

# MATTHEW M. OSMOND

Postdoctoral Fellow

Center for Population Biology

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## Academic Positions

**Prof.** Department of Ecology & Evolutionary Biology, University of Toronto 2021-  
**PDF** Center for Population Biology & Banting Fellow, UC Davis 2018-2020  
Supervisors: Graham Coop, Sebastian Schreiber, Andrew Whitehead

## Education

**PhD** Zoology, University of British Columbia 2013 - 2018  
Title: *Adaptive challenges: fitness valleys and evolutionary rescue*  
Supervisor: Sarah Otto  
Committee: Amy Angert, Michael Doebeli, Michael Whitlock

**MSc** Biology, McGill University 2010 - 2012  
Title: *Eco-evolutionary rescue: an adaptive dynamic analysis*  
Supervisor: Claire de Mazancourt  
Committee: Michel Loreau, Frédéric Guichard

**BSc** Mathematics & Biology, Queen's University 2004 - 2008  
Honours title: *The meaning of female coloration in the American redstart*  
Honours supervisor: Laurene Ratcliffe (and Matt Reudink)  
Committee: Paul Martin

## Selected Awards and Fellowships

2018-2021	Center for Population Biology Postdoctoral Fellowship, UC Davis	\$125,000
2018-2020	Banting Postdoctoral Fellowship	\$140,000
2018-2020	NSERC Postdoctoral Fellowship (declined)	\$90,000
2013-2017	Alexander Graham Bell Canada Graduate Scholarship (CGS-D), NSERC	\$105,000
2011-2012	Alexander Graham Bell Canada Graduate Scholarship (CGS-M), NSERC	\$17,500
2008	Undergraduate Student Research Award (USRA), NSERC (declined)	\$4,500
2007	Undergraduate Student Research Award (USRA), NSERC	\$4,500

## Publications

10. Thompson K, **Osmond M**, Schluter D. 2019. Parallel genetic evolution and speciation from standing variation. *Evolution Letters* 3:129-141.
9. Edwards K, Kremer C, Miller E, **Osmond M**, Litchman E, Klausmeier C. 2018. Evolutionary stable communities: a framework for understanding the role of trait evolution in the maintenance of diversity. *Ecology Letters* 21:1853-1868.
8. Scott M\*, **Osmond M\***, Otto S. 2018. Haploid selection, sex ratio bias, and transitions between sex-determining systems. *PLoS Biology* 16:e2005609. [\* joint first authors]
7. **Osmond M**, Klausmeier C. 2017. An evolutionary tipping point in a changing environment. *Evolution* 71:2930-2941.
6. **Osmond M**, Otto S, Klausmeier C. 2017. When predators help prey adapt and persist in a changing environment. *The American Naturalist* 190:83-98. [F1000Prime Recommended]
5. **Osmond M**, Barbour M, Bernhardt J, Pennell M, Sunday J, O'Connor M. 2017. Warming induced changes to body size stabilize consumer-resource dynamics. *The American Naturalist* 189:718-725.
4. Toews D, Delmore K, **Osmond M**, Taylor P, Irwin D. 2017. Migratory orientation in a narrow avian hybrid zone. *PeerJ* 5:e3201.
3. **Osmond M**, Otto S. 2015. Fitness-valley crossing with generalized parent-offspring transmission. *Theoretical Population Biology* 105:1-16.
2. **Osmond M**, Reudink M, Marra P, Germain R, Nocera J, Boag P, Ratcliffe L. 2013. Relationships between carotenoid-based female plumage and age, reproduction, and mate colour in the American Redstart. *Canadian Journal of Zoology* 91:589-595.
1. **Osmond M**, de Mazancourt C. 2013. How competition affects evolutionary rescue. *Philosophical Transactions of the Royal Society B: Biological Sciences* 368:20120085.

## Additional Research Experience

2017	<b>Student</b> Evolutionary Quantitative Genetics workshop (J. Felsenstein <i>et al.</i> )
2016	<b>Visiting researcher</b> University of Montpellier and CNRS (O. Ronce, T. Lenormand)
2015	<b>Student</b> Complex Systems Summer School (Santa Fe Institute)
2013	<b>Student</b> Metacommunities summer school (M. Leibold, C. Klausmeier)
2013	<b>Researcher</b> Michigan State University (C. Klausmeier, E. Litchman)
2012-2014	<b>Visiting researcher</b> University of Helsinki (S. Geritz, E. Kisdi)
2012	<b>Research assistant</b> University of British Columbia (D. Irwin)
2011	<b>Student</b> Adaptive Dynamics summer school (S. Geritz, C. Klausmeier)
2010-2012	<b>Member</b> Eco-evolutionary working group (A. Gonzalez <i>et al.</i> )
2010	<b>Research assistant</b> USGS (J. Piatt) and University of Victoria (A. Burger)
2009-2010	<b>MSc</b> (withdrew) Lakehead University (A. Mallik)

## Community Involvement

**Referee** *The American Naturalist* (8), *Evolution* (2), *Genetics* (2), *Journal of Theoretical Biology* (2), *Theoretical Population Biology* (2), *Biological Journal of the Linnean Society* (1), *Ecology* (1), *Ecology Letters* (1), *eLife* (1), *Frontiers in Ecology and Evolution* (1), *Global Change Biology* (1), *Philosophical Transactions of the Royal Society B* (1), *PLoS Computational Biology* (0.5), *Journal of Statistical Mechanics* (1), *Science* (0.5)

2018-        **Organizer** Center for Population Biology Seminar & Social, UC Davis  
 2017-2018 **Secretary** Zoology Graduate Student Society, University of British Columbia  
 2017        **Volunteer** Eco-Evo Retreat, Squamish, British Columbia  
 2016-2017 **Organizer** Let's Assume (evol. theory discussion group), University of British Columbia  
 2014        **Organizer** Vancouver Evolution Group (regional journal club), Vancouver  
 2010-2012 **Organizer** Eco-Theoretic Cafe (mathematical ecology discussion group), McGill University  
 2007        **Volunteer** Society of Canadian Ornithologists meeting, Queen's University

## Teaching Experience/Training

2019        **Participant** Teaching Toolkit for Diverse Learners, San Francisco State University  
 2014, 2016, 2017 **Marker** Population Genetics, University of British Columbia  
 2011        **Mentor** for work-study undergraduate student, McGill University  
 2010        **Teaching Assistant** Math Models in Biology, McGill University  
 2010        **Teaching Assistant** Organismal Biology, McGill University  
 2010        **Teaching Assistant** Evolutionary Concepts, Lakehead University  
 2009        **Teaching Assistant** Ecology, Lakehead University

## Invited Seminars

**Osmond M.** 2018. Evolutionary rescue: adaptation, genetics, demography. University of Toronto, Toronto, Canada.  
**Osmond M**, Martin G, Ronce O, Otto S. 2018. Evolutionary rescue. Mathematical Biology Seminar, University of British Columbia, Vancouver, Canada.  
**Osmond M.** 2018. Evolutionary rescue: integrating ecological and evolutionary theory. Center for Population Biology, University of California - Davis, Davis, USA.  
**Osmond M**, Martin G, Otto S, Ronce O. 2016. Genetic signatures of evolutionary rescue with sex. Stochastic Models for the Inference of Life Evolution group, College de France, Paris, France.  
**Osmond M**, Otto S, Klausmeier C. 2016. When predators help prey adapt and persist. Institute National de la Recherche Agronomique, Montpellier, France.  
**Osmond M**, Otto S. 2016. Subcritical adaptation: fitness valleys and evolutionary rescue. Stochastic and Deterministic Models for Evolutionary Biology workshop, Oaxaca, Mexico.  
**Osmond M**, de Mazancourt C. 2013. Using adaptive dynamics to predict evolution and extinction in changing environments. Pacific Institute for the Mathematical Sciences, University of British Columbia, Vancouver, Canada.  
**Osmond M**, de Mazancourt C. 2011. To adapt and persist in a changing environment. Mick Follows lab, Massachusetts Institute of Technology, Boston, USA.

## Conference Presentations

- Osmond M**, Coop G. 2019. Genetic signatures of evolutionary rescue. Evolution, Providence, USA.
- Osmond M**, Coop G. 2019. Genetic signatures of evolutionary rescue. Bay Area Population Genetics, Stanford, USA.
- Osmond M**, Martin G, Ronce O, Otto S. 2018. Genetic paths to evolutionary rescue. Population and Evolutionary Quantitative Genetics, Madison, USA. (poster) **\*Poster award**
- Osmond M**, Martin G, Ronce O, Otto S. 2018. Predicting the genetic paths evolutionary rescue will take. Evo-WIBO, Port Townsend, USA. **\*Talk award**
- Osmond M**, Scott M, Otto S. 2017. Gametic competition, meiotic drive, sex ratio selection, and transitions between sex determination systems. Evolution, Portland, USA.
- Osmond M**, Klausmeier C. 2017. Evolutionary tipping points in changing environments. Canadian Society for Ecology and Evolution, Victoria, Canada.
- Osmond M**, Otto S, Klausmeier C. 2016. When predators help prey adapt and persist. Evolution, Austin, USA.
- Osmond M**, Klausmeier C. 2016. When predators help prey adapt and persist. Evo-WIBO, Port Townsend, USA.
- Osmond M**, Otto S. 2015. Crossing fitness-valleys without the help of Mendel: extending theory. Canadian Society for Ecology and Evolution, Saskatoon, Canada. **\*Talk award**
- Osmond M**, Otto S. 2014. Crossing fitness-valleys without the help of Mendel. Evolution, Raleigh, USA. (poster)
- Osmond M**, Otto S. 2014. Crossing fitness-valleys without the help of Mendel. Evo-WIBO, Port Townsend, USA. (poster)
- Osmond M**, Otto S. 2014. Crossing fitness-valleys without the help of Mendel. Evolution of Mating Systems, University of Jyväskylä, Jyväskylä, Finland. (poster)
- Osmond M**, Weigang H. 2012. Shorter generation times, slower evolution? Impact of life-history on evolution. Swedish Meeting on Mathematics in Biology, Lund, Sweden. (poster)
- Osmond M**, Weigang H. 2012. How life-history affects the rate of evolution. Biomathematics Day, University of Helsinki, Helsinki, Finland.
- Osmond M**, de Mazancourt C. 2012. How competition affects evolutionary rescue. Joint Congress on Evolutionary Biology, Ottawa, Canada.
- Osmond M**, de Mazancourt C. 2011. Evolutionary rescue and competition. Quebec Centre for Biodiversity Science Symposium, Montreal, Canada.
- Osmond M**, de Mazancourt C. 2011. To adapt and persist in a changing environment. Canadian Society for Ecology and Evolution, Banff, Canada. (poster)