

Saras M Windecker

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RESEARCH OVERVIEW

I am a quantitative plant ecologist with experience in field ecology, experimental design, ecological statistics, programming in R, and software development.

My ecological research has focused on using experimental data to assess the influence of species' traits and hydrology on decomposition rates in freshwater wetlands. I also developed open source software for carbon trait estimation in plant tissue. More recently, I have begun work on imperfect detection in species distribution models and spatial risk modelling for disease and public health, including collaborations with the Doherty Institute and the Bill & Melinda Gates Foundation.

I am involved in the open research community in Melbourne. I am interested in promoting reproducible research practices in ecology.

EDUCATION

- 2019 **Doctor of Philosophy.** School of BioSciences, The University of Melbourne, Melbourne, Australia.
- 2012 **Master of Environmental Studies.** School of Earth and Environmental Science, The University of Pennsylvania, Philadelphia, PA, USA.
- 2012 **Bachelor of Arts.** Biology. The University of Pennsylvania, Philadelphia, PA, USA.

PROFESSIONAL SUMMARY

- 2018- **Research Fellow, Quantitative and Applied Ecology Group, School of BioSciences, The University of Melbourne, Melbourne, VIC, Australia.** Develop and operationalise statistical models for disease risk.
- 2017-2018 **Research Assistant, Zoon Project, School of BioSciences, The University of Melbourne, Melbourne, VIC, Australia.** Wrote vignettes and code for the species distribution modelling R package, *zoon*.
- 2013-2014 **Research Assistant, Waterway Ecosystem Research Group, The University of Melbourne, Melbourne, VIC, Australia.** Led fieldwork and data analysis for geomorphology monitoring in the Goulburn River.
- 2011 **Research Assistant, United States Agency for International Development, Tel Aviv, Israel.** Researched water supply and sanitation issues in the Gaza Strip.

SOFTWARE

Windecker SM & Golding N. (2018). **mixchar**: An R package for the deconvolution of thermal decay curves. Available on CRAN.

WORKSHOPS

Taking your R skills to the next level: four great strategies for reproducible research, Australian Interdisciplinary Meta-research and Open Science Conference, Melbourne, VIC, Australia, 7 Nov 2019 & Ecological Society of Australia Conference, Launceston, TAS, Australia, 28 Nov 2019

Introduction to Bayesian Analysis in R (Demonstrator), User! 2019 Conference, Toulouse, France, 9 Jul 2019

Bayesian Modeling for Ecology, Charles Darwin University, Darwin, NT, Australia, 16 – 18 Apr 2019

Introduction to R packages and version control, rOpenSci Oz Unconference, Melbourne, VIC, Australia, 21 Nov 2018

Introduction to Generalised Linear Models and Mixed Effects Models in R (Demonstrator), University of Melbourne, Melbourne, VIC, Australia, 2 Nov 2018

Introduction to R (Demonstrator), User! Conference, Brisbane, QLD, Australia, 10 Jul 2018

TEACHING

- 2017 Demonstrator, **Applied Ecology**, School of BioSciences, University of Melbourne, Melbourne, VIC, Australia
- 2017 Tutor, **Environmental Impact Assessment**, School of Geography, University of Melbourne, Melbourne, VIC, Australia
- 2015 Tutor, **Monitoring Environmental Impacts**, School of Engineering, University of Melbourne, Melbourne, VIC, Australia
- 2015 Demonstrator, **Ecology**, School of BioSciences, University of Melbourne, Melbourne, VIC, Australia
- 2015 Tutor and demonstrator, **Ecology in Changing Environments**, School of BioSciences, University of Melbourne, Melbourne, VIC, Australia
- 2012 Teaching Assistant, **Introduction to Geology**, Earth and Environmental Science, University of Pennsylvania, Philadelphia, PA, USA

GRANTS AND AWARDS

- 2019 AUD 1,500, **ECR Travel Award**, *Botany Foundation at the University of Melbourne*
- 2019 AUD 1,500, **“Workshop: Taking your R skills to the next level, four great strategies for reproducible research.”** *Ecological Society of Australia*
- 2016 AUD 1,500, **Science Abroad Travelling Scholarship**, *The University of Melbourne*
- 2016 AUD 7,600, **“Impact of carbon source and hydrology on carbon sequestration in freshwater wetlands.”** *Australian Nuclear Science and Technology Organisation Research (2 years)*
- 2016 AUD 1,500, **School of BioSciences Travel Grant**, *The University of Melbourne*
- 2015 AUD 12,825, **“The impact of vegetation communities on carbon sequestration in wetlands.”** *Holsworth Wildlife Research Endowment and The Ecological Society of Australia (3 years)*
- 2015 AUD 2,300, **“The relationship between plant functional trait composition and water infiltration.”** *Lifeworks Foundation via University of Melbourne Botany Foundation*
- 2015 AUD 1,163, **Travel Grant**, *Centre of Excellence for Environmental Decisions*
- 2014 **Melbourne International Fee Remission Scholarship**, *The University of Melbourne*
- 2014 **Melbourne International Research Scholarship**, *The University of Melbourne*
- 2012 USD 1,100, **“Distribution and habitat characteristics of a freshwater gastropod, *Pleurocera proxima*, in eastern Pennsylvania.”** Master of Environmental Science Capstone Research Grant, *University of Pennsylvania*
- 2012 **Dean’s List Scholar**, *University of Pennsylvania*
- 2011 USD 5,300. **“Trophic interactions in Mediterranean rocky shore ecosystems.”** University Scholars Research Grant, *University of Pennsylvania*

PROFESSIONAL SERVICE

- 2018- Steering committee member, **Melbourne Open Research Network**
- 2018- Committee member, **Quantitative Ecology Research Chapter, The Ecological Society of Australia**
- 2018 Organising committee member, **rOpenSci Oz Unconference 2018**
- 2016, 2018 Lab retreat co-ordinator, **Quantitative and Applied Ecology Research Group**
- 2015 Academic Events Coordinator, **Postgraduate Student Society The University of Melbourne**

PUBLICATIONS

Peer-reviewed publications

- Windecker SM**, Vesk PA, Trevathan-Tackett SM, & Golding N. (in review) mixchar: An R package for the deconvolution of thermal decay curves. *Journal of Open Research Software*.
- Windecker SM**, Carnell PE, McColl-Gausden E, Vesk PA, Catford JA, & Macreadie PI. (in review) Drivers of soil carbon storage in freshwater wetlands of south eastern Australia. *Global Change Biology*.
- Windecker SM**, Trevathan-Tackett SM, Golding N, Catford JA, Macreadie PI, & Vesk PA. (in review) Decoupling plant economics traits and biomass carbon composition in wetland litter. *New Phytologist*.
- Windecker SM**, Golding N, Catford JA, Sanchez P, Camac JS, & Vesk PA. (in review) Understanding variation in litter decomposition in a multispecies mesocosm. *Functional Ecology*.
- Carnell PE, **Windecker SM**, Brenker M, Baldock J, Maque P, Brunt K, & Macreadie PI. 2018. Carbon stocks, sequestration, and emission of wetlands in south eastern Australia. *Global Change Biol*, 24, 9. <https://doi.org/10.1111/gcb.14316>.

Book Chapters

- Catford J, Roberts J, Capon S, Froend R, **Windecker SM**, & Douglas M. 2017. Wetland vegetation of inland Australia. *Australian Vegetation* (ed. D.A. Keith). Cambridge University Press.

Technical Reports

- Carnell PE, **Windecker SM**, Brenker M, Yukate B, Johnson K, & Macreadie PI. 2016. Carbon sequestration by Victorian inland wetlands. Blue Carbon Lab, Deakin University, Victoria, Australia for the Department of Environment, Land, Water, and Planning.
- Webb A, Vietz G, **Windecker SM**, Hladyz S, Thompson R, Koster W, Jones M. 2015. Monitoring and reporting on the ecological outcomes of Commonwealth environmental water delivered in the lower Goulburn River and Broken Creek in 2013/14. Technical report for the Commonwealth Environmental Water Office.

- Windecker S**, Vietz, G. 2014. Assessing the influence of environmental flows on physical habitat. Conference Report for the 7th Australian Stream Management Conference, Townsville, QLD, AU.

PRESENTATIONS

Invited talks

- Gold star reproducibility: straightforward containerisation with open-source tools**, R-Ladies Montpellier, 3 Jul 2019, R-Ladies Sydney & University of New South Wales, 28 Aug 2019, R-Ladies Melbourne, 24 Sep 2019
- Replication in ecology**, From replication crisis to credibility revolution workshop, Melbourne, VIC, Australia, 14 Nov 2018

Applying functional trait ecology to a meta-analysis of wetland restoration success, Society of Wetland Scientists Conference, Providence, RI, USA, 31 May – 4 Jun 2015

Oral presentations

Open-access software for research: beyond data analysis, UseR! 2019 Conference, Toulouse, France 11 Jul 2019 & Victorian Biodiversity Conference, Melbourne, VIC, Australia, 7 – 8 Feb 2019

Zoon R package for reproducible and shareable species distribution modelling, UseR! 2018 Conference, Brisbane, QLD, Australia, 11 – 13 Jul 2018

Decomposition of wetland plants: a non-linear hierarchical Bayesian approach, Victorian Biodiversity Conference, Melbourne, VIC, Australia, 6 – 7 Feb 2018

A meta-analysis of functional restoration in global wetlands, British Ecological Society conference, Liverpool, United Kingdom, 11 – 14 Dec 2016

Drivers of carbon storage and sequestration rates in freshwater wetlands, Southeastern Australia, International Society of Limnology conference, Torino, Italy, 31 July – 5 Aug 2016

Poster presentations

Decomposition of wetland plants: a non-linear hierarchical Bayesian approach, Bayes on the Beach conference, Surfer's Paradise, QLD, Australia, 13 – 15 November 2017

REFERENCES

Dr Nick Golding

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