



THE SCHOOL
FOR FIELD STUDIES

Marsupials of Australia

SFS 3272

Syllabus
4 credits

The School for Field Studies (SFS)
Center for Rainforest Studies (CRS)
Queensland, Australia



COURSE CONTENT SUBJECT TO CHANGE

Please note that this is a copy of a recent syllabus. A final syllabus will be provided to students on the first day of academic programming.

SFS programs are different from other travel or study abroad programs. Each iteration of a program is unique and often cannot be implemented exactly as planned for a variety of reasons. There are factors which, although monitored closely, are beyond our control. For example:

- Changes in access to or expiration or change in terms of permits to the highly regulated and sensitive environments in which we work;
- Changes in social/political conditions or tenuous weather situations/natural disasters may require changes to sites or plans, often with little notice;
- Some aspects of programs depend on the current faculty team as well as the goodwill and generosity of individuals, communities, and institutions which lend support.

Please be advised that these or other variables may require changes before or during the program. Part of the SFS experience is adapting to changing conditions and overcoming the obstacles that may present. This is a field program, and the field can change!

Course Overview

This 4-week program will focus on the evolution, biogeography, ecology, behaviour and conservation of marsupials of Australia.

Australia is one of the most ancient continents on our planet with geological features dating back to more than 1.7 billion years. Its history was influenced by long periods of isolation from other land masses while uplifts and erosion of mountains, forming and disappearance of inland seas and cycles of fires, drought, cyclones and flooding shaped this land. This long history resulted in a unique diversity of plants and animals. Ancient forms of mammals, such as egg-laying monotremes and some small marsupials lived amongst Australia's dinosaurs about 110 million years ago and formed part of the ancient Gondwana fauna. After the extinction of the dinosaurs and when Australia finally broke away from Gondwana it took with it its unique array of mammals into isolation. Freed from the past dominating dinosaurs and finding themselves on a vast continent with no competing intruders, Australia's ancient marsupials could thrive and diversify. Marsupial 'hippos', 'rhinos' and 'tapirs' occupied the land while killer-kangaroos targeted the weakest of these herds of grazing marsupials.

The following period of cycling climate between icehouse phases with cold and dry conditions and greenhouse phases with warm and wet conditions pushed the existing species to become giants. Some of the species grew up to 3 meters and were hunted by Pleistocene Marsupial lions which were of the size of an African lion. Then, over the last 100,000 years 86% of Australia's megafauna became extinct, but many small-sized species (10 to 100kg) survived to the present days. As Australia continued to be a land of extremes with many habitats fluctuating between fires and floods, these surviving marsupials developed a range of adaptations to changing conditions. These include embryonic diapause, fire-induced torpor and vasoconstriction.

With arrival of humans on the Australian continent, some 60,000 years ago, and the settlement of Europeans on this continent, conditions started to change again and many factors contribute to a rising extinction of marsupial species in Australia. Australia has a sad record of disappearing mammalian species with one to two extinctions of endemic land mammal species per decade (Woinarski et al. 2015).

Apart from habitat loss, habitat fragmentation and introduced predators are major threats to our current mammalian fauna. Marsupial species suffer particularly from introduced predators. Climate change amplifies many of these extinction causing factors with more extreme weather events, flooding and fires.

In this course you will understand the factors that resulted in the dominance of marsupials on the Australian continent and current factors that jeopardize their survival into the future. You will become familiar with a wide array of marsupial species that inhabit different habitats of Australia today and which threats they are facing. Mitigating these threats requires knowledge of their ecology and behaviour, the application of sophisticated and preferably non-invasive field research methods and the introduction of effective conservation policies. This course will introduce you to some of these field research methods that Australian scientists are using to study marsupials and other mammalian species and to the current legislative and community-driven conservation tools.

You will gain practical field experiences by assessing factors that facilitate and inhibit the colonization of restored habitat by Australian mammals and particularly marsupials.

The course will mainly take place on the Atherton Tablelands in the Wet Tropics of Eastern Australia, an area with one of the highest proportions of endemic mammals in Australia. While you

are living in a campus that is situated in rainforest habitat where you encounter Striped Possums and Bandicoots when doing spotlighting at night, you will also visit wet and dry sclerophyll forests to observe Gliders and will spend some days in Australia's savannahs to see large kangaroos. You will meet wildlife caretakers and learn from their work to rehabilitate tree-kangaroos and pademelons and will hear from indigenous people about their connection to Australia's unique wildlife species.

Learning Objectives

1. Gain in-depth knowledge about the evolution, taxonomy, physiology, ecology and behaviour of marsupial species of Australia
2. Learn how marsupials and other mammals of Australia have adapted to habitats that can fluctuate between extremes
3. Get insight into the threats that jeopardize the survival of many marsupial and mammalian species into the future
4. Develop an understanding on how Australian governmental and non-governmental entities work to mitigate these threats
5. Get familiar with some non-invasive field research techniques to study marsupial
6. Gain confidence in both independent and group work activities and public speaking.

Assessments

Assessment Item	Value (%)
Species quiz	20
Marsupial species talk	25
Field Research Report	25
Final Exam	25
Participation	5
TOTAL	100

Species Quiz (20%)

You will be given a suite of marsupial species. You will get yourself familiar with some ecological parameters of each of these species such as the type of habitat it lives in, the food it consumes, and its activity rhythm. In a short quiz you will be tested on some of the species and their parameters.

Marsupial species talk (25%)

You will be assigned a marsupial species and present information about its distribution, main habitat, its ecology and conservation issues in a three-minute talk (3MT). This is mainly a desktop work but requires you to use a diversity of resources.

Field Research Report (25%)

You will contribute to some conservation-related research on a marsupial of the Atherton Tablelands. You are required to prepare a short report outlining the Methods used, the main results obtained and a discussion of the results in relation to a conservation-related question of your choice.

Final Exam (25%)

During the final exam you will be tested on material presented in lectures, field lectures and

excursions. Answering questions will require critical and analytical thinking across the various teaching units.

Participation (5%)

Everybody should be prepared for each academic session. This implies reading the materials for each session with enough detail to be able to ask relevant questions; and to participate in analytical discussions about the key issues. Active participation during classes, discussions, assignments, and hikes is expected.

Grading Scheme

A	95.00 - 100.00%	B+	86.00 - 89.99%	C+	76.00 - 79.99%	D	60.00 - 69.99%
A-	90.00 - 94.99%	B	83.00 - 85.99%	C	73.00 - 75.99%	F	0.00 - 59.99%
		B-	80.00 - 82.99%	C-	70.00 - 72.99%		

General Reminders

Honor Code/Plagiarism – SFS places high expectations on their students and we hold students accountable for their behaviors. SFS students are held to the honor code below. SFS has a zero-tolerance policy towards student cheating, plagiarism, data falsification, and any other form of dishonest academic and/or research practice or behavior. Using the ideas or material of others without giving due credit is cheating and will not be tolerated. Any SFS student found to have engaged in or facilitated academic and/or research dishonesty will receive no credit (0%) for that activity.

I approach coursework, fieldwork, and research with integrity and commit to full participation. I do my own work with honesty and give credit where it's due. I use tools and technology responsibly and only as permitted. I speak up when something conflicts with our shared values. I respect the communities we learn from and commit to ethical, non-extractive research that keeps knowledge connected to the places and people who share it with us.

AI Usage in Assignments – SFS acknowledges the growing role of artificial intelligence (AI) tools in education and professional settings. While AI can be a valuable resource for learning and productivity, its use must align with the learning goals and integrity of each assignment. For this reason, students are encouraged to discuss the acceptable uses of AI for each assignment with the instructor. If you wish to use AI for any part of an assignment, consult with the instructor beforehand to ensure that its use adheres to the academic expectations of the course. Let's work together to navigate this evolving landscape responsibly!

Deadlines - for written and oral assignments are instated to promote equity among students and to allow faculty ample time to review and return assignments before others are due. As such, deadlines are firm and extensions will only be considered under extenuating circumstances. If you believe that you have been prevented from completing your work on time for reasons beyond your control (e.g. illness), make sure that you discuss this with the relevant faculty member as soon as possible, and certainly before the assignment is due. Late assignments will incur a penalty proportional to the length of time that they are late. This means an assignment that is one day late when students were given two days to work on it will have 50% of total points removed from the grade awarded for that assignment, and an assignment that is 2 hours late when two full days (16 hrs) were allocated to

work on it will have 12.5% of total points removed from the grade.

Content Statement – Every student comes to SFS with unique life experiences, which contribute to the way various information is processed. Some of the content in this course may be intellectually or emotionally challenging but has been intentionally selected to achieve certain learning goals and/or showcase the complexity of many modern issues. If you anticipate a challenge engaging with a certain topic or find that you are struggling with certain discussions, we encourage you to talk about it with faculty, friends, family, the HWM, or access available mental health resources.

Participation – Since we offer a program that is likely more intensive than you might be used to at your home institution, missing even one lecture can have a proportionally greater effect on your final grade simply because there is little room to make up for lost time. Participation in all components of the course is mandatory, it is important that you are prompt for all activities, bring the necessary equipment for field exercises and class activities, and simply get involved.

Course components

AS: Assignment; **L:** Lectures, **FL:** Field Lectures, **FEX:** Field Exercise, **FLAB:** Field Lab, **EX:** Exam, **REV:** Review, **GL:** Guest Lecture, **EXC:** Excursion

*Not all readings are required

No	Topics Covered	Hours	Type	Required Readings
1	Course Overview This lecture will introduce you to the course components and the resources available to make the course a successful and enjoyable one for you.	1.0	L	Geyle, et al. (2018). Tyndale-Biscoe (2005). Ward and Williams (2021). Ritchie (2022).
2	Introduction to History of Human Colonization of the Wet Tropics, Implications on Wildlife and Current Mitigation Strategies A video will introduce you to the factors that were leading up to the declaration of the Wet Tropics World Heritage Area and how the Atherton Tablelands community engages in conservation.	1.0	L	Onus (2022). Moran, et al. (2017). Goosem and Tucker (2013). Winter, et al. (1987).
3	Geology of Australia and the Wet Tropics To understand the evolution and distribution of plants and animals we need to get an insight of the geological history of our planet as geological processes shaped landscape and climate.	1.0	L	Whitehead, et al. (2007). Johnson and Prideaux (2004). Johnson (2004). Stephensons (1989).
4	Geology of the Atherton Tablelands and Threats to Wildlife Excursion We will explore some of the geological features of the Atherton Tablelands and how they affected the land use. We will see how land uses affect the distribution of native vegetation and which consequences this has for wildlife.	4.0	FL	Stephensons (1989). Haberle (2005). Latch (2008). Laurance (2008). Schwartz, et al. (2020). Fahrig (2017). Wintle, et al. (2019). Heise-Pavlov and Gillanders (2016). Villard and Metzger (2014). Woinarski, et al. (2015).

No	Topics Covered	Hours	Type	Required Readings
				Eldridge and Koen (2008). Dickman, et al. (2019). Doody, et al. (2021). Williams, et al. (2003). Wagner, et al. (2020). Meade, et al. (2018). Mella, et al. (2019).
5	Debrief of Atherton Geo-Threats to Wildlife Excursion	1.0	L	
6	Fauna of Australia and the Wet Tropics This lecture will introduce you to the main fauna elements of Australia and some of their representatives in the Wet Tropics.	1.0	L	Heise-Pavlov (2017). Russel, et al. (2015). Wardhaugh, et al. (2018).
7	Ecosystems of the Wet Tropics You will be introduced to the main ecosystems of the Wet Tropics and the way of classifying them.	1.0	L	Tracey (1982). Harrington, et al. (2005). Tng (2019).
8	Conservation Field Techniques During community services you will be introduced to restoration practices and will assist in CRS-driven and community-driven restoration projects.	3.0	CS	
9	The Diversity of Marsupials While marsupials have some features in common, they are quite diverse in other ways. Taxonomists have used various features to develop a classification system of marsupials and we will explore where all the different Australian marsupials fit in. You will be given opportunities to see marsupials in the wild and in a wildlife sanctuary to deepen your knowledge on the existing diversity of marsupials in Australia.	5.0	L; EXC	Menkhorst and Knight (2004). Wildlife of Tropical North Queensland (2000). Eldridge, et al. (2019). Archer, et al. (1999). Mitchell, et al. (2014).
10	Evolution and Biogeography of Marsupials This lecture will dive into the origin of marsupials and factors that influenced the distribution and diversification of Australian marsupials. You will be introduced to some of the ancient types of marsupials that inhabited the Australian landmass.	2.0	L	Black, et al. (2012). Rule (2012). Archer, et al. (2002). Bi, et al. (2018). Bennett, et al. (2018). Goin, et al. (2016). Feng, et al. (2022). Crespo, et al. (2022).
11	Species Quiz Contact your faculty for help.	1.5	AS	
12	Physiology of Marsupials These lectures will define marsupials in their physiological uniqueness that makes them	2.0	L	Tyndale-Biscoe (2005). Gemmell, et al. (2001). Marsh, et al. (2006). Renfree and Shaw (2021).

No	Topics Covered	Hours	Type	Required Readings
	adaptable to many of the extreme and fluctuating conditions of Australian ecosystems.			Deakin and O'Neill (2020). Geiser, et al. (2008). Krockenberger, et al. (2012).
13	Inside a Marsupial A visiting veterinarian will help you to deepen your knowledge on the physiology and morphology of marsupials in Australia.	2.0	GL	
14	Emerging Diseases in Marsupials You will hear about diseases that are specific to marsupials in Australia, their causes and how to mitigate their effects in marsupial populations.	1.0	L	Harvey, et al. (2023). Dubey, et al. (2021). Smith, et al. (2009). Preece, et al. (2017).
15	Field Lab Course (Three Parts) You will become familiar with the technique of spotlighting (A). You will be introduced to invasive and non-invasive field methods for research on Australian mammals (B). You will learn animal observation techniques and how to analyse observational data (C).	5.5	FLAB	Henderson (2003). Lindenmayer, et al. (2001). Fuller, et al. (2015). Zemanova (2020). Heise-Pavlov, et al. (2020). Hale, et al. (2020).
16	Marsupial Species Talk You will be assigned a marsupial species and will present information about its distribution, main habitat, its ecology and conservation issues in a 3MT. Contact your faculty for help.	3.0	AS	
17	Marsupials in Different Environments Marsupials have adapted to various and often very fluctuating environments of Australia. Some of these amazing ways to live in deserts and to cope with droughts and fire will be presented in this intro-lecture. We will explore more of these fascinating adaptations during this course and our excursion to the drier western margins of the Atherton Tablelands.	5.0	L; EXC	Stawski, et al. (2017). Jarman and Evans (2010). Matthews, et al. (2017). Dawson, et al. (2000). Hing, et al. (2014). Heise-Pavlov and Procter-Gray (2020). Biedenweg (2010).
18	Population Surveys on Yellow-Bellied Gliders You will use various methods to collect data on the presence and habitat use of Yellow-bellied Gliders in a wet sclerophyll forest of the Wet Tropics. You will design your own research question and write a short report about your findings.	6.0	FEX	Heise-Pavlov, et al. (2018). Onus (2022).
19	Brief Introduction to Scientific Writing Principles, Basic Statistical Analyses and Graph Development You will be given some tools to analyse the collected field data and to prepare a well-written report.	2.5	L	

No	Topics Covered	Hours	Type	Required Readings
20	Short Field Research Report You are required to prepare a short report outlining the importance of restored habitat for the conservation of one selected species, the field research sites we visited, the methods used and the results. Contact faculty for help.	3.0	AS	
21	Mitigation Excursion During this excursion you will hear about and see mitigation strategies that local conservationists use to preserve our unique marsupial mammals. During a debrief session we will summarize these strategies.	4.0	FL	Goosem, et al. (2006). Wintle, et al. (2019). Heise-Pavlov and Gillanders (2016). Villard and Metzger (2014). Heise-Pavlov (2023). Harrison and Congdon (2002). Woinarski, et al. (2015). Heise-Pavlov and Bradley (2021). Vernes, et al. (2001). Williams, et al. (2003). Wagner, et al. (2020). Meade, et al. (2018). Mella, et al. (2019). Brown (2024).
22	Conservation of Australia's Mammals Part 1: The Role of Federal, State and Local Governments and Their Legislation You will hear about some of Australia's conservation legislation and policies, their pros and cons and where Australia's conservation strategies are in comparison to other developed countries.	1.0	L	Woinarski, et al. (2016). Ziembicki, et al. (2015). Lindenmayer, et al. (2013). Australian Government's Threatened Species Strategy (2021). Heise-Pavlov (2019).
23	Conservation of Australia's Mammals Part 2: The Role of Non-Governmental and Action Groups Non-governmental and Action Groups play an important role in habitat protection, habitat restoration, species recovery and advocacy. A guest lecturer will bring you examples of non-governmental conservation activities in our region and further away.	1.0	GL	Pasquini, et al. (2011). Fitzsimons (2015). Kearney, et al. (2022).
24	Exam Review	1.0	REV	
	Total	58.5		

Reading List

Not all readings will be required. Required readings will be shared in advance of class sessions.

1. Archer et al. (2002) The Evolution of Australia: 110 million years of change. Sydney: Australian Museum. (Faculty office)
2. Archer. M. et al. (1999) The evolutionary history and diversity of Australian mammals. *Australian Mammalogy* 21: 1-45.
3. Bennett et al. (2018) Deep time diversity of metatherian mammals: implications for evolutionary history and fossil-record quality. *Paleobiology*, 44(2), 171–198
4. Bi et al. (2018) An Early Cretaceous eutherian and the placental–marsupial dichotomy. *Nature Research*
5. Biedenweg (2010)
6. Black et al. (2012) The rise of Australian marsupials: a synopsis of biostratigraphic, phylogenetic, palaeoecologic and palaeobiogeographic understanding. In *Earth and life* (pp. 983-1078). Springer, Dordrecht.
7. Brown (2024)
8. Crespo et al. (2022) The last African metatherian. *Fossil Record* 25 (1), 173–186
9. Dawson et al. (2000) Thermoregulation by kangaroos from mesic and arid habitats: influence of temperature on routes of heat loss in eastern grey kangaroos (*Macropus giganteus*) and red kangaroos (*Macropus rufus*). *Physiological and Biochemical Zoology*, 73(3), 374-381.
10. Deakin and O’Neill (2020) Evolution of Marsupial Genomes. *Annu. Rev. Anim. Biosci.* 8:25–45
11. Dickman, et al. (2019)
12. Doody, et al. (2021)
13. Dubey et al. (2021) Recent aspects on epidemiology, clinical disease, and genetic diversity of *Toxoplasma gondii* infections in Australasian marsupials. *Parasites & Vectors* 14:301
14. Dubey et al. (2021). Recent aspects on epidemiology, clinical disease, and genetic diversity of *Toxoplasma gondii* infections in Australasian marsupials. *Parasites & Vectors*, 14(1), 301.
15. Eldridge and Koen (2008)
16. Eldridge et al. (2019) An emerging consensus in the evolution, phylogeny, and systematics of marsupials and their fossil relatives (Metatheria). *J Mammal.* (pdf)
17. Fahrig (2017)
18. Feng et al. (2022) Incomplete lineage sorting and phenotypic evolution in marsupials. *Cell* 185, 1–15
19. Fitzsimons, J. A. (2015) Private protected areas in Australia: current status and future directions. *Nature Conservation*, 10, 1-23
20. Fuller et al. (2015) Connecting soundscape to landscape: Which acoustic index best describes landscape configuration?. *Ecological Indicators*, 58, 207-215.
21. Geiser et al. (2008) Torpor in Marsupials: Recent Advances.
22. Gemmell et al.(2001) Birth in marsupials. *Comparative Biochemistry and Physiology Part B: Biochemistry and Molecular Biology*, 131(4), 621-630.
23. Geyle et al. (2018) Quantifying extinction risk and forecasting the number of impending Australian bird and mammal extinctions. *Pacific Conservation Biology* 24:157-167.
24. Goin et al., A Brief History of South American Metatherians,- Springer Earth System Sciences, DOI 10.1007/978-94-017-7420-8_7
25. Goosem and Tucker (2013)
26. Goosem M, Weston N and Bushnell S. 2006. Effectiveness of rope bridge arboreal overpasses and faunal underpasses in providing connectivity for rainforest fauna . IN: *Proceedings of the 2005 International Conference on Ecology and Transportation*, Eds. Irwin CL, Garrett P, McDermott KP. Center for Transportation and the Environment, North Carolina State University, Raleigh, NC: pp. 304-316.
27. Haberle (2005)
28. Hale, R., Blumstein, D. T., Mac Nally, R. and Swearer, S. E. (2020) Harnessing knowledge of animal behavior to improve habitat restoration outcomes. *Ecosphere*, 11(4), e03104.
29. Harrington et al. (2005) The Wet Sclerophyll and Adjacent Forests of North Queensland: A Directory to Vegetation and Physical Survey Data. Cooperative Research Centre for Tropical Rainforest Ecology and Management. Rainforest CRC, Cairns (78 pp).
30. Harrington et al. (2005) The Wet Sclerophyll and Adjacent Forests of North Queensland: A Directory to Vegetation and Physical Survey Data. Cooperative Research Centre for Tropical Rainforest Ecology and Management. Rainforest CRC, Cairns (78 pp).
31. Harrison, D.A. and Congdon, B.C. (2002) Wet Tropics Vertebrate Pest Risk Assessment Scheme.- CRC, Cairns, chapters 1.2.1; 2.1 and 2.2, CRS library

32. Harvey et al. (2023). Divergent hepaciviruses, delta-like viruses, and a chu-like virus in Australian marsupial carnivores (dasyurids). *Virus Evolution*, 9(2), vead061.
33. Heise-Pavlov (2017) Current knowledge of the behavioural ecology of Lumholtz's tree-kangaroo (*Dendrolagus lumholtzi*). *Pacific Conservation Biology*, 23, 231–239
34. Heise-Pavlov (2023)
35. Heise-Pavlov et al. (2018) The use of a replanted riparian habitat by the Lumholtz's tree-kangaroo (*Dendrolagus lumholtzi*). - *Ecological Management and Restoration* 19: 76-80.
36. Heise-Pavlov et al. (2020) Using non-invasive techniques to study tree-kangaroos. In: *Tree Kangaroos – Science and Conservation* (eds Dabek, L., Valentine, P., Blessington, J., and Schwartz, K. R.) pp. 407-429. Elsevier, Academic Press.
37. Heise-Pavlov S. and Bradley, A. (2021) When ancestry haunts – can evolutionary links to ancestors affect vulnerability of Australian prey to introduced predators. – *Australian Mammalogy*, 44(1) 98-108
38. Heise-Pavlov S. and Procter-Gray E. (2020) How an Understanding of Lumholtz's Tree Kangaroo Behavioral Ecology Can Assist Conservation. In: *Tree Kangaroos – Science and Conservation* (eds Dabek, L., Valentine, P., Blessington, J., and Schwartz, K. R.) pp. 85-107. Elsevier, Academic Press.
39. Heise-Pavlov, S. (2019) Improving the management of Australia's biodiversity through better synergy between private and public protected areas—a response to Australia's biodiversity loss. *Pacific Conservation Biology*, 26(1), 3-12.
40. Heise-Pavlov, S. and Gillanders, A. (2016) Exploring the use of a fragmented landscape by a large arboreal marsupial using incidental sighting records from community members.- *Pacific Conservation Biology* 22: 386-398
41. Henderson (2003) *Practical Methods in Ecology*; (CRS Library ECO075)
42. Hing et al. (2014) A review of factors influencing the stress response in Australian marsupials. *Conservation Physiology*, 2(1).
43. Jarman, P. J. and Evans, M. C. (2010) Circadian variation in resource quality: leaf water content and its relevance to eastern grey kangaroo *Macropus giganteus* and common wombat *Vombatus ursinus*. *Austral Ecology*, 35(2), 176-188.
44. Johnson and Prideaux (2004) Extinctions of herbivorous mammals in the late Pleistocene of Australia in relation to their feeding ecology: No evidence for environmental change as cause of extinction. *Austral Ecology* 29, 553–557
45. Johnson, D. (2004) *The Geology of Australia*.- Cambridge University Press, 276pp.
46. Kearney et al. (2022) Saving species beyond the protected area fence: Threats must be managed across multiple land tenure types to secure Australia's endangered species. *Conservation Science and Practice*, e617.
47. Krockenberger et al. (2012) The limit to the distribution of a rainforest marsupial folivore is consistent with the thermal intolerance hypothesis. *Oecologia* 168:889-899
48. Latch (2008)
49. Laurance (2008)
50. Lindenmayer et al. (2001) How effective is spotlighting for detecting the greater glider (*Petauroides volans*)?. *Wildlife Research*, 28(1), 105-109.
51. Lindenmayer et al. (2013) Counting the books while the library burns: why conservation monitoring programs need a plan for action. *Frontiers in Ecology and the Environment*, 11, 549-555
52. Marsh et al. (2006) The Detoxification Limitation Hypothesis: Where Did it Come From and Where is it Going? *J Chem Ecol.* 32: 1247–1266
53. Matthews et al. (2017) Torpor and basking after a severe wildfire: mammalian survival strategies in a scorched landscape. *Journal of Comparative Physiology B*, 187(2), 385-393.
54. Meade et al. (2018) Substantial reduction in thermo-suitable microhabitat for a rainforest marsupial under climate change. *Biology letters*, 14(12), 20180189.
55. Mella et al. (2019) Needing a drink: rainfall and temperature drive the use of free water by a threatened arboreal folivore. *PLoS One*, 14(5), e0216964.
56. Menkhorst, P. and Knight, F. (2004) *Field guide to the mammals of Australia*. Oxford University Press (CRS Library)
57. Mitchell et al. (2014) Molecular Phylogeny, Biogeography, and Habitat Preference Evolution of Marsupials. *Mol. Biol. Evol.* 31(9):2322–2330
58. Moran, et al. (2017)
59. Onus, G. (2022) Scaling up revegetation in the Wet Tropics. – *TREAT newsletter*, Storm season 2022

60. Pasquini et al. (2011) The establishment of large private nature reserves by conservation NGOs: key factors for successful implementation. *Oryx*, 45(3), 373-380.
61. Preece, N.D. et al. (2017). A guide for ecologists: Detecting the role of disease in faunal declines and managing population recovery. *Biological Conservation*, 214, pp.136-146.
62. Renfree and Shaw (2021) Placentation in marsupials. *Adv Anat Embryol Cell Biol* 234:41-60.
63. Ritchie (2022) Australia's biodiversity crisis and opportunity. *Science* VOL 375 ISSUE 6578
64. Rule (2012) The aftermath of megafaunal extinction: ecosystem transformation in Pleistocene Australia. *Science*, 335(6075), 1483-1486.
65. Russel et al. (2015) Variability in the growth, feeding and condition of barramundi (*Lates calcarifer* Bloch) in a northern Australian coastal river and impoundment. *Marine and Freshwater Research*, , 66, 928–941
66. Schwartz, et al. (2020)
67. Smith, K.F. et al. (2009). The role of infectious diseases in biological conservation. *Animal conservation*, 12(1), pp.1-12.
68. Stawski, et al. (2017) A new cue for torpor induction: charcoal, ash and smoke. *Journal of Experimental Biology*, 220(2), 220-226.
69. Stephenson, P.J. (1989) *Rocks and Landscapes of the Cairns District.*- Qld Dept. of Mines (CRS Library ECO081)
70. The Australian Government's Threatened Species Strategy 2021–2031 DAWE 2021, Department of Agriculture, Water and the Environment, Canberra, April. CC BY 4.0. ISBN 978-1-76003-397-2; This publication is available at awe.gov.au/publications.
71. Tng, D. (2019) The enigma of *Eucalyptus grandis* (Rose Gum)/rainforest ecotones in the Australian Wet Tropics – the plot thickens. *North Queensland's Naturalist* 49: 25-33.
72. Tracey J. (1982) *The Vegetation of the Humid Tropical Region of North Queensland.* CSIRO book
73. Tyndale-Biscoe, C.H., (2005) *Life of marsupials.* CSIRO Publishing (CRS Library MAM042)
74. Vernes, et al.. (2001) Mammalian Diet and Broad Hunting Strategy of the Dingo (*Canis familiaris* dingo) in the Wet Tropical Rain Forests of Northeastern Australia. *Biotropica*, 33(2), 339-345.
75. Villard, M. A. and Metzger, J. P. (2014) Beyond the fragmentation debate: a conceptual model to predict when habitat configuration really matters. *Journal of Applied Ecology*, 51(2), 309-318.
76. Wagner et al. (2020) Climate change drives habitat contraction of a nocturnal arboreal marsupial at its physiological limits. *Ecosphere*, 11(10), e03262.
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