THE SCHOOL FOR FIELD STUDIES

Wildlife and Conservation Biology
SFS 3701

Syllabus
4 credits

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

This syllabus may develop or change over time based on local conditions, learning opportunities, and faculty expertise. Course content may vary from semester to semester.

www.fieldstudies.org

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 they may present. In other words, this is a field program, and the field can change.

Course Overview

This component of the program focuses on identifying threats to wildlife populations, how to obtain data on the impact of these threats on wildlife populations and how to select and apply appropriate conservation methods to mitigate these threats. We will look at these aspects in general and then demonstrate them in case studies of species in the Wet Tropics. To formulate a background understanding of habitats of the Wet Tropic's wildlife, we will explore the origin of the main landscape formations of this part of Australia by looking at geological and biogeographical factors that shaped the landscape and its biota. You will be introduced to Australia's fauna and the unique species that inhabit the diverse habitats of the Wet Tropics. We then will deal with some basic ecological concepts of biodiversity and why so many species can co-exist in one place. This will also involve learning skills to obtain data on various parameters of wildlife populations to assess the impact of habitat loss, fragmentation, introduced species and climate change on them. Field trips and fieldwork in various parts of the Atherton Tablelands will help you in learning these skills.

Using the obtained data on wildlife populations we will explore various conservation techniques to mitigate these threats to the flora and fauna of the Wet Tropics, how to identify partners and resources for conservation work, how to triage conservation needs, and how to best advocate conservation. We will consider the role of corridors or landscape linkages, particularly along riparian areas, and ways in which restoration and landscape rehabilitation can overcome negative effects of human driven landscape modification and climate change on these ecosystems. We will consider options on how to efficiently control pest animals and their impacts on native flora and fauna.

The course is a mixture of class lectures, field lectures, field laboratory courses, workshops, field trips, and readings to complement the material presented in the lectures. A major emphasis is on field skills, the collection, management and analyses of data, and skills of writing a scientific paper. A wide range of material will be provided and should be used to study the class topics and to acquire the desired skills. Be aware that all material covered in class, lectures, field lectures, field trips and readings is examinable.

The Wildlife and Conservation Biology Course is divided into four parts. In the first part, you will become familiar with the basics of wildlife ecology which will help you to understand the threats to fauna (Part 2). In part 3 you will be introduced to various field techniques when collecting data on animals which will lead us to part 4 in which we discuss ways to mitigate threats to fauna populations. You will be involved in various current conservation projects on the Atherton Tablelands. These projects will assist you in understanding the principles of effective wildlife conservation. The course will also give you an understanding on how to most effectively communicate and advocate conservation needs.

Learning Objectives

Following this course, students should understand:

1. the factors that influenced the origin of the Wet Tropics' landscapes and ecosystems
2. the ecology of rainforest, freshwater, and marine ecosystems of the Wet Tropics
3. the fauna of the Wet Tropics
4. the threats to wildlife populations of various ecosystems in the Wet Tropics
5. the issues associated with conserving wildlife populations and managing rainforest, freshwater, and marine ecosystems in the Wet Tropics

Assessment

Assessment Item	Value (%)
Bird Quiz	20
GIS Revegetation Database Assignment	20
FEX Report	30
Final Exam	25
Participation	5
TOTAL	**100**

Bird Quiz (20%)

The purpose of this quiz is to develop your skills in identifying birds of our rainforest by sound and visual cues. As the Atherton Tablelands is home to a diverse fauna the familiarization with the most common species will help to better understand the roles these animals play in the ecosystems of this region. We will conduct bird walks to practice techniques to quickly identify birds by sight and/or sound. The quiz will give you some familiarity with the Wet Tropics fauna.

GIS Revegetation Database Assignment (20%)

During the course you will apply your acquired knowledge in collecting spatial data in the field, displaying spatial data using GIS software, retrieving further spatial data using provided maps and storing your spatial information in a GIS database. Many factors contribute to the success of a revegetation site and its colonization by wildlife. CRS-SFS has started in 2016 to compile a database that collates planting and site-specific information that can help to identify factors which contribute the most to a site's development, to derive site-specific management practices, to select best practices of revegetation on the Tablelands and to study the colonization of revegetated sites by wildlife. In this group assignment you will be assigned a restoration area from which you collect spatial data in the field, retrieve further spatial data and add these data to CRS-SFS's Revegetation database.

FEX Report (30%)

During our Field Exercise we will assess the diversity of mammals in old growth rainforests and secondary forests at CRS using non-invasive methods. We will apply some of the wildlife field techniques which you became familiar with. You will design data sheets, collect data and develop your own research question. Workshops on scientific writing and statistical data analysis will prepare you to write your mock scientific paper.

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%)

During the course, students will be graded by faculty based on their overall participation in fieldwork and during lectures or discussion. Students may also have their peers involved in giving feedback on how each of them participated during group work.

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.

> *"SFS does not tolerate cheating or plagiarism in any form. While participating in an SFS program, students are expected to refrain from cheating, plagiarism and any other behavior which would result in a student receiving credit for work which they did not accomplish on their own. Students are expected to report any instance of cheating or plagiarism by others."*

Deadlines – 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; extensions will only be considered under extreme circumstances. Late assignments will incur a penalty of 10% of your grade for each day you are late. After two days past the deadline, assignments will no longer be accepted. Assignments will be handed back to students after a one-week grading period. Grade corrections for any assessment item should be requested in writing at least 24 hours after assignments are returned. No corrections will be considered afterwards.

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 Content

L: Lectures, **GL**: Guest Lecture, **FL:** Field Lectures, **FEX:** Field Exercise, **EX**: Exams, **REV:** Review, **WFT:** Wildlife Field Techniques, **WS:** Workshop, **EXC**: Excursion, **AS**: Assignment

*Not all readings will be required.

No	*Topics covered*	*Hours*	*Type*	*Readings*
	Part 1: Basics of Wildlife Ecology			
1	**Course Overview** This lecture introduces to you the course content, course components and resources. This lecture will get you into the swing of discovering Australia's unique wildlife, the threats to it and attempts to conserve it.	1.0	L	Geyle et al. (2018) Ward and Williams (2021) Ritchie (2022)
2	**Introduction to Assignments** Further information, resources, and rubrics for course assignments.	1.0	L	
3	Geological processes that shaped the landscapes and fauna of the Tablelands and the Great Barrier Reef Let's dive into the past and see how geological events created the various landscape elements we are seeing today along the coast of Far North Queensland, and how they have affected the fauna of this area.	1.0	L	Whitehead et al. (2007) Johnson and Prideaux (2004) Johnson, D. (2004) Stephensons, P.J. (1989) Winter (1997) Black et al. (2012)
4	**Geology Field Day** We will explore some of the geological features of the Atherton Tablelands	3.0	FL	Stephensons, P.J. (1989) Haberle, S. (2005)
5	**Fauna of rainforests and freshwater ecosystems of the Wet Tropics** Faunal elements of the rainforest and water streams. Keep your eyes open and always explore the fauna. Contact your faculty for assistance in identifying your observations.	1.0	L	Ramsey, D. (2005) **Further articles such as:** Pearson et al. (2015) Pepper et al. (2018) Pettit et al. (2016) Heise-Pavlov et al. (2011) Freeman and Freeman (2009) Heise (2017)
6	**Biodiversity and Life in the Jungle** We will explore the different meanings/types of biodiversity and some ecological terms related to biodiversity. We will analyze the different roles animals play in an ecosystem and mechanisms that ensure that species can all co-exist.	1.0	L	Attiwill, P. and Wilson, B. (2006) Alamgir et al. (2018) Graham et al. (2010) Kiley et al. (2019) **Further articles such as:** Kitching et al. (2007) Sekercioglu (2006) Gordon et al. (2010) Tingley et al. (2014) Zavaleta et al. (2009)

7	**Fauna of marine ecosystems of the Great Barrier Reef** In this guest lecture you will get familiarized with the many different ecosystems of the Great Barrier Reef and the main creatures that inhabit them.	1.0	L	Ceccarelli et al. (2014) Cheal et al. (2012) Jones et al. (2018) Hof et al. (2017) Emslie et al. (2017) Kingsford et al. (2012) Sobtzick et al. (2017)
8	**The outback of Australia** In this component you will get a taste of the Australian outback with its typical landscapes and vegetation.	2.0	EXC; FL	
Part 2: Threats to Fauna				
9	**Impact of humans on the natural assets of the Atherton Tablelands** A tour on the Tablelands will show you the main impacts of humans on this area. We will see different soil types and discuss how their distribution has affected the rainforest distribution and land uses. We will analyze the human impact on the landscape and wildlife populations.	5.0	EXC; FL	Haberle et al. (2006)
10	**Consequences of habitat loss and fragmentation for wildlife populations** Habitat fragmentation has profound impacts on terrestrial and freshwater ecological communities – we will consider some theoretical aspects of these impacts and consider examples from our rainforest fauna.	1.0	L	Latch, P. (2008) Laurance (2008) Schwartz et al. (2020) Fahrig, L. (2017) Wintle, et al. (2019) Heise-Pavlov (2016) Villard and Metzger (2014) **Further articles such as:** Couvet (2002) Harding and Gomez (2006) Pettit et al. (2016) Goosem and Turton (2000) Moore et al. (2022)
11	**Introduced species** We learn about the impact of non-native plant and animal species on the Australian ecosystems and the tropical rainforests and freshwater ecosystems of the Atherton Tablelands in particular.	1.0	L	Harrison and Congdon (2002) Attiwill and Wilson (2006) Woinarski et al. (2015) Eldridge and Koen (2008) Petersen et al. (2006) Dickman et al. (2019) Doody et al. (2021) **Further articles such as:** Brown and Sax (2004) Clavero (2014) Shea and Chesson (2002) Heise-Pavlov and Longway (2011)

12	**Impact of Climate change on Australian Wet Tropics animal populations** You will hear how changing climatic conditions in Australia will affect our wildlife populations, particularly in the Wet Tropics.	1.0	L	Williams et al. (2003) Wagner et al. (2020) Meade et al. (2018) Mella et al. (2019)
Part 3: Fauna Field Techniques				
13	**Wildlife Field Techniques 1: Trapping** You will be introduced to various methods to collect data on wildlife in the field, and the characteristics of these methods in relation to animal welfare.	2.0	FEX	Henderson (2003) Cromsigt et al. (2009) Wearn and Glover-Kapfer (2019) Fuller et al. (2015) **Further articles such as:** Cilulco et al. (2013) Lomolino et al. (2015)
14	**Wildlife Field Techniques 2: Species ID** You will be introduced to species ID methods in the field and various ID apps	2.0	FEX	
15	**Wildlife Field Techniques 3: Animal observations** You will be given a brief introduction to the study and description of animal behavior and will apply some of these techniques.	1.0	FEX	Smith and Pinter-Wollman (2021)
16	**Wildlife Field Techniques 4: Nocturnal fauna methods** We will go out to explore the nocturnal fauna of a rainforest habitat. Your will become familiar with the technique of spotlighting	2.0	FEX	Lindenmayer et al. 2001
17	**Bird quiz** Utilize knowledge acquired during the bird walk and the resources on the student drive to prepare yourself for the bird quiz.	1.0	AS	
18	**Introduction to spatial tools in wildlife conservation (GPS/Topographic maps/GIS):** This workshop consists of two parts: Part A: In this part we will learn how to extract spatial information from topographic maps and how to collect spatial data in the field. Part B: In this part we will practice how to manage spatial data that we collected in the field, and we will familiarize ourselves with the various parts of ARC-GIS software.	5.0	W	Kozak et al. (2008) Heise-Pavlov (2016) **Further articles such as:** O'Kane et al. (2014)
19	**Field Exercise** You will develop, prepare, implement, and report on a small research project. You will be introduced to rules of scientific writing and methods for statistical data analysis (these are parts of the DR syllabus) during the FEX. You	5.0	FEX	

	will develop your own specific research question and write a mock scientific paper to address your question. Contact your faculties for assistance in selecting your research question, and with questions about scientific writing and statistical data analysis.			
20	**GIS Revegetation Database Assignment** You will collect spatial data from a revegetation plot assigned to your group. Using GIS software you will extract further spatial information of this plot and add this information to CRS's Revegetation database.	4.0	AS	
Part 4: Mitigating Threats to Fauna Populations				
21	**Mitigating threats to wildlife** In a video and during a one-day field lecture, hear and see how the community of the Atherton Tablelands engages in wildlife conservation. During community service you will assist in some of these community-driven conservation projects.	5.0	FL; Vide o; D	
22	**Mitigating habitat Loss and fragmentation** During this field lecture and your community service, you will be introduced to various ways to restore lost habitat. You'll hear about connectivity projects driven by governmental and NGO entities in the Wet Tropics.	5.0	FL	Soule, M.E. et al. (2004) Elgar et al. (2014) Florentine (2008) Lindenmayer, D. (2019) Pascual-Hortal and Saura (2006) Cattarino et al. (2016) **Further articles such as:** Jones et al. (2011) Goosem et al. (2005) Villard-Metzger (2014) Zeller et al. (2012) Gibbons et al. (2007) Diaz-Garcia et al. (2020) Shoo et al. (2016)
23	**Mitigating impact of introduced species to native wildlife populations** There are numerous conventional methods to control introduced species and reduce their impact on native Australian wildlife populations. You will also hear about some modern techniques in genetics and animal behavior that are now being applied by wildlife ecologists.	1.0	L	Heyword and Norbury (1999) Gentle and Cother (2014) Cooke (2012) Van Bommel and Johnson (2017) **Further articles such as:** Nelson et al. (2011) Humphrys and Lapidge (2008) Massei and Cowan 2014
24	**Mitigating the effects of climate change on Wet Tropics animal populations**	1.0	L	Weber et al. (2021) Seymour, F. (2020) Reside et al. (2014)

	Apart from reducing our greenhouse gas emissions to prevent further global warming, there are several measures we can implement to reduce the impact of global warming on wildlife populations, particularly in the high elevated areas of the Atherton Tablelands which contain many endemic species that depend on cooler climates			Keppel et al. (2015) Reside et al. (2017)
25	**Assessment of animal extinction risk** For a realistic assessment of the impact of threats to wildlife populations we need an understanding of population parameters such as birth rates, fecundity, growth rates, reproductive parameters, mortality rates and how they affect population resilience.	1.0	L	Akçakaya and Sjögren-Gulve (2000) Chaudhary & Oli (2020) Brodie, et al. (2018) Franklin, et al. (2021) Godwin, et al. (2020) **Further articles such as:** Fragan and Holmes (2006)
26	**Assessing effects of conservation actions** How can we assess whether our conservation work was successful? Shortage of resources for conservation demands effective methods that work, but how to assess their outcomes?	1.0	L	Mahlum et al. (2018) Schori et al. (2020) Lindenmayer et al. (2013)
27	**Exam Review** Consult your faculty during exam preparation.	1.0	REV	
	Total	**56**		
	UMN Instructional Hours*	**67.2**		

**UMN defines* an instructional hour as a 50-minute block. SFS syllabi are written in full 60-minute hours for programming purposes. Therefore 50 full hours = 60 UMN instructional hours (for four credit courses) and 25 full hours = 30 UMN instructional hours (for two credit courses).*

Reading List

Not all readings will be required.

1. Akçakaya H.R. and P. Sjögren-Gulve. 2000. Population viability analysis in conservation planning: an overview. Ecological Bulletins 48:9-21.
2. Alamgir et al. (2018): Spatial congruence and divergence between ecosystem services and biodiversity in a tropical forested landscape.- Ecological Indicators 93 (2018) 173–182
3. Attiwill, P. and Wilson, B. (2006): Ecology – an Australian Perspective.- pages 550 – 554, CRS Library ECO086
4. 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.
5. Brodie, J. F., Redford, K. H., & Doak, D. F. (2018). Ecological function analysis: incorporating species roles into conservation. Trends in Ecology & Evolution, 33(11), 840-850.
6. Brown and Sax (2004)
7. Cattarino et al. (2016) Spatial scale and movement behaviour traits control the impacts of habitat fragmentation on individual fitness.- Journal of Animal Ecology, 85, 168–177

8. Ceccarelli et al. (2014)
9. Chaudhary, V., & Oli, M. K. (2020). A critical appraisal of population viability analysis. Conservation Biology, 34(1), 26-40.
10. Cheal et al. (2012)
11. Cilulco et al. (2013): infrared thermal imaging
12. Clavero (2014)
13. Cooke (2012): Rabbits: manageable environmental pests or participants in new Australian ecosystems? - Wildlife Research, 39, 279–289
14. Couvet (2002)
15. Cromsigt et al. (2009): Monitoring large herbivore diversity at different scales: comparing direct and indirect methods.- Biodivers Conserv 18:1219–1231
16. Diaz-Garcia et al. (2020)
17. Dickman et al. (2019): Assessing Risks to Wildlife from Free-Roaming Hybrid Cats: The Proposed Introduction of Pet Savannah Cats to Australia as a Case Study.- Animals 9, 795-787
18. Doody et al. (2021): Impacts of invasive cane toads on an Endangered marsupial predator and its prey.- Endangered Species Research 46: 269–277
19. Eldridge and Koen (2008): Formation of nutrient-poor soil patches in a semi-arid woodland by the European rabbit (Oryctolagus cuniculus L.).- Austral Ecology (2008) 33, 88–98
20. Elgar et al. (2014): Overcoming barriers to seedling regeneration during forest restoration on tropical pastureland and the potential value of woody weeds.- Frontiers in Plant Science 5: 1-10
21. Emslie et al. (2017)
22. Fahrig, L. (2017): Ecological Responses to Habitat Fragmentation Per Se.- Annu. Rev. Ecol. Evol. Syst. 48:1–23
23. Florentine (2008): Species persistence and natural recruitment after 14 years in a restoration planting on ex-rainforest land in north-east Queensland. Ecol. Managem and Restor 9: 217-221
24. Fragan and Holmes (2006)
25. Franklin, A. D., Lacy, R. C., Bauman, K. L., Traylor-Holzer, K., & Powell, D. M. (2021). Incorporating drivers of reproductive success improves population viability analysis. Animal Conservation, 24(3), 386-400.
26. Freeman and Freeman (2009)
27. Fuller et al. (2015): Connecting soundscape to landscape: Which acoustic index best describes landscape configuration?.- Ecological Indicators 58 (2015) 207–215
28. Gentle and Cother (2014): Biodegradation of 1080: Testing soils in south-eastern Australia for sodium fluoroacetate-degrading micro-organisms.- Ecolog Managem and Restoration 15: 52-57
29. Geyle et al. (2018) Quantifying extinction risk and forecasting the number of impending Australian bird and mammal extinctions. Pacific Conservation Biology 24:157-167.
30. Gibbons et al. (2007)
31. Godwin, J. L., Lumley, A. J., Michalczyk, Ł., Martin, O. Y., & Gage, M. J. (2020). Mating patterns influence vulnerability to the extinction vortex. Global Change Biology, 26(8), 4226-4239.
32. Goosem and Turton (2000)
33. Goosem et al. (2005)
34. Gordon et al. (2010)

35. Graham et al. (2010): Dynamic refugia and species persistence: tracking spatial shifts in habitat through time.- Ecography 33: 1062-1069,

36. Haberle et al. (2006): The impact of European occupation on terrestrial and aquatic ecosystem dynamics in an Australian tropical rain forest.- Journal of Ecology 94, 987–1002

37. Haberle, S. (2005): A 23,000-yr pollen record from Lake Euramoo, Wet Tropics of NE Queensland, Australia.- Quaternary Research 64 (2005) 343 – 356;

38. Harding and Gomez (2006)

39. 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

40. Heise (2017)

41. Heise-Pavlov and Longway (2011)

42. Heise-Pavlov et al. (2011)

43. 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

44. Henderson (2003): Practical Methods in Ecology; CRS Library ECO075 (also see ECO064);

45. Heyword and Norbury (1999): Secondary poisoning of ferrets and cats after 1080 rabbit poisoning.- Wildlife Research 26, 75.80

46. Hof et al. (2017)

47. 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

48. Johnson, D. (2004) The Geology of Australia.- Cambridge University Press,276pp. (Faculty office)

49. Jones et al. (2011)

50. Jones et al. (2018)

51. Keppel et al.;. (2015): The capacity of refugia for conservation planning under climate change. Frontiers in Ecology and the Environment. 13 (2): 106-112.

52. Kiley et al. (2019): Modest levels of interpretability of the term 'biodiversity', mediated by educational level, among the Australian public.- Pacific Conservation Biology, , 25, 208–210

53. Kingsford et al. (2012)

54. Kitching et al. (2007)

55. Kozak et al. (2008): Integrating GIS-based environmental data into evolutionary biology.- Trends in Ecology and Evolution Vol.23 No.3: 141-148

56. Latch, P. (2008): Recovery Plan for Mabi Forest- Mabi Forest Recovery Team, Queensland Government, EPA-Pdf file

57. Laurance (2008): Theory meets reality: How habitat fragmentation research has transcended island biogeographic theory.-Biological Conservation

58. 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

59. Lindenmayer et al. 2001: How effective is spotlighting for detecting the greater glider (Petauroides volans)?.- Wildlife Research, 28, 105–109

60. Lindenmayer, D. (2019): Small patches make critical contributions to biodiversity conservation.- pnas.1813051115
61. Lomolino et al. (2015) - soundscape
62. Mahlum et al. (2018): Does restoration work? It depends on how we measure success.- Restoration Ecology 26, 952–963
63. Meade et al. (2018) Substantial reduction in thermo-suitable microhabitat for a rainforest marsupial under climate change. Biology letters, 14(12), 20180189.
64. 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.
65. Moomaw et al. (2021): WORLD SCIENTISTS' WARNINGS INTO ACTION, LOCAL TO GLOBAL
66. Moore et al. (2022)
67. Nelson et al. (2011); Humphrys and Lapidge (2008); Massei and Cowan 2014
68. O'Kane et al. (2014)
69. Pascual-Hortal and Saura (2006): Comparison and development of new graph-based landscape connectivity indices: towards the priorization of habitat patches and corridors for conservation.- Landscape Ecology 21:959–967
70. Pearson et al. (2015)
71. Pepper et al. (2018)
72. Petersen et al. (2006): On the numerous concepts in invasion biology.- Biological Invasions 8:1409–1424
73. Pettit et al. (2016)
74. Ramsey, D. (2005): Rainforests of tropical Australia. Ecosystem Manual series; CRS Library TRF072
75. Reside et al. (2014): Characteristics of climate change refugia for Australian biodiversity.- Austral Ecology 39, 887–897
76. Reside et al. (2017): Adapting systematic conservation planning for climate change.- Biodivers Conserv
77. Ritchie (2022) Australia's biodiversity crisis and opportunity. Science VOL 375 ISSUE 6578
78. Schori et al. (2020): Designing monitoring protocols to measure population trends of threatened insects: A case study of the cryptic, flightless grasshopper Brachaspis robustus.- PlusOne Sept 2020
79. Schwartz et al. (2020): The value of monitoring wildlife roadkill.- European Journal of Wildlife Research 66: 18
80. Sekercioglu (2006)
81. Seymour, F. (2020): Seeing the Forests as well as the (Trillion) Trees in Corporate Climate Strategies.- One Earth 2.
82. Shea and Chesson (2002)
83. Shoo et al. (2016)
84. Smith and Pinter-Wollman (2021): Observing the unwatchable: Integrating automated sensing, naturalistic observations and animal social network analysis in the age of big data.- Anim Ecol. 90:62–75.
85. Sobtzick et al. (2017)
86. Soule, M.E. et al. (2004): The role of connectivity in Australian conservation.- Pacific Conservation Biology 10: 266-279. CRS Library JPCB104
87. Stephensons, P.J. (1989) Rocks and Landscapes of the Cairns District.- Qld Dept. of Mines (CRS Library ECO081)

88. Tingley et al. (2014)

89. Van Bommel and Johnson (2017): Olfactory communication to protect livestock: dingo response to urine marks of livestock guardian dogs.- Australian Mammalogy, 39, 219–226

90. 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.

91. Villard-Metzger (2014)

92. Wagner et al. (2020) Climate change drives habitat contraction of a nocturnal arboreal marsupial at its physiological limits. Ecosphere, 11(10), e03262.

93. Ward and Williams. (2021) Australia faces environmental crisis. Science, 371(6534), 1115-1116.

94. Wearn and Glover-Kapfer (2019): Snap happy: camera traps are an effective sampling tool when compared with alternative methods.- R. Soc. open sci. 6: 181748.

95. Weber et al. (2021): Managing a World Heritage Site in the Face of Climate Change: A Case Study of the Wet Tropics in Northern Queensland.- Earth 2, 248–271

96. Whitehead et al. (2007) Temporal development of the Atherton Basalt Province, north Queensland. Australian Journal of Earth Sciences, 54:5, 691 – 709

97. Wildlife of Tropical North Queensland; Cooktown to Mackay, Queensland Museum 2000 -CRS Library TRF 066

98. Williams et al. (2003) Climate change in Australian tropical rainforests: an impending environmental catastrophe. Proceedings of the Royal Society of London. Series B: Biological Sciences, 270(1527), 1887-1892.

99. Winter (1997) Responses of Non-volant Mammals to Late Quaternary Climatic Changes in the Wet Tropics Region of North-eastern Australia. Wildlife Research 24: 493-511

100. Wintle, et al. (2019) Global synthesis of conservation studies reveals the importance of small habitat patches for biodiversity. Proceedings of the National Academy of Sciences, 116(3), 909-914.

101. Woinarski et al. (2015): Ongoing unraveling of a continental fauna: Decline and extinction of Australian mammals since European settlement.- PNAS 112: 4531–4540

102. Zavaleta et al. (2009)

103. Zeller et al. (2012)