

# 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 stochastic simulations.
- 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. 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>
2. Forrest, S. W., Pagendam, D., Bode, M., Drovandi, C., Potts, J. R., Perry, J., Vanderduys, E., & Hoskins, A. J. (2024). Simulating animal movement trajectories from temporally dynamic step selection functions. In *bioRxiv* (p. 2024.03.19.585696). <https://doi.org/10.1101/2024.03.19.585696>
3. 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>
4. 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.

5. 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.

## Presentations and Conference Attendance

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- 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 (**presenter**)
- 2024 Applied Mathematical Ecology Group Symposium (**presenter**)
- 2023 CSIRO Living Landscapes Science Hour (virtual - **presenter**)
- 2023 International Congress on Modelling and Simulation Conference (**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

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- 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.
- 2019 **Dunedin Halo Project:** Biodiversity Monitoring, Dunedin, New Zealand  
Monitoring of pest control tracking tunnels.
- 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*).

## Grants

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- 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

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- 2022- QUT PhD Research Training Program (RTP) Stipend Scholarship
- 2022- Commonwealth Scientific and Industrial Research Organisation (CSIRO) Top-Up Scholarship
- 2021 International Biologging Society Conference (BLS7)- runner-up student presentation
- 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

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

## References

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### Professor Michael Bode

QUEENSLAND UNIVERSITY OF TECHNOLOGY

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

*Brisbane, Australia*

*Primary Supervisor*

### Dr Andrew Hoskins

COMMONWEALTH SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANISATION (CSIRO)

- Email: andrew.hoskins@csiro.au

*Townsville, Australia*

*Primary External Supervisor*

### Dr Dan Pagendam

COMMONWEALTH SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANISATION (CSIRO)

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

*Brisbane, Australia*

*Associate External Supervisor*