

Scott William Forrest

PHD CANDIDATE

School of Mathematical Sciences, Queensland University of Technology

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Education

Queensland University of Technology

Brisbane, Australia

PHD IN MATHEMATICAL SCIENCES

2022 -

- Thesis title: **Modelling animal movement with stochastic simulations and deep learning**
- In my thesis I am developing new methodologies for modelling animal movement, with a focus on simulating animal movement trajectories.
- I will apply the methodologies we develop to feral buffalo (*Bubalus bubalis*) and cattle (*Bos indicus*) in Northern Australia's tropical savannas.

University of Otago

Dunedin, New Zealand

MASTER OF SCIENCE IN WILDLIFE MANAGEMENT

2020-21

- Thesis title: **Operation Kākā Repopulation: Using GPS tracking and spatial modelling to restore a flagship species**
- During my thesis I GPS-tracked kākā (*Nestor meridionalis*) and quantified their space use and resource selection, as well as their behaviours through accelerometry data.

University of Otago

Dunedin, New Zealand

POSTGRADUATE DIPLOMA IN WILDLIFE MANAGEMENT

2018-19

- Coursework-based diploma with a focus on field ecology.

Flinders University and Australian Maritime College

Adelaide and Launceston, Australia

BACHELOR OF ENGINEERING (WITH HONOURS) IN NAVAL ARCHITECTURE

2012-16

- Honours thesis title: **Ship-generated solitons and the dynamic vessel response as a function of blockage**

Relevant Employment History

Queensland University of Technology

Brisbane, Australia

TUTOR

2023

- Work Integrated Learning for Applied and Computational Mathematics (MXB328)

University of Otago

Dunedin, New Zealand

TEACHING FELLOW

2020-21

- Animal Biology (BIOL112)

University of Otago

Dunedin, New Zealand

STATISTICS MENTOR FOR POSTGRADUATE STUDENTS

2019-21

- Spatial ecology (home range estimation, resource selection, Species Distribution Modelling)
- GLM/GLMM, model selection and multi-model inference
- Animal growth data and nesting success

University of Otago

Dunedin, New Zealand

DEMONSTRATOR

2018-21

- Biological Data Analysis and Computing (ZOOL316/WILM404)
- Conservation Biology (ZOOL319)
- Animal Biology (BIOL112)
- Cell Biology (CELS191)

Publications

1. Cowan, M. A., Forrest, S. W., Setterfield, S. A., Dunlop, J. A., Gibson, L. A., Moore, H. A., & Nimmo, D. G. (n.d.). The impact of mining on animal movement and landscape connectivity revealed through simulations and scenarios. *Ecological Applications (In Review)*.
2. Westaway, D. M., Cowan, M. A., Forrest, S. W., & Nimmo, D. G. (n.d.). Movement ecology of an iconic Australian lizard in a fragmented agricultural landscape. *(In Preparation)*.
3. Forrest, S., Pagendam, D., Hassan, C., Drovandi, C., Potts, J., Bode, M., & Hoskins, A. (n.d.). Predicting animal movement with deepSSF: A deep learning step selection framework. *Methods in Ecology and Evolution (In Review)*.

4. Forrest, S. W., Rodríguez-Recio, M., & Seddon, P. J. (2024). Home range and dynamic space use reveals age-related differences in risk exposure for reintroduced parrots. *Conservation Science and Practice*, e13119. <https://doi.org/10.1111/csp2.13119>
5. Forrest, S. W., Pagendam, D., Bode, M., Drovandi, C., Potts, J. R., Perry, J., Vanderduys, E., & Hoskins, A. J. (2024). Predicting fine-scale distributions and emergent spatiotemporal patterns from temporally dynamic step selection simulations. *Ecography*. <https://doi.org/10.1111/ecog.07421>
6. Forrest, S. W., Rodríguez-Recio, M., & Seddon, P. J. (2022). Moving wildlife tracking forward under forested conditions with the SWIFT GPS algorithm. *Animal Biotelemetry* 2022 10:1, 10(1), 1–11. <https://doi.org/10.1186/S40317-022-00289-9>
7. Forrest, S. W. (2021). *Space use and resource selection of the orokonui ecosanctuary kākā (nestor meridionalis) population* [Master's thesis]. University of Otago; University of Otago.
8. Forrest, S. W., Macfarlane, G. J., & Robbins, R. (2016). *Ship-generated solitons and the dynamic vessel response due to blockage coefficient* [Honour's thesis]. Australian Maritime College.

Grants

- 2025 **QUT Centre for Data Science First Byte:** Co-Investigator, \$10,000
Waterhole health check: Identifying and assessing waterholes in Northern Australia for ecosystem health
- 2024 **QUT Centre for Data Science Travel Grant:** Recipient, \$2,000
Travel funding for research visits in Europe and ISEC 2024 attendance
- QUT Centre for Data Science Travel Grant:** Recipient, \$2,000
- 2023 Travel funding for Ecological Society of Australia and MODSIM conferences, and PhD fieldwork in Arnhem Land
- QUT Centre for Data Science Travel Grant:** Recipient, \$2,000
- 2022 Travel funding for Ecological Society of Australia / Society for Conservation Biology Oceania conference attendance
- 2020-21 **University Teaching and Development Grant:** Principal Investigator, \$10,124
Integrating MOOC platform xOtago into the teaching of Zoology papers for future flexibility and resilience
- 2020 **Dunedin City Council Parks and Reserves:** Principal Investigator, \$15,000
GPS tracking kākā from Orokonui Ecosanctuary
- 2020 **OSPRI:** Principal Investigator, \$7,000
GPS tracking kākā from Orokonui Ecosanctuary
- 2020 **High Country Contracting:** Principal Investigator, \$2,000
GPS tracking kākā from Orokonui Ecosanctuary

Scholarships and Awards

- 2024 CDS Showcase **Runner-up Best Poster Award**
- 2024 International Statistical Ecology Conference (ISEC) **Best Student Presentation Award**
- 2022- Commonwealth Scientific and Industrial Research Organisation (CSIRO) **Top-Up Scholarship**
- 2022- QUT PhD Research Training Program (RTP) **Scholarship**
- 2021 International Biologging Society Conference (BLS7) - **Runner-up Best Student Presentation Award**
- 2016 **Top Five Thesis Presentations** of the AMC Engineering Cohort
- 2012-13 Sir Eric Neal **Engineering Scholarship**
- 2010 **Dux of Physical Education** St Joseph's School

Professional Memberships

- 2022- Ecological Society of Australia
- 2022-2023 Society for Conservation Biology
- 2020- International Biologging Society
- 2020-21 Australasian Wildlife Management Society
- 2019-21 Ornithological Society of NZ (Birds NZ)

Presentations and Conference Attendance

2024 Ecological Society of Australia Conference (**presenter**)

2024 QUT Centre for Data Science Showcase (**presenter** and **poster**)

2024 International Society for Behavioral Ecology Congress (**poster**)

2024 Max Planck Institute of Animal Behaviour Research Visit (**presenter**)

2024 ETH Zurich Research Visit (**presenter**)

2024 University of Zurich Research Visit (**presenter**)

2024 IFREMER Research Visit (**presenter**)

2024 International Statistical Ecology Conference (**presenter** and **poster**)

2024 University of Potsdam Research Visit (**presenter**)

2024 University of Göttingen Research Visit (**presenter**)

2024 Bayesian Research and Applications Group (**presenter**)

2024 Queensland and New Zealand Institute of Applied Mathematics Conference (**presenter**)

2024 QUT Resilience Centre and UQ Centre for Biodiversity and Conservation Science ECR event (**speaker**)

2024 Geospatial Share Workshop - Animal Movement Modelling (**lead presenter**)

2024 Time-Series Modelling Workshop (**organiser and presenter**)

2024 International Biologging Society Conference (BLS8) (virtual - **poster**)

2024 Applied Mathematical Ecology Group Symposium (**presenter**)

2023 CSIRO Living Landscapes Science Hour (virtual - **presenter**)

2023 International Congress on Modelling and Simulation Conference (MODSIM) (**presenter**)

2023 Ecological Society of Australia Conference (**presenter**)

2023 CSIRO Machine Learning and Artificial Intelligence Reimagining Science Symposium

2023 Applied Mathematical Ecology Group Symposium (**presenter**)

2022 Ecological Society of Australia / Society for Conservation Biology Oceania Conference (**presenter**)

2022 Australian Data Science Network Conference

2022 International Statistical Ecology Conference (virtual)

2022 Queensland and New Zealand Institute of Applied Mathematics Conference

2021 International Biologging Society Conference (BLS7) (virtual - **presenter**)

2021 University of Otago Zoology Departmental Seminar (**presenter**)

2021 Birds NZ Conference - (**presenter**)

2020 Australasian Wildlife Management Society Conference (virtual - **presenter**)

2019 Otago Postgraduate Research Symposium (**presenter**)

Volunteering, Fieldwork and Community Outreach

2023 **CSIRO and Queensland University of Technology:** PhD fieldwork, Arnhem Land, Australia
Attaching GPS devices to feral buffalo (*Bubalus bubalis*)

2020-21 **University of Otago:** MSc fieldwork, Orokonui Ecosanctuary, Dunedin, New Zealand
Attaching VHF and GPS devices to kākā (*Nestor meridionalis*) and collecting data multiple times each week

2020-21 **Orokonui Ecosanctuary:** Education Outreach Team, Dunedin, New Zealand
Educational tours for school and public groups within Orokonui Ecosanctuary.

2020 **University of Otago:** Zoology Tertiary Open Day Coordinator, Dunedin, New Zealand
Organising and running the Zoology stand at the University of Otago Tertiary Open Day.

2020 **Otago Museum:** Science Fair Judge, Dunedin, New Zealand
Judging science fair projects for secondary school students.

2019 **Department of Conservation:** Kākā (*Nestor meridionalis*) Recovery Team, Fiordland National Park, New Zealand
Mist-netting kākā and attaching telemetry devices.

2019 **Department of Conservation:** Kākāpō (*Strigops habroptil*) Recovery Team, Whenua Hou (Codfish Island), New Zealand
Juvenile kākāpō feeding and health checks, telemetry device attachment and triangulation.

2018 **Department of Conservation:** Takahē (*Porphyrio hochstetteri*) Recovery Team, Kahurangi National Park
Takahē telemetry triangulation and health checks.

2017 **Montana Fish, Wildlife and Parks:** Gray Wolf (*Canis lupus*) Program, Western Montana, USA
Gray wolf telemetry triangulation and assessment of presence through faeces and markings.

2014 **Comunidad Inti Wara Yassi (CIWY):** Puma/Jaguar Caretaker, Parque Ambue Ari, Bolivia
Caring for rehabilitated pumas (*Puma concolor*) and jaguars (*Panthera onca*).

References

Professor Michael Bode

QUEENSLAND UNIVERSITY OF TECHNOLOGY

- Email: michael.bode@qut.edu.au

Brisbane, Australia

Primary Supervisor

Dr Dan Pagendam

COMMONWEALTH SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANISATION (CSIRO)

- Email: dan.pagendam@data61.csiro.au

Brisbane, Australia

External Supervisor

Dr Andrew Hoskins

COMMONWEALTH SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANISATION (CSIRO)

- Email: andrew.hoskins@csiro.au

Townsville, Australia

External Supervisor