

# Juliane Gaviraghi Mussoi

## Postdoctoral Fellow

School of Biological Sciences  
The University of Auckland - Waipapa Taumata Rau  
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### Education

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#### **Ph.D. in Biological Sciences** (2019 - 2023)

University of Auckland - New Zealand

Thesis: The importance of sleep for avian vocal communication.

Supervisors: Dr Kristal Cain, Prof. Margaret Stanley

#### **MSc in Biology - Animal Ecology** (2016 - 2018)

Lund University – Sweden

Thesis: Mirror-mediated spatial location in urban and rural great tits (*Parus major*).

Supervisor: Prof. Anders Brodin

#### **BSc in Biological Sciences** (2011 - 2016)

Universidade de Caxias do Sul – Brazil

Thesis: Effects of human presence on Southern lapwing (*Vanellus chilensis*) behaviour.

Supervisor: Dr Renata de Boni Dal Corno

#### **General Biology - Exchange** (2012 – 2013)

Thompson Rivers University – Canada

One-year exchange program; awarded Brazilian government scholarship 'Science Without Borders'

### Research Experience

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My research focuses on how animal behaviours are shaped by ecological pressures and evolutionary processes. I am especially interested on the effects of environmental change on animal behaviour and ecology. My PhD research focused on the effects of disturbances, such as noise and light at night, on birds' sleep and vocalisations. Additionally, I have research experience in animal cognition and vision, urban ecology, visual and vocal signalling, and hormonal responses.

My research incorporates a wide variety of methodological approaches including field and laboratory research, experimental manipulation and field observations, and behavioural and physiological measurements. I am also eager to broaden my research interests and am open to exploring new areas of study that align with my skills and expertise.

#### **Postdoctoral Fellow** (2024 – present)

University of Auckland

Project title: Are sleepy birds sloppy singers? Using songbirds to examine the relationships between sleep and vocal learning.

#### **Ph.D. project** (2019 – 2023)

University of Auckland

Thesis title: The importance of sleep for avian vocal communication.

Supervisors: Dr Kristal Cain, Prof. Margaret Stanley

#### **Research project** (2019 – 2020)

University of Auckland

Title: Visual and auditory ornaments in New Zealand fantails (*Rhipidura fuliginosa*)

PIs: Dr Kristal Cain, Prof. Margaret Stanley

#### **Research Assistant** (2018)

Lund University

Project: Visual acuity of budgerigars (*Melopsittacus undulatus*) for moving targets.

PI: Prof. Almut Kelber

### **MSc Thesis** (2017 – 2018)

Lund University

Thesis title: Mirror-mediated spatial location in urban and rural great tits (*Parus major*)

Supervisor: Prof. Anders Brodin

### **Research Assistant** (2016 – 2017)

Lund University

Projects:

- Problem solving in urban and rural great tits (*Parus major*)
- Self-control with experienced great tits (*Parus major*)

PI: Prof. Anders Brodin

### **Bachelor's Thesis** (2015 – 2016)

Universidade de Caxias do Sul

Project: Behavioural analysis of Southern Lapwing (*Vanellus chilensis*) with human presence

Supervisor: Dr Renata de Boni Dal Corno

### **Field Technician** (2013)

Thompson Rivers University

Project: Associations of parental care and quality on offspring plumage colouration in mountain bluebirds (*Sialia currucoides*)

PI: Ass. Prof. Matthew Reudink

### **Laboratory Internship** (2011 – 2012)

Universidade de Caxias do Sul

Project: Cellulase, xylanase and pectinase production from *Penicillium echinulatum*, *Aspergillus oyzae* e *Trichoderma reesei* fungi in solid and liquid cultivation.

PIs: Prof. Marli Camassola, Prof. Aldo José Pinheiro Dillon

## **Publications**

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### Published:

**Gaviraghi Mussoi, J.**, MacQueen, R.A., Stanley, M. C., & Cain, K. E. (2024). Experimentally elevated corticosterone increases song output and complexity in common mynas. *Journal of Experimental Zoology Part A: Ecological and Integrative Physiology*, 1–10. 10.1002/jez.2817 (IF: 2.8)

deRegnier, R., **Gaviraghi Mussoi, J.**, Gaskett, A. (2023) Passage of spores of the dung moss *Tayloria callophylla* (Splachnaceae) through and avian digestive tract - a novel mode of dispersal? *Bryophyte Diversity and Evolution*, 46(1), 168-173. 10.11646/BDE.46.1.18

**Gaviraghi Mussoi, J.**, Stanley, M. C., & Cain, K. E. (2022). Importance of sleep for avian vocal communication. *Biology Letters*, 18(8) 10.1098/rsbl.2022.0223 (IF: 3.904. Altmetrics: In the top 5% of all research outputs, 97th percentile compared to outputs of the same age.)

Johnsson, R. D., Connelly, F.\*, **Gaviraghi Mussoi, J.\***, Vyssotski, A. L., Cain, K. E., Roth, T. C., & Lesku, J. A. (2022). Sleep loss impairs cognitive performance and alters song output in Australian magpies. *Scientific Reports*, 12(1) 10.1038/s41598-022-10162-7 (\*joint second author. IF: 4.997. Altmetrics: In the top 5% of all research outputs, 96th percentile compared to outputs of the same age.)

Chaib, S., **Mussoi, J. G.**, Lind, O., & Kelber, A. (2021). Visual acuity of budgerigars for moving targets. *Biology Open*, 10(9) 10.1242/bio.058796 (IF: 2.643. Altmetrics: In the top 25% of all research outputs, 90th percentile compared to outputs of the same age.)

**Mussoi, J. G.**, Johnsson, R., Connelly, F., Lesku, J., & Cain, K. E. (2022). Effects of sleep deprivation on birdsong performance in adult Australian magpies. *Journal of Sleep Research*, *Journal of Sleep Research*, 29 (77-78). 10.1111/jsr.13181 (IF: 5.296. Published in the online supplement of the Journal of Sleep Research - Abstracts of the 25th Congress of the European Sleep Research Society)

Johnsson, R. D., Connelly, F., **Mussoi, J. G.**, Cain, K. E., Vyssotski, A. L., Roth, T. C., & Lesku, J. A. (2020). A causal role for sleep in maintaining high neurobehavioural performance in Australian magpies. *Journal of Sleep Research*, 29 (178-178). 10.1111/jsr.13181 (IF: 5.296. Published in the online supplement of the Journal of Sleep Research - Abstracts of the 25th Congress of the European Sleep Research Society)

Submitted or in preparation:

Vincze, E., Kačergytė, I., **Gaviraghi Mussoi, J.**, Urhan, U., Brodin, A. Are comparable studies really comparable? Suggestions from a problem-solving experiment on urban and rural great tits. Under review: *Animal Cognition* - 03/2024. Preprint: 10.21203/rs.3.rs-4027997/v1

**Gaviraghi Mussoi, J.**, MacQueen, R. A., Stanley, M. C., & Cain, K. E. The effects of sleep deprivation on vocal performance of common mynas. To be submitted to: *PLOS Biology*.

**Gaviraghi Mussoi, J.**, MacQueen, R. A., Stanley, M. C., & Cain, K. E. Effects of light and noise at night on sleep and vocal output of common mynas. To be submitted to: *Behavioural Ecology*.

## **Conference Presentations**

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**Gaviraghi Mussoi, J.**, Stanley, M. C., Cain, K. E. (2023) The importance of sleep for avian vocal communication, *Australasian Society for the Study of Animal Behaviour Conference*, Sydney, Australia

**Gaviraghi Mussoi, J.**, MacQueen, R. A., Stanley, M. C., Cain, K. E. (2022) Effects of sleep on vocal communication of common mynas, *Australasian Society for the Study of Animal Behaviour Conference*, Virtual Meeting

**Gaviraghi Mussoi, J.**, MacQueen, R. A., Stanley, M. C., Cain, K. E. (2022) Importance of sleep on vocal communication of common mynas and Australian magpies. *International Society for Behavioral Ecology Congress*. Stockholm, Sweden

**Gaviraghi Mussoi, J.**, MacQueen, R. A., Stanley, M. C., Cain, K. E. (2022) Effects of manipulated corticosterone on vocal performance of common mynas. *Australasian Ornithological Society Conference*. Virtual Meeting

**Gaviraghi Mussoi, J.**, MacQueen, R. A., Stanley, M. C., Cain, K. E. (2021) Effects of stress on the singing performance of common mynas. *New Zealand Ecological Society Conference*. Virtual Meeting

**Gaviraghi Mussoi, J.**, MacQueen, R. A., Stanley, M. C., Cain, K. E. (2021) Effects of stress on the singing performance of common mynas. *School of Biological Sciences Showcase UoA*. Virtual Meeting

**Gaviraghi Mussoi, J.**, Johnsson, R. D., Connelly, F. C., Lesku, J. A., & Cain, K. E. (2020). Effects of sleep on avian vocal communication. *Australasian Society for the Study of Animal Behaviour Conference*. Virtual Meeting

**Gaviraghi Mussoi, J.**, Johnsson, R. D., Connelly, F. C., Lesku, J. A., & Cain, K. E. (2020). Effects of sleep deprivation on birdsong performance in adult Australian magpies. *25th Congress of the European Sleep Research Society*. Virtual Meeting

**Gaviraghi Mussoi, J.**, Johnsson, R. D., Connelly, F. C., Lesku, J. A., & Cain, K. E. (2020). Effects of sleep on avian vocal communication. *57th Annual Conference of the Animal Behavior Society*. Virtual Meeting

**Gaviraghi Mussoi, J.**, Johnsson, R. D., Connelly, F. C., Lesku, J. A., & Cain, K. E. (2019) Are sleepy magpies worse singers? *Exposure Postgraduate Research Exposition*. Auckland, New Zealand.

**Gaviraghi Mussoi, J.**, Johnsson, R. D., Connelly, F. C., Lesku, J. A., & Cain, K. E. (2019) Are sleepy magpies worse singers? *Faculty of Science Postgraduate Poster Competition*. Auckland, New Zealand.

**Gaviraghi Mussoi, J.**, Exnerova, A., Brodin, A. (2019) Can great tits use mirrors? *Australasian Society for the Study of Animal Behaviour Conference*. Waiheke, New Zealand

**Gaviraghi Mussoi, J.**, Kacergyte, I., Urhan, U. Brodin, A. (2019) Problem solving in urban and rural great tits. *Ecology, Evolution and Behaviour Meeting*. Auckland, New Zealand.

**Gaviraghi Mussoi, J.**, Kacergyte, I., Urhan, U. Brodin, A. (2017) Problem solving in urban and rural great tits. *35th International Ethological Conference*. Estoril, Portugal.

**Gaviraghi Mussoi, J.**, Kacergyte, I., Urhan, U. Brodin, A. (2017) Problem solving in urban and rural great tits. *Biologists in Lund Annual Meeting*. Lund, Sweden.

**Gaviraghi Mussoi, J.**, Kacergyte, I., Urhan, U. Brodin, A. (2017) Problem solving in urban and rural great tits. *Swedish OIKOS Meeting*. Lund, Sweden.

**Gaviraghi Mussoi, J.**, Fontana, R. C., Dillon, A. J. P., Camassola, M. (2012) Produção de celulasas e xilanases por culturas mistas em cultivo em estado solido. *XX Meeting of Young Researchers UCS*. Caxias do Sul, Brazil.

**Gaviraghi Mussoi, J.**, Fontana, R. C., Camassola, M., Dillon, A. J. P. (2011) Produção de celulasas e xilanases por *Penicillium echinulatum*, *Trichoderma reesei* e *Aspergillus oryzae* em culturas isoladas e mistas. *XIX Meeting of Young Researchers UCS*. Caxias do Sul, Brazil

## **Scholarships and Awards**

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- **International Society for Behavioral Ecology Travel Award** – 1400 USD (2022)
- **Australasian Ornithological Conference 2022 Student Grant** – 120 NZD (2022)
- **Runner-up Best Student Poster New Zealand Ecological Society Conference** (2021)
- **Best poster SBS Showcase** (2021)
- **Centre for Biodiversity and Biosecurity publication stipend** – 1100 NZD (2021)
- **Australasian Society for the Study of Animal Behaviour Student Research Grant** – 2500 AUD (2020)
- **3rd place – Faculty of Science Postgraduate Research Showcase** – 800 NZD (2019)
- **University of Auckland Doctoral Scholarship** – 27,900 NZD p.a. (2019 - 2022)
- **Science without Borders Scholarship** – ~ 15,000 CAD (2012 - 2013)
- **Research Funding - PIBIT/CNPq** – 360 BRL p.m. (2011 - 2012)
- **Research Funding - UCS** – 360 BRL p.m. (2011)

## **Teaching Experience**

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Tertiary Teaching: Extensive teaching experience at all undergraduate levels

**Teaching Consultant** (2023)

Courses: *Biology of Terrestrial Animals (BIOSCI 338)*, *Animal Form and Function (BIOSCI 207)*  
The University of Auckland, New Zealand

Responsibilities: Designing practical assessment and course guide, developing R code for exercises about bioacoustics, data analysis and data visualisation, and leading tutorials.

**Graduate Teaching Assistant (2023)**

Course: *Animal Behaviour (BIOSCI 337)*

The University of Auckland, New Zealand

Responsibilities: Laboratory demonstrations about proximate and ultimate causes of behaviour, project design, execution, writing and results presentation. Field work supervision and logistics, marking assignments, assisting and giving feedback to students, test invigilation, and contributing to improving learning outcomes for future years.

**Teaching Assistant (2023)**

Course: *Quantitative Biology (BIOSCI 220)*

The University of Auckland, New Zealand

Responsibilities: Laboratory demonstrations about project design, using R for statistical analysis and data visualisations, and interpret and communicate statistical results. Assisting students, providing feedback to students, marking assignments.

**Invited Lecturer (2022, 2023)**

Course: *Animal Behaviour (BIOSCI 337)*

The University of Auckland, New Zealand

Responsibilities: I was invited to give lectures about avian vocalisation and sleep to this third-year course at the University of Auckland.

**Teaching Assistant (2021 – 2023)**

Course: *Biology of Terrestrial Animals (BIOSCI 338)*

The University of Auckland, New Zealand

Responsibilities: Laboratory demonstrations about insect collection, bioacoustics, writing and statistical support. Field work supervision and logistics, marking assignments, assisting students, providing feedback to students, test invigilation, and contributing to improving learning outcomes for future years.

**Teaching Assistant (2023)**

Course: *Ecology and Evolution: The Continuum of Life (BIOSCI 109)*

The University of Auckland, New Zealand

Responsibilities: Laboratory demonstrations about project development, writing and statistical skills, ecological and evolutionary mechanisms, and environmental science. Field work supervision, assisting and giving feedback to students.

**Teaching Assistant (2019 – 2022)**

Course: *Animal Behaviour (BIOSCI 337)*

The University of Auckland, New Zealand

Responsibilities: Laboratory demonstrations about proximate and ultimate causes of behaviour, project design, execution, writing and results presentation. Field work supervision and logistics, marking assignments, assisting and giving feedback to students, test invigilation, and contributing to improving learning outcomes for future years.

**Graduate Teaching Assistant (2021)**

Course: *Animal Form and Function (BIOSCI 207)*

The University of Auckland, New Zealand

Responsibilities: Lead teacher for a laboratory. Adapting practical assessment to be delivered online, leading all streams of the bioacoustic practical laboratory, providing help, advice and feedback to students, and contributing to improving learning outcomes for future years.

**Teaching Assistant (2019, 2021)**

Course: *Animal Form and Function (BIOSCI 207)*

The University of Auckland, New Zealand

Responsibilities: Laboratory demonstrations, field work supervision and logistics, marking assignments, assisting and giving feedback to students, test invigilation, and contributing to improving learning outcomes for future years.

**Demonstrator (2018)**

Lund University, Sweden

Course: *Animal Behaviour (BIOF08)*

Responsibilities: Introducing students to animal cognition and behavioural research in captive birds.

### Other Teaching Experience:

#### **Invited Workshop (2021)**

Australasian Society of the Study of Animal Behaviour, Online

Subject: *Online Workshop - Tools to make engaging research posters*

Responsibilities: I developed and led this workshop about using different software and tools to make posters more engaging and accessible.

#### **ESL Teacher (2018 – 2019)**

Talkers Idiomas, Brazil

Responsibilities: Teaching English as a Second Language (ESL) to students of all levels of expertise, with students ranging in age from 3 to 60 years old. Developing and marking tests, creating pedagogic content, and performing other administrative work.

#### **ESL Teacher (2015 – 2016)**

SKILL Idiomas, Brazil

Responsibilities: Teaching English as a Second Language (ESL) to students of all levels of expertise, with students ranging in age from 3 to 60 years old. Developing and marking tests, creating pedagogic content, and performing other administrative work.

#### **ESL Teacher (2013 – 2014)**

Instituto de Idiomas Yázigi, Brazil

Responsibilities: Teaching English as a Second Language (ESL) to students of all levels of expertise, with students ranging in age from 3 to 60 years old. Developing and marking tests, creating pedagogic content, and performing other administrative work.

#### **IT Teacher (2013)**

Community Volunteering, Brazil

Subject: *Computing for Older Adults*

Responsibilities: As a community contribution, I volunteered to teach 50+ years old students basic computer knowledge.

#### **Volunteer Community Educator (2007 – 2012)**

Community Volunteering, Brazil

Responsibilities: Provided reading assistance, mentoring and instruction to younger members of the community (9 to 13 years old), creating pedagogical content, designing classes and activities.

### **Mentoring and Supervision**

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#### **PhD and Master's student Co-supervision**

Mentoring and co-supervising all aspects of thesis research including project design, data collection, statistical analysis, writing and presentation.

Kamya Patel (2023 – present) – PhD Student – “The impacts of sleep disturbances on learning and reproduction”

Simone Li (2023 – 2024) – Masters student – “*The effects of sleep disturbances on common mynas' behaviour (Acridotheres tristis)*” (Grade: A)

Rebecca MacQueen (2021 – 2022) – Masters student – “*Personality and sex: stress physiology effects on vocal performance in the common myna (Acridotheres tristis)*” (Grade: A)

#### **Research Volunteer Supervisor (2020 – 2022)**

Supervising, training and managing research volunteers and summer research scholars, ensuring that they are contributing effectively to the research project.

#### **Doctoral Induction Panellist (2022)**

Invited to be part of three panel discussions that were part of University of Auckland Doctoral Inductions.

## **Service and Technical Roles**

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**Conference Liaison Officer** (2022 – present)  
Australasian Society for the Study of Animal Behaviour

**Biosecurity Species Risk Assistant** (08/2023 – 03/2024)  
Auckland Council

**Equity Banner Designer** (2023)  
SBS Equity Committee – University of Auckland

**Workshop coordinator** (2021 – 2022)  
Australasian Society for the Study of Animal Behaviour

**Conference committee ASSAB** (2020, 2022)  
Australasian Society for the Study of Animal Behaviour

**Outreach officer and board member** (2019 – 2022)  
Australasian Society of the Study of Animal Behaviour

**Blood collection coordinator** (2019 – 2022)  
School of Biological Sciences – The University of Auckland

**Manuscript reviewing**  
Evolutionary Ecology – IF: 2.074 (2020)  
Behavioural Processes – IF: 1.729 (2019)

**Board member and head of project and internal engagement** (2018)  
Projekt6 (NGO) – Lund University

**Outreach officer and board member** (2017)  
Projekt6 (NGO) – Lund University

**Organization Volunteer for Swedish OIKOS Meeting** (2017)  
Lund University – Lund University

**Vice-Secretary of Biology Student Union** (2015)  
Universidade de Caxias do Sul

**Organization Volunteer for Simpósio Nacional de Bioprocessos** (2011)  
Universidade de Caxias do Sul

## **Media and Outreach**

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### Media Coverage of Research:

The Wildest Dreams – **New Zealand Geographic** (Nov 2022) – <https://www.nzgeo.com/stories/the-wildest-dreams/>

Human activity is affecting how birds sing – **Newshub** (Oct 2022) – <https://www.newshub.co.nz/home/new-zealand/2022/08/human-activity-is-affecting-how-birds-sing-research.html>

Insomniac Birds – **Radio New Zealand (RNZ), Lately** (Aug 2022) – <https://www.rnz.co.nz/national/programmes/lately/audio/2018854027/insomniac-birds>

Light, noise pollution, could be keeping birds awake – **RNZ, Morning Report** (Aug 2022) – <https://www.rnz.co.nz/national/programmes/morningreport/audio/2018854112/light-noise-pollution-could-be-keeping-birds-awake>

Lack of sleep can change how birds sing – **UoA News and Opinion** (Aug 2022) – <https://www.auckland.ac.nz/en/news/2022/08/19/bird-song.html>

### Outreach Talks:

#### **34<sup>th</sup> Rotary National Science and Technology Forum (2024)**

The University of Auckland

The Forum is a 14-day program for high-achieving Year 12 students about tertiary education in S.T.E.M.

#### **Faculty of Science (UoA) Exhibitor at STEM Expo (2023)**

Otahuhu College

This STEM Expo was designed to inspire Year 11 to Year 13 students on the endless possibilities of S.T.E.M. career paths.

#### **Invited Talk (2023)**

Glen Eden Intermediate

Title: Sing Sleep Repeat

#### **Invited Talk (2022)**

Pest Free Kaipātiki

Title: The effect of sleep deprivation on how birds sing.

#### **Invited Talk (2022)**

Forest & Bird – North Shore

Title: Effects of sleep disturbances on birdsong.

#### **Invited Radio Guest (2022)**

Radio Lollipop – New Zealand

Radio Lollipop is an international charity dedicated to providing care, comfort, play and entertainment for sick children in hospitals. I was invited to chat to give a radio interview and chat to children about animals and their behaviour.

#### **Invited Talk (2019)**

Skype a Scientist Program

Skype a Scientist is a program that matches schools and scientists together to promote science communication around the world. I chatted through video conferences with middle school students about a career in science and different biological subjects.

#### **Invited Talk (2018)**

Projekt 6 - Sweden

Projekt 6 is an organization working to promote sexual health on a physical, emotional and social level to university students. I gave a talk about sexual behaviour in animals.

### **Relevant Professional Development**

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#### **ECR Teaching Workshop (2024)**

FoS Research Fellow Society Committee (University of Auckland)

#### **Media Training Workshop - Amplify Your Research Impact (2023)**

Ngā Ara Whetū: Centre for Climate, Biodiversity and Society (University of Auckland)

#### **Advocacy for change (2023)**

Ngā Ara Whetū: Centre for Climate, Biodiversity and Society (University of Auckland)

#### **Restoration planning and GeoMapping/GIS workshop (2023)**

Auckland Council

#### **Engaging with the public and media workshop (2022)**

The University of Auckland

#### **Te Reo Māori Level 1 (2022)**

Onehunga Highschool



**Making Sense of the Treaty of Waitangi in a Research Context (2022)**

The University of Auckland

**Outdoor First Aid (2019, 2022, 2024)**

First Training Auckland

**Mental Health First Aid (2022)**

St. John Auckland

**Bioacoustics Analysis in R (2021)**

Organization for Tropical Studies (OTS)

**Wild Bird Rescue and Rehabilitation (2021)**

Learn Bird Care and New Zealand Bird Rescue

**Strategic communication for environmental causes (2021)**

Universidade de Caxias do Sul

**Te Tiriti o Waitangi Introductory Workshop (2021)**

The University of Auckland

**Strategies for Academic Reading (2020)**

The University of Auckland

**Animal Ethics – New Animal User Legislation Training (2019)**

The University of Auckland

**Managing Research Data Workshop (2019)**

The University of Auckland