Jason Bertram **Curriculum Vitae**

Personal data

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Education and Academic Positions

2018-present	**Research Faculty** Environmental Resilience Institute, Indiana University
2015-2018	**Postdoctoral Researcher** Department of Ecology and Evolutionary Biology, University of Arizona. Advisor: Joanna Masel.
2012-2015	**PhD** Population ecology, statistical mechanics, turbulence theory (Australian National University). Advisors: Roderick Dewar, Graham Farquhar, Michael Roderick.
2009-2011	**MPhil** Theoretical plasma physics (Australian National University)
2008	**BSc (Hons)** Applied Mathematics (University of Cape Town, South Africa)
2005-2007	**BSc** Pure Mathematics, Applied Mathematics, Statistics

Publications in review

1. **J Bertram**, J Masel (2019) Different mechanisms drive the maintenance of polymorphism at loci subject to strong versus weak fluctuating selection. (in review at *Evolution*) https://doi.org/10.1101/164723 (preprint)
2. **J Bertram**, Erica Newman, Roderick Dewar (2019) Maximum entropy models elucidate the contribution of metabolic traits to patterns of community assembly (in review at *Global Ecology and Biogeography*) https://doi.org/10.1101/526764 (preprint)

Peer-reviewed Publications

1. S Foy, B Wilson, **J Bertram**, M Cordes, J Masel (2019) A shift in aggregation avoidance strategy marks a long-term direction to protein evolution. *Genetics* https://doi.org/10.1534/genetics.118.301719
2. K Gomez*, **J Bertram,** J Masel (2019) In rapidly adapting asexuals, the orientation of G can reflect selection rather than functional constraints. *Genetics* https://doi.org/10.1534/genetics.118.301685
3. **J Bertram**, J Masel (2018) Density-dependent selection and the limits of relative fitness. *Theoretical Population Biology* https://doi.org/10.1016/j.tpb.2018.11.006
4. **J Bertram**, K Gomez*, J Masel (2016) Predicting patterns of long-term adaptation and extinction with population genetics. *Evolution* **71** 204 https://doi.org/10.1111/evo.13116
5. S Haskey, B D Blackwell, C Nuehrenberg, A Koenies, **J Bertram**, C Michael, M Hole, J Howard (2015) Experiment-theory comparison for low frequency BAE modes in the strongly shaped H-1NF stellarator. *Plasma Phys. Control. Fusion* **57** 095011
6. **J Bertram** and R C Dewar (2015) Combining mechanism and drift in community ecology: a novel statistical mechanics approach *Theor. Ecol.* **8** 419 https://doi.org/10.1007/s12080-015-0259-7
7. **J Bertram** (2015) Maximum kinetic energy dissipation and the stability of turbulent Poiseuille flow. *J. Fluid Mech.* **767** 342 https://doi.org/10.1017/jfm.2015.65
8. **J Bertram** (2014) Maximum entropy models of ecosystem functioning. *AIP Proceedings MaxEnt 2013* https://doi.org/10.1063/1.4903722
9. **J Bertram** and R C Dewar (2013) Statistical patterns in tropical tree cover explained by the different

water demand of individual trees and grasses. *Ecology* **94** 2138. https://doi.org/10.1890/13-0379.1

10. **J Bertram**, B D Blackwell and M J Hole (2012) Ideal-magnetohydrodynamic theory of low-frequency Alfvén waves in the H-1 Heliac. *Plasma Phys. Control. Fusion* **54** 055009 https://doi.org/10.1088/0741-3335/54/5/055009
11. **J Bertram**, M J Hole, D G Pretty, B D Blackwell and R L Dewar (2011) A reduced global Alfvén eigenmodes model for Mirnov array data on the H-1 NF Heliac. *Plasma Phys. Control. Fusion* **53** 085023 https://doi.org/10.1088/0741-3335/53/8/085023
12. M J Hole, G von Nessi, **J Bertram**, J. Svensson, L. C. Appel, B. D. Blackwell, R. L. Dewar and J. Howard (2010) Model Data Fusion: developing Bayesian inversion to constrain equilibrium and mode structure. *J. Plasma Fusion Res.* **9** 479

*advised student

Conferences and Workshops

1. "Density-dependent selection and limits of relative fitness" (Talk) Evolution (Montpellier, 2018)
2. "Reversal of dominance is a powerful stabilizer of polymorphism in fluctuating environments, but boom-bust cycles and storage are more likely to stabilize many loci of large effect" Population, Evolutionary and Quantitative Genetics (Madison, 2018)
3. "Density-dependent selection and limits of relative fitness" (Talk) Arizona Population Genetic Group (Tucson, 2018)
4. "Feedbacks can drive large fluctuations in adaptation rates when sex is optional" (Talk) *Mathematical Modeling and Analysis of Populations in Biological Systems* (Tucson, 2017)
5. "Contrast between selection on fecundity versus interference" (Talk) *Evolution 2016* (Austin, 2016)
6. "Modelling long-term adaptation and extinction" Microbial Population Biology Gordon Conference (2015)
7. "A population-genetic model of long-term adaptation and extinction" (Talk) *Mathematical Models in Ecology and Evolution 2015* (Paris, 2015)
8. "Statistical stability arguments for maximum kinetic energy dissipation" (Talk) *Mathematics of the Fluid Earth* (Newton Institute, Cambridge, UK, November 2013)
9. "Maximum Entropy Models of Ecosystem Functioning" *MaxEnt 2013* (Canberra, December 2013)
10. *Frontiers in Macroecology Workshop* (UC, Berkeley, January 2013)
11. "A reduced global Alfvén eigenmodes model for Mirnov array data on the H-1 NF Heliac." EPS Plasma Physics (Dublin 2010)

Research supervision

Undergraduate research students:

Austin Fritzke (Primary supervisor, Spring 2015)
Jasmin Templin (Primary supervisor, Spring 2015 – Spring 2017)
Madison Delmoe (Primary supervisor, Fall 2017 – Spring 2018)

PhD students:

Kevin Gomez (Co-advisor, Fall 2015 – present)

Teaching

2016	Co-developer and instructor of an active-learning-based mathematical modelling course, University of Arizona
2012	Teaching assistant, introductory physics, Australian National University
2010	Teaching assistant, introductory mathematics, Australian National University

Awards

Cambridge Philosophical Society Bursary to visit the Newton Institute, Cambridge University (2013)
Australian National University Graduate Scholarship (Australian National University 2009-2014)
Crompton Travel Scholarship Award (Australian National University, 2010)

Service

1. Regular editor of scientific Wikipedia pages to add content and improve scientific accuracy https://en.wikipedia.org/wiki/Special:Contributions/Jasonbertram.
2. Organizer of annual Wikipedia Edit-a-thons in the Department of Ecology and Evolution at the University of Arizona. Significant improvement to many pages across evolution and ecology.
3. Contributing author to University of Arizona postdoctoral guide
4. Reviewer for *Evolution*, *Genetics*, *BioScience, Phil. Trans. B*

References

1. Prof. Joanna Masel
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2. Prof. Roderick Dewar
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   Australian National University
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3. Prof. Joachim Hermisson
   Faculty of Mathematics
   University of Vienna
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