

# Matthew E. Wolak

## Curriculum Vitae

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### PROFESSIONAL EXPERIENCE

- 2013- **Postdoctoral Research Fellow in Evolutionary Quantitative Genetics:**  
University of Aberdeen  
Advisor: Jane Reid  
Project: Quantitative genetics of polyandry, inbreeding, and fitness in wild song sparrows

### EDUCATION

- 2013 **Ph.D. in Evolution, Ecology, and Organismal Biology:**  
University of California, Riverside  
Advisor: Daphne Fairbairn
- 2007 **B.Sc. in Environmental Science (with honors) and Biology (double major):**  
College of William and Mary  
Advisor: Randy Chambers

### ACADEMIC HONORS AND FELLOWSHIPS

- 2012 University of California Riverside, Graduate Dean's Dissertation Year Program Fellowship
- 2010 University of California Riverside, Outstanding Evolution, Ecology, and Organismal Biology Program Service Award
- 2008 National Science Foundation Graduate Research Fellowship
- 2007 University of California Riverside Chancellor's Distinguished Fellowship

### RESEARCH GRANTS AND AWARDS

- 2012 Genetics Society of America, DeLill Nasser Career Development Travel Award (\$1,000)
- 2011 University of California Riverside, Department of Biology Newell Award (\$800)
- 2011 American Society of Naturalists Travel Award (\$500)
- 2011 National Science Foundation Doctoral Dissertation Improvement Grant (\$14,545)
- 2010 University of California Riverside Graduate Dean's Dissertation Research Grant (\$800)

- 2010 University of California Riverside, Department of Biology Newell Award (\$250)
- 2006 National Science Foundation University Biomath Initiative Research Grant (\$3,500)
- 2005 National Science Foundation University Biomath Initiative Research Grant (\$3,000)

## PUBLICATIONS

16. **Wolak, ME** & Reid, JM (in press) Accounting for genetic differences among unknown parents in microevolutionary studies: How to include genetic groups in quantitative genetic animal models. *Journal of Animal Ecology*.
15. Charmantier A, **ME Wolak**, A Grégoire, A Fargevieille, & C Doutrelant (2016) Colour ornamentation in the blue tit: quantitative genetic (co)variances across sexes. *Heredity*.
14. Germain RR, **ME Wolak**, P Arcese, S Losdat, & JM Reid (2016) Direct and indirect genetic and fine-scale location effects on breeding date in song sparrows. *Journal of Animal Ecology* 85:1613-1624.
13. Reid JM, G Bocedi, P Nietlisbach, AB Duthie, **ME Wolak**, EA Gow, & P Arcese (2016) Variation in parent-offspring kinship in socially monogamous systems with extra-pair reproduction and inbreeding. *Evolution* 70:1512-1529.
12. **Wolak ME** & JM Reid (2016) Is pairing with a relative heritable? Estimating female and male genetic contributions to the degree of biparental inbreeding in song sparrows (*Melospiza melodia*). *American Naturalist* 187:736-752.
11. Reid JM, P Arcese, G Bocedi, AB Duthie, **ME Wolak**, & LF Keller (2015) Resolving the conundrum of inbreeding depression but no inbreeding avoidance: estimating sex-specific selection on inbreeding by song sparrows (*Melospiza melodia*). *Evolution* 69:2846-2861.
10. Careau V, **ME Wolak**, PA Carter, & T Garland Jr (2015) Evolution of the additive genetic variance-covariance matrix under continuous directional selection on a complex behavioural phenotype. *Proceedings of the Royal Society of London B* 282:20151119.
9. Reid JM, AB Duthie, **ME Wolak**, & P Arcese (2015) Demographic mechanisms of inbreeding adjustment through extra-pair reproduction. *Journal of Animal Ecology* 84:1029-1040.
8. Hoeck PEA, **ME Wolak**, RA Switzer, CM Kuehler, & AA Lieberman (2015) Effects of inbreeding and parental incubation on captive breeding success in Hawaiian crows. *Biological Conservation* 184:357-364.
7. **Wolak ME**, DA Roff, & DJ Fairbairn (2015) Are we underestimating the genetic variances of dimorphic traits? *Ecology and Evolution* 5:590-597.
6. Reid JM, P Arcese, LF Keller, RR Germain, AB Duthie, S Losdat, **ME Wolak**, & P Nietlisbach (2015) Quantifying inbreeding avoidance through extra-pair reproduction. *Evolution* 69:59-74.
5. Careau V, **ME Wolak**, PA Carter, & T Garland Jr (2013) Limits to behavioral evolution: the quantitative genetics of a complex trait under directional selection. *Evolution* 67:3102-3119.
4. **Wolak ME** (2012) nadiv: an R package to create relatedness matrices for estimating non-additive genetic variances in animal models. *Methods in Ecology and Evolution* 3:792-796.
3. **Wolak ME**, DJ Fairbairn, & YP Paulsen (2012) Guidelines for Estimating Repeatability. *Methods in Ecology and Evolution* 3:129-137.

2. **Wolak ME**, GW Gilchrist, VA Ruzicka, DM Nally & RM Chambers (2010) A contemporary, sex-limited change in body size of an estuarine turtle in response to commercial fishing. *Conservation Biology* 24:1268-1277.
1. **Wolak ME** (2008) Rensch's rule applies to clinal variation of body size in the Argentine grasshopper *Dichroplus pratensis*: correction of Bidau & Martí. *Annals of the Entomological Society of America* 101:801.

## BOOK CHAPTERS

1. **Wolak ME** & LF Keller (2014) Dominance genetic variance and inbreeding in natural populations. In *Quantitative Genetics in the Wild*, A Charmantier, LEB Kruuk, & D Garant eds. Oxford University Press, pp.104-127.

## SOFTWARE

2. nadiv: (Non)Additive Genetic Relatedness Matrices. R package.  
CRAN - <https://CRAN.R-project.org/package=nadiv>  
GitHub - <https://github.com/matthewwolak/nadiv>
1. ICC: Facilitating Estimation of the Intraclass Correlation Coefficient. R package.  
CRAN - <https://CRAN.R-project.org/package=ICC>  
GitHub - <https://github.com/matthewwolak/ICC>

## MANUSCRIPTS SUBMITTED OR IN REVISION

1. **Wolak ME**, DA Roff, & DJ Fairbairn (*in revision*) The contribution of sex chromosomal additive genetic (co)variation to the phenotypic resemblance between relatives under alternative models of dosage compensation.
2. **Wolak ME**, AJ Wilson, LEB Kruuk, DA Roff, & DJ Fairbairn (*in revision*) Sex chromosome linked genetic variation affects estimates of additive genetic (co)variation.
3. **Wolak ME** & DJ Fairbairn (*in revision*) Intersexual differences in epistasis covary with sexual dimorphism: genetic architecture of population crosses in *Aquarius remigis*.
4. Roff DA, **ME Wolak**, LA Correa, & M Soto-Gamboa (*in review*) The phenotypic correlates and quantitative genetics of masculinization in the rodent, *Octodon degus*. *Heredity*.

## INVITED TALKS

- 2012 X-linked Additive Genetic Variation. Wild Evolution Group Seminar. University of Edinburgh, Scotland, UK

## CONFERENCE PRESENTATIONS

- 2016 Fitness variation in a wild song sparrow (*Melospiza melodia*) population: Quantitative genetic analyses of fitness components. Oral Presentation, Annual Evolution Meeting. Austin, TX, USA.
- 2015 Inherited Inbreeding: Evidence of sex-specific, additive genetic variances in the degree of inbreeding. Oral Presentation, Congress of the European Society for Evolutionary Biology. Lausanne, Switzerland.
- 2014 Is the relatedness between social mates heritable in song sparrows? Oral Presentation, Wild Animal Model Biennial Meeting. Pitlochry, Scotland, UK.
- 2014 Quantitative genetic analyses of inbreeding decisions in the wild. Oral Presentation, Evolution of Mating Systems Workshop. Konnevesi, Finland.
- 2012 X-linked Additive Variance Reduces the Between-Sex Genetic Correlation. Oral Presentation, 1<sup>st</sup> Joint Congress on Evolutionary Biology. Ottawa, Canada.
- 2012 X-linked additive variance reduces the between sex genetic correlation. Poster Presentation, 4<sup>th</sup> International Conference on Quantitative Genetics. Edinburgh, Scotland, UK.
- 2011 Computing the dominance relatedness matrix to estimate dominance variance. Oral Presentation, Wild Animal Model Biennial Meeting. Galleria, Corsica, France.
- 2011 Quantifying the genetic architecture of sexually dimorphic traits from population line crosses of the water strider, *Aquarius remigis*. Oral Presentation, Annual Evolution Meeting. Norman, OK, USA.
- 2010 Rules of thumb for estimating repeatability. Oral Presentation, 4<sup>th</sup> Annual Western Evolutionary Biology Meeting. Irvine, CA, USA.
- 2010 Is there a rule of thumb for estimating repeatability? The effect of variance structure, number of measurements per individual, and number of individuals measured. Poster Presentation, Annual Evolution Meeting. Portland, OR, USA.
- 2010 Evolutionary genetics in metapopulations: elucidating the importance of non-additive genetic effects in population hybrids. Oral Presentation, UC Riverside Evolution, Ecology, and Organismal Biology Gradfest. Riverside, CA, USA.
- 2008 Selection shifts female body size and growth rate in the diamondback terrapin (*Malaclemys terrapin*). Oral Presentation, UC Riverside Evolution, Ecology, and Organismal Biology Gradfest. Riverside, CA, USA.
- 2006 Crab Pot Mortality Exerts a Selection Pressure On a Diamondback Terrapin Population. Oral Presentation, Atlantic Estuarine Research Society Meeting. Baltimore, MD, USA.

## TEACHING Guest Lecturer

### University of Aberdeen, School of Biological Sciences:

Life History Evolution (BI3809): Lecture entitled "Introduction to Quantitative Genetics: part 2" (2016)

Life History Evolution (BI3809): Directed learning exercise in R entitled “Introduction to Quantitative Genetics” (2016)

### **Teaching Assistant**

#### University of California Riverside, Department of Biology:

Evolution (BIOL105): 2 quarters

Evolutionary Ecology of Terrestrial Vertebrates (BIOL163): 1 quarter assistant

Introductory Organismal Biology (BIOL5B): 1 quarter

### **Science Mentor**

#### Journal of Emerging Investigators:

Since 2015 I have provided constructive feedback and served as a reviewer for 4 scientific papers written by 16 middle and high school students.

#### University of California Riverside:

Mentor to 27 undergraduate students conducting work in the water strider laboratory, where 4 of these students worked directly with me for course credit.

Mentor to one student conducting a science fair project through the NASA–UCR–Riverside Unified School District Climate Science Mentor program (2011–2012)

## **PROFESSIONAL SERVICE**

#### Manuscript review:

Proceedings of the Royal Society B (1x), Evolution (3x), Molecular Ecology (2x), Heredity (2x), Biological Journal of the Linnean Society (2x), PloS One (1x), Evolutionary Biology (1x), Australian and New Zealand Journal of Statistics (1x), Psyche (1x).

#### University of Aberdeen:

Co-organized 2014 Wild Animal Model Biennial Meeting in Pitlochry, Scotland.

#### University of California Riverside:

EEOB Graduate Student Association Teaching and Program Committee Representative (2012–2013), Moderator of Biology Graduate Student E-mail Listserver (2011–2013). EEOB Graduate Student Association President (2010–2011), Co-organizer of EEOB seminar series (2008).