and is especially important with increasing climate change and megafires. However, care is required to collect rigorous data and avoid wasting resources. Remote acoustic sensors coupled with artificial intelligence provides a cost-effective approach for detecting vocalising forest fauna over multiple nights. Robust analytical approaches that account for imperfect detection can then generate occupancy trends while also identifying correlates of change. We present trends for a passive acoustic forest monitoring program at 224 sites across 8.5 million hectares of forest in northeast NSW between 2015 to 2022, which spans before and after 'black summer' mega-fires burnt much of the study region in 2019. An extensive dataset has accumulated through the program comprising: >25,000 hours of nocturnal recording over >2,500 nights. We used semi-automated AI call recognition for a dozen iconic forest species to derive trends over eight years and focus on five vocal mammal species here. Koala occupancy remained high and stable, although extent of both severe fire and 16-30 year old stands from past heavy timber harvesting (pre-current EPA regulations) increased site extinction probability. Colonisation probability was constant and offset extinction. In comparison, Yellow-bellied Glider occupancy increased during the study and was most strongly influenced over time by variation in NDVI (drought and fire). Trends for additional species will be presented. Monitoring over a regional scale is important for assessing the changing status of fauna together with dynamic covariates that can help explain candidate drivers of trends.

GENETIC STRUCTURE EMERGES AT DIFFERENT SPATIAL SCALES IN TWO CO-OCCURRING THREATENED BATS, *CHALINOLOBUS DWYERI* AND *VESPADELUS TROUGHTONI*

Lachlan J. McRae¹, Caragh G. Threlfall¹, Chad T. Beranek², Brad Law³, and Rachael Dudaniec¹

¹School of Natural Sciences, Faculty of Science and Engineering, Macquarie University, NSW, Australia

²School of Environmental and Life Sciences, University of Newcastle, Callaghan, NSW, Australia

³NSW Department of Primary Industries and Regional Development, Forest Science, Parramatta, NSW, 2124

Bio: Lachlan J. McRae (he/him) Lachlan.mcrae@hdr.mq.edu.au <https://www.linkedin.com/in/lachlan-mcrae/>



Population genetics can reveal hidden patterns of connectivity that are difficult to detect from field observations alone. This study investigated genetic structure and connectivity in two co-occurring threatened bats of eastern Australia, the large-eared pied bat (*Chalinolobus dwyeri*) and eastern cave bat (*Vespadelus trougtoni*). Both species occur in broadly similar forested rocky landscapes, but they

differ in roosting ecology, with *C. dwyeri* being more restricted to natural rocky roosts, while *V. troughtoni* uses a wider range of natural and anthropogenic structures. Using genome-wide SNP data from New South Wales and Queensland, we asked whether these ecological differences are reflected in how populations are genetically connected across the landscape. The answer is not as simple as we expected. These findings have important implications for how local roost networks should be defined and managed in conservation planning.

PHYSIOLOGICAL TOOLS FOR MONITORING URBAN IMPACTS AT THE ROOST LEVEL IN INSECTIVOROUS BATS

Robin Rowland¹, Dr. Kerry Fanson², Dr. Alexis Levensgood¹, Prof Stuart Parsons³, Dr. Clare Stawski¹

¹ School of Science, Technology and Engineering, The University of the Sunshine Coast, Sippy Downs QLD 4556

² School of Agriculture, Biomedicine and Environment, La Trobe University, Melbourne 3086

³ Faculty of Science, University of Canterbury, Christchurch 8140, New Zealand

Bio: Robin Rowland (she/her), rrowland@usc.edu.au; @stressedoutbats

Urban-tolerant insectivorous bats frequently utilise anthropogenic structures for roosting, yet the physiological consequences of living in anthropogenic structures and associated modified environments remain poorly understood. We validated an enzyme immunoassay to non-invasively monitor adrenocortical activity via faecal glucocorticoid metabolites (FGMs) in three species: the eastern broad-nosed bat, (*Scotorepens orion*), central-eastern broad-nosed bat (*Scotorepens sp.* [Parnaby]), and large-footed myotis (*Myotis macropus*). Over a two-year period, we sampled 932 bats at 33 roost sites across an urban gradient in South East Queensland, collecting 583 faecal samples. Using species-specific models, we examined how FGM levels varied with sex, reproductive state, and body condition, and assessed whether these measures differed among roost and land use types. For *M. macropus*, we additionally modelled FGM levels across 15 culvert roosts spanning a rural-to-urban gradient. We discuss how biological states interact with roost and habitat characteristics to shape adrenocortical activity, providing insights into the physiological effects of urban roosting in insectivorous bats.

GLOBAL BAT PEST SUPPRESSION SERVICES - STATE OF KNOWLEDGE

April Reside¹, Nayelli Rivera Villanueva, Rani Davis¹

¹School of the Environment, The University of Queensland, Gatton, 4343, QLD, Australia

Bio: April is a senior lecturer at the University of Queensland researching effective recovery of threatened species and ecosystems, despite the multitudes of threats including climate change, land use change and bad policies. April focusses on terrestrial vertebrates, particularly the flying ones. Email: a.reside@uq.edu.au

Insectivorous bats have been shown to provide enormous value to agriculture through their pest control services, providing savings in the billions per crop per year in avoided pest damage. However, research on this is patchy globally, and in early stages in Australia. Mechanisms that provide enabling conditions for bats to play their pest control role could improve outcomes for the environment and biodiversity in agricultural systems more generally. However, empirical evidence for the effectiveness of strategies for increasing bat pest control is lacking, and is a high priority for research. We have embarked on a global collaboration to bring together the current state of knowledge of bats as pest controllers, and evaluate existing evidence for the effectiveness of interventions. We have collated research findings from rice, cotton, cacao, macadamia, date palms, corn, fruit (including berries), vineyards and vegetables; and from Africa and Madagascar; Europe; Middle East; North, South and Central America; Asia and Oceania including the Pacific Islands. Several interventions have been proposed—including reducing agrochemical inputs, increasing landscape heterogeneity, and enhancing roost availability—but only the provision of artificial roosts has demonstrated measurable success, and only in one international study where roost installation reduced rice borer damage over a decade as bat occupancy increased. Our own research in vegetable and

macadamia crops in Queensland have shown bats do eat crop pests; but interventions are yet to be tested. This presentation will highlight the global state of knowledge of bats as pest controllers and key interventions showing the greatest promise.

FERTILITY CONTROL OF FEMALE BARE-NOSED WOMBATS WITH LEVONORGESTREL IMPLANTS

Graeme Coulson^{1,2}, Michelle Wilson^{1,3} and Jemma Cripps^{1,4}

¹The University of Melbourne, VIC 3010, Australia;

²Macropus Consulting, Carlton, VIC 3053, Australia;

³Wilson Environmental, Coburg, VIC 3058, Australia;

⁴Arthur Rylah Institute for Environmental Research, Heidelberg, VIC 3184, Australia.

Bio: Graeme Coulson (he/him), Email: gcoulson@unimelb.edu.au

A novel form of human-wildlife conflict occurs at Tidal River Campground in Wilsons Promontory National Park, Victoria. Bare-nosed wombats have become adept at breaking into campsites, stealing human food and damaging camping equipment. We explored the potential of fertility control to reduce the density of this problem population and break transmission of information to young wombats. We captured wombats in the campground at night with a heavy hand-net, restraining them manually to give an intramuscular injection of Zoletil 100 at a dose of 5-10 mg kg⁻¹. We marked individuals with a paired, colour combination of reflective ear-tags and a PIT tag inserted at the back of the neck. We also removed and euthanased any unfurred pouch-young (< 6 months old) to induce oestrus and mating. We randomly allocated adult females to treatment ($n = 12$) or control ($n = 10$) groups. Females in the treatment group received four subdermal 70-mg implants of levonorgestrel, a synthetic progesterone, via a small incision at the shoulder. We monitored the fertility of individuals for eight years after treatment through quarterly searches of the campground at night, recording the identity of wombats encountered and the presence of visible pouch-young and young-at-heel. Nine of the ten control females bred at least once in eight years; the tenth dispersed so was not monitored. In contrast, no females in the treatment group showed any evidence of breeding in eight years. We conclude that levonorgestrel implants are a simple and effective form of fertility control for this long-lived marsupial.

THE HAWKESBURY-NEPEAN PLATYPUS PROJECT: TRACING METAL CONTAMINANT PATHWAYS IN AN URBAN RIVER SYSTEM

Michelle M. Ryan¹, Madison A. White¹, Joanne H. Connolly², Anne Musser^{3,4}, Geoff J. Dutton², and Katherine G. Warwick¹

¹School of Science, Western Sydney University, Richmond, New South Wales, 2753, Australia.

²School of Agricultural, Environmental and Veterinary Sciences, Charles Sturt University, Wagga Wagga, NSW, 2678

³Palaeontology, Australian Museum Research Institute, Australian Museum, Sydney, NSW 339, Australia.

⁴Jenolan Caves Reserve Trust, Jenolan, NSW, Australia.

Bio: Dr Michelle Ryan is a Senior Lecturer in Ecology and Environmental Science at Western Sydney University, the current Hawkesbury-Nepean Waterkeeper and leads the Hawkesbury-Nepean Platypus Project. Michelle's research includes human impacts on aquatic environments with a focus on the ecological health of freshwater systems and aquatic animals. Her current research focuses on the iconic platypus and the health of platypus populations in the Greater Sydney region. Michelle works with communities, industry and government to protect the platypus and the waterways they call home. Email:

m.ryan@westernsydney.edu.au Socials: <https://www.instagram.com/hawkesburynepeanplatypus/>

<https://www.facebook.com/HawkesburyNepeanPlatypus>

The Hawkesbury-Nepean Platypus Project is a collaborative research initiative investigating the ecology and health of the platypus across one of Australia's most urbanised catchments. In Western Sydney, increasing urbanisation has raised concerns about the movement of contaminants through freshwater ecosystems and their potential impacts on wildlife. This study examines the mobilisation and trophic transfer of metal

contaminants, with a focus on zinc and mercury, across the Hawkesbury-Nepean River system. We quantified concentrations in water, sediment, macroinvertebrates, and platypus fur from sub-catchments representing contrasting land-use intensity. Macroinvertebrates showed evidence of metal uptake, including mercury, indicating transfer through the food web. Platypus fur contained a subset of these metals, with higher concentrations detected in individuals from urban catchments. These findings provide early evidence of contaminant movement from sediments to higher trophic levels within urban waterways, highlighting the role of platypus as bioindicators and reinforcing the importance of integrated catchment management in rapidly urbanising landscapes.

TALKING BATS

Shana Ahmed¹ and Keren Cox-Witton¹

¹ Wildlife Health Australia, 490 Northbourne Ave, Canberra, ACT 2602

Bio: Shana Ahmed (she/ her) Since 2023 Shana has worked at Wildlife Health Australia (WHA) as a Project Officer in the Wildlife Disease Surveillance team. Prior to this Shana has worked in South Australia and New South Wales in a variety of fields including eco-tourism, bush regeneration, environmental education and several years working in wildlife rescue and rehabilitation. At WHA she supports the Bat Health Focus Group which has inspired her interest in bats, their health, and their importance to the environment. sahmed@wildlifehealthaustralia.com.au, <https://www.instagram.com/wildlifehealthaustralia/>, <https://au.linkedin.com/company/wildlife-health-australia>

Bats are often portrayed negatively in the media through communication that uses sensationalised or exaggerated language and menacing images. This is particularly overt in media about zoonotic diseases associated with bats in Australia and overseas such as Hendra virus, Australian bat lyssavirus, Nipah virus and SARS-CoV-2. Negatively skewed communication can also occur about other bat health issues such as heat stress. This contributes to negative public perceptions of bats, which can lead to persecution and pose a threat to conservation and welfare. Informing the public of the potential disease risk from bats is important to protect human health. Likewise, raising awareness for bat diseases and encouraging the public to report sick and dead bats contributes to national disease surveillance and conservation. While these forms of messaging are factual and non-sensational, they can contribute to negative attitudes if not carefully crafted.

There is a need to balance information on the ecological importance of bats with necessary messaging about public health, biosecurity and surveillance while creating engaging communications. This presentation will provide an update on the uses and progression of the communication guides developed by Wildlife Health Australia's Bat Health Focus Group and the Australasian Bat Society, outline how balanced communication can be achieved across a range of bat health issues, and highlight key resources including PPE guidelines and information on the exotic disease white-nose syndrome. While this presentation will focus on bats, the principles of balanced communication on wildlife disease, biosecurity and surveillance can be applied to all mammal species.

Session 2: 11:00 – 12:45

THE INTERACTION OF DIET, NUTRITION, AND THE MICROBIOME: LONGTERM NON-INVASIVE SAMPLING OF THE KOALA

Imogen Dumville^{1,2}, Katrin Hohwieler^{1,2}, Samuel Phillips^{1,3}, Karen Marsh⁴, Kara Youngentob⁵, Cathryn Dexter⁶, and Romane H Cristescu^{1,2}

¹Centre for Bioinnovation, University of the Sunshine Coast, 90 Sippy Downs Dr, Sippy Downs QLD 4556, Australia

²Detection Dogs for Conservation, University of the Sunshine Coast, 90 Sippy Downs Dr, Sippy Downs QLD 4556, Australia

³School of Health, University of the Sunshine Coast, 90 Sippy Downs Dr, Sippy Downs QLD 4556, Australia

⁴Research School of Biology, The Australian National University, Canberra, ACT 2600, Australia

⁵Fenner School of Environment and Society, The Australian National University, Canberra, ACT 2600, Australia

Bio: Imogen Dumville (she/her) is a third-year PhD student at the University of the Sunshine Coast studying koala disease ecology, genetics, and pathogen monitoring. She is particularly passionate about research projects with direct conservation action, with previous work spanning conservation and population genetics, and wildlife disease evolution, with activism in her spare time. Her background and publications can be found on her LinkedIn Page (<https://www.linkedin.com/in/imogen-dumville>) or her ORCID (<https://orcid.org/0009-0005-3731-4198>). Email: imogen.dumville@research.usc.edu.au.



The koala, *Phascolarctos cinereus*, is a cultural and tourism icon of Australia and is found across multiple Eastern states - but is now endangered across most of its range. Chlamydial disease (*Chlamydia pecorum*) is a primary threat to koalas, and the number one cause of death at wildlife hospitals. Despite its prevalence, Chlamydia's impact on koalas across Australia is a conundrum, with disease inconsistently affecting individuals and populations. Determining the factors that contribute to differing infection levels and disease outcomes is crucial to inform koala conservation.

We used non-invasively collected scat samples from 25 individuals, followed between 1-8 years in 2 distinct Queensland koala populations. Data on individual chlamydial infection and disease status was supplemented with long term monitoring, combined with scat-determined dietary diversity (by SNP panel), microbiome composition (via 16s sequencing), and nutritional quality (nitrogen quantification by NIR spectroscopy). Each of these factors has been linked to disease in other species but only studied in isolation in koalas.

The emphasis of this research is therefore threefold. Firstly, to test the power of non-invasive sampling in the conservation space. Secondly, to provide essential ecological baseline data for the koala across a diverse array of sexes and ages at a population and individual level. Thirdly, to investigate the relative contribution of diet, nutrition, and microbial diversity on *Chlamydia* disease outcome. This will provide explicit targets for conservation action and funding prioritisation for reduction of the prevailing threat of koalas across Australia.

INVESTIGATING LINKS BETWEEN ROOST DENSITY, SOCIAL NETWORKS, AND VOCAL VARIATION IN A COMMON URBAN-DWELLING BAT

Mei-Ting (Magic) Kao¹, Brad Law², Dieter Hochuli¹, Justin Welbergen³ and Caragh Threlfall⁴

¹ School of Life and Environmental Sciences, Faculty of Science, The University of Sydney, Camperdown, NSW 2050, Australia

² NSW Department of Primary Industries and Regional Development, Forest Science, Parramatta, NSW 2150, Australia

³ Hawkesbury Institute for the Environment, Western Sydney University, Richmond 2753, NSW, Australia

⁴ School of Natural Sciences, Smart Green Cities Research Centre, Faculty of Science and Engineering, Macquarie University, Macquarie Park, NSW 2113, Australia

Bio: Magic Kao (she/her), Email mei-ting.kao@sydney.edu.au

The density of wildlife roosts has declined due to urbanisation, potentially altering animal social interactions and communication. Roosts are a key factor shaping social networks in colonially roosting species, yet the influence of declining roost density on social communication and roosting patterns remains poorly understood. We examined how roost density affects social communication and network structure in Gould's wattled bats, *Chalinolobus gouldii*, within urban ecosystems. Colonies of *C. gouldii* typically congregate in bat boxes in urban green spaces during the maternity season. To answer the effects of roost density on social networks and social vocalisation variation, we quantified roost density through surveys of tree hollows and bat boxes. Social networks were constructed using data from banded individuals captured in bat boxes between 2020 and 2025. We recorded social vocalisations near roosts and extracted the most common social vocalisations, Syllable 1, assessing variation using Mahalanobis distance. At sites with low roost density, *C. gouldii* individuals aggregated into large colonies and showed greater variation in Syllable 1 between individuals. In contrast, sites with high roost density supported multiple subgroups with fewer

intergroup connections and lower variation in Syllable 1. These findings suggest that roost scarcity intensifies individual connectivity, which in turn increases social vocalisation variation in *C. gouldii*, potentially enhancing individual recognition. This study highlights the potential for ecological constraints to shape bat social networks and communication in urban ecosystems.

INVESTIGATION OF ANIMAL-VEHICLE COLLISIONS: INCIDENTS, CONSEQUENCES, MITIGATION, AND HUMAN DIMENSIONS

Sujatha Mayadunnage¹, R. Spencer¹, H. J. Stannard², C. Beckmann^{3,4}, J. M. Old^{1,5,6}

¹ School of Science, Western Sydney University, Hawkesbury, NSW, Australia

² School of Agricultural, Environmental and Veterinary Sciences, Charles Sturt University, Wagga Wagga, NSW, Australia

³ School of Science, RMIT University, 124 La Trobe Street, Melbourne, VIC 3001, Australia

⁴ School of Life and Environmental Sciences, Deakin University, 75 Pigdons Rd, Waurn Ponds, Victoria 3216, Australia

⁵ Hawkesbury Institute for the Environment, Western Sydney University, Hawkesbury, NSW, Australia

⁶ Translational Health Research Institute, Western Sydney University, Hawkesbury, NSW, Australia

*Corresponding author, A/Prof Julie Old, School of Science, Western Sydney University, Hawkesbury, NSW, Australia. Email: j.old@westernsydney.edu.au

Animal-Vehicle Collisions (AVC) are important socioeconomic, safety, human health, and animal welfare issues. This global concern is equally significant in Australia as, annually, thousands of animals collide with vehicles, resulting in humans being injured, property damage and animal deaths. The current study provides a first-hand account of AVC occurrences in Australia, discussing incidents, consequences, and mitigation measures, with special attention to wombats. This study also investigates human dimensions of wombats using the Theory of Planned Behaviour. An online questionnaire was used to gather information. While macropods and birds, accounted for the largest share of reported collisions, wombats were among the more frequently involved species. Our results show that those who had never been involved in an AVC were extremely concerned about their personal safety. Most respondents did not report incidents to the police and/or insurance companies for various reasons, including being unaware of what to do. Respondents suggested reasons for collisions with wombats with most suggesting wombat behaviour to be an issue. Some respondents indicated that avoiding the collision was impossible. The majority believed that subjective norms and perceived behaviour control are important. More female respondents were willing to participate in future wombat conservation intentions. These findings highlight the importance of improving drivers' knowledge of road safety and draws special attention to how to behave in wildlife areas and what to do in an AVC. This study will aid in the conservation of wildlife and improve road safety as it shows how the public views wildlife.

TREATMENT OF SARCOPTIC MANGE IN WOMBATS USING MOXIDECTIN

Eliza K. Stott¹, L.F. Skerratt¹, T. Whitem², M. Leeming³, K. Pillay⁴, G.S. Doran⁷, B. Gardner¹, M. Lynch¹, M. Klein⁸, P. Holz¹, A. Weithoelter¹, T. Chen¹, J. Hufschmid¹, A.P. Woodward^{5,6}

¹ Melbourne Veterinary School, Faculty of Science, The University of Melbourne, 250 Princes Highway, Werribee VIC 3030, Australia

² College of Science and Engineering, James Cook University, 1 James Cook Drive, Townsville QLD 4811, Australia

³ Bio21 Molecular Science and Biotechnology Institute, The University of Melbourne, 30 Flemington Road, Parkville VIC 3053, Australia

⁴ Sydney Zoo, 700 Great Western Highway, Bungaribee NSW 2767, Australia

⁵ Faculty of Health, University of Canberra, Bruce ACT 2617, Australia

⁶ Precision One Health Initiative, College of Veterinary Medicine, University of Georgia, Athens, GA 30602, USA

⁷ Charles Sturt University, School of Agricultural, Environmental and Veterinary Sciences, Wagga Wagga, NSW 2678, Australia

⁸ Australian Synchrotron/ANSTO, 800 Blackburn Road, Clayton 3168, Australia

Sarcoptic mange is a major disease of bare-nosed wombats (*Vombatus ursinus*), with severe animal welfare impacts and potential population-level consequences. Management of this disease currently relies on pour-

on antiparasitic treatment of individuals, yet dosing strategies remain largely unvalidated. We combined pharmacokinetic (PK) modelling with a field trial to evaluate the effectiveness of transdermal moxidectin under realistic management conditions. A PK study in 12 wombats, following intravenous (n=4), subcutaneous, and transdermal administration (n=8, receiving both administration routes one month apart), demonstrated extremely low transdermal bioavailability (<1%), indicating minimal systemic absorption. Despite this limitation, alternative delivery routes are constrained by the practicalities of treating free-ranging animals, with volunteer-based application remaining the primary method for disease management. Dose-simulation modelling informed a treatment regimen of 10 mg/kg applied at 5-week intervals. This regimen was trialled in 12 free-ranging mange-affected wombats at Wilsons Promontory National Park, alongside 4 healthy controls. Individuals were recaptured at weeks 0, 2, 6, and 15 to assess clinical response. Treatment resulted in clear improvement in clinical condition across all individuals. However, persistent lesions remained in regions peripheral to application sites. These outcomes align with PK findings and suggest that limited systemic distribution may constrain complete treatment efficacy. Our results demonstrate the limitations of moxidectin in the treatment of sarcoptic mange in wombats, coupled with the practical limitations of multiple follow up treatments, calls for an improved delivery strategies in wildlife disease management for sarcoptic mange in wombats.

GOING PLACES: POPULATION DIFFERENCES IN SENSITIVITY TO CLIMATE WARMING REVEALED BY VIRTUAL TRANSPLANTS IN A WIDESPREAD BAT

Ruvinda K. de Mel¹, Kristoffer H. Wild², Shannon R. Conradie³, Michael R. Kearney², Zenon J. Czenze¹

¹Centre for Behavioural and Physiological Ecology, School of Environmental and Rural Science, University of New England, Armidale, NSW 2351, Australia.

²School of BioSciences, The University of Melbourne, Parkville, Victoria, Australia.

³School of Animal, Plant, and Environmental Sciences, University of the Witwatersrand, 1 Jan Smuts Ave, Braamfontein, Johannesburg 2001, South Africa.

Species with cosmopolitan distributions experience contrasting microclimates leading to some populations being disproportionately affected by climate change. We measured physiological variables of lesser long-eared bats (*Nyctophilus geoffroyi*) from arid, semi-arid and temperate ecosystems to investigate the intra-specific differences in their thermal physiology. Using these data, we parameterised a biophysical model to investigate the lethal dehydration and acute hyperthermia threats faced by each population under varying climate change scenarios. Our physiological data showed that the heat tolerance limits of arid and semi-arid bats were 2 °C higher than the temperate bats. Our biophysical models revealed that arid bats faced the greatest current threat of lethal dehydration and acute hyperthermia (17.3 ± 9.72 days year⁻¹) and this is expected to triple under +4 °C climate scenario (47.2 ± 12.3 days year⁻¹). Our modelling technique also allowed for *in silico* reciprocal transplants. The transplants illustrated that although the thermal physiology of arid bats currently confers an advantage when contending with high T_a s, under a +4 °C scenario arid bats would face 2.5 more lethal dehydration days per year than if temperate bats were transplanted to the arid ecosystem. We emphasise that despite their higher heat tolerance limits and thrifty water economy, arid bats are at a disproportionately higher risk from T_a increases due to global climate change. Our results underscore the need of pre-emptive conservation measures such as creating artificial water sources and thermally buffered artificial roosts, tailored to ensure the persistence of arid bats in a warming world.

ASSESSING THE RELIABILITY OF CURRENT SCORING SYSTEMS FOR DETECTING SARCOPTIC MANGE IN FREE-RANGING WOMBATS

Grace Holland, Jasmin Hufshmid and Lee Skerratt

Department of Veterinary Biosciences, Melbourne Veterinary School, The University of Melbourne, Werribee, Victoria, Australia

Bio: Grace Holland (she/her) is a recent Bachelor of Science (Honours) graduate from the University of Melbourne, where she studied Zoology, Ecology & Conservation and completed her honours in Veterinary Bioscience. Her honours research centered on improving sarcoptic mange detection in bare-nosed wombats. She's passionate about protecting native biodiversity and is excited to see where a career in conservation takes her. You can find her on LinkedIn or on Instagram at @_graceholland.



Sarcoptic mange is an emerging wildlife disease affecting over 150 mammal species globally, with bare-nosed wombats (*Vombatus ursinus*) among the most susceptible species in Australia. The disease is frequently monitored using visual scoring systems to estimate severity, treatment efficacy and disease dynamics, particularly where diagnostic confirmation is not feasible. Despite their importance, the precision of these systems has not been assessed. This study assessed the reliability of three scoring systems, one holistic system and two region-based systems, to inform recommendations for how visual assessment of mange in wombats should continue. Data were collected from three pairs of field-observers and 16 independent observers scoring wombat images. Field-based scoring demonstrated higher inter-observer agreement compared to image-based assessments when observations were made for healthy wombats in optimal environmental conditions, while agreement for image scoring was notably worse, with focal regions such as the flank performing better than less conspicuous regions. Agreement improved as observers became more familiar with the scoring systems, highlighting the importance of training. A usability survey revealed that existing systems were perceived to struggle to balance practicality and complexity, with suggestions to incorporate lesion severity and affected area size. To address the lack of surface area weighting in region-based systems, body surface area was calculated from three wombat cadavers and applied to a weighted scoring approach. Two evidence-based scoring systems are proposed, though further validation is required. These findings have broad implications for disease monitoring and management of bare-nosed wombats and provide a basis for surveillance of other susceptible species.

SHRINKING FORESTS, SHIFTING FAUNA: URBANISATION AND CHANGING OCCUPANCY OF ARBOREAL MAMMALS IN SOUTHEAST QUEENSLAND, AUSTRALIA

Kirstie Starr¹, Clare Morrison¹, Guy Castley¹

¹School of Environment and Science, Griffith University, Queensland, 4215, Australia

Bio: Kirstie Starr (She/Her) is a PhD candidate on the Gold Coast researching the extinction debt of urbanisation on arboreal mammals in Southeast Queensland. Her work investigates how historical and ongoing urban development drives continued biodiversity loss, identifying which arboreal species are most vulnerable to these pressures. Using field surveys, historical data, and spatial modelling, she examines long-term population patterns to inform more effective and sustainable conservation planning. Her research highlights the need to protect both old growth forests and urban remnants before biodiversity declines become irreversible. Email: kirstie.starr@griffithuni.edu.au. Socials <https://www.linkedin.com/in/kirstie-starr-env227/> <https://www.instagram.com/littlekirstietravels/>



Urbanisation drives habitat modifications, disrupting native ecosystems and threatening biodiversity. As these pressures intensify, many native species decline or suffer local extinction, with arboreal mammals especially vulnerable due to their dependence on forests. The legacy of historical landscape modifications can leave populations further exposed, compounding extinction risks as urban expansion continues. This study examined long-term shifts in arboreal mammal occupancy relating to urban-driven landscape changes over three decades and assessed evidence of local extinctions. Using Southeast Queensland as a rapidly urbanising case study, we compiled historical occurrence records from the Global Biodiversity Information Facility for the four glider and five possum species that traditionally inhabit the region. These records were analysed alongside temporal changes in remnant vegetation, built-up area, urban footprint,

and road networks to quantify landscape transitions. Results showed progressive expansion of urban areas, reducing remnant vegetation. Furthermore, the number of individual forest patches increased, while mean patch size decreased, indicating continuing fragmentation of once larger forests. Although arboreal species sightings increased over time, this pattern was likely influenced by the rise of citizen science platforms (e.g., iNaturalist, Atlas of Living Australia). When survey effort was incorporated into the analysis, changes in occupancy patterns were species-dependent, with species such as the greater glider showing declines. These findings suggest that despite higher detection rates, many arboreal mammals in Southeast Queensland are experiencing long term habitat contraction and may be approaching localised extinction under continued urbanisation trends. Recognising these shifts is critical for shaping effective conservation and urban planning outcomes.

A NEW SPECIES OF BAT FOR AUSTRALIA – THE COASTAL WATTLED BAT (*CHALINOLOBUS ORARIUS*)

Damian Milne¹, Glenn Hoyer² and Harry Parnaby³

¹ Flora and Fauna Division, Department of Lands, Planning and Environment, PO Box 496, Palmerston, NT, Australia.
damian.milne@nt.gov.au

² PO Box 271, Belmont, NSW, Australia.

³ Australian Museum Research Institute, Australian Museum, 1 William Street, Sydney, NSW, Australia.

Bio: **Damian Milne** is a Senior Scientist with the Northern Territory Department of Lands, Planning and Environment and has worked on fauna conservation and management across the Top End for the past 30 years. He is the lead for biodiversity data management for the NT and he also has a particular interest in bats. Damian is currently working on the Australian Mammal Mapping Project.

Recent research has confirmed the presence of a previously unrecognised bat species in Australia: the Coastal Wattled Bat (*Chalinolobus orarius*). Since the early 2000s, surveys in northern Australia had reported bats resembling Gould's Wattled Bat (*C. gouldii*), but differing in size and echolocation frequency. The lack of clear diagnostic traits hindered taxonomic resolution. This uncertainty was resolved following the formal description of *C. orarius* in Papua New Guinea and the identification of distinctive morphological characters, notably an incipient secondary cusp on the upper first incisor in combination with an enlarged pendent skin lobe at the base of the ear. These features were subsequently confirmed in several Northern Territory museum specimens. Comparative analyses of cranial and external measurements show close concordance with the type series of *C. orarius*.

All confirmed Australian records occur in low-lying coastal environments of the Northern Territory, within 5 km of the coastline, primarily in mangrove systems and adjacent *Eucalyptus* open forests below 100 m elevation. The species appears uncommon and possibly rare in Australia, although historical misidentification may have masked its true distribution. This finding adds a new species to the Australian bat fauna and underscores the need for targeted surveys and revised identifications of northern Australian *Chalinolobus* specimens to clarify distribution, abundance and conservation status.

RESIDENCE AND RESILIENCE OF PLATYPUSES THROUGH MULTIPLE DESEDIMENTATION WORKS IN THE BLUE LAKE, JENOLAN KARST CONSERVATION RESERVE (JKCR)

Anne Musser^{1,2}, Tom Grant³, Eren Turak⁴, Michelle Ryan⁵, Katherine Warwick⁵, Joanne Connolly⁶ and Geoffrey Dutton⁶

¹Jenolan Caves Reserve Trust, Jenolan NSW Australia

²Palaeontology, Australian Museum Research Institute, Australian Museum, Sydney NSW Australia

³School of Biological, Earth and Environmental Sciences, University of New South Wales, Sydney NSW Australia

⁴Department of Climate Change, Energy, the Environment and Water (NSW DCCEW), NSW Australia

⁵School of Science, Western Sydney University, Richmond NSW Australia

⁶School of Agricultural, Environmental and Veterinary Sciences, Faculty of Science and Health, Charles Sturt University, Wagga Wagga NSW Australia

Bio: Anne Musser (she/her). Email: anne.musser@dcceew.nsw.gov.au Socials: <https://facebook.com/JenolanCaves>; <https://www.instagram.com/jenolancaves>

Musser *et al.* (2024, 2025) reported on the movements of platypuses (*Ornithorhynchus anatinus*) around natural and anthropogenic instream structures and their responses to two major desedimentation operations in the Blue Lake and upper Jenolan River in the JKCR. Subsequently, multiple medium to large later flood events again deposited boulders, gravel and finer sediments into the Blue Lake, requiring further but less extensive desedimentation works to be carried out. Here we report on movements, continued occupation and reoccupation of the Blue Lake by platypuses following these disturbances using observational, remote camera and live trapping data. Our data, including repeat captures of some microchipped individuals later in the study, suggests strong site attachment. As these works severely deplete the macroinvertebrate prey communities, we suggest that individuals return and continue to use the Lake primarily due to the suitability of its vegetation-consolidated banks being suitable for burrows. In an attempt to facilitate reestablishment of the macroinvertebrate community, mixed substrates were established after each desedimentation works, with monitoring of macroinvertebrates now being undertaken.

This research represents one of very few studies of the effect of repeated instream disturbances on platypus populations and is intended to continue as a monitoring project in the long term in the JKCR, with climate change predicted to result in such disturbances being on-going. The results to date highlight the species' resilience to change. Future monitoring will be invaluable to understanding and managing conservation of this iconic, unique and evolutionarily important species in response to both natural, anthropogenic and climate change-induced pressures.

THE SKULL OF *WANBUROO HILARUS*, AN EARLY STHENURINE KANGAROO FROM MIDDLE MIOCENE DEPOSITS OF THE RIVERSLEIGH WORLD HERITAGE AREA, QUEENSLAND, AUSTRALIA

Kenny J. Travouillon¹, Michael Archer², and Suzanne J. Hand²

¹Collections and Research, Western Australian Museum, Perth, Western Australia, Australia

²School of Biological, Earth and Environmental Sciences, University of New South Wales, New South Wales 2052, Australia

Bio: Kenny Travouillon Email: Kenny.Travouillon@museum.wa.gov.au. Bluesky: [kennytravouillon.bsky.social](https://bsky.app/profile/kennytravouillon.bsky.social)

The sthenurines, also known as the short-faced kangaroos, are an extinct subfamily of macropodids which was most diverse during the Pleistocene. The group included over 25 species in five genera, with the most well-known species being the 2-metre-tall giant short-faced kangaroo, *Procoptodon goliah*. Their origin goes back to the Miocene, though only three species are known from that time period: *Hadronomas puckridgi*, *Rhizosthenurus flanneryi* and *Wanburoo hilarus*. *W. hilarus* was first described from juvenile specimens found in Middle Miocene deposits in the Riversleigh World Heritage Area, Queensland. At the time of its description, *W. hilarus* was thought to be a 'bulungamayine', an extinct kind of ancient kangaroo. Over a decade later, several studies have used phylogenetic analyses to show that it is the oldest member of Sthenurinae. Upon re-examination of the Riversleigh material, several partial skulls of *W. hilarus* have been identified, enabling the first comparison of the cranial morphology of that species with the more recent sthenurine, *R. flanneryi*. While neither species can yet be characterised as having a shortened face, they provide clues about the early evolution of this subfamily, and how they diverged from the rest of the kangaroos. Most noticeable is their significant increase in size over time which would lead eventually to the well-known giants of the Pleistocene.

EFFECTIVE BAT BOX MONITORING: A CASE STUDY IN SOME 'DO'S' AND 'DON'TS' FOR BOTH BAT ECOLOGISTS AND PROJECT MANAGERS

Alison Martin, Mark Ambrose, Tracey Sanna, Fiona O'Meara and Oisin Canney

Greenloaning Biostudies Pty Ltd

Bio: Alison Martin (Ms) has worked as an ecologist for over 40 years, first assisting with trapping microbats in the 1970's. She has since worked with microbats in many parts of NSW and Qld and managed long term monitoring programmes for a range of threatened microbat species. These programmes have included 10 years of harp trapping and acoustic monitoring for cave and forest bats, mark-recapture monitoring of a Large Bent-winged Bat maternity colony over seven years, bat box monitoring in forest systems, and monitoring for numerous cave-roosting microbat species in a limestone karst system in north Qld. Whatsapp, LinkedIn, Facebook



The use of bat boxes for monitoring purposes has been growing in popularity over the past few decades, which, as for any survey or monitoring technique, has had mixed results. Factors generally considered to be important include the type and design of boxes, placement of boxes in the field, type of habitat to be monitored, target species and actual monitoring requirements/scope of works. But the field design of monitoring programmes and the practicalities of carrying out both cost and energy efficient monitoring of bat boxes, both of which contribute substantially to final outcomes, can be overlooked.

This presentation provides details of a recent case study within disturbed Swamp Forest habitat in Northern NSW. Greenloaning was requested to carry out the first annual monitoring survey for boxes installed in 2024. The project was conducted in conjunction with Australian Wetlands Consulting and was required as part of offsets for a residential development. The scope of works comprised:

- Monitoring of 113 boxes
- Recording box occupation by bat species including species present and numbers
- Recording any occupation of boxes by feral species
- Recording physical condition of boxes
- Photographing roost boxes at several locations

Although the monitoring, primarily using a video endoscope, successfully recorded three bat species, including one threatened species, there were a number of practical issues associated with the monitoring. These issues and practical solutions are discussed and the importance of involvement of field ecologists and thoughtful planning prior to bat box installation to achieve effective bat box monitoring programmes is discussed.

FERAL CAT FORAGING ON PHILLIP ISLAND REVEALS PREY SELECTIVITY

Glenn Maxwell¹, Duncan R Sutherland², **Anthony R Rendall**¹

¹School of Life and Environmental Sciences, Faculty of Science, Engineering and the Built Environment, Deakin University, Geelong

²Conservation Department, Phillip Island Nature Parks, Cowes, Phillip Island

Bio: Anthony Rendall is a Senior Lecturer in Conservation Biology at Deakin University and the Treasurer of the Australian Mammal Society. His research focusses on trophic dynamics, often between threatened or understudied taxa and invasive species, working on applied conservation solutions. His research spans the field of Landscape Ecology, Invasive and threatened species ecology, trophic dynamics, conservation translocations and behavioural ecology.



Feral cats are one of the most impactful feral species in Australia, preying upon critical weight range mammals. Their foraging ecology is thought to be influenced by prey availability, but few have measured directly how prey availability effects feral cat diet. We aimed to determine if feral cat diet relates to localised prey availability on Phillip Island, Victoria; quantify to what extent feral cats are consuming a novel prey species – Eastern barred bandicoots (*Perameles gunnii*) – since their translocation to the island; and assess how seasonal changes in resource availability and feral cat morphology affects diet. We used 364 feral cat stomachs containing prey to identify important prey species. Camera traps were used to

determine prey activity to compare prey consumed relative to their activity. We used eastern barred bandicoot expansion, NDVI, vegetation height, cat weight, sex and season were analysed to assess prey assemblage and Eastern barred bandicoot consumption. Feral cats selected house mice and rabbits more than their relative activity. Feral cats showed avoidance to Eastern barred bandicoots relative to their expansion. Diet assemblage changes with seasonal abundance of preferred prey. large feral cats consume the largest prey. Shearwaters are consumed year around and by the smallest cats. Feral cat predation has not prevented EBB establishment with feral cats showing avoidance. House mice and rabbits were consumed more than their activity, with selection changing seasonally. Our result support the idea that eastern barred bandicoots can co-exist despite feral cat predation. However, feral cats could still limit eastern barred bandicoots through disease transmission of *Toxoplasma gondii*. The strong reliance of feral cats on invasive prey species further reinforces the potential benefits of bottom-up invasive predator control, where rabbits and rats are controlled to indirectly reduce feral cat abundances.

Session 3: 13:45 – 15:55

AMS President's Early Researcher Award plenary

GENOMIC INSIGHTS ON THE EVOLUTION AND EXTINCTION OF AUSTRALIAN MAMMALS

Emily Roycroft

School of Biological Sciences, Monash University

Australia is in the midst of a biodiversity crisis, with over 100 species lost to extinction since European colonisation in 1788. Australia's mammals have been particularly impacted, with 46 extinctions in the past 250 years, and over 30% of surviving species at risk. Despite this immense loss of biodiversity, the genomes of many extinct species have been inadvertently preserved in specimens housed in museum collections. This historical record catalogues the genomic impact of catastrophic decline, presenting a unique opportunity to learn from the past, as we look to secure the future for our threatened species.

As well as being at imminent risk of extinction, Australia's diverse native mammals are important case studies for understanding how species adapt and evolve. Despite representing globally unique branches of the Tree of Life, there are many gaps in our understanding of the evolutionary history, diversification, biogeography, species boundaries and genome evolution of Australian mammals.

My research uses cutting-edge genomic tools applied to historical and modern museum specimens, to 1) understand the pattern and pace of biodiversity loss since European colonisation, and 2) reconstruct millions of years of evolutionary history of Australia's globally unique mammals.

A crucial component of these objectives has been developing and applying laboratory and computational methods to unlock the genomes from museum specimens up to 250 years old. The research carried out during my postdoctoral period has focused on genomics, macroevolution, and statistical analysis to address questions about evolutionary relationships, diversification, speciation, genomic adaptations, demographic history, genetic diversity and extinction in one of Australia's most threatened mammal groups; native rodents, but also includes various marsupial case studies.

Over the past five years, my research contributions include uncovering the rapid pace of mammal extinctions since European colonisation, discovering new species, documenting declines in surviving species, reconstructing millions of years of evolution in the Australasian region, and uncovering drivers of genetic diversity, genome evolution, speciation, and diversification. My research also revealed that Gould's mouse, previously thought extinct, had been 'hiding in plain sight' under another name, on an island in Shark Bay, Western Australia. As a result of this, we removed a species from the extinction list in Australia – a good news story that featured in 179+ news articles worldwide.

My published research works spanning 2021-2025 collectively represent the most species-complete genomic analyses of evolution, speciation, phylogeography and conservation genetics of an Australo-Papuan mammal radiation, resulting in fundamental insights into the timing and drivers of diversification in our region, providing biological support for the debated 'late emergence' geological hypothesis of New Guinea, the discovery of new species, and insight into the genomic basis of adaptation to new environments. These insights have been published in leading international journals, including *PNAS*, *Current Biology*, *Molecular Ecology*, *Biological Conservation*, *Evolution*, and *Genome Biology & Evolution*. Importantly, I have also focused on translating these results to inform conservation strategies for threatened species, e.g. informing genetic rescue, captive breeding and reintroductions of the threatened Pookila in Victoria, and the Boodie in WA.

ARE POOKILA LEAVING A TRACE? TRIALLING eDNA AS A SURVEY METHOD

Abby L. Dennien^{1,2}, John Dearnaley¹, Megan C. Edwards^{1,2}

¹ School of Science, Engineering and Digital Technologies, University of Southern Queensland, 487-535 West St, Darling Heights, 4350, Queensland, Australia

² Centre for Applied Climate Science, University of Southern Queensland, 487-535 West St, Darling Heights, 4350, Queensland, Australia

Bio: Abby Dennien (she/her) is a PhD candidate and casual academic at the University of Southern Queensland. Her research aims to better understand Pookila populations in Queensland. Prior to her obsession with rodents, she completed her honours degree trialling a new feral cat management method. Abby has worked with a wide range of native species both in the field and captive environments. Email: abby.dennien@unisq.edu.au



Environment DNA (eDNA) has been a successful tool for detecting species in aquatic environments. The application for detecting terrestrial species, using soil or air, is being increasingly explored. This emerging technique could greatly benefit species which prove difficult to detect using traditional methods. The Pookila (New Holland mouse; *Pseudomys novaehollandiae*), a threatened native rodent species, is a prime candidate due to difficulties in detection across part of its range. Live trapping surveys in Queensland over the last two and a half years have yielded very low detection rates, with just one Pookila detection. Therefore, this research investigated the use of eDNA as a survey method for Pookila. Following the development of a species-specific assay, we surveyed five known Pookila locations, sampling soil and swabbing the environment. Additional samples were taken from captive enclosures and active burrows at a Victorian reintroduction site, acting as positive controls. A single positive result was obtained from the swab of a captive Pookila enclosure. All other samples, including the soil sample from a captive enclosure, were negative. These results suggest the current soil-based sampling may not be viable for this species in the field. Instead concentrating on swabbing and targeting high use areas may improve detectability. This research represents the first use of eDNA to detect Pookila and provides preliminary insights for its use as a survey method for native rodent species. Reporting variable outcomes is critical for the refinement of emerging techniques and improving future applications.

HIDDEN COASTAL CORRIDORS: DRAINAGE CULVERTS FOR WILDLIFE ROAD CROSSING IN THE OTWAYS

Cate Oldham¹, Elizabeth Riviere¹, Jemma Cripps², Marissa Parrott³, Barbara Wilson⁴, Kaori Yokochi¹

¹Deakin University, Burwood, Victoria 3125, Australia,

²Arthur Rylah Institute, Heidelberg, Victoria 3084, Australia,

³Zoos Victoria, Parkville, Victoria 3052, Australia,

⁴Barbara Wilson Pty Ltd, Aireys Inlet, Victoria 3231, Australia

Bios: Cate Oldham (she/her) is an honours graduate with a keen interest in small mammal and threatened species conservation. She has camera and live trapping experience from her honours project along the



Great Ocean Road and her current role as a research assistant at Zoos Victoria. Email: cate.oldham@gmail.com

Elizabeth (Libby) Riviere (she/her) is an early-career wildlife ecologist. Her honours research explores how wildlife use road culverts along the Great Ocean Road. She enjoys working with a broad range of taxa and is interested in threatened species conservation and road ecology. Email: libriv17@gmail.com



Roads fragment habitat, limit wildlife movement and cause road mortality. This is a particular concern along the Great Ocean Road (GOR) in Victoria, where wildlife populations are losing habitat to coastal erosion and being forced inland. This study investigated if wildlife use existing drainage structures to facilitate road crossings under the GOR. Cameras were deployed at six drain entrances across five sites using a novel plastic umbrella base setup. Over multiple seasons, 31 different species were recorded at culvert entrances, with 16 species completing 563 crossings. The threatened swamp antechinus (*Antechinus minimus*) was recorded crossing three times. Introduced predators were recorded at culverts, and their presence was generally associated with fewer crossings by critical weight range mammals, suggesting avoidance behaviour. There was no evidence that predators used culverts to actively hunt prey. Crossings varied seasonally and were influenced by environmental factors and culvert structure. Drainage culverts can facilitate movement by a diverse range of species, and the conditions influencing crossings identified in this study highlight the importance of incorporating them into future management. These findings inform culvert design and maintenance, including predator control, to enhance connectivity for threatened species across landscapes fragmented by roads.

NAVIGATING THE NIGHT: ECOMORPHOLOGICAL ADAPTATIONS IN THE INNER EARS OF BATS

Maddison C. Randall¹, Kyle N. Armstrong², Sue J. Hand³, Gavin J. Prideaux¹, Rex Mitchell¹ and Vera Weisbecker¹

¹College of Science and Engineering, Flinders University, Bedford Park, SA, 5042, Australia

² Environment Institute, University of Adelaide, North Terrace, Adelaide, South Australia, 5005, Australia

³Earth & Sustainability Science Research Centre, Biological, Earth and Environmental Sciences, University of New South Wales, Sydney, NSW 2052, Australia

Bio: Maddison Randall (she/her) is a PhD candidate in the Weisbecker Lab at Flinders University. Her research focuses on the inner ear shape of bats and its connection to their diverse echolocation abilities. She uses 3D geometric morphometric and traditional linear measurements to investigate how inner ear morphology is shaped by echolocation, ecology and habitat complexity. Maddison's broader interests include the evolution of vertebrate sensory organs and bioacoustics.



An exceptional ability to navigate has arisen in many animals from the evolution of specialised super-sensory organs. In echolocating bats, the inner ears are optimised for detection of high-frequency sounds, enabling precise navigation in total darkness. This study therefore aimed to determine how the functional demands of specialised navigation have driven sensory diversification in bats. Echolocation signal structure is tightly coupled to habitat complexity and foraging strategies, so the structure of the inner ears should reflect ecological niches. Furthermore, bats that occupy similar niches might exhibit convergent morphological traits, regardless of proximity. To test these hypotheses, we used 3D geometric morphometrics to quantify inner ear shape across 145 species of bats representing 20 extant bat families. We assessed the association of shape variation with echolocation call type (Constant Frequency [CF] vs. Frequency Modulated [FM]), foraging strategy (gleaning vs. aerial hawking), and phylogeny to provide insights on the extent to which the functional demands of specialised navigation drive sensory diversification in bats. Preliminary results indicate that two CF-echolocating families—Rhinolophidae and Hipposideridae—differ in overall cochlear dimensions. The FM-echolocating family Megadermatidae also have a distinctive shape which might reflect their ability to detect prey-generated sound more than their echolocation signal structure. A clear picture has emerged of the balance between phylogenetic constraint and adaptive convergence in the chiropteran auditory system.

INTEGRATING MULTIPLE SPECIES TRAITS INTO POPULATION VIABILITY ANALYSIS FOR REWILDING SUCCESS

Bonita M. Mendel, Thomas M. Newsome, Nicholas Kennedy, Mareshell Wauchope, Patrick B. Finnerty, Catherine E. Grueber

School of Life and Environmental Sciences, The University of Sydney, Sydney NSW 2006, Australia

Bio: Bonita Mendel (she/her) is a PhD candidate in the School of Life and Environmental Sciences at the University of Sydney. Her research focuses on conservation and population genetics, investigating how wildlife translocation planning can be improved to conserve population genetic health. To address these questions, she uses approaches such as population viability analysis, meta-analysis and genetic analysis. She is currently part of the multidisciplinary ARC Linkage project, *Urban Rewilding: Ecologically and Community-informed Futures*, working to reintroduce the bogul (Dharug), a native bush rat (*Rattus fuscipes*), to urban reserves in northern Sydney to restore ecological function and keep common species common.



Rewilding uses methods such as reintroductions, which re-establish species within their indigenous range, to mitigate biodiversity loss. Yet, strategies for prioritising species for rewilding are often constrained to species with detailed demographic/life-history data. The use of trait databases could facilitate rapid assessments of larger groups of candidate species, to support planning by parameterising population viability analyses (PVA) and/or identify data gaps requiring targeted field observation. We developed and tested a rapid species-prioritisation approach for rewilding by investigating whether life-history information could be collected from trait databases and to what extent species traits predicted PVA-based reintroduction outcomes. For 38 Australian mammal species identified as currently/historically present in northern Sydney, we used a systematic trait database and literature search protocol with imputation where required. These data were used to parameterise PVA models in VORTEX and predict species reintroduction success in the short-term (probability of survival, population growth rate, mean time to extinction) and long-term (expected heterozygosity, mean inbreeding coefficient) to a 375-ha urban reserve. We found that age-related traits were readily available in databases, whereas mortality traits had to be sourced from scientific literature. From PVA estimates of reintroduction success, mortality rate and mean litter size were important predictors of short-term reintroduction success across species, and population density was an important predictor of long-term success. A 'fast' life-history strategy (high reproduction/low survival) also increased reintroduction success. Our approach systematically evaluated multiple species for rewilding and could be applied more broadly to other taxa/locations to rapidly assess reintroduction suitability and support rewilding strategy.

EVOLUTIONARY ADAPTATIONS OF THE AXIAL MUSCULOSKELETAL SYSTEM UNDERLYING BIPEDAL HOPPING IN MACROPODID KANGAROOS

Rika Nakagawa^{1,2} and Hideki Endo²

¹ Department of Global Agricultural Sciences, Graduate School of Agricultural and Life Sciences, The University of Tokyo, 1-1-1 Yayoi, Bunkyo-ku, Tokyo 113-8657, Japan.

² The University Museum, The University of Tokyo, 7-3-1 Hongo, Bunkyo-ku, Tokyo 113-0033, Japan.

Rika Nakagawa (she/her) is a PhD student at the University of Tokyo, studying comparative anatomy and functional morphology of marsupials. Her current research focuses on the morphological diversity and evolutionary adaptations of the axial musculoskeletal system in marsupials, with particular emphasis on locomotor function. Email: rikanakagawa@g.ecc.u-tokyo.ac.jp X: @__rika15



Marsupials exhibit diverse locomotor modes despite occupying ecological niches similar to those of placental mammals. Macropodidae use bipedal hopping powered by the hindlimbs, whereas placental herbivores such as ungulates occupying similar ecological niches rely on quadrupedal running. The morphological factors underlying this divergence have remained unclear. The vertebral column plays a key role in transmitting forces generated by the limbs and maintaining posture, thereby integrating whole-body locomotion. This study aims to clarify the morphological basis of hopping by examining variation in vertebral and muscular morphology in macropodid kangaroos.

Vertebral morphology was analysed in Macropodidae (n=63) and non-hopping marsupials (n=16). Muscular morphology was examined in Macropodidae (n=6). Variation along the vertebral column was evaluated using profile analysis, and body size effects were assessed using regression.

Results suggest that several traits previously interpreted as adaptations for hopping are also present in a non-hopping musky rat-kangaroo specimen, suggesting that they reflect phylogenetic influences rather than direct functional specialisations. In contrast, macropodids exhibit a reduction in ligament-associated structures, which may contribute to decreased passive stiffness of the vertebral column. These findings suggest that impact absorption at landing and elastic energy utilisation during hopping are likely associated with derived modifications of the vertebral column.

BREAKING THE LIMITS: INCLUSION OF EXTINCT MARSUPIALS INCREASES THE CRANIAL DIVERSITY OF MARSUPIAL MAMMALS

Samantha Smith-Kemp (she/her)¹, Anne-Claire Fabre (she/her)^{2,3,4}, Anjali Goswami (she/her)⁵, Jacob D. van Zoelen (he/him)¹, Fraser Brown (he/him)¹, D. Rex Mitchell (he/him)¹ and Vera Weisbecker (she/her)¹

¹College of Science and Engineering, Flinders University, South Australia 5042, Australia.

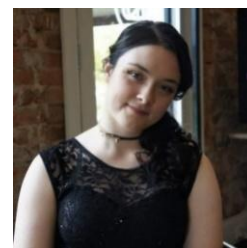
²Naturhistorisches Museum, Bern (NMBE), Bern, Switzerland

³Institute of Ecology and Evolution, Universität Bern, Bern, Switzerland

⁴Department of Life Sciences, The Natural History Museum, London, United Kingdom

⁵Natural History Museum, London, United Kingdom

Bio: Samantha Smith-Kemp (she/her) is a PhD candidate in palaeontology at Flinders University. Her research uses geometric morphometrics to investigate cranial morphological diversity in marsupials, which integrates both extant and extinct species to understand evolutionary patterns and constraints. Her work focuses on the importance of fossil data in shaping interpretations of marsupial diversity and challenging assumptions about marsupial adaptability. Email: smit1819@flinders.edu.au



Marsupials are the dominant group of Australian native mammals and have been central to debates on mammalian evolutionary adaptability and morphological diversity. Historically, marsupials have been considered constrained in cranial shape relative to placental mammals, often attributed to their early birth and limited diversity. However, extinct marsupials exhibit highly distinctive cranial shapes, particularly in Australia's extinct megafauna (Vombatiformes and many giant kangaroos). We tested whether extinct marsupials expand cranial morphospace and if this variation is related to size (allometry) with geometric morphometric analyses of 3D cranial meshes from 95 marsupial species across seven orders (70 extant, 25 extinct). We quantified morphological disparity and assessed allometric effects using Procrustes regression models. Extinct marsupials occupied a larger, less dense, and more displaced region of morphospace than extant species. Extinct taxa occupy new regions of morphospace beyond those represented by extant species. Allometry showed a significant but weak relationship between cranial shape and size, which suggests cranial shape variation is primarily driven by ecological and functional specialisation rather than size alone. The restricted morphospace of extant marsupials reflects the loss of ecologically and functionally distinct cranial forms. Analyses based only on extant species, therefore, underestimate marsupial morphological diversity and warrant further comparison with placental mammals.

FILLING THE GAP: GENETIC CHARACTERISATION OF THE KIMBERLEY GHOST BAT POPULATION

Diana Prada¹, Linette Umbrello¹, Kym Ottewell¹, Melissa Millar¹, Nicola Hanrahan^{2,3}, Kyle Armstrong⁴

¹Department of Biodiversity, Conservation and Attractions, Kensington, Western Australia, 6151

²Research Institute for the Environment and Livelihoods, Charles Darwin University, Casuarina, Northern Territory, Australia

³Hawkesbury Institute for the Environment, Western Sydney University, Richmond, New South Wales 2753, Australia

⁴ Adelaide University, North Terrace, Adelaide, South Australia 5005.

Bio: Dr Diana Prada (she/ her) is a research scientist with the Department of Biodiversity, Conservation and Attractions (DBCA) in Western Australia. Her background is in molecular ecology, with extensive experience applying molecular-based techniques across a range of conservation projects. Her research interest in bats began during her PhD, which examined the epidemiology and genetic structure of microbat populations in south-western Western Australia. Since joining DBCA's conservation genetics team in 2020, she has specialised in the non-invasive monitoring of the Pilbara ghost bat population. Email: diana.prada@dbca.wa.gov.au



The ghost bat, a Vulnerable species of national environmental significance under the *Environment Protection and Biodiversity Conservation Act 1999*, has a disjunct distribution throughout northern Australia. Local efforts to study and monitor their populations exist in Queensland, the Northern Territory (NT) and the Pilbara region in Western Australia (WA). Ghost bats are known to persist in the Kimberley region (WA), where a decrease in population size is suspected to have occurred, but baseline studies or continuous monitoring efforts have yet to be established. We report on recent efforts to confirm the occurrence of ghost bats in the western Kimberley and confirm their persistence in the eastern Kimberley. Aided by DBCA regional staff and local Indigenous Rangers, we collected samples for genetic analysis and identified key sites for ongoing monitoring programs. Samples for molecular analysis were of particular interest as the region is under-represented in existing studies. We obtained samples from 16 live and six mummified individuals, and 151 scats from roost accumulations. Population structure analyses based on single nucleotide polymorphisms amplified from the tissue samples revealed isolation by distance between the eastern and western Kimberley. As expected, the Kimberley and the NT populations are more genetically similar to each other than the Kimberley and Pilbara populations. Profiling of the unique genetic fingerprint of individuals from scat samples was highly successful, with 51 individuals identified. This work met a long-standing need for the genetic characterisation of the Kimberley ghost bat population and built a baseline for future monitoring initiatives in the region.

DESIGNING A ROBUST MONITORING PROGRAM FOR SEEMINGLY TRAP UN-HAPPY WOYLIES (*BETTONGIA PENICILLATA OGILBYI*)

Kerryn Fox and Floyd Holmes

Phoenix Environmental Sciences 5 Pitino Court, Osborne Park, WA

Bio: Kerryn Fox (she/her) is a professional Zoologist at Phoenix Environmental Sciences specialising in terrestrial fauna monitoring and environmental consultancy in Western Australia. With a background in species-specific monitoring for large-scale resource projects, she leads field teams in complex environments such as the Jarrah Forest and the Pilbara. Kerryn is an advocate for collaborative conservation and technical innovation in wildlife survey methods.



Establishing reliable population baselines for cryptic and critically endangered species is a pervasive challenge in conservation management. During recent baseline surveys in Western Australia, a significant discrepancy was observed between detection methods for Woylies (medium-sized brush-tailed bettong; *Bettongia penicillata ogilbyi*). While extensive camera trap arrays yielded 705 independent records, traditional cage trapping resulted in only four physical captures, suggesting a localised "trap-unhappy" behavioural response. This data disparity rendered standard spatially explicit capture-recapture (SECR) models based on physical marking insufficient for robust population estimation. Consequently, we undertook a collaborative redesign of the long-term monitoring strategy, shifting the primary objective from absolute population abundance to occupancy modelling. This transition was informed by an intensive consultation process involving species experts, private consultants, biostatisticians, government agencies, and NGOs. The resulting program emphasises cross-sector collaboration and the critical role of client investment in developing scientifically rigorous monitoring frameworks. Although the final program is yet to be fully implemented, this presentation highlights the logistical and statistical challenges of monitoring "trap-shy" populations and the value of adaptive management in survey design. We welcome insights from the floor regarding similar methodological shifts in threatened species recovery programs.

GHOST BATS AND ANTHROPOGENIC NOISE: A MULTIDISCIPLINARY APPROACH TO DEVELOP NOISE EFFECTS CRITERIA

Benjamin Lawrence¹, Tamara Keeley² and Nicola Hanrahan³

¹Wood PLC, Perth, Western Australia 6000, Australia

²School of the Environment, University of Queensland, Queensland 4072, Australia

³Research Institute for the Environment and Livelihoods, Charles Darwin University, Northern Territory 0810, Australia

Ghost bats are considered potentially vulnerable to disturbance from anthropogenic noise due to their highly developed hearing and sensitivity to human activity near roost sites. However, the threshold for the onset of noise disturbance effects is unknown because there is currently no direct evidence linking disturbance to anthropogenic noise. Noise management thresholds of 70 dB(Z) or 70 dB(A) have been recently applied at ghost bat roost entrances in the Pilbara region of Western Australia to mitigate potential mining impacts, but these criteria are not based on observed adverse behavioural responses or the species' hearing sensitivity and present practical challenges for implementation. A multi-disciplinary approach is being explored to determine the most suitable tools to establish new noise threshold criteria for the ghost bat by correlating noise exposure with behavioural and physiological responses in both wild and captive ghost bats. The approach involves evaluating the effect of noise on ghost bat vocalisations, observed behaviour and faecal glucocorticoids, and incorporates experience from on-site implementation of noise limits in the Pilbara. Noise exposure may result in decreased foraging success or roost abandonment, with subsequent effects on health and reproduction for ghost bats. Understanding the potential disturbance effects of anthropogenic noise is therefore critical for the management and conservation of ghost bats.

USING SCIENCE TO LINK COMMUNITY KNOWLEDGE AND ADVANCE OUR UNDERSTANDING OF THE OCEANIC CETACEAN FAUNA OF SYDNEY, NSW

Elizabeth Eyre¹, Greg McLachlan², Hal Epstein³, Roger McGovern⁴, Dion Hobcroft⁵, David James⁶

¹School of Natural Sciences, Macquarie University, New South Wales 2109, Australia

²Allen Street, Canterbury, New South Wales 2193, Australia

³Manning Road, Double Bay, New South Wales 2028, Australia

⁴Cremorne Road, Cremorne, New South Wales 2090, Australia

⁵Natural History Services, Concord, New South Wales 2137, Australia

⁶Birdbrain Enterprises, Peakhurst, New South Wales 2210, Australia

Bio: Ms Elizabeth (Libby) Eyre is a scientific officer and museum curator at Macquarie University. She has a background in zoo keeping, animal training and has researched humpback whale acoustics and Indian Ocean cetacean diversity. Despite a focus on marine mammals, her interests include biodiversity; Australian mammals; and wildlife conservation, art and public education. Email: elizabeth.eyre@mq.edu.au LinkedIn: [Linkedin.com/in/libby-eyre-8a7b35105/](https://www.linkedin.com/in/libby-eyre-8a7b35105/) Instagram: [pelagich20](https://www.instagram.com/pelagich20)

Twenty-eight species of dolphins and whales have been recorded from the Sydney region. Information on oceanic cetaceans offshore of Sydney exist largely as opportunistic observations scattered across informal platforms such as websites and group databases, limiting its accessibility, verification, and broader scientific and public use. As a result, the wider Sydney community and key stakeholders remain largely unaware of the cetacean diversity on their doorstep.

Dedicated monthly nature trips have been operating from Sydney into offshore waters since the 1990s through the Sydney Pelagic Group Cooperative. These trips traverse the continental shelf to reach a seamount 40 kilometres from Sydney Heads and primarily focus on seabird sightings, however, cetaceans are also recorded, representing a substantial body of community-generated ecological knowledge.

Almost thirty years of data have been extracted from trip reports and notebooks, totalling 230 offshore trips and 419 encounters with cetaceans, with 24 species recorded. Analysis is in the early stages, but clear

seasonal trends and potential southward shifts in distributions are suggested. The project aims to: (1) compile and validate these long-term observations; (2) translate them into a robust scientific dataset suitable for publication; and (3) communicate the results back to both stakeholders and the broader community to improve awareness, accessibility, and use of information on Sydney's oceanic cetacean fauna.

SEEING INSIDE THE HOLLOW: 3D MODELLING OF TREE HOLLOWES USED BY GREATER GLIDERS AND OTHER HOLLOW-DEPENDENT MAMMALS

Tom Dempsey¹, Monica Knipler², **Ana Gracanin**^{1*}

¹ Fenner School of Environment and Society, ANU College of Science, The Australian National University, Canberra, Australia

² New South Wales Department of Climate Change, Energy, the Environment and Water, Queanbeyan, New South Wales, Australia

Bio: Ana Gracanin *Presenting author; E: ana.gracanin@anu.edu.au Instagram: @ana_gracanin

Tree hollows are essential microhabitats for hollow-dependent Australian mammals, including gliders, possums, bats, and dasyurids. Hollow availability is declining due to deforestation, land-use change and repeated, severe wildfires, elevating extinction risk for many species. Restoration efforts such as nest boxes and carved hollows are widespread, but their effectiveness can be uncertain due to limited data on species-specific preferences for hollow shape, volume, and internal structure. Traditional measurement methods of natural hollows rely on simple linear dimensions taken by hand and fail to capture the complexity of hollow interiors. The aim of this study was to develop and test a standardised photogrammetry workflow for 3D modelling of tree hollows, providing a low-cost and accessible alternative to hand measurements. We applied the workflow to hollows used by the greater glider (*Petauroides volans*), an endangered arboreal marsupial, and characterise a suite of morphological metrics, including internal volume, entrance shape, and den-space surface area. The protocol reliably and precisely quantified hollow structure, surpassing traditional techniques in both detail and accuracy. While we demonstrate the method on greater glider hollows, the workflow is applicable to tree hollows used by any species. The workflow can be performed using a standard smartphone or action camera, making it highly accessible to end-users. The resulting 3D models can be used to identify species-specific habitat preferences, track structural changes in hollows over time, and model their internal microclimate.

THE FLATTENED FAUNA INDEX

Helena Bender¹, Graeme Coulson², and **Garry Jolley-Rogers**³

¹ School of Agriculture, Food and Ecosystem Sciences, The University of Melbourne, Parkville VIC 3010

² School of BioSciences, The University of Melbourne, Parkville VIC 3010

³ 1 Whalan Place, Kaleen, ACT, 2617

Bios: Helena Bender (she/her): My nonlinear, interdisciplinary and applied career path has included research in behavioural ecology, practices in social ecological systems research, teaching pedagogy, tools to facilitate and measure sustainability, and finding methods of fostering hope. It is the sounds that Eastern Grey Kangaroos (*Marram / Macropus giganteus*) make and listen to that is the main thread that carries me forwards, with my current work focused on wildlife vehicle collisions. Email: hbender@unimelb.edu.au

Garry Jolley-Rogers (he/him): I have had adventures in many disciplines. At CSIRO, I contributed to The Atlas of Living Australia and Taxonomic Research and Information Network. Regrettably, my interests extend beyond mammals. I am particularly fond of crustaceans. Currently, I am thinking about measuring our impact on nature. I have a few passion projects in train on this theme (including the FFX). For example, I am cataloguing 9 years of macro-invertebrates bycatch from pitfall traps at Arid Recovery. Occasionally, I still think Banjo the Quoll is following me. Email: garry@jolley-rogers.id.au

Human activities including habitat loss, pollution, spread of feral animals and weeds threaten wild mammals throughout Australia. Wild mammals, conversely, can damage property and crops. Wildlife-vehicle collisions (wvc) can result in damage to property, wildlife and people, yet there is no centralised, national, dynamic visual representation of these impacts. The Flattened Fauna Index (FFX) seeks to

syndicate data from any source that deals with the consequences of humans on wild-mammals - starting with wvc.

1/ With partners, we will develop protocols to evaluate evidence of wvc strikes/near misses on rail/road. We will include maintenance records, carcass removals, and dashcam footage. Collision intensity will be correlated with ecotones, water, fodder, season and behaviour. 2/ Wildlife rehabilitators are often first on scene. We will develop tools and protocols to effortlessly record circumstances of each rescue; to identify hidden contingent factors. 3/ Clinical records from wildlife clinics and hospitals provide not only direct but also circumstantial evidence of all classes of anthropogenic injury and concomitant factors. 4/ Excellent public datasets exist; each focused on a locality, taxon, or project. By design, data custodians will retain discretion on what details they supply. Aggregation will enhance their impact by revealing trends and patterns.

We intend the FFX to be a long-term, public, impactful monitoring program, providing nuanced reliable information to inform actions to protect wild mammals.

Thursday 9th July 2026

Joint AMS/ABS conference

Shine Dome – Ian Wark Theatre, with additional seating in the Ballroom

Session 1: 08:30 – 10:30

THE CONSERVATION OF VICTORIA'S MAMMALS

Euan Ritchie¹

¹ School of Life and Environmental Sciences, Deakin University, Burwood, Victoria, Australia 3125

Bio: Prof Euan Ritchie (he/him). Euan leads the Applied Ecology and Conservation Research Group at Deakin University. His research group has a strong focus on the significance of species interactions and ecological functions of Australian mammals, fire, invasive species, and ecosystem management. This research is aimed at more effective environmental policy, management actions, and biodiversity conservation. Euan is also the President of the Australian Mammal Society, a Councillor within the Biodiversity Council, and a prominent science communicator. Email: e.ritchie@deakin.edu.au



At the time of European colonisation, Victoria was home to well over 100 native mammal species, reflecting the state's diverse ecosystems and habitats. Regrettably, more than 20 species are now thought extinct, and more than a third of extant species are listed as threatened. Declines have been driven by multiple, often compounding threats: habitat destruction and modification; invasive predators; altered fire regimes; climate change; disease; and direct persecution. The cessation of First Nations' cultural practices on Country, ineffective and conflicting environmental policy, and chronic underfunding for management and monitoring all further impede conservation and recovery. And now, a new threat looms on the horizon, the H5N1 strain of avian influenza. Tensions between government, industry, and community are epitomised by the conservation challenges facing iconic species, including Leadbeater's possum and the southern greater glider. Notable successes exist and deserve celebration as beacons of hope. The eastern barred bandicoot—once listed as extinct in Victoria—now thrives on multiple fox-free islands, demonstrating what is achievable. Improving the conservation and recovery of Victoria's native mammals requires multi-faceted, substantial change. This includes strengthening and aligning environmental policy; greater collaboration across institutions and communities; supporting partnerships and co-management with First Nations peoples and their self-determination in caring for Country; and significantly increased, longer-term funding commitments targeting key threats and population recovery. Robust monitoring of outcomes is essential. The social, cultural, economic, and environmental values of these species depend on our collective willingness to act. We share a moral imperative to rise to this challenge.

NOCTURNAL RHYTHMS: EMERGENCE AND RETURN PATTERNS OF GHOST BATS AT KOHINOOR ADIT

Nicola Hanrahan^{1,2}, Kyle Armstrong³, Justin Welbergen² and Sam Banks¹

¹ Research Institute for the Environment and Livelihoods, Charles Darwin University, Casuarina, Northern Territory 0810, Australia

² Hawkesbury Institute for the Environment, Western Sydney University, Richmond, New South Wales 2753, Australia

³ School of Biological Sciences, Adelaide University, Adelaide, South Australia 5005, Australia

Bio: Nicola Hanrahan (she/her). Email: Nicola.hanrahan@cdu.edu.au; @macroderma.bsky.social

Investigating temporal patterns in roost use among individuals, seasons, and demographic groups is important for understanding ghost bat ecology and assessing impacts on roosts. We present preliminary findings from PIT-tag monitoring at the largest known ghost bat roost and maternity site. Sixty-two mixed-sex ghost bats were PIT-tagged in October 2024 (28 bats) and 2025 (34 bats), and a Biomark Cord Antenna

System was installed at the roost entrance in August 2025. Using data from the first year of monitoring, we modelled the effects of sex, month, rainfall, and lunar conditions on emergence and return timing, including interactions between sex and month, and between moon phase and whether the moon was above the horizon. Age class was not modelled because some classes were absent in some months due to PIT-tag timing. Both emergence and return timing varied significantly with sex, month, rainfall, and lunar conditions. Males generally emerged earlier and returned earlier than females, although this varied seasonally. Greater rainfall was associated with later emergence and earlier return. Emergence was delayed during fuller moon phases, particularly when the moon was above the horizon within 2 h of sunset. Return timing also varied with moon phase and moon-above-horizon status. Together, these results show that emergence and return behaviour are shaped by a combination of environmental conditions and sex-specific seasonal patterns, providing new insight into ghost bat roost-use ecology.

IMPLICATIONS OF ACTIVE FOREST MANAGEMENT FOR ARBOREAL MAMMALS

Benjamin Wagner

School of Agriculture, Food and Ecosystem Sciences, The University of Melbourne, 500 Yarra Boulevard, Richmond 3121 VIC, Australia

Bio: Dr. Benjamin Wagner is an expert in forest- and landscape ecology, forestry and wildlife conservation. His research draws on novel technologies, such as drones and traditional remote sensing methods, in combination with spatial modelling and machine learning, to help improve our ability to detect, monitor, measure and manage forest wildlife and its habitat.

After native timber harvesting ended in Victoria's state forests in 2024, forests are left as a mix of different ages and histories of use. However, we have limited knowledge about how native tree-dwelling mammals—such as critically endangered Leadbeater's Possum, and the iconic, but endangered southern greater glider, as well as koalas, and associated glider and possum species—are using these forests today and in the future.

We tested the use of thermal drones as a new way to detect and monitor these nocturnal animals. Drones can cover large areas (100–200 hectares) and detect animals more effectively than traditional methods like spotlighting on foot, which can be time-consuming, covers smaller areas, and can miss rare species. Our study found that drones detected more animals and more species compared to spotlighting, offering a clearer picture of where animals occur, what forests they use and resulting population densities.

We used these drones to survey forests of different ages—from recently logged areas to forests regenerating from timber harvesting for over 45 years—as well as nearby undisturbed forests to capture baseline data. Our findings help us understand how animals are recovering after logging, and which species are returning to and using younger forests or edge habitat. This research documented how native arboreal fauna respond to forest disturbance directly and over time and provides valuable information for managing and monitoring forest wildlife as many states move beyond native forest logging.

LONELY GHOSTS: CONSERVATION GENOMICS OF A THREATENED BAT (*MACRODERMA GIGAS*) CONFIRMS LOW GENE FLOW AND HIGH ROOST FIDELITY ACROSS NORTHERN AUSTRALIA

Linette Umbrello¹, Diana Prada¹, Kym Ottewell¹, Melissa Millar¹, Nicola Hanrahan^{2,3}, Roger Coles⁴, John Augusteyn⁵, Kyle Armstrong⁶, Jessica Worthington Wilmer⁷

¹Department of Biodiversity, Conservation and Attractions, Kensington, Western Australia 6151, Australia

²Research Institute for the Environment and Livelihoods, Charles Darwin University, Casuarina, Northern Territory 0810, Australia

³Hawkesbury Institute for the Environment, Western Sydney University, Richmond, New South Wales 2753, Australia

⁴The South Endeavour Trust, Kings Plains Station, via Cooktown, Queensland 4895, Australia

⁵Queensland Parks and Wildlife Service, Red Hill, Queensland 4701, Australia

⁶School of Biological Sciences, Adelaide University, Adelaide, South Australia 5005, Australia

⁷Biodiversity and Geosciences Program, Queensland Museum, South Brisbane, Queensland 4101, Australia

Bio: Linette (she/her) is a Research Scientist at the Western Australian Government Department of Biodiversity, Conservation and Attractions and her work focusses on applying a variety of genetic methodologies to better understand threatened mammal populations. This includes the use of non-invasive scat DNA sequencing for highly sensitive species such as the ghost bat. Linette also works on the systematics of small dasyurids such as *Planigale* and *Sminthopsis* and is a steering committee member of the Australian Mammal Taxonomy Consortium. Email: linette.umbrello@dbca.wa.gov.au, bluesky: @planigale.bsky.social



The ghost bat is an iconic, endemic mammal that has a disjunct distribution across northern Australia from the Pilbara in Western Australia to several coastal regions in north-east and central Queensland. Historically, they have disappeared from the central Australian parts of their range and in 2016 were listed as Vulnerable under the *EPBC Act 1999* with a National Recovery Plan currently under draft. Genetic studies from the 1990s found the species to be well differentiated across its range with evidence of female philopatry and recent fine-scale monitoring in the Pilbara has revealed high roost fidelity over multiple years. Here, we sequence Single Nucleotide Polymorphisms (SNP) from previously unsampled locations to investigate population genetic structure, gene flow and genetic diversity across the species' distribution, including a detailed analysis within Queensland. Our expanded sampling corroborates previous work, finding evidence of limited gene flow between and within regions, with significant divergence in Queensland associated with the Carpentaria Basin. We record lower diversity and effective population size estimates for the Camooweal population in western Queensland compared to other populations, in line with suspected population declines in this region. The observed signatures of genetic isolation are remarkable for a relatively large flying mammal and, together with the known ecology of the species, emphasizes their vulnerability to disturbance and environmental change. With documented regional extinctions, population declines and high sensitivity to disturbance, understanding regional genetic management units, genetic health and diversity is important for the future resilience of the ghost bat.

MAMMALS AS SCAVENGERS IN AUSTRALIA

Thomas Newsome¹

¹ School of Life and Environmental Sciences, University of Sydney, New South Wales 2006, Australia

Bio: Associate Professor Thomas Newsome's research focuses on understanding how humans modify the patterns of animal ecology and diversity that we witness today and providing solutions for improving ecological outcomes through species reintroductions, habitat restoration, invasive species control and by reducing human-wildlife conflict. He established the Global Ecology Lab at The University of Sydney and conducts research with many government, industry and indigenous partners across Australia and globally. Email: thomas.newsome@sydney.edu.au

Many mammals actively scavenge, yet the role of carrion in shaping mammalian food webs remains poorly understood in many ecosystems globally. This is especially the case in Australia; however, recent studies have started to reveal the extent to which Australian mammals utilise carrion as a food source and how this can influence other species and critical ecosystem processes more broadly. To demonstrate this, I will provide detailed insights from camera trap monitoring of over 850 carcasses across Australia incorporating 1000's of hours of scavenging by mammals. I will compare how mammals utilise carrion compared to other major scavenging guilds, highlight key factors that influence rates of scavenging by mammals, and in turn other species, and speculate about whether mammals are fulfilling their expected ecological roles as dominant scavengers. I will conclude by outlining how additional standardised scavenging studies can help to uncover not only when, where, why and how mammals utilise carrion, but also how metrics of their scavenging efficiency can be used to assess ecosystem health and integrity.

REINTRODUCED EASTERN BETTONG DIET AND CHANGES IN FUNGAL COMPOSITION

Linda E. Neaves^{1,2}, Jenny Newport², Catherine E. Ross², Iain J Gordon^{2,3,4,5,6}, Adrian D. Manning²

¹ School of Environmental & Conservation Sciences, Murdoch University, Murdoch, WA, 6150.

² Fenner School of Environment and Society, The Australian National University, Canberra, ACT, Australia

³ Pastoral Livestock Production Lab, Lincoln University, Lincoln, 7674, New Zealand.

⁴ The James Hutton Institute, Dundee, DD2 5DA, UK.

⁵ Research Division, Central Queensland University, Townsville, QLD, 4810, Australia.

⁶ College of Science & Engineering, James Cook University, Qld, 4810, Australia

Bio: Linda Neaves (she/her) is a conservation geneticist with Murdoch University. Her research focuses on using genetic tools to address questions that are relevant to conservation management actions, including population and evolutionary genetics as well as species detection and trophic interactions via environmental DNA. She has interests in the development of protocols to improve reintroduction success and understanding the factors that influence that success. This includes understanding how reintroduced species interact with their new environment (e.g., via diet) and this can highlight niche variability, which can lead to divergence from the expected ecological outcomes.



The health and resilience of ecosystems depend on the interactions of multiple species to maintain their functions. Reintroductions of extirpated fauna can restore ecosystem functions and trophic interactions. Fungivores can act as a vector for a variety of fungi, including ectomycorrhizal fungi (ECM), which form symbiotic relationships which contribute to plant health. However, the determining the potential impacts and interactions between reintroduced species and their prey species can be difficult and this can hamper understanding their potential impacts on the ecosystem.

We investigated changes in the fungi, arthropods and plants detected in 106 faeces of the eastern bettong *Bettongia gaimardi* population that was reintroduced to Mulligans Flat in 2012, using DNA metabarcoding. A diverse fungal community was detected, primarily comprised of ECM, which shifted over time with saprotrophs becoming the dominant fungal guild as conditions became drier and bettong numbers increased. Tuberous plants appeared to form a consistent part of the diet, while arthropods appear infrequently consumed intentionally (although a range of flies associated with fungi were frequently detected).

Our results suggest that eastern bettong can vary their diet and potentially act as vectors for a large array of fungal species. However, disentangling the impacts of bettong where they are reintroduced, and environmental factors in fungal community dynamics will require longer term studies to better encompass environmental variation. The application of meta-barcoding to mycophagous mammal faeces could provide insights into larger scale environmental changes that alter fungal and plant communities and impact on ecosystem health and functioning.

BATS IN BACKYARDS: USING CITIZEN SCIENCE TO MONITOR INSECTIVOROUS BATS ACROSS NSW

Elsa Kohane¹, Anna Lloyd², Alicia Scanlon², Kim Luckie², Alison Cowie², Beth Mott², Joanna Haddock², Brad Law¹, Leroy Gonsalves¹, Isobel Kerr¹, Chris Turbill³

¹ Forest Science, NSW Department of Primary Industries and Regional Development, Locked Bag 5022, NSW, 2150;

elsa.kohane@dpi.nsw.gov.au

² NSW Department of Climate Change, Energy, the Environment and Water

³ Western Sydney University, School of Science and Hawkesbury Institute for the Environment

Bio: Elsa Kohane. I work in the Forest Science team at NSW Department of Primary Industries and Regional Development. Our Forest Ecology research group specialises in eco-acoustics, both bat ultrasonics and acoustic species such as koalas and gliders. We also develop AI tools for identifying key forest species from these large datasets. I joined the world of bats and acoustics through my honours thesis in 2022, where I used ultrasonics and camera traps to study bat usage of artificial boxes.

Bats in Backyards is a citizen science project that aims to engage landholders in NSW and increase our knowledge of insectivorous bats. Low-cost ultrasonic bat detectors are sent to landholders to deploy on their property for 5 days before posting the detector back to us for analysis. The project aims to mobilise landholders to participate in citizen science, educate the community, and positively influence public

sentiment about bats, and to collect high quality acoustic data across NSW to produce occupancy maps across poorly surveyed private lands. Many citizen scientists are willing to take part in repeat surveys over several years, providing monitoring data that will allow tracking of changes in bat populations over time. The Bats in Backyards program engaged 100 participants in its 2022-23 pilot year. Now in its fourth year, the 2025-26 season has increased to 300 participants, including multiple industry partners, and undertaken around 450 surveys. Over 500,000 bat calls have been analysed so far. 24 species and 1 species complex have been confidently detected across the project, including 9 threatened species. With four years of data, we are now modelling and mapping occupancy and activity of bat species across target regions of NSW, investigating how this varies regionally in different habitats, and ultimately across years.

LET'S TALK ABOUT SEX ... AND HOW IT AFFECTS THERMAL PHYSIOLOGY

Zenon Czenze¹, Sanjeev Baniya¹, Ruvi de Mel¹, Courtney Adams², Kris Wild³, Katherine Moseby², Michael Kearney³

¹Centre for Behavioural and Physiological Ecology, School of Environmental and Rural Science, University of New England, Armidale, NSW 2351, Australia.

²Centre for Ecosystem Science, School of Biological, Earth and Environmental Science, University of New South Wales, Kensington, Sydney, Australia.

³School of BioSciences, The University of Melbourne, Parkville, Victoria, Australia.

✉ zczenze@une.edu.au, sbaniya3@myune.edu.au, wdemel@myune.edu.au, courtney.adams@student.unsw.edu.au, kristofferw@unimelb.edu.au, k.moseby@unsw.edu.au, m.kearney@unimelb.edu.au

Bio: Zenon Czenze (he/him). I am a comparative ecophysiological working primarily on mammals and birds. My research examines how aspects of species' natural history and ecology (i.e., roosting behaviour, drinking strategies, and diet) shape thermoregulation, using physiological approaches to quantify these relationships. My lab focuses on the behavioural and physiological ecology of small endotherms, with a particular emphasis on whole-organism thermal physiology and energy budgets. Broadly, we aim to understand how ecological traits influence energy and water balance under natural and changing environmental conditions



Making evidence-based conservation decisions requires integrating physiological insight into how individuals respond to environmental stress. Predicting species responses to future climates remains challenging, but collaborative approaches that combine ecology, physiology, and biophysics are beginning to reveal consistent patterns. Over the past five years, we have combined field and laboratory approaches including microclimate measurements, bio-logging, open-flow respirometry, and biophysical modelling to quantify the energy and water balance of mammals across diverse environments. Across this work, several trends emerge showing that thermal physiology is shaped by both environmental context and life-history demands. However, most recently, sex has emerged as a key predictor of thermoregulation in the heat. Males and females exhibit distinct strategies in balancing heat dissipation and water conservation, likely driven by differing reproductive roles and selective pressures. In many cases, females prioritise water conservation, resulting in lower evaporative water loss and higher thermal limits relative to males. Conversely, males appear to be less frugal with their water reserves, initiating evaporative cooling at comparatively lower temperatures than females. These findings highlight that incorporating sex-specific physiological traits into mechanistic models improves their predictive accuracy, and our results demonstrate strong agreement between model predictions and empirical measurements. Together, this work suggests that forecasts of species vulnerability to climate change require moving beyond species-level averages to explicitly account for demographic variation. While there is no single solution for conservation, integrating cross-disciplinary data provides a powerful framework for developing physiologically informed management strategies for mammals in a warming world.

RANGE EXPANSION OR RE-DISCOVERY? THE LONG-FOOTED POTOROO IN NSW

Fred Ford¹, Meg Cleary², Monica Knipler¹, Joshua Ford, Kristal Jolie³, Katie Oxenham³ and Rohan Bilney².

¹Ecosystems and Threatened Species, NSW Department of Climate Change, Energy Environment and Water, Queanbeyan.
fred.ford@dcceew.nsw.gov.au.

²Forestry Corporation of NSW, Eden.

³Biodiversity and Ecological Health Branch, NSW National parks and Wildlife Service, Merimbula.

The long-footed potoroo was rediscovered in NSW in 2023. We aimed to determine its current distribution, and assess whether its presence was the result of range expansion or undetected *in situ* survival. Camera surveys were used to assess current distribution. Distributional change was interpolated from occupancy at 5km grid cells across the species distribution between 1990 and 2022. The current distribution of LFP in NSW consists of a few small areas of forest on the margins of its East Gippsland range. Analysis suggested this is the result of recent range expansion around the margins of its distribution. Areas of local extinction and re-invasion were also identified, including extinction in its former NSW distribution, and recent expansion into the rediscovery site. There was significant temporal bias in the data set, with recent years recording increasingly higher numbers of records. There was also a high degree of inter-annual variation in spatial sampling. However, our method reasonably successfully dealt with these issues, and a comparative analysis with the long-nosed bandicoot (*Perameles nasuta*) suggested spatio-temporal sampling bias did not significantly affect our result. Species experts also supported this conclusion. Our results are consistent with the hypothesis that the long-footed potoroo has expanded its range into NSW recent years. This is probably a result of intensive, persistent, landscape-wide predator management in the core of its distribution, in combination with favourable rainfall and vegetation conditions following drought and fire.

REMODELLING A NATIONAL MONITORING PROGRAM TO FORECAST RODENT OUTBREAKS

Matthew Rees¹; Steve Henry¹; Ryan Sarre¹; Eva Moore¹; Régine Chantler²; Chloe Faulks², Peter Brown¹

¹Health & Biosecurity, CSIRO, Building 101, Clunies Ross St, Black Mountain ACT 2601

²Manufacturing, CSIRO, 1 Research Way, Clayton, VIC 3169

Bio: Matthew Rees (He/him); Email: matt.rees@csiro.au

Extreme boom-bust population dynamics are common in wild rodents, with outbreaks having far-reaching consequences on ecosystems, industries and local communities. A notorious example is invasive house mice, who sporadically reach “plague proportions” across Australian grain growing regions. Mouse plagues can cost around \$1 billion and cause widespread cases of post-traumatic stress.

CSIRO, Grains Research and Development Corporation and project partners have refined a national monitoring program over successive iterations since 2012. This program now monitors mouse populations at key times of the year using multiple data types across five states. Low-quality “rapid assessment” surveys are calibrated against high-quality data at a few sites which estimate population density in statistical models, allowing spatially-explicit seasonal forecasts. Lagged rainfall is a key predictor variable. An interaction between extreme dry and wet periods appears critical for plague formation, potentially by mediating mouse social structure. A strong communication focus ensures forecasts are clearly communicated to grain growers for timely management actions.

In this talk I will provide an overview of this project, detailing new processes relevant to other mammal monitoring programs seeking to inform applied management decisions. Employing principles of reproducible workflows and near-term ecological forecasting has improved robustness, timeliness and cost-effectiveness of mouse forecasts. Our newly developed non-invasive automated rodent monitoring device is also showing promise to further enhance this national monitoring program in the longer-term. Recently developed digital tools are allowing ecologists to behave more like weather forecasters, which can supercharge the translation of our research into on-the-ground action.

POST-RELEASE FATE OF REHABILITATED SWAMP WALLABIES

Joanne H. Connolly¹, Geoffrey J Dutton¹, Jacqueline Marlow², Joan Reid², Mikala Welsh², Lauren Suffling³, Margot Horder², Lorraine Woodward², Justine Steward², Helen Rowe², Ian Ralph², Margaret St Hill⁴ and Deanna Duffy⁵

¹School of Agricultural, Environmental and Veterinary Sciences, Charles Sturt University, Wagga Wagga, NSW.

²Sydney Wildlife Rescue, Duffys Forest, NSW.

³The School of Life and Environmental Sciences, The University of Sydney, NSW.

⁴Sydney Bushwalkers Club, NSW, Australia.

⁵Spatial Data Analysis Network, Charles Sturt University, Thurgoona, NSW.

Globally wildlife faces many threats from anthropogenic activities and climate change. In NSW 104,000 native animals are rescued and rehabilitated each year by 5,600 licenced volunteers. The goal in rehabilitating wildlife is not only to improve welfare, but to ensure animals successfully reintegrate into the wild and survive. Outcomes such as mortality and time till release are easy to define, but post-release survival longer term and breeding is the ultimate measure of successful rehabilitation. There is little literature to guide decision-making during rehabilitation, with a noticeable lack of critical post-release monitoring. The aim of the study was to conduct post-release monitoring of hand-reared swamp wallabies assessed to be suitable for release to measure and improve outcomes. Five microchipped swamp wallabies were released into Sydney bushland adjacent to a national park with ear tags and GPS/VHF collars and were monitored for over 12 months. The combination of spatial analysis, along with camera trap images and visual observations provided data on movements, interactions, home ranges, fate and survival times. Collars on test animals detached after 97 – 321 days (9 days for control animal). Swamp wallaby home ranges varied from 3.1-26.8 ha (smaller ranges possibly reflecting food availability and topography). Two wallabies died (fox attack 97d, vehicle strike 321d), the remainder were detected at release site up to 21mths and were in good body condition. Prophylactic use of ectoparasiticides, fox control and community sighting reports are recommended. Predator avoidance training may be considered.

EMERGENCY FEEDING OF MOUNTAIN PYGMY-POSSUMS AFTER THE BLACK SUMMER FIRES IN JANUARY 2020 AND SUBSEQUENT RESPONSES

Linda Broome

Ecosystems and Threatened Species, Department of Climate Change, Energy, the Environment and Water, New South Wales, 2621 Australia.

Bio: Dr Linda Broome commenced working on the mountain pygmy-possum *Burramys parvus* in Kosciuszko National Park in 1986, the start of a 40-year annual monitoring program. She has been a Senior Threatened Species Officer with the Ecosystems and Threatened Species Unit, DCCEEW, Queanbeyan, NSW since 1995, undertaking recovery actions, conducting surveys and research on *Burramys* and other small mammals including the smoky mouse *Pseudomys fumeus*. Recently retired from official duties, she is currently devoting her time to analysing data and writing those final publications.
Lindasbroome1@gmail.com



On the 4th January 2020, the catastrophic Dunns Road fire incinerated all vegetation from the habitat of the endangered mountain pygmy-possum *Burramys parvus* in the northern section of Kosciuszko National Park, comprising 30% of the NSW population. Three years of severe drought preceding the fire had led to record low numbers of bogong moths in the alps, a major food source for the possums, together with drying of boulder streams. While it was surmised many of the possums would have survived the fire in deep boulderfield refugia, the longer-term outlook appeared grim due to lack of food and water. Fortunately, concerned over diminishing bogong moths, Zoos Victoria had developed a ‘bogong biccie’ mix and food dispenser that we were able to deploy as an emergency response. Sixty-one feeding stations and 34 water dispensers were distributed across the three main possum colonies and supplied weekly with 200 g “bogong biccies” per feeder (12.2 kg total per week) from 15-23 January 2020 until May 2021 (2 sites) or May 2022 (2 sites). The drought broke in 2020, vegetation surrounding the boulderfields had recovered by

summer 2023, except for the fire-sensitive mountain plum-pines *Podocarpus lawrencei*, but bogong moth numbers were slower to recover, not reaching pre-drought numbers until 2025. Annual trapping surveys showed that the northern, food assisted colonies maintained population sizes and did better than the southern, unburnt colonies, which declined from 2018-2022. Food supplementation is a recommended option following loss of food from catastrophes such as wildfire.

OF BABIES AND BATHWATERS: DETERMINING HOW MUCH VARIATION COINCIDES WITH PHYLOGENETIC STRUCTURE IN COMPARATIVE ANALYSES

D. Rex Mitchell^{1,2*}, Ben Halliwell^{3,4}, Luke Yates^{3,4}, Sally Potter^{5,6}, Mark D. B. Eldridge⁶ & Vera Weisbecker^{1,2}

¹College of Science and Engineering, Flinders University, Adelaide, SA 5001, Australia.

²Australian Research Council Centre of Excellence for Australian Biodiversity and Heritage, Wollongong, NSW 2522, Australia.

³School of Natural Sciences, University of Tasmania, Hobart, Tasmania 7000, Australia

⁴ARC Centre of Excellence for Plant Success in Nature and Agriculture, University of Tasmania, Hobart, Tasmania 7000, Australia

⁵School of Natural Sciences, Macquarie University, Sydney, New South Wales 2109, Australia

⁶Australian Museum Research Institute, Sydney, New South Wales 2010, Australia

Bio: Vera Weisbecker (she/her) works on unceded Kurna country. Her research focuses on quantitative studies of biodiversity and evolution of Australian mammals and birds, with a focus on 3D imaging and geometric morphometrics. With these methods, she addresses wide-ranging questions from mammalian taxonomy and conservation phenomics to deep-time patterns of marsupial evolution and supposed diversity constraints.



Phylogenetic correction is a standard tool in comparative analyses of organismic traits. It aims to address the fact that related species can have similar traits just because of their ancestral condition, rather than due to repeated unrelated responses to natural selection. Phylogenetic generalised least squares (PGLS) regression – which corrects model error distributions for phylogenetic relatedness – is probably the most widely used phylogenetically corrected analysis, and often favoured over ordinary least squares regression (OLS). However, both PGLS and OLS risk mis-estimating the “true” relationship between variables: OLS assumes that relatedness plays no role at all, whereas PGLS assumes that patterns shared by related species are explained by their relatedness. Most often, however, the influence of phylogenetic structure *versus* natural selection are inextricably confounded, an effect termed conservative trait correlation (CTC). Estimating CTC is therefore crucial to adequately interpret comparative regression analyses. We here demonstrate two ways of determining CTC using a previously published geometric morphometric dataset of skull shape in the rock wallaby genus *Petrogale*. In this genus, facial length is allometric so that so that larger species have longer faces, which is predicted for biomechanical reasons; but body mass and facial shape both contain substantial phylogenetic signal, causing PGLS to retrieve no significant allometry. We then estimate CTC using two methods, the more simplistic variation partitioning (VARPART) technique and the recently developed, more sophisticated multi-response phylogenetic mixed models (MR-PMM) method. Both methods suggest high levels of CTC; this situation puts the onus on researchers to either argue for a biological interpretation (in our case, that the allometry is predicted by biomechanics) or refrain from interpretation altogether.

Session 2: 11:00 – 13:00

EVALUATING NON-TARGET RISK IN BAITING PROGRAMS

Amy M. Edwards^{1,7} Benjamin Abernethy^{1,3}, Jess Bettega², Rebecca Cherubin², Andrew W. Claridge^{4,5}, Tarnya Cox⁶, Ellie Cummins^{1,7}, Annalie Dorph¹, Jaime Heiniger^{1,8}, Abby Hine^{2,9}, Kimberly Howard³, Olivia Kimber^{1,2}, Elliot Luck⁵, Heath Milne², Christie O’Halloran², Grace Proudfoot⁶, Georgia K. Smith², Rebecca L. Stone¹ and David Wurst³ and Guy-Anthony Ballard^{1,2}

Authors are listed in alphabetical order following the first author.

¹ School of Environmental and Rural Science, University of New England, Armidale, NSW, 2351.

² Vertebrate Pest Research Unit, NSW Department of Primary Industries and Regional Development, Armidale, NSW, 2351.

³ NSW National Parks and Wildlife Service, Merimbula, NSW, 2548.

⁴ Vertebrate Pest Research Unit, NSW Department of Primary Industries and Regional Development, 257 Crawford Street, Queanbeyan NSW 2620.

⁵ School of Science, Northcott Drive, University of New South Wales, Canberra ACT 2601.

⁶ Vertebrate Pest Research Unit, NSW Department of Primary Industries, Orange, NSW, 2800.

⁷ NSW National Parks and Wildlife Service, Dubbo, NSW, 2830.

⁸ NSW National Parks and Wildlife Service, Armidale, NSW, 2351.

⁹ NSW Biodiversity Conservation Trust, Coffs Harbour, NSW, 2450.

Broad-scale baiting with Compound 1080 remains a cornerstone of Australian predator management. While baiting efficacy is well established, this practice often rests on a key assumption: that non-target impacts are limited. This persists despite substantial gaps in species-specific risk data. For many native mammals, LD₅₀ values simply do not exist.

We undertook several non-toxic field trials, using baits containing the non-toxic biomarker Rhodamine B (RhB) to measure bait uptake in 3 bioregions of New South Wales. Whisker analyses, for presence of RhB post-baiting with Eradicat baits found 11 out of 14 native species were positive for the biomarker. For seven of these species, less than one toxic Eradicat bait exceed the species' LD₅₀ for Compound 1080. Similarly, analyses following deployment of baits containing Hard Shelled Delivery Vehicles found thirteen endemic species positive for the biomarker, with camera footage adding two further species. Among these 15 species, five have no recorded LD₅₀ information, and ten have an LD₅₀ that would result in death from ingestion of less than 1 bait.

Reliance on historical toxicity data and assumptions re inherent tolerance are insufficient. There is an urgent need to improve our knowledge of risk posed by predator management, to non-target species. Targeted research along with evidence-based strategies to reduce non-target exposure, while maintaining control efficacy, are required to justify ongoing use, and expansion, of poison baiting for predator management.

45 YEARS OF MONITORING CETACEAN MORTALITIES IN SOUTH AUSTRALIA: CAN THIS SHED LIGHT ON THE 2025 HARMFUL ALGAL BLOOM?

Catherine Kemper¹, Michael Bossley², Tomoyo Segawa Fellowes³, and Rebecca Souter⁴

¹ Adelaide University, Frome Road, Adelaide, SA 5000, Australia (

² Whale & Dolphin Conservation, Port Adelaide, SA 5015, Australia

³ South Australian Museum, North Terrace, Adelaide, SA 5000, Australia

⁴ Adelaide University, Roseworthy, SA 5371, Australia

Bio: Catherine Kemper (she/her). Email: catherinekemper1@outlook.com)

Long-term monitoring is crucial to identifying population fluctuations and threats. Cetacean mortalities have been documented by the South Australian Museum (SAM) since <1990. Over 1650 records of 27 species were databased, with many assigned to a circumstance of death. State-wide annual mortality counts ranged from 31–84 for all species and 17–70 for dolphins. Both were highest in 2005–2007, 2013 and 2025. Elevated mortalities were associated with lung nematode disease and high sardine harvests (2005–2007), and an Unusual Mortality Event (UME) related to cetacean morbillivirus (2013). The high number of dolphin mortalities during 2025 (n = 70), particularly in Gulf St Vincent Bioregion (n = 53), appeared to be associated with the Harmful Algal Bloom (HAB) and a marine heat wave. During the 2013 UME Indo-Pacific Bottlenose Dolphins were the primary species affected whereas Common Dolphin mortalities were equally prevalent during 2025. Of the 17 dolphins from 2025 that were post-mortemed, 8 reports were available for this study. Testing for brevetoxins, other algal toxins, morbillivirus and avian influenza gave results below reporting limits. Moderate and severe emaciation was reported in 3/8 cases and lung infections in 3 cases. The effect of the HAB on dolphins appears to be chronic rather than acute and is likely to be protracted as a result of prey depletion and associated flow-on effects. The highly

successful multidisciplinary post-mortem and collecting program lead by SAM was paused in 2021. A return to this model is urgently needed in South Australia.

PACBAT – UNITING THE PACIFIC ISLANDS IN BAT CONSERVATION

Harry Rust¹ and Malik Oedin²

¹University of Adelaide, Adelaide, 5005, Australia. He/Him,

²Province Nord, Koné, 98811, Nouvelle Calédonie.

Bio: Harry Rust (He/Him). Harry is a research ecologist specialising in bats and echolocation. Experienced with bioacoustic technology, he has conducted hundreds of surveys for microbats throughout Australia and Oceania. Email:

harryrustwork@gmail.com, <https://www.linkedin.com/in/harryrust/>

Malik Oedin (He/Him). Email: malik.oedin@gmail.com, <https://www.linkedin.com/in/malikoedin/>

PACBAT – the Pacific Bat Conservation Network has hit the ground running, since being established in 2020. Connecting nations such as Fiji, Micronesia, Guam, and Papua New Guinea, this network is a powerful tool in international collaboration, hosting the Pacific Island Bat Forum in 2021, and co-hosting the international Bat Research Conference in 2025. This presentation will introduce the group, and discuss various projects, including work in New Caledonia and Vanuatu, with videos recorded across Oceania by members of the network.

LOSS OF MICROBIAL FUNCTIONAL DIVERSITY UNDER CAPTIVITY MAY UNDERMINE REINTRODUCTION SUCCESS

Ashley M. Dungan¹, Emily L. Scicluna¹

¹School of BioSciences, University of Melbourne, Victoria 3010, Australia

Bio: Dr Ashley Dungan (she/her) is a conservation microbial ecologist and Senior Research Fellow at the University of Melbourne. Her research explores how host–microbiome interactions influence wildlife health. She integrates genomics and experimental approaches to understand how captivity and environmental change reshape microbial communities and host physiology. Her work aims to develop microbiome-informed strategies to improve conservation outcomes. Email:

ashley.dungan@unimelb.edu.au. Social: Bluesky @symb10sis.bsky.social | LinkedIn: Ashley M. Dungan | website: www.ashleydungan.com



Captive breeding is a cornerstone of threatened species conservation, yet captive-bred animals frequently show reduced survival following release. Although captivity-associated shifts in microbiome composition are increasingly recognised, the consequences for microbiome diversity and functional capacity remain poorly understood. Here, we use the fat-tailed dunnart (*Sminthopsis crassicaudata*), a small Australian marsupial widely used as a model for threatened dasyurid species, to examine how captivity reshapes the gut microbiome. Captivity was associated with reduced alpha diversity and clear separation in beta diversity, indicating both a loss of microbial richness and a consistent restructuring of community composition under captive conditions. These compositional changes were accompanied by pronounced divergence in microbiome functional potential. Captive microbiomes were enriched for central carbon and carbohydrate metabolism, including glycolysis, pentose phosphate, pyruvate metabolism, and simple sugar uptake systems, consistent with efficient energy extraction from simplified diets. In contrast, wild microbiomes showed broader functional enrichment across lipid metabolism, short-chain fatty acid production, amino acid interconversion, vitamin and redox pathways, xenobiotic degradation, and secondary metabolite biosynthesis. Functionally, these patterns suggest that captivity selects for metabolically streamlined, lower-diversity microbiomes while eroding microbial contributions to immune education, disease resistance, detoxification capacity, and endocrine signalling. This functional narrowing provides a plausible, previously underappreciated, mechanism linking captivity to increased disease susceptibility, stress sensitivity, and reduced post-release performance. Together, our results highlight

microbiome diversity and function as critical dimensions of host adaptation to captivity and identify host–microbiome interactions as tractable targets for improving conservation breeding and reintroduction outcomes.

EVOLUTION AND DRIVERS OF LONG-DISTANCE VOCAL COMMUNICATION IN MAMMALS

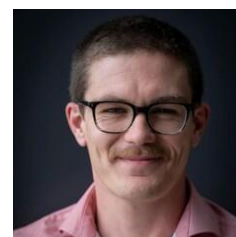
Benjamin J.J. Walker^{1,2} & Tracey L. Rogers^{1,3}

1. Evolution and Ecology Research Centre, School of Biological, Earth and Environmental Sciences, UNSW Sydney, Sydney, NSW, 2052, Australia

2. Centre for Ecosystem Science, School of Biological, Earth and Environmental Sciences, UNSW Sydney, Sydney, NSW, 2052, Australia

3. Centre for Marine Science and Innovation, School of Biological, Earth and Environmental Sciences, UNSW Sydney, Sydney, NSW, 2052, Australia

Bio: Dr Ben JJ Walker (he/him). I am an ecologist and evolutionary biologist with interests in biology, ecology, evolution, and statistics. I conduct research on diverse systems including environmental impacts from human activity (mining, anthropogenic noise pollution, management actions), effects of climate systems on cetacean movement and behaviour, and the evolution and ecology of vertebrate communication systems (chemical and acoustic). My research focuses on the intersections of evolution, ecology, animal behaviour (communication and movement), and species traits - in the context of human activity and impacts. Email: ben.walker@unsw.edu.au Social media handle: Bluesky: @benjjwalker.bsky.social (<https://bsky.app/profile/benjjwalker.bsky.social>) Website: <https://benjjwalker.github.io/portfolio/>



Long distance communication is important for life history processes in many species. Long-standing debate exists about the type of evolutionary history and environmental drivers which have shaped the propagation of animal sounds. We compare the maximal propagation distance of calls for 103 mammalian species using comparative analysis. While maximal propagation distances in aquatic mammals are best explained by body mass, in terrestrial mammals the effects of home range, with call type, habitat, and sociality best explain maximal propagation distances. The difference between effects of body mass and home range on maximal propagation distances of mammal sound signals suggests that sound propagation strongly depends on environmental pressures and evolutionary mechanisms, within physical laws. Evidence is provided that the acoustic adaptation hypothesis may be more associated with home range than body mass in terrestrial mammals, while predation may be an important component that facilitates this adaptation for mammals in different environments. Understanding these evolutionary trait drivers provides one key step to answer whether vocal species could be affected by environmental and anthropogenic acoustic pressures, and whether they can evolve in response to those pressures.

LIFE IN THE BIG CITY – IDENTIFYING BANDICOOT PRESENCE IN THE SYDNEY URBAN MATRIX

Sonja Elwood

2 Stromboli Place, Bilgola Plateau 2107

Bio: Sonja Elwood (she/her) has over 30 years' experience working in local government in Sydney, with roles spanning biodiversity conservation, bushland management, invasive species control, and environmental education. She has been a licensed volunteer wildlife rehabilitator for 40 years and is the founder of Sydney Wildlife Rescue. In addition, Sonja is a founding member and current Chair of the NSW Wildlife Council, the peak body for the volunteer wildlife rehabilitation sector in New South Wales. Email: sonjaelwood15@gmail.com



Though bandicoots can thrive in suburbia, their numbers are in decline in Sydney. To identify factors that promote urban adaptation, I examined 25 years of urban land-use and demographic factors influencing long-nosed bandicoot (*Perameles nasuta*) presence across Sydney's 39 local government areas and national parks.

Sighting records, including unutilised wildlife rescue and council data, were analysed in five-year intervals between 1993 and 2018. Long-nosed bandicoot ('burruga', Darug) presence showed a strong negative association with agricultural and rural land use. Other relationships could not be resolved without larger, finer-scale spatial and temporal data.

Although considered an urban adaptor in Sydney's northern suburbs, since 2019, remaining suburban populations are likely declining due to increasing urban densification, fox predation, and possible competition with domestic poultry and brush turkeys.

Longitudinal studies of native fauna in peri-urban environments are few. Overall, the findings emphasise the importance of improved datasets and stronger application of ecologically sustainable development principles to ensure burraga persistence in Sydney's urban landscape.

AUTUMN SWARMING-LIKE BEHAVIOUR IN AUSTRALIA'S CHOCOLATE WATTLED BAT

Kelly Sheldrick^{1,2}, Amy Hutchinson¹, Levi MacDonald^{1,3}, Alysha Johnson⁴

¹ Conservation Council of WA, Wadjuk Country, West Perth, Western Australia, Australia

² Murdoch University, Perth, Western Australia, Australia

³ University of Western Australia, Perth, Western Australia, Australia

⁴ Capes Foundation, Wadandi Country, Margaret River, Western Australia, Australia

Bio: Kelly Sheldrick (she/her; @kellyjsheldrick) is an ecologist and Citizen Science Program Manager at the Conservation Council of Western Australia. Passionate about bat conservation and ecoacoustics, she has spent the past three years coordinating community-based surveys across southwest WA. Her work engages volunteers in collecting ecological and acoustic data to better understand local bat species, their roosting behaviour, and habitat use, while helping address misconceptions and support safe coexistence between people and bats. Email: kelly.sheldrick@ccwa.org.au

Autumn swarming is well documented in European and North American bats, where it is associated with mating, social information transfer, and hibernation-site assessment. Swarming sites likely play a crucial role in bat life cycles, and their loss could have significant conservation consequences, highlighting the importance of identifying and protecting these locations. Comparable behaviour, however, is poorly described in Australian bats. This study examines seasonal cave activity in the chocolate wattled bat (*Chalinolobus morio*) in south-west Western Australia to assess whether it aligns with autumn swarming.

Seasonal acoustic surveys (spring, summer, autumn, winter) and observations of autumn guano accumulation indicated elevated cave activity early March, with no comparable activity in other seasons. Vocalisations recorded during this period were almost all social calls.

Targeted autumn surveys incorporating acoustic monitoring, trapping, and thermal/infrared imaging showed that bats arrived ~2–3 hours after sunset and exhibited frequent chasing and social calling. Temporary clusters (>60 bats) were observed on four survey nights (five clusters total), forming ~4 hours after sunset within the swarming area and dispersing before sunrise. Cluster locations shifted ~10 m every 1–2 nights. Repeated approach–retreat flights towards clusters and individuals were also observed. Captures were limited (n=13), predominantly male (n=10) and in breeding condition (n=5). No daytime roosting was observed.

These observations are consistent with autumn swarming behaviour described in Northern Hemisphere species; however, further data are required to confirm function. The findings highlight a potentially important behaviour and reinforce the need to investigate its ecological role and conservation significance.

FIRE SEVERITY AND HABITAT QUALITY SHAPE POST-FIRE DENSITIES OF THE SOUTHERN GREATER GLIDER

Jemma K. Cripps^{1,2}, Phoebe V. Macak¹, Michael P. Scroggie¹, Louise K. Durkin¹, Benjamin Wagner³, Craig Nitschke³, and Jenny L. Nelson¹

¹ Department of Energy, Environment, and Climate Action, Arthur Rylah Institute for Environmental Research, Heidelberg, VIC 3084, Australia

² School of BioSciences, University of Melbourne, Parkville, VIC 3010, Australia.

³ School of Agriculture, Food and Ecosystem Sciences, University of Melbourne, Parkville, VIC 3010, Australia.

Bio: Jemma Cripps (she/her) is a threatened species ecologist with over a decade of experience working on threatened fauna. Jemma completed her PhD at the University of Melbourne and has worked for Zoos Victoria and other parts of the public service sector. Jemma currently works at the Arthur Rylah Institute for Environmental Research (ARI), which is part of the Victorian Department of Energy, Environment and Climate Action (DEECA). There, Jemma works in the Threatened Fauna Team undertaking applied research on threatened mammals. She provides scientific input and expertise on a range of topics to support evidence-based decision-making, ecosystem management and on-ground conservation actions. Email: jemma.cripps@deeca.vic.gov.au

Fire severity and frequency are predicted to increase under changing climates, posing risks to fire-sensitive species. In 2019-2020, a 1.5 million ha megafire burnt a significant proportion of the distribution of the threatened hollow-dependent mammal, the Southern Greater Glider (*Petauroides volans*) in south-east Australia. We aimed to use field data and habitat suitability models to explore the relationship between abundance, pre-fire habitat quality and fire severity in Victoria. 136 sites across the fire footprint were selected using stratified random sampling based on mapped fire severity (from unburnt to high severity) and a pre-fire habitat suitability model. Double observer, mark-recapture distance sampling spotlighting was undertaken at each site to enable an estimation of greater glider densities. We showed that densities of greater gliders were much lower where fire severity was highest. We also detected an interaction between predicted habitat suitability and fire severity: in low-suitability habitat, glider density declined more with increasing fire severity than in high-suitability habitat. Post-fire, the average density across the study area was relatively low (0.062 gliders per ha) compared to other populations in eastern Australia. This study reiterates the importance of unburnt but also high-quality habitat as refugia for greater gliders and aligns with other research showing that mature forest is a critical factor for maintaining population persistence following disturbance. These findings demonstrate how species distribution models can be useful in identifying key areas for proactive conservation strategies after large megafires, and that high-quality habitat burnt at high severity may still support gliders following fire.

ON THE HUNT FOR A BETTER CATALOGUE OF MAMMAL DIVERSITY IN THE TRANS-FLY REGION OF PAPUA NEW GUINEA

Tyrone Lavery¹, Clifford Single², Joshua Sikota², Kumuwa Duti³, Siwanekato Thomas³, Kawaleya Dedewana³, Jenny Samoso³, Alex Gaeligali³, Wiyawato Bonene³, Beya Sogowa³, Dedamowate Imiya³, Baiya Tabua³, Sobato Tabua³, Ama Seyawa³, Kanota Kesa³ and Rick Hamilton⁴

¹ School of BioSciences, The University of Melbourne, Parkville, VIC 3052, Australia

² The Nature Conservancy, Gordons Industrial Area, Port Moresby, Papua New Guinea

³ Yomolo-Samaki Tribal Area, Fly Delta, Western Province, Papua New Guinea

⁴ The Nature Conservancy, South Brisbane, QLD 4101, Australia

New Guinea is the world's largest tropical island and Papua New Guinea ranks among the most biodiverse nations globally. Mammalogy in the country remains constrained by Linnean and Wallacean shortfalls: many species remain to be described and distributions are inadequately mapped. Even within New Guinea, some key regions are more lacking in information than others, the Trans-Fly is one such understudied area. The Yomolo and Samaki tribal lands north and south of the upper Aramia River encompass almost one million hectares of largely intact forest, supporting six remote communities that together total just ~6,000 people. As an initial foray into documenting the mammals of this region, we have been combining participatory hunting records and interviews, with GPS tracking of hunting trips, and opportunistic observations. Data are being collated and analysed to describe species composition, hunting frequencies and spatial use. Preliminary analyses reveal a diverse assemblage of hunted species, including regionally endemic forms. Introduced rusa deer (*Cervus timorensis*) are a key resource for hunters that could be offsetting the targeting of indigenous mammals. Hunting effort appears concentrated along major waterways and our data show gender-specific patterns of resource use. Our findings are offering essential baseline information for locally appropriate management and are beginning to justify expanded mammal surveys in the near future.

A STATUS UPDATE ON THE COORDINATION OF FLYING-FOX MONITORING IN NEW SOUTH WALES

Matthew Mo and Kylie Madden

New South Wales Department of Climate Change, Energy, the Environment and Water

Monitoring populations of flying-foxes is challenging considering their nomadic habits but is needed for conservation status assessments and tracking movement trends to inform management issues. National censuses involving synchronous counts at as many flying-fox roosts as possible have been undertaken, including into the present day with the National Flying-fox Monitoring Program. Established in 2012, this program involves quarterly censuses in the months of February, May, August and November. This paper focuses on how the program is operating in New South Wales, where there are currently 476 known roosts. We are also appealing for new participants to help address coverage gaps.

ENHANCING MONITORING AND IDENTIFYING CRITICAL HABITAT VALUES FOR AN URBAN BANDICOOT

Pippa Clifton and **Kate Bryant**

School of Environmental and Conservation Sciences, Murdoch University, Western Australia

Bio: Dr Kate Bryant (she/her) is a Senior Lecturer and Wildlife Biologist at Murdoch University in Perth. K.Bryant@murdoch.edu.au

Urbanisation threatens Australian wildlife, primarily by degrading or removing natural habitats, making it difficult for populations to persist without targeted conservation support. An example is the quenda (*Isoodon fusciventer*), endemic to south-west Western Australia and a conservation-priority species under state legislation. As one of the few native marsupials persisting within Perth's urban landscape, it contributes important ecosystem services and is of high conservation value. However, there has been a paucity of broad-scale data available, limiting our understanding of its status and the efficacy of urban conservation management. We addressed these knowledge gaps by investigating quenda occupancy across 33 urban remnant bushland reserves in northern metropolitan Perth, using camera trapping and sign surveys, and identifying key habitat characteristics influencing presence. Quenda were detected in 18 reserves, updating our understanding of both natural and translocated populations. Occupancy modelling revealed that vegetation density at both lower (0-30cm) and mid-storey (100-300cm) structural layers significantly predicted quenda presence, with preliminary data suggesting that >50% lower-storey density supports a high probability of persistence. Connectivity to other remnant vegetation (within 2km), grass tree abundance and fire history also predicted occupancy. These findings provide a valuable baseline of fine-scale distributional data against which quenda populations can be monitored over time, and the methods to do so. Key metrics on habitat requirements will improve support for existing and future populations, and enhance conservation management outcomes for the quenda throughout its urban range.

VAGRANT SUBANTARCTIC FUR SEALS IN SOUTHERN AUSTRALIA FROM 2005 TO 2024

Peter Shaughnessy¹, Ebony McIntosh², Rebecca McIntosh³, Holly Raudino⁴, Sam Thalmann⁵

¹ South Australian Museum, Adelaide SA 5000 peter.shaughnessy@samuseum.sa.gov.au

² Melbourne Zoo, Elliot Avenue, Parkville VIC 3052 EMcIntosh@zoo.org.au

³ Phillip Island Nature Parks, Cowes Victoria 3922 rmcintosh@penguins.org.au

⁴ Marine Science Program, Department of Biodiversity, Conservation and Attractions, Perth WA 6151 holly.raudino@dbca.wa.gov.au

⁵ Natural Resources and Environment Tasmania, Hobart Tasmania 7000 sam.thalmann@nre.tas.gov.au

Subantarctic fur seals (*Arctocephalus tropicalis*) were harvested in the 19th century. Their populations recovered during the 20th century, and they have since spread widely. Main breeding locations are Gough Island (South Atlantic Ocean) and Amsterdam Island (South Indian Ocean).

The study documents the species' presence on the coasts of Western Australia (WA), South Australia (SA), Victoria and Tasmania, based on reports to State fauna authorities, SA Museum and Melbourne Zoo. Subantarctic fur seals were recognised by the pale pelage on their chest, face and above the eyes, which separates them from the resident long-nosed fur seals *A. forsteri* and Australian fur seals *A. pusillus doriferus*.

Overall, 466 Subantarctic fur seals were recorded ashore over 22 years, averaging 21.2 per annum. Tasmania, Victoria and WA had similar numbers (121-126), with fewer in SA (95). Peak numbers were in 2021 (100 records, 21.5% of the total), mostly in SA and Victoria (ca. 40 each). The seals were ashore each month of the year with maximum in August (22%) and fewest in March (1.9%).

There is evidence of breeding attempts on the Australian coast. In WA, two births were recorded. In south-west Tasmania, adult male Subantarctic fur seals have held territories in long-nosed fur seal colonies; hybridisation is suspected. Subantarctic fur seals breed successfully at Macquarie Island; will they do so on the south coast of Australia?

Three tagged Subantarctic fur seals have been recorded in Australia, all from Amsterdam Island. This is the most likely source of the vagrants.

RESPONSE OF EXTANT SMALL DESERT MAMMALS TO FERAL PREDATOR EXCLUSION FENCING

Emma Fitzsimmons, Tim Henderson, Monique Lush

Australian Wildlife Conservancy, Level 2, 322 Hay Street, Subiaco, Western Australia 6008.

Bio: **Emma Fitzsimmons** (she/her) is a Field Ecologist with the Australian Wildlife Conservancy (AWC), based at Newhaven Wildlife Sanctuary in Central Australia. Emma holds a Master of Conservation Science and has six years of experience in ecology, with a primary interest in protected areas and the conservation of threatened mammal and bird species. Email:

Emma.Fitzsimmons@australianwildlife.org

Feral predator exclosures are widely used in Australia to create refuges for threatened or reintroduced species, yet their effects on non-target extant small mammals is less understood. Using data from five years of standardised live-capture surveys at Newhaven Wildlife Sanctuary in central Australia, we assessed the influence feral predator exclusion fencing had on the abundance of three extant small mammal species: spinifex hopping mouse (*Notomys alexis*), brush-tailed mulgara (*Dasycercus blythi*) and sandy inland mouse (*Pseudomys hermannsburgensis*). We compared capture rates inside versus outside the exclosure, as well as before versus after fence completion, using generalised linear models that accounted for sampling effort and temporal variation. Responses were species-specific: *N. alexis* and *D. blythi* increased significantly in abundance inside the fenced area following its completion, whereas *P. hermannsburgensis* showed no detectable change. Most notably, *D. blythi* abundance was five times higher inside the exclosure than outside after its completion. These results suggest that exclusion fencing has positive outcomes for some extant small mammals but can also influence species composition due to shifts in interspecific competition and predation.

Session 3: 14:00 – 16:00

WHEN GHOSTS GHOST YOU: USING NON-INVASIVE HORMONE MONITORING TO STUDY GHOST BAT PHYSIOLOGY

Alicia Dimovski¹, Tamara Keeley, Nicola Hanrahan² and Kerry Fanson¹

¹ School of Agriculture, Biomedicine & Environment, La Trobe University, Melbourne, Australia

² Research Institute for Environment and Livelihoods, Charles Darwin University, Brinkin, Northern Territory, Australia

Bio: Alicia Dimovski (she/her) is a Research Associate at La Trobe University with a focus on conservation physiology and the development of non-invasive tools to study wildlife biology. Her work uses glucocorticoid and reproductive hormone monitoring to investigate physiological processes including reproduction, seasonal variation, and responses to environmental conditions across a range of vertebrates. Alicia's research aims to develop and apply practical, low-impact physiological monitoring approaches that enhance understanding of cryptic and disturbance-sensitive species and support evidence-based conservation and wildlife management. She has a strong interest in translating physiological data into conservation outcomes and improving monitoring approaches for hard-to-study wildlife. Email: a.dimovski@latrobe.edu.au



Ghost bats (*Macroderma gigas*) are a disturbance-sensitive species with specialised roosting requirements. They are threatened by habitat loss and disturbance of critical roosting sites, with significant population declines reported across parts of their range. To support effective conservation, it is important to understand their physiological responses to environmental and anthropogenic stressors. Monitoring adrenocortical activity provides a powerful tool for assessing animal health and physiological state. Glucocorticoid hormones play a key role in mediating the acute stress response and supporting essential physiological functions. For disturbance-sensitive species such as ghost bats, non-invasive hormone monitoring enables physiological assessment with minimal disturbance of individuals or roosting groups. However, we currently lack appropriate tools to monitor adrenocortical activity in ghost bats.

To address this gap, we biologically validated an enzyme immunoassay for monitoring faecal glucocorticoid metabolites (FGMs) in ghost bats using faecal samples collected from captive individuals before and after a known stressor. We compared the performance of six enzyme immunoassays targeting different glucocorticoid metabolites to identify the most sensitive assay. We then used this validated assay to characterise sex and seasonal patterns in FGMs.

FGMs did not differ overall between male and female ghost bats but varied significantly across the year, with seasonal patterns differing between sexes. These patterns aligned with sex-specific reproductive phases. This study provides the first assessment of adrenocortical activity in ghost bats and establishes a robust, non-invasive framework for physiological monitoring to inform evidence-based conservation management.

EMERGING TOOLS FOR REWILDING BEYOND-THE-FENCE

Patrick B. Finnerty¹, Katherine Moseby², Jennifer R. Anson³, Rebecca West², Rob Brewster⁴, Mareshell Wauchope¹, Thomas M. Newsome¹

¹ School of Life and Environmental Sciences, The University of Sydney, Sydney, New South Wales, Australia

² Centre for Ecosystem Science, School of Biological, Earth and Environmental Science, University of New South Wales, Kensington, Sydney, Australia

³ Australian Wildlife Conservancy, Sydney, NSW, Australia

⁴ Invasive Species Council, Sydney, NSW, Australia

Australia is experiencing a biodiversity crisis driven largely by invasive predators, which have caused the extinction of at least 40 small-bodied mammal species and continue to drive ongoing declines. Invasive predator-free fenced reserves and islands have emerged as a critical 'safe haven' conservation solution for this problem, facilitating successful threatened species translocations. An important extension of this work, however, is the establishment of threatened populations that can withstand some threshold of invasive predation pressure outside these reserves, enabling species to reclaim portions of their former ranges and restore ecosystem function beyond fenced areas. In recent years, more than 35 projects have attempted to establish populations in unfenced landscapes, either adjacent to fenced reserves ('beyond-the-fence') or in open systems. While some have succeeded, many have failed, suggesting that unfenced releases require new, targeted strategies. Beyond-the-fence translocations occupy a unique middle ground between fully fenced and completely open landscapes, creating both opportunities and risks. These dynamics mean they cannot simply replicate conventional translocation approaches and instead require strategies tailored to the interacting influences of fences and invasive predators. Here, we synthesise existing knowledge and recent Australian case studies to identify four key categories of ecological, behavioural, and technological interventions to enhance translocation success: (i) manipulating predators, (ii) manipulating the focal species, (iii) manipulating the environment, and (iv) manipulating release protocols. While these approaches show strong potential, key challenges remain, particularly those unique to fence-adjacent contexts, including predator aggregation along edges and altered post-release movement and settlement patterns.

ENHANCING THE EXPERIENCE OF A FLYING-FOX ROOST

Maree Treadwell^{1,2}, Matthew Mo³ and Sera Steves^{1,2}

¹ Bats and Trees Society of Cairns, PO Box 528, Kuranda Qld 4881

² Wildlife Tourism Australia, 1770 Running Creek Rd, Rathdowney, Qld 4207

³ NSW Department of Climate Change, Energy and the Environment and Water, 4 Parramatta Square, 16 Darcy St Parramatta, NSW 2150

Bios: Maree Treadwell and Sera Steves (She/her both). Maree and Sera are President and Vice-President of Bats and Trees Society of Cairns, a not-for-profit conservation group in Far North Queensland that engages and educates the community about bats with the aim of creating a society that celebrates its bats. Maree (vice-chair) and Sera also serve on the executive committee of Wildlife Tourism Australia, a not-for-profit organisation promoting sustainable development of a diverse wildlife tourism industry that supports conservation. Maree and Sera are particularly interested in bat tourism, with Sera coming from a family involved with Merlin Tuttle's bat conservation and Maree coordinating the ABS Australasian Bat Night Program. [linkedin.com/in/maree-treadwell-kerr-91443a1a](https://www.linkedin.com/in/maree-treadwell-kerr-91443a1a) Instagram: @batsandtreessocietyofcairns FaceBook: @BATSOCinc

Matthew Mo (He/him) Matthew is a Sydney-based ecologist currently working on statewide management of threatened species as the Senior Project Officer (Saving Our Species) in the Biodiversity and Conservation Division of the NSW Department of Climate Change, Energy, the Environment and Water. He convenes the NSW Flying-fox Consultative Committee and is the steering committee chair of the new National Flying-fox Monitoring Program. He has authored over 50 peer-reviewed scientific publications, including on normalising flying-foxes and enhancing experiences of flying-fox roosts to improve public perceptions. He is a strong believer in the importance of communication in promoting science and conservation and achieving societal change. [linkedin.com/in/matthew-mo-a07333134](https://www.linkedin.com/in/matthew-mo-a07333134)

Flying-foxes are amazing native animals that uniquely provide pollination and seed dispersal services for our ecosystems over extraordinary distances. However, public perceptions of these useful species vary from very positive to very negative. Wildlife tourism can play a role in portraying flying-foxes in a positive light and contribute to solutions to human/flying-fox conflict. The sustainable nature tourism sector has the opportunity to harness flying-foxes as part of the industry and, in so doing, contribute to flying-fox conservation and help address the image problem by influencing how people, especially the next generations, think about flying-foxes. Conveniently, many flying-fox roosts occur in public spaces, some viewable from walking tracks and boardwalks, and some in scenic locations, such as on the edge of lakes and rivers. Flying-foxes departing their roosts *en masse* at sunset also provide an additional spectacle, often being an unexpected highlight of a visit to Australia. This presentation outlines some existing bat tourism examples, introduces a new concept for offering visitors an interactive virtual experience at a flying-fox

roost and explores the potential of this in a case study of the endangered spectacled flying-fox at an urban roost in Cairns, FNQ.

10 SPECIES IN 10 YEARS: A REVIEW OF THE MT GIBSON MAMMAL RESTORATION PROJECT

Nell Glover, Amanda Bourne, Louis O'Neill, Bryony Palmer, Aliesha Dodson, Arnika Thorbjornsen, Sophia Callander, John Kanowski

Australian Wildlife Conservancy, 322 Hay Street, Subiaco WA 6008.

Nell Glover (She/her) is a field ecologist for the Australian Wildlife Conservancy and has experience working across multiple states, both in government and non-for-profit sectors. She has worked with a range of species including small mammals, birds, frogs and reptiles using a range of trapping techniques including cage, Elliot, mist netting, pitfall, funnel and camera traps. She is passionate about working towards positive conservation outcomes for threatened species and increasing collaboration with First Nations People and different sectors for effective and sustainable conservation strategies. Email: Nell.glover@australianwildlife.org Instagram: nell_787



Mt Gibson's Mammal Restoration Project, on Badimia Country in Western Australia, has recently celebrated a significant conservation milestone for The Australian Wildlife Conservancy. The project aimed to establish viable, self-sustaining populations of ten locally extinct or suitable ecological replacement mammal species. In 2024, the final planned release of the last planned species (12 Western Quolls, or Chuditch, *Dasyurus geoffroii*, from Taronga Zoo's captive breeding program) was completed. Over the last ten years, mammal translocations have been conducted both inside and outside a 7,828 ha feral predator-proof fenced area. Whilst the most recently released species are in the early stages of establishment at Mt Gibson, and translocation outcomes are too early to evaluate, several translocated species have now met medium- and/or long-term success criteria and show signs of long-term viability and resilience. One indicator of this is fluctuations in population abundance in response to environmental conditions, with several species declining during a recent severe drought, then recovering as conditions improved. Rodents proved more difficult to translocate than marsupials, with Shark Bay Mice, *Pseudomys gouldii*, failing to establish post release, and Greater Stick-nest Rats, *Leporillus conditor*, declining to near undetectable levels following severe drought. Continued control of feral predators via eradication from the fenced area, and ongoing suppression across the larger property, has been critical to the project success. The knowledge gained from this ambitious multi-species reintroduction program will inform future translocations and provide greater understanding of the opportunities and challenges inherent with large, complex, landscape-scale conservation and restoration programs.

COMPARATIVE GENOMICS REVEALS INSIGHTS INTO THE SPECIATION OF FOUR AUSTRALIAN FLYING-FOXES

Matthew J. Lott¹, Binia De Cahsan², Ira R. Cooke³, Anja Divljan¹, Matthew A. Field³, Greta J. Frankham¹, Kris M. Helgen⁴, Linda E. Neaves⁵, Mark D. B. Eldridge¹

¹Australian Museum Research Institute, Australian Museum, Sydney, NSW 2010, Australia

²Globe Institute, University of Copenhagen, 1350 Copenhagen K, Denmark

³College of Science and Engineering, James Cook University, Townsville, QLD 4811, Australia

⁴Bernice Pauahi Bishop Museum, 1525 Bernice Street, Honolulu, Hawai'i 96817, United States of America

⁵School of Environment and Conservation, Murdoch University, Murdoch, WA 6150, Australia

Bio: Matthew Lott (he/him) My major research interests lie in the use of genomics to investigate the molecular ecology and evolutionary history of Australian terrestrial vertebrates. This includes studying dispersal, population structure, genetic connectivity, and the effects of habitat fragmentation, as well as assessing the consequences of isolation, population declines, and inbreeding on fitness and adaptive potential. I am particularly interested in how genomic variation is shaped across heterogeneous landscapes, including the maintenance of both neutral and adaptive diversity and its implications for population management. My work also explores broader questions of speciation, with a focus on the genomic signatures of divergence, the role of hybridisation, and the dynamics of gene flow across partially differentiated lineages. Email: Matthew.Lott@Australian.Museum



Accurate taxonomic delimitation is essential for effective wildlife management. However, recent evolutionary radiations can blur species boundaries, complicating the identification of meaningful conservation units. Flying-foxes (*Pteropus*) are a speciose group of non-echolocating large bats, with five extant Australian species. The widely distributed black flying fox (*Pteropus alecto*) is known to hybridise with both the spectacled flying fox (*Pteropus conspicillatus*) and the grey-headed flying fox (*Pteropus poliocephalus*), but the extent and evolutionary significance of gene flow among these taxa remain poorly understood. In this study, we sequenced whole genomes from 15 flying-fox specimens, representing all four mainland Australian species, and several putative hybrids. Our results highlight the complexities of Australian flying-fox systematics, as we observed extensive allele sharing and limited genome-wide differentiation between *P. alecto* and *P. conspicillatus*, reflecting a combination of incomplete lineage sorting and persistent genetic connectivity. The relatively small number of genomic regions exhibiting elevated differentiation between *P. alecto* and *P. conspicillatus* included genes associated with immune function, transcriptional regulation, and chromatin organisation, suggesting that these pathways may underlie lineage-specific phenotypic differences. Notably, hybrids between *P. alecto* and *P. conspicillatus* displayed approximately equal parental genomic contributions, whereas *P. alecto*–*P. poliocephalus* hybrids showed ancestry bias that was modest genome-wide but markedly stronger in highly differentiated, potentially adaptive genomic regions, suggesting that selection against deleterious allele combinations—rather than uniform backcrossing alone—may be shaping introgression patterns. Together, these findings demonstrate the importance of integrating genomic data into wildlife management frameworks, particularly in systems where species boundaries remain porous.

MOVEMENT ECOLOGY OF BRUSHTAIL POSSUMS REINTRODUCED TO A DESERT ENVIRONMENT

Tim Henderson, Helenna Mihailou, Samantha Mulvena, Emma Fitzsimmons, Helen Crisp, Danae Moore

Australian Wildlife Conservancy, Level 2, 322 Hay Street, Subiaco, Western Australia 6008.

Bio: Dr Tim Henderson (he/him) is a Wildlife Ecologist working and living at AWC's Newhaven Wildlife Sanctuary in central Australia. He has over 10 years' ecology experience and has spent the last three years managing the science program at Newhaven, with a focus on species reintroductions and ecohealth monitoring. Tim previously completed a PhD on Spotted-tailed Quoll ecology and has a specific interest in working with threatened species. While his primary experience is in mammal ecology, Tim is also a keen birdwatcher and photographer. Email: Tim.Henderson@australianwildlife.org

The common brushtail possum (*Trichosurus vulpeula*) was once widespread in arid Australia but has recently declined to extinction across much of this region. In 2024, 64 brushtail possums were translocated into a large feral predator exclosure at Newhaven Wildlife Sanctuary, located in central Australia. This study aimed to investigate the post-release movement ecology and establishment of reintroduced possums to this desert environment. Specifically, we assessed post-release dispersal, home range, nocturnal movement, and habitat selection. We fitted GPS collars to 10 possums from two source locations and monitored individuals for up to three months post-release. Three individuals moved beyond the feral predator exclosure, two of which made long distance movements. Home range and nocturnal movements varied between individuals, however, there were no significant differences observed between sex or between source location. Mean nightly distance decreased over time, suggesting dispersal behaviour was reduced as individuals became established. Habitat selection analysis revealed a preference for a large quartzite range located within the exclosure, which served as the primary habitat for early establishment. These findings suggest that rocky ranges provide important habitat for translocated possums and may be

critical for the success of future translocations into central Australia. This study also highlights the importance of obtaining high-resolution spatial data for understanding the post-release behaviour of reintroduced species.

AN HISTORICAL PERSPECTIVE (1980-2005) ON BAT RESEARCH IN STATE FORESTS DURING WOODCHIP OPERATIONS IN SOUTH-EAST NSW

Daniel Lunney¹

¹SOLES, University of Sydney 2006 and Australian Museum NSW 2000.

In 1978, at the direction of the NSW premier, the NSW NPWS was directed to survey the fauna of the coastal forests near Bega and to determine the impact of woodchip logging. As a researcher in the Service, I was tasked with this responsibility. The aim of this paper is to recount the challenges associated with including bats in this work, given that at the time there was a dearth of such studies, and describe the achievements of the multi-year research program. Advice was sought from bat experts and non-bat ecologists on species identification, netting, trapping, banding, radio-tracking, acoustic surveys and tree selection. They contributed generously to open, iterative discussions on methods and design throughout the project and we were assisted in the field by numerous volunteers. We used nets and newly-constructed collapsible harp traps to capture animals in logged and unlogged forest, ridges and gullies, on track and off track and at increasing distances across the forest. We tracked movements using radio-telemetry and explored the use of emerging acoustic techniques for nocturnal surveys. With each new technique we discovered new insights in bat biology and ecology in the highly-disturbed forest. For example, we were the first in the world to track forest bats to tree roosts and showed that they depend upon large, hollow-bearing trees and are thus highly vulnerable to logging. Co-operation, generosity in advice, a willingness to participate in novel research ideas and techniques in these early years of forest bat research opened the previously hidden dimensions of forest bat research.

TO HELP OR TO HARM IN THE HEAT; PRINCIPLES FOR GUIDING INTERVENTION THRESHOLDS TO MINIMISE HARM IN FLYING-FOX HEAT STRESS EVENTS.

Sarah Curran and Matthew Mo

Extreme heat events are increasingly common drivers of mass morbidity and mortality in Australian flying-fox populations. Wildlife carers form the critical frontline response, often operating under conditions of scale, urgency, and limited resources.

Flying-foxes exhibit a predictable range of thermoregulatory responses to high ambient temperatures, although expression can vary across species, age, and local environmental conditions. The ability to accurately interpret these responses underpins appropriate intervention decisions.

This presentation explores how interpretation of flying-fox behaviour, ecology, and physiology shapes decision-making during heat stress events, and how responses intended to help may, under some conditions, contribute to unintended harm. It considers how this informs intervention thresholds, and how these decisions influence welfare outcomes. Insights from broader emergency response literature highlight the value of coordinated, structured approaches to further reduce the risk of unintended harm.

SEEING AND HEARING THE BIGGER PICTURE: LANDSCAPE-SCALE MONITORING OF FAUNA IN NSW TIMBER PRODUCTION FORESTS

Leroy Gonsalves¹, Brad Law¹, Traacey Brassil¹, Glenyse Villanueva¹, Isobel Kerr¹, Elsa Kohane¹, Christopher O'Loughlin¹, Emma Sawyers¹, Fernanda Tique-Bernal¹, Chris Slade²

¹ Forest Science, NSW Primary Industries and Regional Development, Parramatta, NSW 2150.

² Forestry Corporation of NSW, Wauchope, NSW 2446.

Bio: **Leroy Gonsalves** is a Senior Research Scientist in the New South Wales Department of Primary Industries and Regional Development. He undertakes research on threatened species, in forested and other landscapes to improve ecological outcomes.

Systematic monitoring is a key approach for understanding where fauna populations are distributed in space and time, particularly at landscape scales that capture variations in climate, environmental attributes and disturbances. Monitoring occupancy of species at these scales and tracking trends can be used to assess the effectiveness of management. In New South Wales State forests, timber production is balanced with environmental outcomes using the coastal integrated forestry operations approval (CIFOA), which is a licence that sets out the rules for timber harvesting, including landscape protections of fauna habitat. In 2022, landscape monitoring was initiated to assess whether timber harvesting and other disturbances (fire and climate change) are having a neutral, positive or negative impact on landscape-scale environmental values. A rotating panel design was implemented such that in each of three regions, 50 sites are surveyed annually along with a panel of 10 sites that are rotated over a five-year period. Sampling has been undertaken in spring and autumn to allow for seasonal variation in detectability of different species to be captured. Remote sensors (acoustics, ultrasonics and cameras) coupled with artificial intelligence and analytical approaches that account for imperfect detection have been used to model population trends for up to ~50 species after the first three years of the program, while also identifying correlates (e.g., climatic and forest disturbance variables). We present trends for multiple species and provide context using estimates from baseline surveys in the early 1990s. Furthermore, we present examples of how monitoring can be used to inform management.

ASSESSING REINTRODUCTION SUCCESS: AN OVERVIEW OF BRUSH-TAILED BETTONG ESTABLISHMENT AT MALLEE CLIFFS NATIONAL PARK, NSW

Rachel Ladd¹, Laurence Berry² and Greg Holland¹

¹Australian Wildlife Conservancy, 15 Silver City Highway, Buronga NSW 2739

²Trust for Nature, 379 Collins Street, Melbourne Vic 3000

Bio: **Rachel Ladd** (she/her). Email: rachel.ladd@australianwildlife.org

Brush-tailed Bettong (*Bettongia penicillata*) are listed as Endangered nationally and extinct in New South Wales. Reintroduction programs play a critical role in returning this species to parts of its former range. In 2021, the Brush-tailed Bettong was reintroduced to the feral predator-free fenced area at Mallee Cliffs National Park, as part of a multispecies reintroduction project partnership between Australian Wildlife Conservancy and NSW National Parks and Wildlife Service. Founders (n = 70) were sourced from two reintroduced populations: Scotia Wildlife Sanctuary, NSW and Mt Gibson Wildlife Sanctuary, WA. The key criteria to measure the success of the reintroduction include survival, animal condition, recruitment, and population size. Additionally, habitat selection and post-release dispersal were also investigated. The methods used to assess these criteria included VHF and GPS telemetry (n = 20 and n = 8 respectively), live trapping and camera trapping. Survival in the first 3 months post-release was high (93 – 96%), and in the 4 years since reintroduction, mean animal condition has been maintained within the acceptable range for the species, and the population has increased by 814%. The Brush-tailed Bettong has dispersed across the feral predator-free fenced area, with insights into early animal movement and habitat preferences to be presented. The monitoring data indicates that this species is on-track for successful establishment, returning this species to part of its former range and increasing global population size.

EVALUATING THE PROS AND CONS OF MECHANICALLY CARVED TREE HOLLOWES FOR HABITAT RESTORATION AND WILDLIFE CONSERVATION PROGRAMS

Steve Griffiths^{1,2}

¹ Arthur Rylah Institute for Environmental Research, Department of Energy, Environment and Climate Action, 123 Brown Street, Heidelberg, Victoria 3084

² Research Centre for Future Landscapes, School of Agriculture, Biomedicine and Environment La Trobe University, Bundoora, Victoria 3083

Bio: Steve Griffiths is a Scientist at the Arthur Rylah Institute for Environmental Research, and an Adjunct Research Fellow in the Research Centre for Future Landscapes at La Trobe University. His current research is focused on quantifying the effectiveness of different types of artificial hollows in providing supplementary nest and den sites for hollow-dependent fauna in human-disturbed landscapes. His broader research interests include the ecology and sociobiology of tree-roosting insectivorous bats.

Nest boxes are widely used in restoration programs to compensate for the removal of hollow-bearing trees, yet growing evidence suggests they often fail to deliver intended conservation outcomes, particularly for threatened species. Mechanically carving cavities directly into trees has emerged as a popular alternative that has been widely adopted by the Australian arboriculture industry. However, very little systematic monitoring has been conducted testing their effectiveness for Australian hollow-dependent fauna. In this presentation, I synthesise findings from multiple research projects assessing the conservation value of carved tree hollows installed across 11 parks in Greater Melbourne. The studies comprise 175 carved hollows for arboreal mammals and hollow-nesting birds, and 200 fissure cavities for tree-roosting microbats. The projects have focused on cavity microclimates, patterns of use by target species, factors influencing occupancy, impacts on tree health, and the costs associated with monitoring and maintenance. The studies have generated some promising results, but overall, they suggest that mechanically carved hollows may complement, but not replace, the ecological functions of mature hollow-bearing trees. I conclude by outlining key research priorities and practical considerations for adopting a collaborative approach involving land managers, ecologists and arborists when integrating carved hollows into habitat restoration and biodiversity offset programs.

UNDERSTANDING POOKILA SUBPOPULATION BASELINES IN NEW SOUTH WALES AND TASMANIA

Nadia Nieuwhof¹, Anna Lloyd², Micah Visoiu³ and Phoebe Burns¹

¹ Wildlife Conservation and Science, Zoos Victoria, Parkville 3052, Victoria, Australia

² NSW Department of Climate Change, Energy, the Environment and Water, Edgar St, Coffs Harbour 2450, NSW, Australia

³ Department of Natural Resources and Environment Tasmania, GPO Box 44 Hobart 7001, Tasmania, Australia

Bio: Nadia Nieuwhof (she/her) is currently employed as Zoos Victoria's Pookila Field Officer. The main focus of this role is to undertake a two-year project to reassess the status and health of Pookila subpopulations in NSW and Tasmania. She also supports other Threatened Species programs at Zoos Victoria, including Smoky Mouse and Mountain Pygmy Possum work. Email: nnieuwhof@zoo.org.au



The Pookila (New Holland Mouse; *Pseudomys novaehollandiae*), a small, native, burrowing rodent, is patchily distributed from Tasmania to south-east Queensland and is known to have undergone substantial declines in Victoria since 1975. Knowledge gaps about the status of subpopulations in New South Wales (NSW) and Tasmania have been hampering efforts to prioritize conservation actions for the species in these states. The aims of this project were to assess the persistence of Pookila populations in NSW and Tasmania, evaluate their genetic health, and identify key habitat requirements.

Broad-scale camera trapping was used to survey for extant populations in areas where the species had not been recorded in decades, with habitat structure surveys undertaken opportunistically at camera sites. We followed this with Elliott live trapping at positive camera detection sites, where we collected genetic samples for analysis.

In NSW, Pookila were detected on 21 cameras, across six different parks/reserves, including areas where the mice had not been detected in 30 years. Pookila were captured at four of the NSW parks, with trap

success as high as 24.55%. No Pookila were detected on cameras on mainland Tasmania, however live trapping was successful on Flinders Island.

Genetic samples have now been analysed, painting a clearer picture of the genetic diversity of and relationships between the different populations. This provides crucial information to aid in conservation planning for the Pookila across its entire distribution. We have also developed camera survey guidelines to support local partners in delivery ongoing monitoring of these newly rediscovered populations.

THE ABS AND AMS AUSTRALIAN MAMMAL MAPPING PROJECT – AN UPDATE

Damian Milne

PO Box 434, Karama, NT, 0813.

Bio: Damian Milne is a Senior Scientist with the Northern Territory Department of Lands, Planning and Environment and has worked on fauna conservation and management across the Top End for the past 30 years. He is the lead for biodiversity data management for the NT and he also has a particular interest in bats. Damian is currently working on the Australian Mammal Mapping Project. Email: damian6105@gmail.com

In September 2025, the Australian Mammal Society and Australasian Bat Society agreed to jointly support and administer the Australian Mammal Mapping project (aka the 'Atlas of Australian Mammals'). The aim of the project is to develop, maintain, and disseminate authoritative distribution maps for all Australian terrestrial mammals by drawing on the collective expertise of members of the Australasian Bat Society (ABS) and Australian Mammal Society (AMS). The project will adopt a similar model as the BatMap project (<https://www.ausbats.org.au/batmap.html>) which has successfully developed dynamic, expert-reviewed distribution maps for all 80 species of mainland Australian and Tasmanian bats, and is widely regarded as the authoritative source for Australian bat distributions.

I will present the key aspects of the project including the project governance, distribution categories, mapping process, architecture and costs. I will also present progress on the project to date, including the outcomes of the completed data architecture review and the initial phase of project implementation.

Session 4: 16:30 – 17:00

Plenary presentation:

CHANGING STATUS OF AUSTRALIA'S MAMMAL FAUNA: PAST AND FUTURE

John Woinarski

Research Institute for the Environment and Livelihoods, Charles Darwin University, Casuarina, Northern Territory, Australia, 0810

In homage to Ellis Troughton, I dusted off my much battered but now seldom opened copy of the 1967 version of his *Furred Animals of Australia*. From its first edition in 1941, this was once the (somewhat reliable, somewhat quixotic) go-to introduction and reference guide to Australian mammals. Well, other than the marine ones. I consider how our knowledge of the Australian mammal fauna has changed from then to now (mostly impressively) and how that fauna has fared (mostly, but not entirely, badly). From the perspective of the extent of change over that period, I look to a future which is maybe scary, maybe hopeful.



EVERYTHING YOU NEED FOR YOUR TRACKING WORK

Bat and Avian Tracking



T15 VHF TRANSMITTER

Our T15 VHF Transmitter is one of the lightest in the world, 0.15 grams. Activated via your cell phone flashlight, these VHF transmitters have a 7-27 day life. Units have range up to 650 meters tested by Wildlife Drones.

A2405 VHF TRANSMITTER

ATS has been a pioneer in VHF animal tracking since 1960's. Our A2414 and A2415 models are our most popular for bat tracking with battery life ranging from 18-45 days. The units range in weights from 0.4 to 0.5 grams to accommodate weight restrictions for tracking bats and smaller avian species.



www.atsaustralia.com

SONG METER® SM5BAT

Two bat channels. Stereo bird recording. One device.

- 4 independent channels: 2 ultrasonic and 2 acoustic
- 2 acoustic cabled mic accessories for recording at height
- Industry-leading battery life and flexibility: lithium ion, alkaline (single use D cell), nickel metal hydride (rechargeable D cell)
- External power option, including solar
- Bluetooth configurator app option for set up
- Rugged, IP67-rated weatherproof enclosure

With SM5BAT from Wildlife Acoustics, you can now record bats, birds, frogs, insects, and terrestrial mammals simultaneously.



faunatech
A WILDLIFE ACOUSTICS COMPANY

faunatech.com.au | +61 2 8005 5343





**See more.
Hear more.
Protect more.**

Advanced optics and field technology
for wildlife monitoring, research
and conservation.



THERMAL OPTICS

High-performance imaging
for day and night detection.



BIOACOUSTIC RECORDERS

Capture wildlife sounds with
precision and clarity.



TRAIL CAMERAS

Reliable, remote monitoring
in any environment.



BUILT TO ENDURE

Rugged. Reliable.
Field-ready.



SUPPORT RESEARCH

Empowering data-driven
conservation.



TRUSTED BY

Researchers &
Conservationists.



EMAIL

environment@saffronaid.com



PHONE

02 7813 6830



WEBSITE

www.saffronaid.com

**EQUIP TODAY.
CONSERVE TOMORROW.**



**Supersensory
Technologies**

**Wildlife super-senses
for automated environmental monitoring**

Ultrasonics and audio

Calls from all Australasian bat species

Neural networks

Bio acoustic signal recognition with deep learning

Thermal vision

Tracking and counting bat flights; quantifying behaviour

RADAR

Quantifying bat flights at altitude

LiDAR

Characterising habitat structure and condition

Environmental

Sound, vibration, light, climate and more

VISIT US AT THE BOOTH

SUPERSENSORY.COM.AU

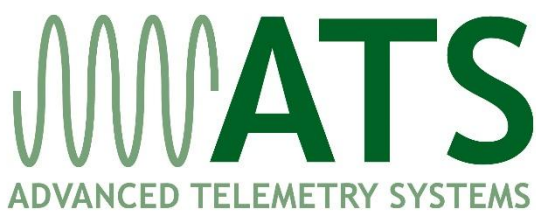
Record it all.



Our recorders and software are designed for all types of acoustic monitoring and analysis.

- Designed and made in Brisbane.
- Australian owned.
- Ready for Aussie field conditions.





CSIROPUBLISHING



Sarah Allen
WILDLIFE ILLUSTRATION + CHILDREN'S BOOKS