

Jaime Ashander, Ph.D.

Land, Water, and Nature Program
Resources for the Future (RFF)
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Summary

Theoretical Ecologist seeking to understand the consequences of complex dynamics across human-influenced environments from seas to mountains to deserts. **Environmental Data Scientist** developing computational, mathematical and statistical methods to inform management and decision-making in socio-environmental systems. **Mentor** helping others to learn tools and workflows to improve generation of knowledge and stewardship of data.

Education

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|---------------------------------|---------------------|-------------|
| University of California, Davis | Population Biology | Ph.D., 2016 |
| University of Alberta | Applied Mathematics | M.Sc., 2010 |
| Stanford University | Physics | B.Sc., 2004 |

Appointments

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|----------------------|----------------------------------|-----------|
| Postdoctoral Fellow | Resources for the Future (RFF) | 2018– |
| Certified Instructor | Data & Software Carpentry | 2016– |
| Postdoctoral Scholar | UCLA / University of Oregon | 2016–2018 |
| Affiliate | Data Science Institute, UC Davis | 2015–2018 |

Peer-reviewed Publications (h-index: 6; citations: 120)

9. **Ashander, J.**, L. Thompson, J. N. Sanchirico, M. L. Baskett. (2019) Optimal investment to enable evolutionary rescue. *Theoretical Ecology* doi: [10.1007/s12080-019-0413-8](https://doi.org/10.1007/s12080-019-0413-8).
8. Chmura, H., H. Kharouba, **J. Ashander**, S. Ehlman, E. Rivest, L. Yang. (2019) The mechanisms of phenology: the patterns and processes of phenological shifts. *Ecological Monographs* doi: [10.1002/ecm.1337](https://doi.org/10.1002/ecm.1337).
7. Kelleher, J., K. R. Thornton, **J. Ashander**, P. L. Ralph. (2018) Efficient pedigree recording for fast population genetics simulation. *PLoS Computational Biology* 14(11):e1006581 doi: [10.1371/journal.pcbi.1006581](https://doi.org/10.1371/journal.pcbi.1006581).
6. (Kreitzman, M., **Ashander, J.**),* A. Bateman, J. Driscoll, M.A. Lewis, K. Chan, M. Krkošek. (2018) Wild salmon sustain the effectiveness of parasite control on salmon farms: conservation implications from an evolutionary ecosystem service. *Conservation Letters* 11(2):e12395 doi: [10.1111/conl.12395](https://doi.org/10.1111/conl.12395).
() *denotes co-equal first authorship.
5. Chevin, L.-M., O. Cotto, **J. Ashander**. (2017) Stochastic evolutionary demography under a fluctuating optimum phenotype. *The American Naturalist* 190(6) doi: [10.1086/694121](https://doi.org/10.1086/694121).
4. **Ashander, J.**, L.-M. Chevin, M. L. Baskett. (2016) Predicting evolutionary rescue via evolving plasticity in stochastic environments. *Proceedings of the Royal Society, B* 283:1839-1849 doi: [10.1098/rspb.2016.1690](https://doi.org/10.1098/rspb.2016.1690).
3. Meek, M., C. Wells, K. Tomalty, **J. Ashander**, E. Cole, D. Gille, B. Putman, J. Rose, M. Savoca, L. Yamane, J. Hull, D. Rogers, E.B. Rosenblum, J.F. Shogren, R. Swaisgood, B. May. (2015) Overcoming

- the fear of failure to improve the conservation of extremely small populations. *Biological Conservation* 184:209-217 doi: [10.1016/j.biocon.2015.01.025](https://doi.org/10.1016/j.biocon.2015.01.025).
2. Krkošek, M., **J. Ashander**, L. Neil Frazer, M.A. Lewis. (2013) Allee effect from parasite spill-back. *The American Naturalist* 182:640-652 doi: [10.1086/673238](https://doi.org/10.1086/673238).
 1. **Ashander, J.**, M. Krkošek, M.A. Lewis. (2012) Aquaculture-induced changes to dynamics of a migratory host and specialist parasite: a case study of pink salmon and sea lice. *Theoretical Ecology* 5:231-252 doi: [10.1007/s12080-011-0122-4](https://doi.org/10.1007/s12080-011-0122-4).

Pre-prints

Ashander, J., E. McCartney-Melstad, P. L. Ralph, H.B. Shaffer. Demographic inference in a spatially-explicit ecological model from genomic data: a proof of concept for the Mojave Desert Tortoise. *In revision at Molecular Ecology Resources* (preprint bioRxiv doi: [10.1101/354530](https://doi.org/10.1101/354530)).

Grants

NSF CNH2-L (*in revision*) 2019
Co-PI with Laura E. Dee (PI; CU Boulder), S. Allesina (Chicago), R. Epanchin-Niell (RFF), K. Kroetz (ASU). *Managing Widespread Species Invasions in Social-Environmental Systems with Feedbacks* (\$1,594,795 USD *total costs*).

Bureau of Reclamation (*declined*) 2016
Delta Science Program Postdoctoral Fellowship with S. Carlson (Berkeley) and R. Johnson (NOAA) for *Population Consequences of Life-history Variability and Water Management in Central Valley Chinook* (\$158,188 USD *total costs*).

UC Davis–**The Nature Conservancy, CA** 2015
Sub-contract with M. Clapp and C. Whitesell to analyze 23-year dataset of bird captures in two Sierra Nevada meadows and determine effect of restoration. Sub-agreement under Contract No. 03122014-2096 (\$3,000 USD *direct costs*).

NSF REACH IGERT Internship Grant 2014
Two-month internship with Luis-Miguel Chevin at Centre d'Ecologie Fonctionnelle & Evolutive (CEFE) at Centre National de la Recherche Scientifique (CNRS). NSF Grant No. DGE-0801430 (\$7,688 USD *direct costs*).

NSF REACH IGERT Trainee & Bridge RA 2010-2012, 2013
Interdisciplinary Graduate Education and Research Traineeship (IGERT) in Responding to Rapid Environmental Change (REACH), UC Davis. NSF Grant No. DGE-0801430 (\$90,000 USD *direct costs*).

Software

Kelleher, J., P. L. Ralph, D. Nelson, **J. Ashander**, ... and 13 others. (2018) `msprime` An efficient coalescent simulator for modern data sets. <https://github.com/tskit-dev/msprime> – Language: Python and C.

Ashander, J., P. L. Ralph. (2017) `ftprime` Forward-time simulation of the `msprime` data structure. doi: [10.5281/zenodo.831698](https://doi.org/10.5281/zenodo.831698) – Language: Python.

Ashander, J., L.-M. Chevin. (2016) *phenoecosim* Quantitative genetic simulations for eco-evolutionary dynamics. doi: [10.5281/zenodo.56416](https://doi.org/10.5281/zenodo.56416) – Language: R and C++.

Technical Reports

Shaffer, B., **J. Ashander**, E. McCartney-Melstad, P. Ralph. (2019) Desert Tortoise PVA Final Report, 2018. Technical Report submitted 2019-04-26 to *US Fish and Wildlife Service* (unpublished).

Ashander, J., M. Clapp, C. Whitesell, R. Hijmans. (2015) Effect of restoration on breeding songbirds at two Sierra Nevada meadows: an impact analysis using generalized linear mixed models. Technical Report submitted to *The Nature Conservancy CA Chapter* (unpublished).

Ashander, J. (2014) Response of fish biota to dams in the Lower Colorado River basin: Empirical findings and utility for predicting responses to climate and water use change. Final Report to *Ecogeomorphology Field Class* (Preprint: <https://dx.doi.org/10.6084/m9.figshare.1584652>).

Teaching and Curriculum Development

Quantitative Workshops (Instructor)

2019 Data Carpentry – Geospatial with R – “[Geospatial Workshop @ GWU](#)” *George Washington University*, Washington, DC.

2019 Reproducible workflows with R – “Data & Code Management for Easier, Better Research” *RFF Junior Seminar Series*, Washington, DC.

2017 Data Carpentry with R – “[Data Carpentry Workshop for QuARRC \(Quality Assurance Research Reproducibility Collaborative\)](#)” *UMN Department of Veterinary Medicine, University of Minnesota*, Minneapolis, MN.

2017 Software Carpentry with R – “[Software Carpentry Workshop for California State Water Science Agencies](#)” *Delta Science Program*, Sacramento, CA.

2015 Applied statistics tutorial with R – “[Visualizing fits, inference, implications of \(G\)LMMs](#)” *R Users Group*, Davis, CA.

University Courses (TA / Lab Leader)

2016 Introduction to Evolution and Ecology (UC Davis BIS 2B lab; also 2014)

2015 Ecology (UC Davis EVE 101 discussion; also 2014)

2013 Population Dynamics and Estimation (UC Davis WFC 122 lab)

2012 Linear Algebra for Engineering Students (U Alberta MATH 102 lab; also 2011).

2010 Introduction to Applied Statistics (U Alberta STAT 100 lab).

Software/Data Carpentry Curricula Contributions

Wilson, G., Silva, R., ... **Ashander, J.,** ... *et al.* (2017, April). SQL Ecology Lesson v2017.04.0. *Data Carpentry*. <http://doi.org/10.5281/zenodo.570049>.

Michonneau, F., Teal, T., ... **Ashander, J.,** ... *et al.* (2017, April). R Ecology Lesson v2017.04.3. *Data Carpentry*. <http://doi.org/10.5281/zenodo.569875>.

Allen, J., Arnold, J., ... **Ashander, J.,** ... *et al.* (2017, February). R for Reproducible Scientific Analysis. *Software Carpentry*. <http://doi.org/10.5281/zenodo.278224>.

Selected Academic Presentations (out of > 14 including 11 at national or international conferences)

- 2019 Ecological forecasts for integrated socio-environmental systems. *Ecological Forecasting Initiative (EFI) Conference*, Washington, DC, USA.
- 2017 Using genomic data to inform population viability in a long-lived endangered vertebrate. *Evolution*, Portland, Oregon, USA.
- 2016 Predicting rescue via evolving plasticity in stochastic environments. *Conference of the American Society of Naturalists (ASN)*, Asilomar, California, USA.
- 2015 Bioeconomic optimization of interventions to aid evolutionary rescue of a population threatened by environmental change. *27th International Congress for Conservation Biology (ICCB)*, Montpellier, France.
- 2014 Demographic limits to the role of plasticity in adaptation to environmental shifts. *Ecological Society of America (ESA)*, Sacramento, CA, USA.
- 2014 Estimating plastic and evolutionary change under density-dependence from time series. *International Conference on Statistical Ecology*, Montpellier, France.
- 2013 Understanding the joint effects of plastic and evolutionary change on demography from time series. *Ecological Society of America (ESA)*, Minneapolis, MN, USA. (**Lotka award**)
- 2011 Aquaculture-induced changes to dynamics of a migratory host and specialist parasite: a case study of pink salmon and sea lice. *American Fisheries Society (AFS)*, Seattle, WA, USA.

Honors & Awards

- Second Place Poster* 2014
Student Awards, International Statistical Ecology Conference
- Lotka Award* 2013
Best Student Poster, Ecological Society of America—Theory Section.

Service

- Reviewer* 2014–
15+ reviews for journals including *Theoretical Ecology*, *The American Naturalist*, *Journal of Animal Ecology*, *Conservation Letters*, *Evolution*, *Ecology*, *Ecological Modelling*
- Working Groups / Workshops* 2010–
- 2019 *Socio-Environmental Networks to Improve the Management of Socio-Environmental Systems*, National Socio-Environmental Synthesis Center (SESYNC), Annapolis, MD, USA (*co-organizer*).
- 2019 *Advancing Integrated Process-Based Modeling of Complex Socio-Environmental Systems*, National Socio-Environmental Synthesis Center (SESYNC), Annapolis, MD, USA (*co-organizer*).
- 2013 *Rapid Evolution and Sustainability* [Mathematical Biology Institute \(MBI\)](#) Ohio, USA. (*participant*).
- 2012 *Multiple Goals in Floodplain Restoration: A Historical and Ecological Perspective* Capstone Workshop for [REACH IGERT Collaborative Project](#), UC Davis, (*co-organizer* 2012).
- 2012 *The Conservation of Extremely Small Populations* Symposium, UC Davis (*co-organizer*).
- 2010 *Hierarchical Modeling in Ecology* CPB Workshop, UC Davis. (*co-organizer*).

Volunteer Mentor

2010–2014

Student and Landowner Education & Watershed Stewardship (SLEWS) Program,
Center for Land-Based Learning.