Elliot Gould

PhD Candidate, Research Assistant, Consultant

School of Agriculture, Food and Ecosystem Sciences, University of Melbourne

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Elliot Gould is a PhD candidate at the School of Agriculture, Food and Ecosystem Sciences, and a Quantitative Research Assistant on the repliCATS project at the School of History and Philosophical Studies, University of Melbourne. Their PhD investigates the transparency and reproducibility of ecological models in applied ecology and conservation decision-making. In their role as a Quantitative Research Assistant, Elliot managed a small team of researchers to develop a data analytics and management platform for the repliCATS project, and contributed to research on metascience. They have an enthusiasm for teaching and skill-sharing, particularly with regard to building a strong community of practice in emerging open-science methodology and computational biology within ecology and conservation. Elliot's research seeks to use data science techniques to advance the open-science movement by improving transparency and reproducibility, focussing on ecology and conservation Science. Other research interests include decision-theory, Structured Decision Making, and plant ecology (especially grasslands of the Victorian Volcanic Plains).

Education

Doctor of Philosophy, Science

University of Melbourne — *November 2017 - Present*

- Thesis Title: Reproducibility and Transparency of Ecological Models in Applied Ecology and Conservation Science

Master of Science (Distinction)

University of Melbourne — *March 2012 - December 2015*

- Research Training Degree, with 70% original research and 30% coursework. Course Weighted Average Mark: 82.312
- Thesis Title: Managing Grasslands with Models: Resolving uncertainty and allocating effort among a suite of sites.

Bachelor of Science

University of Melbourne — *March 2005 - November 2011*

- Major in Ecology, First Class Honours Average

Bachelor of Arts

University of Melbourne — *March 2005 - November 2011*

- Major in Indonesian, First Class Honours Average

Employment History

Quantitative Research Assistant - repliCATS, SCORE Program

University of Melbourne

School of Historical and Philosophical Studies, School of BioSciences — *February 2019 - Present*

- Systematising Confidence in Open Research and Evidence (SCORE) is a Research Program initiated by the Defense Advanced Research Projects Agency (DARPA) that aims to develop and deploy automated tools to assign 'confidence scores' to Social and Behavioural research results and claims in light of recent evidence about the 'Replication Crisis' besetting Science. The repliCATS project is one team within the SCORE project, based in Melbourne. In this role, Elliot lead a small team within the repliCATS project to build data analysis software and infrastructure to manage and deliver data products to internal teams and external partners. Research components of the role include modelling to investigate predictors of replication success.

Demonstrator / Tutor

University of Melbourne

School of BioSciences — *2012 - Present*

- Environmental Risk Assessment: 2016, 2017, 2018, 2022, 2023
- Guest lectures in 'Biometry' (2023) and 'Critical Thinking with Data' (2021).
- Vegetation Management and Conservation, 2018, 2019. In addition to demonstrating, I co-developed a teaching and learning module, and developed and delivered a workshop teaching the basics of data-science in R using data collected by the students.
- Applied Ecology: 2014, 2015.
- Ecology: 2014.
- Biology of Cells and Organisms: 2012, 2013, 2014, 2015.

Research Assistant, Various Roles

University of Melbourne

School of BioScience, School of Geography — *2015 - Present*

- National Environmental Science Programme, Threatened Species Recovery Hub: Conservation actions for Threatened Ecological Communities.

Research Assistant, Various Roles

University of Melbourne

School of BioScience, School of Geography *2015 - 2019*

- Various plant ecology and Structured Decision Making projects, involving: data analysis and visualisations, building shiny Apps, model building and testing.

Scholarships and Awards

Science Abroad Travelling Scholarships, 2023

University of Melbourne, Faculty of Science, School of Ecosystem and Forest Sciences *2023*

- This scholarship supports PhD students in the Faculty of Science undertaking travel to attend conferences, fieldwork, etc. as part of a Study Away request. Awarded $2000.

Metascience 2023 travel award

Metascience Conference *2023*

- $300 USD travel award to attend the Metascience 2023 conference in Washington, D.C

AIMOS top-up scholarship

Association for Interdisciplinary Metaresearch and Open Science (AIMOS) *2022*

- AIMOS will award up to four top-up scholarships per year to PhD or Masters students working on a meta-research project.

Research Excellence Award for Interdisciplinary Research (Group Award)

University of Melbourne *2022*

- Nominees will have been collaborators in interdisciplinary research of outstanding influence, that is, the establishment of new, or advancing of existing, collaborations and programs that draw on multiple disciplines typically involving multiple faculties or schools.

Melbourne Centre of Data Science Doctral Academy Fellow

Melbourne Centre for Data Science, University of Melbourne *2021*

- The MCDS Doctoral Academy aims to bring together a campus wide multi-disciplinary cohort of PhD students (MCDS Doctoral Academy Fellows) to share their research, domain challenges and thoughts around the use, implementation and application of data science in their fields.

Australian Government Research Training Program (RTP) Scholarship

The University of Melbourne *2017 - Current*

- Awarded to high-achieving students undertaking graduate research at the University of Melbourne.

Publications

Same data, different analysts: variation in effect sizes due to analytical decisions in ecology and evolutionary biology

EcoEvoRxiv

Gould, E., Fraser, H., Parker, T.H. et al. *2023*

- https://doi.org/10.32942/X2GG62

Implementing code review in the scientific workflow: Insights from ecology and evolutionary biology

Journal of Evolutionary Biology

Ivimey-Cook, E., Pick, J.L., Bairos-Novak, K., Culina, A., Gould, E., Grainger, M., Marshall, B., Moreau, D., Paquet, M., Royauté, R., Sanchez-Tojar, A., Silva, I., Windecker, S. *2023*

- https://doi.org/10.1111/jeb.14230

Predicting reliability through structured expert elicitation with the repliCATS (Collaborative Assessments for Trustworthy Science) process

PLOS ONE

Fraser, H.,Bush, M., Wintle, B.C., Mody, F., Smith, E.T.,Hanea, A.M., Gould, E., Hemming, V., Hamilton, D.G., Rumpff, L., Wilkinson, D.P., Pearson, R., Singleton Thorn, F., Ashton, R., Willcox, A., Gray, C.T., Head, A., Ross, M., Groenewegen, R., Marcoci, A., Vercammen, A., Parker, T.H., Hoekstra, R., Nakagawa, S., Mandel, D.R., van Ravenzwaaij, D., McBride, M.F., Sinnott, R.O., Vesk, P.A., Burgman, M., Fidler, F. *2023*

- https://doi.org/10.1371/journal.pone.0274429

Method Reporting with Initials for Transparency (MeRIT) promotes more granularity and accountability for author contributions

Nature Communications

Nakagawa, S., Ivimey-Cook, E., Grainger, M.J., O'Dea, R.E., Burke, S., Drobniak, S.M., Gould, E., Macartney, E.L., Martinig, A.R., Paquet, M., Morrison, K., Pick, J.L., Pottier, P., Ricolfi, L., Wilkinson, D.P., Willcox, A., Williams, C., Wilson, L.A.B., Windecker, S.M., Yang, Y., Lagisz, M. *2023*

- https://doi.org/10.1038/s41467-023-37039-1

Predicting and reasoning about replicability using structured groups — *Royal Society Open Science*

Wintle, B.C., Mody, F., Smith, E.T.,Hanea, A.M., Wilkinson, D.P., Hemming, V., Bush, M., Fraser, H., Singleton Thorn, F., McBride, M.F., Gould, E., Head, A., Hamilton, D.G., Rumpff, L., Hoekstra, R., Fidler, F. — *2023*

- https://osf.io/preprints/metaarxiv/vtpmb/

What state of the world are we in? Targeted monitoring to detect transitions in vegetation restoration projects — *Ecological Applications*

Jones, C.S., Thomas, F.M., Michael, D.R., Fraser, H., Gould, E., Begley, J., Wilson, J., Vesk, P.A., Rumpff, L. — *2022*

- https://doi.org/10.1002/eap.2728

Mathematically aggregating experts' predictions of possible futures — *PLOS ONE*

Hanea, A.M., Wilkinson, D.P., McBride, M.F., Lyon, A., van Ravenzwaaij, D., Singleton Thorn, F., Gray, C.T., Mandel, D.R., Willcox, A., Gould, E., Smith, E.T., Mody, F., Bush, M., Fidler, F., Fraser, H., Wintle, B.C. — *2021*

- https://doi.org/10.1371/journal.pone.0256919

Towards open, reliable, and transparent ecology and evolutionary biology — *BMC Biology*

O'Dea, R.E., Parker, T.H., Chee, Y.E., Culina, A., Drobniak, S.M., Duncan, D.H., Fidler, F., Gould, E., Ihle, M., Kelly, C., Lagisz, M., Roche, D.G., Sánchez-Tójar, A., Wilkinson, D.P., Wintle B.C., Nakagawa, S. — *2021*

- https://doi.org/10.1186/s12915-021-01006-3

A practical guide for conservation planning using the General Ecosystem Model for Southern Australian Woodlands. — *NESP Threatened Sprecies Recovery Hub Project 7.2, Brisbane*

Good, M., Fraser, H., Gould, E., Vesk, P., Rumpff, L. — *2021*

- https://www.nespthreatenedspecies.edu.au/media/yvlbs1tk/7-2-a-practical-guide-for-conservation-planning-using-the-general-ecosystem-model-for-southern-australian-woodlands_v3.pdf

Selected Talks and Workshops

Invited speaker Mini-note Panel: Association for Interdisciplinary Metaresearch and Open Science Conference — *Melbourne, Australia*

Many Analysts: Heterogeneity in results among studies in ecology and evolutionary biology — *2022*

Big Team Science Conference — *Global - Online*

A many-analyst project in ecology and evolutionary biology demonstrates heterogeneity driven by analysts' decisions and generates new questions about variability in this heterogeneity — *2022*

Society for Open Reliable and Transparent Ecology and Evoluation Workshop Series — *Online - Oceania*

Workshop: Creating reproducible workflows in R with the targets:: package — *2022*

Association for Interdisciplinary Metaresearch and Open Science Conference — *Melbourne, Australia*

'ResearchOps: A principled framework and guide to computational reproducibility', and 'Modelling as Ways of Knowing - How Viewing Models as an Epistemic Activity is useful in Ecology' — *2021*

Model Based Research and Reproducibility Workshop — *Centre for Open Science*

Workshop: 'Preregistration Templates for Model-Based Research' — *2020*

MetaScience Symposium & Association for Interdisciplinary Meta-Research and Open Science Conference — *San Francisco & Melbourne*

Poster Presentation: 'Questionable Research Practices in Non-Hypothesis Testing Research' — *2019*

Research Consultancy, Professional Membership

Center of Open Science — *Professional Membership*

Preregistration Template Working Group — *2023*

- the Preregistration Template Working Group is working to: 1. Establish criteria to evaluate the suitability of new preregistration templates for inclusion in the OSF. 2. Develop a procedure by which community creators of preregistration templates can put templates forward for inclusion in OSF., 3. Advise and inform COS on issues related to preregistration implementation in OSF.

Victorian Government Department of Environment Land Water & Planning — *Consultancy*

Testing and Developing preregistration templates for ecology and conservation using a case study of environmental flows management in Victoria, Australia — *March 2020 - Present*

- This research consultancy contributes to Elliot's PhD. This work involved the design and delivery of a collaborative workshop with DELWP in order to develop preregistration templates and methodology relevant to ecological modelling, in particular within decision-making and applied contexts.

Society for Open, Reliable, and Transparent Ecology and Evolutionary Biology (SORTEE) *Professional Membership*

Founding Member and Secretary / Treasurer, www.sortee.org *2020 - 2022, 2023*

- SORTEE is a service organization which brings together researchers working to improve reliability and transparency through cultural and institutional changes in ecology, evolutionary biology, and related fields broadly defined.