

RACHEL P. HICKCOX, PhD

34 Selwyn Avenue, Akaroa, NZ 7520

rphickcox@gmail.com

NZ +64 27 636 8907

www.rphickcox.com

www.linkedin.com/in/rphickcox

www.researchgate.net/profile/Rachel_Hickcox

SUMMARY

Quantitative ecologist and conservation biologist specialising in marine ecology, animal movement, and spatial modelling of penguins and other marine predators in Aotearoa New Zealand and Antarctica. I lead field research on foraging dynamics, aiming to bridge field-based research with analytical approaches to better understand how species interact with their environment. I work at the intersection of academic research, consulting, and community conservation to integrate GIS and statistical ecology methods that inform policy and management.

EDUCATION

Doctor of Philosophy in Zoology 2022

University of Otago, Dunedin, NZ

“Exceptional Thesis” Award

- **THESIS:** *Environmental, climatic, and biological interactions influencing the marine distribution of yellow-eyed penguins*
Mapped hoiho/yellow-eyed penguin foraging ranges, modelled marine habitat suitability, and identified key drivers of dispersal; quantified overlap with prey distribution, commercial fisheries, and marine protected areas to inform conservation planning.
- **SUPERVISORS:** Professor Philip Seddon, Professor Yolanda van Heezik, Dr. Thomas Mattern

Master of Science in Biology 2015

University of Lincoln, Lincoln UK

- **THESIS:** *The global macroecology of penguin distribution and conservation*
- **SUPERVISORS:** Professor Daniel Pincheiro-Donoso, Professor Carl Soulsbury

Bachelor of Science (with distinction) in Biology and Biotechnology 2013

Bachelor of Arts (with distinction) in Environmental and Sustainability Studies

Worcester Polytechnic Institute (WPI), Worcester, MA, USA

RESEARCH AND PROFESSIONAL EXPERIENCE

Postdoctoral Fellow Dec 2025-present

University of Canterbury, Christchurch, NZ

- Led analyses of satellite telemetry tracking data from multiple marine predators in the Ross Sea, Antarctica, as part of the *Mesopredators as Indicators of Ross Sea MPA (RSRMPA) Health* project.
- Developed and applied advanced movement and habitat use models to inform conservation and management of the RSRMPA.
- Worked within high-profile international collaborations, including the Antarctic Science Platform, the Ross Sea Research Coordination Network, and the Royal Society of New Zealand Catalyst project.

Lead Penguin Ecologist and Conservation Manager Oct 2019-present

Helps Pōhatu Conservation Trust, Akaroa, NZ

- Initiated and managed pioneering research and monitoring program at largest mainland little penguins/kororā colony in Aotearoa New Zealand.
- Led GPS foraging study to determine marine habitat suitability, species distribution, and anthropogenic impacts.

- Procured 70k+ NZD for equipment and fieldwork.
- Established strategic partnerships with collaborating organisations (e.g., University of Canterbury, University of Otago, Landcare Research, Blue Cradle, NZ Penguin Initiative, etc.).
- Supervised 5+ postgraduate, summer, and PCAS students

Antarctic Research Assistant

Nov 2024, 2025

University of Canterbury, Christchurch, NZ

- Led satellite tag deployments and sample collection for 10+ Emperor penguins at Cape Crozier, Antarctica to study the spatial distribution and niche partitioning of predators in the Southern Ocean (PI Professor Michelle LaRue; supported by Antarctica NZ).
- Secured physiological samples from 30+ Weddell seals, supporting research on foraging ecology and contributing data for peer-reviewed publications.

Quantitative Ecologist

Jul 2021-Jun 2025

Proteus Research and Consulting, Dunedin, NZ

- Conducted Bayesian and frequentist statistical analysis (e.g., state-space, mark-recapture, spatial distribution) on various ecological datasets, while supporting study design, data management, and reporting for partners.
- Led several literature review projects for NZ governmental organisations, synthesizing current information on marine-based topics.
- Contributed to projects including a bycatch mitigation review, Bayesian modelling of quail survival, marine mammal risk assessment.
- Led the restructuring of the New Zealand Yellow-eyed Penguin MS Access database and an update of the Protected Species Captures Database using SQL, R, Python.

Research Collaborator

Aug 2019-Mar 2020

Eudyptes EcoConsulting, Dunedin NZ

- Conducted fieldwork to track yellow-eyed penguins at sea using several GPS/satellite/GSM/TDR loggers.

African Penguin Research Assistant

Mar- Apr 2016

Nelson Mandela Metropolitan University, Port Elizabeth SA

- Assisted in population monitoring and marine tracking of African penguins on Bird Island, South Africa.

Major Qualifying Project (MQP)

Sep 2012-May 2013

Worcester Polytechnic Institute (WPI), Worcester, MA, USA

- Studied the interactions between a local freshwater environment and invasive crayfish species in Massachusetts.

Summer Undergraduate Research Fellow in Oceanography (SURFO)

Jun-Aug 2012

University of Rhode Island Graduate School of Oceanography, Narragansett, RI, USA

- Researched the environmental parameters affecting the halo-tolerance of the toxic raphidophyte *Heterosigma akashiwo*, involving laboratory work (Susanne Menden-Deuer, supervisor).

Interactive Qualifying Project (IQP)

Sep 2011-May 2012

Worcester Polytechnic Institute (WPI), Worcester, MA, USA

Chulalongkorn University, Bangkok, Thailand

- Produced collaborative dissertation in collaboration with WPI and Chulalongkorn students on the effects of climate change and heat stress on industrial and agricultural workers in Thailand.
- Conducted interviews of workers in rural Thailand and contributed to larger, international project.

FUNDING AND GRANTS

9. Nikitine, J. (PA). **Hickcox, R. P.** (PI). 2024. *Little penguin/kororā monitoring and ocean literacy education*. Pacific Development and Conservation Trust Community Grant, \$10,000 NZD.
8. Helps Pōhatu Conservation Trust, **Hickcox, R. P.** (PI). 2022-2025. *Kororā/little penguin monitoring*. University of Canterbury in-kind donation, \$5,000+ NZD.
7. Helps Pōhatu Conservation Trust, **Hickcox, R. P.** (PI). 2022-2024. *Kororā/little penguin tracking at sea*. Environment Canterbury, Waitaha Action to Impact Fund, \$40,000 NZD.
6. Helps Pōhatu Conservation Trust, **Hickcox, R. P.** (PI). 2022. *Conservation at Pōhatu/Flea Bay*. Christchurch City Council Biodiversity Fund, \$30,462 NZD.
5. Helps Pōhatu Conservation Trust, **Hickcox, R. P.** (PI). 2022-2024. *Kororā/little penguin tracking at sea*. Pub Charity Ltd., \$7,438 NZD.
4. Helps Pōhatu Conservation Trust, **Hickcox, R. P.** (PI). 2022. *Kororā/little penguin tracking at sea*. Proteus Research and Consulting donation, \$1,380 NZD.
3. **Hickcox, R. P.** (PI). 2021. *GPS tracking of hoiho/yellow-eyed penguins*. Kelly Tarlton's SEA LIFE Trust Research Grant, \$6,599.
2. **Hickcox, R.** 2020, 2022. University of Otago Postgraduate Travel Grant, \$500.
1. **Hickcox, R. P.** 2018-2021. *Environmental, climatic, and biological interactions influencing the marine distribution of yellow-eyed penguins*. University of Otago PhD Scholarship, \$79,833.

PUBLICATIONS (* peer reviewed)

13. ***Hickcox, R. P.**, Bowe, K., Gwatkin, G., Howell, L. (2025). Nest counts of kororā/little penguins on Horomaka/Banks Peninsula, New Zealand. *New Zealand Journal of Zoology*, 53(1), e70004. Doi: 10.1002/njz2.70004.
12. ***Gwatkin, G., Hickcox, R. P.**, Niebuhr, C. N., Strang, A. J., Flanagan, S. P., LaRue, M. (Under Review). Little penguins breed in older and more isolated nest boxes but lay date influences breeding success.
11. **Hickcox, R. P.**, Meyer, S., & MacKenzie, D. I. (2024). Effects of hook and bait type on commercial longline fisheries bycatch. Report for the Department of Conservation, Conservation Services Programme. Client Report: MIT2023-01. Proteus, Outram, New Zealand.
10. ***Hickcox, R. P.**, van Heezik, Y., Mattern, T., Rodríguez Recio, M., Young, M. J., Seddon P. J. (2023). Risks, resources, and refugia: spatial overlap between yellow-eyed penguin foraging distribution and prey, commercial fisheries, and marine protected areas. *Biological Conservation*, 284. Doi: 10.1016/j.biocon.2023.110197.
9. **Hickcox, R. P.**, Young, M. J., & MacKenzie, D. I. (2023). Grooming and Preparation of the Yellow-eyed Penguin Database. *New Zealand Aquatic Environment and Biodiversity Report No. 307*. 136p.
8. **Hickcox, R. P.**, & MacKenzie, D. I. (2023). Review of warp strike mitigation methods on < 28m commercial trawl vessels in New Zealand. Report for the Department of Conservation, Conservation Services Programme. Client Report: MIT2022-07A. Proteus, Outram, New Zealand.
7. Meyer, S., & **Hickcox, R. P.** (2023). MIT2022-04 Bait retention as a driver to mitigation use in the surface longline fishery. Report for the Department of Conservation, Conservation Services Programme. Client Report: MIT2022-04. Proteus, Outram, New Zealand.
6. Meyer, S., & **Hickcox, R. P.** (2023). Comparing results of black petrel capture interactions with bottom longlines using different data collection methods. *New Zealand Aquatic Environment and Biodiversity Report No. 318*. 40p.

5. ***Hickcox, R. P.**, Mattern, T., Rodríguez Recio, M., Young, M.J., van Heezik, Y., Seddon P.J. (2022). Staying close to home: Marine habitat selection by foraging yellow-eyed penguins using spatial distribution models. *Frontiers in Marine Science*, 9:967741. Doi: 10.3389/fmars.2022.967741.
4. *Young, M. J., Seddon, P. J., Pütz, K., Agnew, P., Mattern, T., **Hickcox, R. P.**, Robertson, B. C., van Heezik, Y. (2022). Conservation implications for post-fledging dispersal of yellow-eyed penguins/hoiho. *Marine Ecology Progress Series*, 695. Doi: 10.3354/meps14124.
3. *Elley, T., Seddon, P. J., Mattern, T., Ellenberg, U., Young, M. J., **Hickcox, R. P.**, van Heezik, Y. (2022). Consistent site-specific foraging behaviours of hoiho/yellow-eyed penguins breeding on Rakiura/Stewart Island reveal foraging plasticity. *Biology*, 11. Doi: 10.3390/biology11060844.
2. ***Hickcox, R. P.**, Jara, M., Deacon, L. A. K., Harvey, L. P., Pincheira-Donoso, D. (2019). Global distribution of terrestrial penguins (*Spheniscidae*) and their conservation by protected areas. *Biodiversity & Conservation*, 28:2861. Doi: 10.1007/s10531-019-01801-z.
1. *Ropert-Coudert, Y. **et al.** (2019). Happy Feet in a hostile world? The future of penguins depends on proactive management of current and expected threats. *Frontiers in Marine Science*, 6. Doi: 10.3389/FMARS.2019.00248.

TEACHING AND SUPERVISORY ROLES

Associate Supervisor	1 MSc, University of Canterbury (NZ) 1 MSc, University of Canterbury (NZ)	Sep 2024-present Jan 2023-Mar 2025
External Advisor	1 MSc, University of Otago (NZ) 1 PhD, University of Canterbury (NZ)	Sep 2023-present Jan 2020-present
Supervisor	5 Wildlife Management, University of Otago (NZ) 1 Postgraduate Certificate in Antarctic Studies, University of Canterbury (NZ)	Jul-Nov 2021 Sep-Dec 2022
Demonstrator	ZOOL222, 223, 319, University of Otago (NZ)	Jul-Nov 2021
Stats Cadet Tutor	University of Otago (NZ)	Jul 2019-Jan 2021
Substitute Teacher	Watertown and Woodbury School Districts (USA)	Sep 2017-Mar 2018

GUEST SPEAKING AND MEDIA ENGAGEMENTS

Guest seminar speaker	University of Canterbury (NZ)	Mar 2024
Guest lecturer	Wildlife Management, University of Otago (NZ) One Health Seminar Series, Delaware Valley University (USA) Westover School (USA)	Apr 2019 Mar 2018 Dec 2016
Scientist Spotlight	Evolution & Ecology 1st year module, University of Lincoln (UK)	Nov 2015
Guest speaker	Penguins International (USA) Akaroa Area School (NZ) Ramsden Primary School (UK virtual) Rangatahi Tumeke camp (NZ) Birds New Zealand (virtual) Penguin Awareness Day (NZ) Seaweek, <i>Know Your Big Blue Backyard</i> (NZ)	April 2024 Jan 2024 Dec 2023 Oct 2019 Oct 2021 Jan 2021 Mar 2020
Interviews	TVNZ TV 1 Edges of Earth Seven Sharp Radio One Dunedin	April 2025 Jan 2025 Jan 2025 Sep 2023

CONFERENCES AND SEMINARS

Oamaru Penguin Symposium (Oamaru, NZ)	May 2025
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	May 2023
	May 2021
11th International Penguin Conference (Vina del Mar, Chile)	Sep 2023
10th International Penguin Conference (Dunedin, NZ)	Aug 2019
Birds NZ Conference (Nelson, NZ)	Jun 2022
3rd World Seabird Conference (virtual)	Oct 2021
Australasian Wildlife Management Society (virtual)	Dec 2020
Yellow-Eyed Penguin Symposium (Dunedin, NZ)	Aug 2021
	Aug 2019
	Aug 2018
EU Macro Conference Ignite session (Copenhagen, Denmark)	Jun 2015

PROFESSIONAL MEMBERSHIPS AND JOURNAL REVIEWER

Global Change Biology	2025
Journal for Nature Conservation	2024
Global Ecology and Biogeography	2021
International Bio-logging Society Member	2020-present
Birds NZ Member	2019-present
British Ecological Society (BES) Student Member	2014-2021
Association for the Sciences of Limnology and Oceanography (ASLO) Student Member	2012-2013

MEDIA ENGAGEMENTS

SHE Changes Climate	What New Zealand's Smallest Penguin Reveals About a Warming World	2025
Drift Travel Magazine	The farm that brought little blue penguins back	2025
TV1 News	Dark Sky Reserve on Banks Peninsula	2025
Seven Sharp News	Pōhatu research and monitoring program	2025
Bay Harbour News	Bringing penguin conservation work to a worldwide audience	2025
Forest & Bird Magazine	Hoiho numbers plummet	2024
University of Otago	Understanding environment use key to protection of hoiho	2023
Otago Daily Times	Penguins losing battle with fishing vessels	2023
Akaroa Mail	Full-time penguin researcher at Pōhatu	2023
Radio One Dunedin	Interview	2023
SEA LIFE Kelly Tarlton	Penguin artwork funds vital devices to help the survival of their feathered friends in the wild	2023
RNZ	Yellow-eyed penguin's foraging habits give pointers to protection measures	2022
Hoiho Bird of the Year	Interview	2019

OTHER WILDLIFE EXPERIENCE

Level 3 Trainer, transponder insertion little penguins	NZ National Bird Banding Scheme	Oct 2020-present
Marine Mammal Medic	Project Jonah (Auckland, NZ)	Apr 2019-present
Kaitiaki Wildlife Response Team	Department of Conservation (Dunedin, NZ)	Oct 2018-2019
Volunteer	Mystic Aquarium (Mystic, CT, USA)	Sep 2017-May 2018
Volunteer	Wildlife Hospital (Dunedin, NZ)	Nov 2018-2019
Volunteer	SANCCOB South African Foundation for the Conservation of Coastal Birds (Eastern Cape, SA)	Mar 2017

SKILLS

- GPS/satellite tracking of marine animals
- Remote fieldwork
- Species distribution modelling (e.g., Maxent) and species-environment interactions
- Spatial analyses using GIS, R, and other programs
- Advanced coding in R, R Markdown, Latex
- Database management using SQL, R, Microsoft SharePoint and Access
- R Shiny app development
- Level 3 transponder certified, little penguins, NZ National Bird Banding Scheme
- Level 2 transponder certified, all other penguins, NZ National Bird Banding Scheme

PROFESSIONAL PROFILES AND IDENTIFIERS

ResearchGate: https://www.researchgate.net/profile/Rachel_Hickcox

ORCID ID: <https://orcid.org/0000-0002-2982-4244>

Web of Science Researcher ID: AAA-3880-2020

Publons: <https://publons.com/researcher/3312071/rachel-p-hickcox/>

Professional website: <https://rphickcox.com>

LinkedIn: <https://www.linkedin.com/in/rphickcox/>