

CURRICULUM VITAE

Professor Stephen E. Williams

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I started the Centre for Tropical Biodiversity & Climate Change research (CTBCC) in 2006 and was the inaugural Director for six years. I currently run the biodiversity and climate change impacts program within the CTBCC and the NCCARF National Adaptation Research Network - Terrestrial Biodiversity and I am the Chair of the IUCN Climate Change & Biodiversity Specialist Group and Wet Tropics Management Authority Science Advisory Committee. My research is focused on understanding biodiversity, assessing the vulnerability of biodiversity to global climate change and using this knowledge to maximise the positive benefits of conservation management and adaptation. My research group is currently examining a diverse range of research topics on climate change and biodiversity (vertebrates, invertebrates, plants and ecosystem processes) including biodiversity patterns and processes, population genetics, thermal physiology, paleo-modelling of habitats and species distributions, extinction proneness, phenology, nutrient cycling, climatic seasonality, trophic interactions, net primary productivity, vegetation structure, resilience and estimating the relative vulnerability of species and habitats.

The NCCARF network is aimed at bringing together global change scientists across Australia to synthesise and collate research, prioritise future research directions and ultimately to minimize the impacts of climate change on terrestrial biodiversity. I am an author of the Australian National Adaptation Research Plan (Terrestrial Biodiversity) aimed at setting national research priorities for climate change adaptation.

My international reputation in research on biodiversity, climate change impacts and adaptation is demonstrated by:

- Peer review citations (>9500): in the **top 10 cited global change biologists in the world** (ISI)
- Director of National Climate Change Adaptation Research Network - Terrestrial Biodiversity (NCCARF)
- Chair – IUCN Species Survival Commission Climate Change Specialist Group .
- Rainforest Theme Leader – Tropical Ecosystems NERP Hub (\$25m Aust. Gov. initiative)
- Author (5 person team) of the Australian National Adaptation Research Plan for Terrestrial Biodiversity
- Board member – Terrestrial Ecosystem Research Network (TERN)
- Chair – Wet Tropics Management Authority Science Advisory Committee
- Invited Review panel – CSIRO Division Sustainable Ecosystems review 2009
- Editor/Reviewer – ARC, NSF, IPCC, major international journals
- Invited and funded participation in 12 international meetings in last two years - 7 keynote/plenary talks.
- Approx. \$1 - 1.5 Million per year in funding.
- Awards:
 - **Earthwatch Institute Principal Investigator of the year** awarded for an “outstanding contribution to conservation research and public education”.
 - The **Wet Tropics Management Authority “Cassowary Award” for contributions to science**
 - JCU Faculty of Science & Engineering **Deans award for “Excellence in Research”**

My research was one of the first to identify global climate change as a severe threatening process in the tropics and that we may be facing many species extinctions in mountain systems around the world. This work resulted in the Australian Wet Tropics being internationally recognized by the IPCC as one of the world’s most vulnerable ecosystems. Papers in *PLoS Biology*, *Nature*, *American Naturalist*, *Global Change Biology*, *Diversity & Distributions* and *Proceedings of the Royal Society of London* have made significant contributions to the high profile of climate change biology in the literature. My research is highly cited and has produced significant outcomes in research, policy and management at all levels from regional to international.

CAREER SUMMARY:

Current:

- Professor – James Cook University
- Program Leader – CTBCC Global Change Biology

2010 Professor (Personal Chair) – James Cook University

2006-2009 Queensland Smart State Senior Research Fellow

2005 Principal Research Fellow / Project Leader – Rainforest-CRC

2002-2004 Senior Research Fellow – Rainforest-CRC

2000-2002: Research Fellow ARC fellowship.

1999-2002: Project Coordinator of Rainforest CRC project examining the determinants of rarity. Research Fellow (Academic Level B) with Rainforest CRC biodiversity project.

1997 – 1999: Post-Doctoral Fellow with Rainforest CRC (academic level A).

1998: PhD (James Cook University): “Vertebrate Biodiversity & Assemblage Structure in the Australian Wet Tropics”.

Citation analysis:

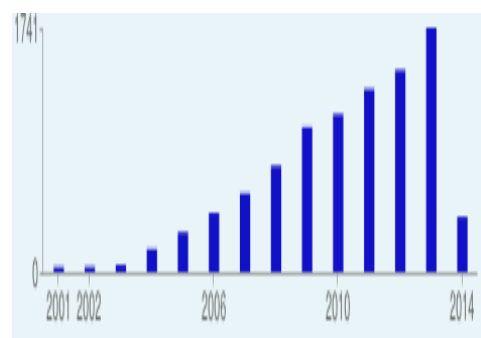
Google Scholar Citation analysis

<http://scholar.google.com.au/citations?user=CLXk3CEAAAAJ&hl=en>

ResearcherID (Thompson ISI Citation analysis (ISI listed publications only):

<http://www.researcherid.com/rid/A-7250-2008>

Total publications:	106	All	Since 2009	
Publications in Press:	4	Citations	9536	7046
Publications in review:	6	h-index	32	27
Av # citations per pub.(ISI):	>100	i10-index	53	52



PUBLICATIONS:

In Review:

1. Zamora-Vilchis I., R. Esparza-Salas, C.N. Johnson, **S.E. Williams**, J.A. Endler and R.H. Crozier. Parasites mediate diversity and selection of host MHC genes: implications for disease impact in a warming climate. *Nature Climate Change*
2. Scheffers B., et al. (incl. **S.E. Williams**) Where you rear your young matters: climate change vulnerability of frogs in the Philippine global biodiversity hotspot. *Functional Ecology*
3. Anderson A.S., L.P. Shoo and **S.E. Williams**. Body size, song and detection probability: correcting for detection bias and estimating density of rare species in rainforest bird surveys. *Journal of Applied Ecology*
4. Anderson A.S., T. Marques, L.P. Shoo and **S. E. Williams**. Species, weather and habitat: factors influencing detectability and density estimation of tropical rainforest birds. *PLoS 1*
5. Pacifici M. et al. Assessing species vulnerability to climate change *Nature Climate Change*
6. Zamora-Vilchis I., **S.E. Williams**, D. Blair & C.N. Johnson. Diversity of bird blood parasites increases with temperature along elevational gradients. *International Journal of Parasitology*

In Press:

1. Reside, A.E., J.A. Welbergen, B.L. Phillips, G.W. Wardell-Johnson, G. Keppel, S. Ferrier, **S.E. Williams**, C.J. Storlie, J. VanDerWal. Characteristics of climate change refugia for Australian biodiversity. *Austral Ecology*
2. **Williams S.E.**, B.R. Scheffers, and J. Isaac. 2014. Tropical rainforests. Pp 67-72 in: "Ten Commitments: reshaping the lucky country's environment", eds. D. Lindenmayer, S. Dovers, M. Harris Olson and S. Morton. CSIRO Publishing, Melbourne
3. Parsons SA, RA Congdon, LP Shoo, V Valdez-Ramirez, **SE Williams**. Spatial Variability in Litterfall, Litter Standing Crop and Litter Quality in a Tropical Rainforest Region. *Biotropica*
4. Staunton, K., S. Robson, C. Burwell, A. Reside & S.E. Williams. Projected distributions and diversity of flightless ground beetles within the Wet Tropics and their environmental correlates. *PLoS 1*

Published:

5. Scheffers, BR., D.P. Edwards, A. Diesmos, Theodore A. Evans & **S.E. Williams**. Microhabitats reduce animal's exposure to climate extremes. 2014. *Global Change Biology* 20:495-503
6. **Williams, S.E.** & B.R. Scheffers. 2013. As climate changes, animals move fast to escape the heat. *The Conversation*. <https://theconversation.com/as-climate-changes-animals-move-fast-to-escape-the-heat-18511> (>7500 readers and over 200 comments in 3 months)
7. Anderson A.S., C.J. Storlie, L.P. Shoo, R. G. Pearson, **S.E. Williams**. 2013. Current analogues of future climate indicate the likely response of a sensitive montane tropical avifauna to a warming world. *PLoS ONE* 8(7): e69393. doi:10.1371/journal.pone.0069393
8. Scheffers, B.R., B. Phillips, W.F. Laurance, N.S. Sodhi, A. Diesmos, and **S.E. Williams**. 2013. Increased arboreality at higher elevations: a novel biogeographic dimension. *Proceedings of the Royal Society B Lond.* 280: 20131581
9. Scheffers B.R., R.M. Brunner, S.D. Ramirez, L.P. Shoo, A. Diesmos, and **S.E. Williams**. 2013. Thermal buffering of microhabitats is a critical factor mediating warming vulnerability of frogs in the Philippine biodiversity hotspot. *Biotropica: early online*
10. Williams Y.M. et al. Terrestrial Report Card 2013: Climate change impacts and adaptation on Australian biodiversity. 2012. National Climate Change Adaptation Research Facility, Brisbane. (http://terrestrialclimatechange.org.au/BioDiversity_Report_card.pdf)
11. Reside, AE, VanDerWal, J, Phillips, B, Shoo, LP, Rosauer, DF, Anderson, BJ, Welbergen, J, Moritz, C, Ferrier, S, Harwood, TD, Williams, KJ, Mackey, B, Hugh, S, **Williams, SE** 2013 *Climate change refugia for terrestrial biodiversity: Defining areas that promote species persistence and ecosystem resilience in the face of global climate change*, National Climate Change Adaptation Research Facility, Gold Coast, pp. 216.
12. Isaac, J. & **Williams, S.E.** 2013. Climate change and extinctions. Cambridge Encyclopaedia of Biodiversity 2nd Ed., S. Levin (ed.)
13. Zozaya, S.M., B.R. Scheffers, C.J. Hoskin, S.L. MacDonald & S.E. Williams. 2013. A significant range extension of the wet tropics skink *Eulamprus frerei*. *Memoirs of the Queensland Museum – Nature*: 56: 621-624
14. Garnett, S, Franklin, D, Ehmke, G, VanDerWal, J, Hodgson, L, Pavey, C, Reside, A, Welbergen, J, Butchart, S, Perkins, G, **Williams, S.E.** 2013. *Climate change adaptation strategies for Australian birds*, National Climate Change Adaptation Research Facility, Gold Coast, Australia. pp.109.
15. Warren, R., VanDerWal, J., Price, J., Welbergen, J.A, Atkinson, I., Ramirez-Villegas, J., Osborn, T.J., Jarvis, A., Shoo, L.P., **Williams, S.E.**, Lowe, J. 2013. Quantifying the benefit of early climate change mitigation in avoiding biodiversity loss. *Nature Climate Change* 7: pp 678-682
16. Storlie C.J., Phillips B.L., VanDerWal J.J., **Williams S.E.** 2013. Improved spatial estimates of climate predict patchier species distributions. *Diversity & Distributions* DOI: 10.1111/ddi.12068

17. Capon *et al.* (incl. **S.E. Williams**). 2013. Riparian ecosystems in the 21st Century: hotspots for climate change adaptation? *Ecosystems* DOI: 10.1007/s10021-013-9656-1
18. Shoo, L. et al. (incl. **S.E. Williams**). 2013. Making decisions to conserve biodiversity under climate change. *Climatic Science early online* DOI 10.1007/s10584-013-0699-2
19. Byrne, M., I.D. Lunt, J.J. Hellmann, N.J. Mitchell, S.T. Garnett, M.W. Hayward, T.G. Martin, E. McDonald-Madden, K.K. Zander & S.E. Williams. 2013. Using assisted colonisation to conserve biodiversity and restore ecosystem function under climate change. *Biological Conservation*. 157: 172-177
20. Laurance W. et al. (incl. **S.E. Williams**). 2012. Averting biodiversity collapse in tropical protected areas. *Nature* 489: 290-294
21. Zamora-Vilchis, I., S.E. Williams & C.N. Johnson. 2012. Environmental temperature affects prevalence of blood parasites of birds on an elevation gradient: implications for disease in a warming climate. *PLoS* 1 7(6): e39208. doi:10.1371/journal.pone.0039208
22. Anderson, A.S., Reside, A., VanDerWal, J., Shoo, L.S., Pearson, R.G. **S.E. Williams**. 2012. Immigrants and refugees: the importance of dispersal in mediating biotic attrition under climate change. *Global Change Biology* 18: 2126-2134
23. Bateman, B.L., J. VanDerWal, **S.E. Williams** & C.N. Johnson. 2012. How much influence do biotic interactions have on predictions of shifts in species distributions under climate change? *Diversity & Distributions*. DOI: 10.1111/j.1472-4642.2012.00922.x
24. Huey, R.B., M.R. Kearney, A Krockenberger, J.A.M. Holtum, M. Jess, **S.E. Williams**. 2012. Predicting organismal vulnerability to climate warming: incorporating the buffering roles of behaviour, physiology, and adaptation. *Philosophical Transactions of the Royal Society*. 367: 1665-1679
25. Moritz C., G. Langham, M Kearney, A Krockenberger, J VanDerWal and **SE Williams**. 2012. Integrating phylogeography and physiology reveals divergence of thermal traits between central and peripheral lineages of tropical rainforest lizards. *Philosophical Transactions of the Royal Society*. 367: 1680-1687
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29. Reside, A., J. VanDerWal, A. Kutt, I. Watson & **S.E. Williams**. 2011. Fire regime shifts affect bird species distributions. *Diversity & Distributions*. 18: 213-225.
30. Bell R.C., J.B. MacKenzie, M.J. Hickerson, KL. Chavarría, M. Cunningham, S.E. Williams, C. Moritz. 2011. Comparative multi-locus phylogeography confirms multiple vicariance events in co-distributed rainforest frogs. *Proc. Royal Society Lond. B* 279: 991-999
31. Hoskin C.J., Tonione M., MacKenzie J.B., Higgie, M., **Williams S.E.**, VanDerWal J., & Moritz C. 2011. Persistence in peripheral refugia promotes speciation in a rainforest frog. *American Naturalist* 178: 561-578
32. Shoo, L. et al. (incl. S.E. Williams). 2011. Engineering a future for amphibians under climate change. *J. of Applied Ecology* 48:487-492
33. Laurance W.F. et al. (incl Williams S.E.) 2011. Global warming, elevational ranges and the vulnerability of tropical biota. *Biological Conservation* 144: 548-557
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35. Welbergen J.A., **S.E. Williams**, S. Goosem. 2011. Gap analysis of environmental research needs in the Australian Wet Tropics. Marine & Tropical Science Research Facility, Australian Government. http://www.jcu.edu.au/mtb/public/groups/everyone/documents/other/jcu_083921.pdf
36. **Williams S.E.**, J. VanDerWal, J. Isaac, L. Shoo, C. Storlie, S. Fox, E.E. Bolitho, C. Moritz, C. Hoskin & Y.M. Williams. 2010. Distributions, life history specialisation and phylogeny of the rainforest vertebrates in the Australian Wet Tropics. *Ecology* 91(8): 2493 (Access DATA via Ecological Archives <http://esapubs.org/archive/ecol/E091/181/default.htm>)
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40. Graham C.H., VanDerWal J., Phillips S., Moritz C., **Williams S.E.** 2010. Shifting refugia and species persistence: tracking spatial shifts in habitat through time. *Ecography* 33:1062-1069
41. Bell R., M. Tonione, J. Parra, J. Mackenzie, **S.E. Williams**, & C. Moritz. 2010. Patterns of persistence and isolation indicate resilience to climate change in montane rainforest lizards. *Molecular Ecology* 19: 2531-2544
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46. Isaac J.L., Vanderwal J., Johnson C.N. & **Williams S.E.** 2009. Resistance and resilience: quantifying relative extinction risk in a diverse assemblage of tropical rainforest vertebrates. *Diversity & Distributions* 15: 280-288
47. Moussalli, A., Moritz C., **Williams S.E.**, & Carnaval A.C. 2009. Variable responses of skins to a common history of rainforest fluctuation: concordance between phylogeography and paleo-distribution models. *Molecular Ecology* 18:483-499 (IF: 5.33 ERA: A)
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50. Vanderwal J., Shoo L.P., Graham C. & **Williams S.E.** 2009. Selecting pseudo-absence data for presence-only distribution modeling: how far should you stray from what you know? *Ecological Modelling* 220:589-594
51. Li, J., D.W. Hilbert, T. Parker & **S.E. Williams**. 2009. How do species respond to climate change along an elevation gradient? A case study of the Grey-headed Robin (*Heteromyias albispecularis*). *Global Change Biology* 15: 255-267
52. Parsons, S., L.P. Shoo & **Williams S.E.** 2009. Volume measurements to determine forest litter standing crop. *Journal of Tropical Ecology* 25: 665-669

53. **Williams S.E.**, Shoo L.P., Isaac J., Hoffmann A.A. & Langham G. 2008. Toward an Integrated Framework for Assessing the Vulnerability of Species to Climate Change. *PLOS Biology* 6: 2621-2626
54. **Williams S.E.** & Middleton J. 2008. Climatic seasonality, resource bottlenecks and abundance of rainforest birds: implications for global climate change. *Diversity & Distributions* 14: 69-77
55. Graham *et al.* (including **Williams**). 2008. The influence of spatial errors in species occurrence data on distribution models. *J. of Applied Ecology* 45: 239-247.
56. **Williams S.E.** & Isaac J. 2008. Tropical rainforests. Pp 67-72 *in*: "Ten Commitments: reshaping the lucky country's environment", eds. D. Lindenmayer, S. Dovers, M. Harriss Olson and S. Morton, CSIRO Publishing, Melbourne.
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58. Steiner, F.M., Schlick-Steiner, B.C., VanDerWal, J.J., Reuther, D., Keefe D., Christian, E., Stauffer, C., Suarez, A.V., **Williams, S.E.** & Crozier R.H. 2008. Combined modelling of distribution and niche in invasion biology: a case study of two invasive *Tetramorium* ant species. *Diversity & Distributions* 14: 538-545
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64. Marsh H., Dennis A., Hines H., Kutt A., McDonald K., Weber E., **Williams S.E.** & Winter J. 2007. Optimising the allocation of management resources to species of wildlife. *Conservation Biology* 21: 387-399.
65. **Williams S.E.** & Hilbert D. 2006. Climate change threats to the biodiversity of tropical rainforests in Australia. Pp. 33-52 *In* Emerging Threats to Tropical Forests. W.F. Laurance & C. Peres (eds.). Chicago University Press.
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PRESENTATIONS:

I am a confident and practiced public speaker. During the last five years I have presented talks at more than 30 scientific meetings within Australia and internationally including a number of keynote/plenary presentations and prestigious colloquia. Most of these have been invited and fully funded presentations (see below). I have also presented research at various public meetings, workshops, departmental seminars, CRC/MTSRF program meetings and other scientific / community groups (QPWS; CSIRO; Wildlife Preservation Society).

Invited Participation / Presentations (last 5 years) (→ fully funded by inviting organization):

- National University of Singapore – **Keynote speaker** – Climate change adaptation Nov 2013
- National University of Singapore – International invited guest Mar 2011
- Aust. Society of Applied Statistics – **Keynote Speaker** 2011
- Birds Australia Congress – **Keynote** Aug 2010
- Fullbright Symposium – Symposium Organiser / Speaker Aug 2010
- Aust. Local Governments Conference – **Keynote Speaker** Gold Coast June 2010
- UC Berkeley – Climate change research institute priorities workshop, Dec 2009
- Southeast Asian Gateway meeting, London 2009 (**Keynote speaker** on climate change & biodiversity)
- Future Species Distributions, ARC-NZ WG54, Adelaide, May 2009.
- Climate change in the Australian Wet Tropics, University of Queensland, July 2009.
- Savanna Biodiversity & Climate Change & the National Reserve system, DEWHA, Darwin 2009.
- “Evolution – the experience” conference, Feb. 2009 Melbourne
- National Academy of Sciences (USA), Arthur M. Sackler Colloquium, Irvine Cal., Niche breadth & sensitivity to climate change, Dec 2008.
- Extinction in the tropics. Smithsonian Tropical Research Institute, Panama, August 2008.
- Climate change impacts on biodiversity, presentation to US Congressional committee for Science & Technology, Jan 2008.

Policy Involvement:

- **Leading the NCCARF Adaptation Research Network - Terrestrial Biodiversity** including involvement of >1000 researchers, 50 institutions and most state / federal environment departments
- **Author - National Adaptation Research Plan for Terrestrial Biodiversity 2010**
- Savanna Biodiversity, climate change & protected areas workshop report – DEWHA 2009
- IUCN Climate Change Vulnerability Assessment for climate change London 2008
- Strategic National Assessment of the Vulnerability of Australia’s Biodiversity to Climate Change, Aust. Greenhouse Office 2007/2008.
- Invited expert reviewer: IPCC 4th Assessment Report on the impacts of climate change, 2007.
- Invited member of the GBRMPA climate change vulnerability advisory committee, 2007.
- Wet Tropics Management Authority, Scientific Advisory Committee, 2007-2010.
- IUCN Nature Conservation and climate change report
- Birdlife International – State of the Worlds Birds report 2004
- Invited comments on “Consultation paper: Developing a National Biodiversity & Climate Change Action Plan” by the National task group on Climate Change Impacts on Biodiversity

POSTGRADUATE SUPERVISION:

- Five completed and four current research fellows
- 10 completed and 10 current PhD students.
- Five completed Honours students
- Five completed and two current Masters students

UNDERGRADUATE TEACHING:

- Course Co-ordinator: Global Change Biology
- Course Co-ordinator: Population & Community Ecology
- Contributed lectures and involved in field trip teaching and co-ordination in a number of subjects from 1st, 2nd, 3rd year undergraduate and MSc subjects including: “Conservation Biology”; “Community Ecology”; “Australian Vertebrate Fauna”; “Wildlife Ecology & Conservation”; “Biometrics”; “Tropical Animal Biodiversity”; University of QLD – summer school (Climate change)

ECOLOGICAL CONSULTANT (1990 – 2008):

Numerous environmental impact assessment consultancies involving a wide range of habitats, fauna, geographic areas and types of impacts, including: climate change impacts, rainforest, freshwater, open forest, brigalow, woodland, mountain tops, grasslands, and arid woodland/spinifex habitats. Surveys and assessments have predominantly involved the terrestrial vertebrate fauna but have included freshwater invertebrates, fish and invertebrate surveys. Output has included numerous unpublished reports and contributed to five refereed publications in journals.

FIELD WORK EXPERIENCE:

I have extensive field experience in many aspects of field ecology gained from over 20 years of field work including: 20 Earthwatch expeditions, field surveys of terrestrial vertebrates, invertebrates, plants and ecosystem processes in association with research on biodiversity, climate change, rarity, environmental impact assessments, teaching wildlife ecology and surveys of remote areas of the Wet Tropics. I have generally led these trips and been responsible for sampling methodology, budgets, staff, logistics and dissemination of results. I have also led and organised a number of longer, more remote expeditions in difficult terrain with large teams (9-24 people over 3-4 weeks).

PROFESSIONAL SOCIETIES

Ecological Society of Australia; Ecological Society of America; Association of Tropical Biology; Society for Conservation Biology; Australian Mammal Society; Australian Herpetological Society; Birds Australia

OTHER PROFESSIONAL SKILLS:

Fauna survey techniques; 'A' class bird banding licence; Computer skills (programming, wordprocessing, databases, spreadsheets, statistical packages and graphics.); Bio-statistics; Vegetation analysis; Scuba Diving open water; Heavy Rigid driving licence.

OTHER WORK EXPERIENCE:

Computer programmer for Planet Home P/L, Townsville for 2 years.

Assistant manager of Townsville branch of Dick Smith Electronics for 8 months.

Owner/operator of ecotourism business for 2 years.

INTERESTS:

Wildlife photography, bushwalking (previous president of Townsville Bushwalking club and leader on numerous club walks), skydiving, rock climbing, white water rafting, diving, travel (previously travelled in Europe, Nepal, USA, New Zealand, Africa, Central/South America and South-east Asia).