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Sara Ryding

Statement

I am a postdoctoral research fellow with Deakin University's Klaassen lab group (Australia) studying how birds respond to climate change, focusing on their migratory behaviour, breeding success, and morphology. I have published 14 original journal articles (212 citations, per Google Scholar), of which 10 are first author papers in journals such as *Trends in Ecology and Evolution* **(IF: 17.3)** and *Global Change Biology* **(IF: 12.0)**. I have extensive engagement in science communication, having published a News and Views article in *Nature Climate Change* **(IF: 27.1)**, articles in *The Conversation*, and media appearances on ABC News TV, ABC radio, BBC radio, Swedish national TV, and *VICE* magazine, among others. I am also a strong advocate for early career researchers' development, having acted as a representative for PhD students in Deakin (2020 – 2023), an ECR board member for the Australasian Evolution Society (2021-2022), and delivering workshops on conflict resolution as an ECR and employability at past Ecological Society of Australasia conferences (2021, 2022).

Education

PhD (Symonds Lab, School of Life and Environmental Science)
2019 – 2024. Deakin University, Melbourne, Australia.
Topic: Morphological changes in response to climate change; using 3D imaging to detect changes in body and beak size of Australian birds in response to climatic warming.
Supervisors: Prof. Matthew R.E. Symonds, Prof. Marcel Klaassen, Prof. Glenn J. Tattersall, Dr. Alexandra McQueen.

Bachelor of Science (Honours) (Buckley Lab, Interdisciplinary Centre for Ancient Life)
2018 – 2019. University of Manchester, United Kingdom.
Topic: Investigating the extent of taxonomic resolution possible from collagen fingerprinting of bird bones.
Supervisor: Dr. Michael Buckley

Bachelor of Science with Industrial Experience (Zoology)
2015 – 2019. University of Manchester, United Kingdom.
Graduated 1st class honours.

Publications

Journal publications – Organised by year of publication. Citations (Google scholar) are shown in orange, Altmetric scores in green, and Field-Weighted Citation Index (FWCI; SciVal) in blue. Impact factors over 5 are shown in bold. Current H-index: 6.

1. S. **Ryding**, A. McQueen, M.R.E. Symonds, G.J. Tattersall, Victorian Wader Study Group, Australasian Wader Studies Group, D.I. Rogers, R. Atkinson, R. Jessop, C.J. Hassell, M. Christie, T.A. Ross, M. Klaassen (2025). Shape-shifting in relative wing length of juvenile shorebirds: no evidence of developmental temperatures driving morphological changes. *Ecography.* https://doi.org/10.1002/ecog.07801 **(Altmetric: 8)** **(IF: 5.9)**
2. S. **Ryding**, A. McQueen (2025). Multiple regression, not ratios, for analyzing relative appendage size. *Evolutionary Ecology*. https://doi.org/10.1007/s10682-025-10346-3 **(Altmetric: 2)** (IF: 2.1).
3. S. **Ryding**, T.A. Ross, M. Klaassen (preprint). Predicting high pathogenicity avian influenza H5N1 susceptibility in wild birds. *EcoEvoRxiv.* https://doi.org/10.32942/X27P8Q **(1 citation).**
4. S. **Ryding**, T.A. Ross, M. Klaassen, M. Wille (2025). Impacts of a potential HPAI H5N1 incursion on Australian wildlife. *Austral Ecology*. https://doi.org/10.1111/aec.70048 **(Altmetric: 34)** (IF: 1.6)
5. S. **Ryding**, A. McQueen, M. Klaassen, G.J. Tattersall, M.R.E. Symonds (2024). Long- and short-term responses to climate change in body and appendage size of diverse Australian birds. *Global Change Biology* (30), e17517. https://doi.org/10.1111/gcb.17517 **(12 citations)** **(Altmetric: 109)** **(FWCI: 2.10)** (**IF: 12.0**)
6. A. McQueen, M. Klaassen, G.J. Tattersall, S. **Ryding**, R. Atkinson, R. Jessop, C. Hassell, M. Christie, A. Fröhlich, M. Symonds (2024). Shorebirds are shrinking and shape-shifting: declining

body size and lengthening bills in the past half-century. *Ecology Letters.* (27), e14513. https://doi.org/10.1111/ele.14513 **(8 citations)** **(Altmetric: 13)** **(FWCI: 2.71)** (**IF: 7.9**)

7. S. **Ryding**, G.J. Tattersall, M. Klaassen, D.J. Wilkinson, M.R.E. Symonds (2024). Measuring avian bill size: comparing and evaluating 3D surface scanning with traditional size estimates in Australian birds. *Journal of Avian Biology* (2025), e03248. https://doi.org/10.1111/jav.03248 **(6 citations)** **(Altmetric: 2)** **(FWCI: 11.1)** (IF: 1.8)
8. S. **Ryding**, A. McQueen (2022). Swallows shrink as climate warms [News and Views article]. *Nature Climate Change* (12), 783-784. https://doi.org/10.1038/s41558-022-01463-w **(Altmetric: 16)** **(IF: 27.1)**
9. S. **Ryding**, M. Klaassen, G.J. Tattersall, J.L. Gardner, M.R.E. Symonds (2022). Response to 'Allometry to evaluate Allen's rule in climate warming' by Santoro and Calzada. *Trends in Ecology and Evolution* (37), 478-479. https://doi.org/10.1016/j.tree.2022.03.005 **(2 citations)** **(Altmetric: 2)** **(FWCI: 0.19)** **(IF: 17.3)**
10. S. **Ryding**, M.K. Klaassen, G.J. Tattersall, J.L. Gardner, M.R.E. Symonds (2021). Shape-shifting: changing animal morphologies as a response to climatic warming. *Trends in Ecology and Evolution* (36), 1036-1048. https://doi.org/10.1016/j.tree.2021.07.006 **(154 citations)** **(Altmetric: 2242)** **(FWCI: 4.01)** **(IF: 17.3)**
11. S. **Ryding**, L.C. Garnham, R.N. Abbey-Lee, I. Petkova, A. Kreshchenko, H. Løvlie (2021). Impulsivity is affected by cognitive enrichment and links to brain gene expression in red junglefowl chicks. *Animal Behaviour* (78), 195-207. https://doi.org/10.1016/j.anbehav.2021.06.007 **(11 citations)** **(Altmetric: 33)** **(FWCI: 0.92)** (IF: 2.1)
12. K.A. Lundgren, R.N. Abbey-Lee, L.C. Garnham, A. Kreshchenko, S. **Ryding**, H. Løvlie (2021). Manipulating monoamines reduces exploration and boldness of Mediterranean field crickets. *Behavioural Processes* (183), 104298. https://doi.org/10.1016/j.beproc.2020.104298 **(2 citation)** **(Altmetric: 4)** **(FWCI: 0.12)** (IF: 1.5)
13. K.A. Lundgren, C.A. Gómez Dunlop, L.C. Garnham, S. **Ryding**, R.N. Abbey-Lee, A. Kreshchenko, H. Løvlie (2021). Exploring the relationship between boldness, activity, exploration and monoaminergic gene expression in red junglefowl chicks. *Animal Behaviour and Cognition* (8), 124-137. https://doi.org/10.26451/abc.08.02.03.2021 **(3 citations)**
14. R. Boddington, C.A. Gómez Dunlop, L.C. Garnham, S. **Ryding**, R.N. Abbey-Lee, A. Kreshchenko, H. Løvlie (2020). The relationship between monoaminergic gene expression, learning, and optimism in red junglefowl chicks. *Animal Cognition* (23), 901-911. https://doi.org/10.1007/s10071-020-01394-z **(13 citations)** **(Altmetric: 19)** **(FWCI: 0.96)** (IF: 2.1)

Professional Experience

2023 – present	Postdoctoral research fellow for Prof. Marcel Klaassen at Deakin University, Australia. Investigating population dynamics and migration behaviour in key migratory shorebird species using extensive datasets from the past 45 years, linking these to disease incursion risk.
2024	Lecturer at Victoria University for the Fundamentals of Ecology unit, which ran twice in 2024. Very positive student reviews (excerpt from student evaluations: "one of the most organised, engaging units I have done").
2021 – 2023	Research assistant for various groups at Deakin University, Australia. Including: recording and liaising with community groups involved in koala monitoring in Victoria (Dr. Desley Whisson), installing pitfall traps for catching herpetofauna (Dr. Kristina Macdonald), and reviewing literature on morphology-dependent mate selection in animals (Prof. Marcel Klaassen).
2020 – 2023	Teaching academic: teaching, tutoring and marking (for units in Landscape ecology, Evolution, Foundation for environmental science, Biodiversity: a global perspective, Ecology and the environment, Geographic information systems for environmental scientists, and Introduction to geographic information systems), School of Life and Environmental Sciences, Deakin University, Australia.

2017 – 2018	Research intern (Industrial Experience component of BSc), Løvlie Group, Linköping University, Sweden. Studying how early life experiences and interindividual differences in brain gene expression relate to impulsivity in birds, under the supervision of A/Prof. Hanne Løvlie.
2014 – 2015	Research assistant, UAE Dolphin Project, United Arab Emirates. Aided with developing methods to recognise dolphin pods and individuals, and conducted fieldwork.

Student supervisions

Madalyn Iaria (Honours). Deakin University *(present)*

Topic: The relationship between plumage colour and morphological adaptation in birds

Jake Tyers (PhD). Deakin University (*2024 – present*)

Topic: Determinants of animal shape-shifting responses to climate change

Isaac Sims (Honors). Deakin University (*2024)*

Topic: Matching spatial and temporal Allen's rule trends in Australian birds. Resulting publication is currently under review at a journal.

Grants and Awards

Year	Award	Organisation	Award amount
2025	LES Strategic Funding: minor equipment	Deakin University School of Life and Environmental Sciences	13 532 AUD
2025	LES Strategic Funding: research-related travel award	Deakin University School of Life and Environmental Sciences	2 830 AUD
2025	Deakin Marine conference travel award	Deakin Marine	6 200 AUD
2024	ECR Researcher award – Best published paper by a PhD candidate	Australasian Evolution Society	700 AUD
2024	National Environmental Science Program funding for Project 5.26 – Assessing disease incursion risk by mapping and modelling shorebird migratory behaviour in the face of global change processes	National Environmental Science Program	396 878 AUD
2022	Statistical training grant for the Coding Club	Centre for Integrative Ecology, Deakin University	10 000 AUD
2021 – 2022	COVID PhD adaptation grants	Centre for Integrative Ecology, Deakin University	5 000 AUD
2022	Publication award for publication in a high-impact journal	Deakin University	1 000 AUD
2022	Skill development grant	Deakin University	100 AUD

2021	Exceptional service as PhD representative	Deakin University	500 AUD
2021	Best published paper by a PhD student for “Shape-shifting: changing animal morphologies as a response to climatic warming”	Centre for Integrative Ecology, Deakin University	100 AUD
2021	Skill development grant	Deakin University	78 AUD
2019 – 2023	PhD scholarship	Deakin University	86 400 AUD
2017 – 2018	Training stipend (scholarship)	ERASMUS	4 285.67 EUR
2018	Best presentation by a junior researcher	The Animal Welfare Science symposium (Sweden)	Non-monetary award

Professional service

Ongoing	Reviewing papers for Nature Climate Change (1), Current Biology (1), PNAS (1), Global Ecology and Biogeography (1), American Naturalist (1), Journal of Experimental Biology (1), Journal of Avian Biology (2), Oecologia (1), and Journal of Mammalogy (1).
2024 – present	Guest editor for a special issue in *Evolutionary Ecology,* entitled “Morphological responses to climate change”. As part of this, I have been handling editor for 3 papers, with 2 published and 1 under review.
2025 – present **2021 – 2022**	*Deakin Coding Club*: Founder and chair of the Deakin University Coding Club. The Coding Club hosts a community of coders, modellers, and stats-users in the life and environmental sciences both within and beyond the university. The club hosts monthly speakers on topics primarily related to ecological and biological statistics and R. I founded and ran Deakin University’s first coding club in 2021, and resumed chair duties in 2025. In 2022, I secured 10 000 AUD in grant money to organise a workshop and hackathon on using Bayesian statistics.
2020 – 2023	*Deakin University*: Elected as board representative for PhD candidates within the Faculty of Science, Engineering, and the Built Environment (2021), and volunteering as one of the PhD representatives at the school level (School of Life and Environmental Sciences). In these roles, I successfully advocated for scholarship extensions for students affected by COVID, initiated two small grant schemes to help students learn new skills and advance their research, and ran a successful research retreat for PhD students.
2021 – 2022	*Australasian Evolution Society*: Early Career Researcher representative for the board. This included planning the AES conference 2022, with specific ECR activities, and advising the board on ECR matters.
2022	*Ecological Society of Australasia*: I organised and delivered a workshop (“Smooth sailing ahead: navigating tricky conversations and interviews”) for ECRs at the 2022 conference.
2022	*Centre for Integrative Ecology*: I was employed to help conceptualise, write, and edit parts of the grant application, submitted for the renewal of the Centre’s funding from Deakin University (requested amount: 3.7 million AUD over 5 years).
2020 – 2021	*Ecological Society of Australasia*: committee member of the ESA’s Early Career Ecologist working group, aiming to help and guide early career ecologists both within the society and in Australia more broadly. We organised and delivered a

workshop ("Selection criteria and the hidden job market: removing the invisibility cloak") for ECRs at the 2021 conference.

2020 *Centre for Integrative Ecology*: As an organizing committee member for the Centre's internal conference 2020, I helped select and schedule speakers, conceptualise and initiate networking activities, and chair sessions. This was the first zoom iteration of the conference (due to COVID lockdowns).

2019 *University of Manchester*: While a temporary member of the Buckley group, I helped facilitate the United Kingdom Archaeology Symposium.

Selected invited presentations

1. S. **Ryding**, A. McQueen, M.R.E. Symonds, G.J. Tattersall, Victorian Wader Study Group, Australasian Wader Studies Group, D.I. Rogers, R. Atkinson, R. Jessop, C.J. Hassell, M. Christie, T.A. Ross, M. Klaassen (2025). Invited talk: Shape-shifting in relative wing length of juvenile shorebirds: no evidence of developmental temperatures driving morphological changes. *European Ornithologists' Union.* Bangor, Wales, UK.
2. S. **Ryding**, A. McQueen, G.J. Tattersall, M. Klaassen, M.R.E. Symonds (2024). ECR Plenary: Long- and short-term responses to climate change in body and appendage size of diverse Australian birds. *Australasian Evolution Society*. Perth, Australia.
3. S. **Ryding**, G.J. Tattersall, M. Klaassen, D.J. Wilkinson, M.R.E. Symonds (2024). Measuring avian bill size: comparing and evaluating 3D surface scanning with traditional size estimates in Australian birds. *Joint American and European Societies for Evolutionary Biology Meeting.* Montreal, Canada.
4. S. **Ryding**, A. McQueen, M. Klaassen, G.J. Tattersall, M.R.E. Symonds (2023). Widespread morphological adaptation to climate change in birds. *Australian Ornithological Conference*. Brisbane, Australia.
5. S. **Ryding**, A. McQueen, M. Klaassen, G.J. Tattersall, M.R.E. Symonds (2023). Widespread morphological adaptation to climate change in birds. *Evolution Meeting*. Albuquerque, NM, USA.
6. S. **Ryding** (2022). Shape-shifting birds: a novel consequence of climate change. *Department of Ecology and Evolutionary Biology, The University of Adelaide.* Adelaide, Australia.
7. S. **Ryding**, A. McQueen, M. Klaassen, G.J. Tattersall, M.R.E. Symonds (2022). Shape-shifting birds: morphological adaptation to climate change. *Australasian Evolution Society conference.* Canberra, Australia.
8. S. **Ryding**, Chris MacColl, Douglass Rovinsky, Clare Holleley, Leo Joseph (2022). Well that's un-egg-spected: 3D scanning unable to solve mystery of historical egg shells. *Ecological Society of Australia.* Wollongong, Australia.
9. S. **Ryding,** G.J. Tattersall, M. Klaassen, M.R.E. Symonds (2022). 3D surface scanning as a viable method for morphometrics in avian museum specimens. *Australasian Ornithological Conference.* Online.
10. S. **Ryding**, M. Klaassen, G.J. Tattersall, J.L. Gardner, M.R.E. Symonds (2020). Some like it hot: reviewing morphological responses to climate change. *Australasian Evolution Society conference.* Online.
11. S. **Ryding**, H. Løvlie (2018). Early life experiences influence impulsivity. *Animal Welfare Science symposium.* Uppsala, Sweden.

Science communication experience

Publication for *The Conversation* titled 'Shrinking wings, bigger beaks: birds are reshaping themselves in a warming world', co-authored with A. McQueen and M.R.E. Symonds (2024). It currently has **16,870 reads**.

Extensive mainstream media appearances following the publication of my first thesis chapter (publication no. 5). This garnered an **Altmetric** of **2252** (in the top 1% of all research outputs scored by Altmetric). I made appearances in TV, radio, and print, in both English and Swedish. This included BBC and ABC radio, the Swedish "TV4", *Smithsonian Magazine*, and *VICE*. Deakin University's media team estimated that news stories regarding my research reached a potential audience of 6,859,000 people worldwide.

Publication for *The Conversation* titled 'New research reveals animals are changing their body shapes to cope with climate change', co-authored with M.R.E. Symonds (2021). It currently has **55,977 reads**.

Scientific writer for the AZo Network's News-Medical site (2018 – 2022). Wrote over 60 scientific news and feature articles covering a broad range of topics in biology, some of which became the website's most read work. For a full list of articles written for News-Medical, please see the following link: https://www.news-medical.net/life-sciences/authors/sara-ryding

Referees

Prof. Marcel Klaassen (*Postdoctoral research supervisor)* at Deakin University, Australia.
Marcel.klaassen@deakin.edu.au

Prof. Matthew R.E. Symonds (*primary PhD supervisor*) at Deakin University, Australia.
Matthew.symonds@deakin.edu.au

Prof. Glenn Tattersall (*external PhD supervisor*) at Brock University, Canada.
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