

CHRISTINE WHITNEY MILLER

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RESEARCH INTERESTS

Evolution of morphology, function, and behavior. I aim to improve understanding of the role of environmental heterogeneity on the processes and outcomes of evolution. My focus is on the reproductive traits of insects, including the behaviors, ornaments, and weapons of sexual selection. I primarily work with true bugs in the family Coreidae.

EDUCATION

The University of Montana – Missoula

Ph.D, Organismal Biology and Ecology. Advisor: Dr. Douglas J. Emlen.

Dissertation: “Maternal effects and sexual selection in the heliconia bug, *Leptoscelis tricolor*.” Dissertation committee: Drs. Thomas E. Martin, John L. Maron, Erick P. Greene, John H. Christy, and Timothy A. Mousseau. Completion date: August 29, 2007.

Wesleyan University, Middletown, CT

B.A. Biology, May 1998. Research Advisor: Dr. Sonia E. Sultan

HONORS, FELLOWSHIPS, GRANTS, and AWARDS

National Science Foundation, Basic Research to Enable Agricultural Development Program, \$602,487. Pending. Title: Engineering antioxidants to improve the sterile insect technique, a critical tool for smallholder agriculture in the developing world. PIs: Daniel Hahn, UF; Alfred Handler, USDA; **Christine W. Miller, UF.**

National Science Foundation, Behavioral Systems Program, \$325,394. Awarded September 2009 – September 2012. Title: Selection in heterogeneous environments: a multi-trait perspective. PI: Christine W. Miller. Major Collaborator: Allen J. Moore.

Entomological Society of America Student and Young Professional Award, 2008.

National Evolutionary Synthesis Center (NESCent) Postdoctoral Fellowship, 2007-2009 (declined).

Bertha Morton Graduate Student Achievement Award, \$2000, 2007.

Outstanding Presentation Award, University of Montana Graduate Student and Faculty Research Conference, 2005.

National Science Foundation Research Experience for Undergraduates, achieved funding for an undergraduate intern to assist my research in Panama, \$6000, 2005.

Smithsonian Tropical Research Institute, Short Term Fellowship, \$1000, 2005.

Smithsonian Tropical Research Institute, Ernst Mayr Fellowship, \$4850, 2004.

Smithsonian Tropical Research Institute, Research Award, \$1138, 2004.

Summer Institute in Statistical Genetics, Tuition Scholarship, \$1650, 2004.

BRIN Program of the National Center for Research Resources, Travel Award for training in statistical genetics, \$1370, 2004.

NSF Graduate Research Fellowship Program Award Recipient, \$121,500. 2003.
Honorable mention: 2000, 2001.

Smithsonian Graduate Student Fellowship, \$3700, 2003.

Sigma Xi Grant-in-Aid of Research, \$300, 2003.

NSF EPSCoR Graduate Fellowship, 2001-2003.

PEER-REVIEWED PUBLICATIONS

Gillespie, S. R., M.S. Tudor, A.J. Moore, and **C.W. Miller**. *In Review*. Mate discrimination varies by environmental context. *Proceedings of the National Academy of Sciences*. Manuscript written with undergraduate first author.

Procter, D.S. Moore, A.J. and Miller, C.W. *In Review*. The form of sexual selection arising from male-male competition depends on the presence of females in the social environment. *Journal of Evolutionary Biology*.

Addesso, K.M., K.A. Short, A.J. Moore, and **C.W. Miller**. *In Review*. Male attractiveness to females is dependent on both current environmental context and early development in leaf-footed cactus bugs. *Ecological Entomology*.

Miller, C.W. *Accepted*. Sexual selection: Male-male competition. In: J. Losos, Editor, **The Princeton Guide to Evolution**. Princeton University Press. Invited chapter.

Miller, C.W., R.J. Fletcher, Jr., B.D. Anderson, and L.D. Nguyen. *Accepted*. Natal social environment affects habitat selection later in life. *Animal Behaviour*. Manuscript written with undergraduate students.

Austin, J.D., **C.W. Miller**, and R.J. Fletcher, Jr. *In press*. What role can natural selection and phenotypic plasticity play in wildlife adaptation to climate change? In: J. Brodie, E. Post, J. Berger, and D. Doak, Editors, **Conserving wildlife populations in a changing climate**. University of Chicago Press.

Miller, C.W. and D.J. Emlen. 2010. Dynamic effects of oviposition site on offspring sexually-selected traits and scaling relationships. *Evolutionary Ecology* 24: 375-390.

Miller, C.W. and D.J. Emlen. 2010. Across and within population differences in the scaling relationship of a sexually-selected trait. *Annals of the Entomological Society of America* 103: 209-215.

Miller, C.W. and S.D. Hollander. 2010. Predation on heliconia bugs, *Leptoscelis tricolor* (Hemiptera: Coreidae): examining the influences of crypsis and predator color preferences. *Canadian Journal of Zoology* 88: 122-128.

Nageon de Lestang, F. and **C.W. Miller**. 2009. Effects of diet on the development and survivorship of *Narnia femorata* nymphs (Hemiptera: Coreidae). *Florida Entomologist* 92: 511-512. Manuscript written with undergraduate as first author.

Miller, C.W. 2008. Seasonal effects on offspring reproductive traits through maternal oviposition behavior. *Behavioral Ecology* 19: 1297-1304.

Fletcher, R.J., Jr., and **Miller, C.W.** 2008. The type and timing of social information alters offspring production. *Biology Letters* 4: 482-485.

Miller, C.W. and A.J. Moore. 2007. A potential resolution to the lek paradox through indirect genetic effects. *Proceedings of the Royal Society (London) B*. 274: 1279-1286.

Fletcher, R.J. and **C.W. Miller**. 2006. On the evolution of hidden leks and implications for reproductive and habitat selection behaviours. *Animal Behaviour* 71: 1247-1251.

TEACHING and LEADERSHIP EXPERIENCE

Principles of Entomology , Undergraduate/Graduate course	2008-present
Integration of Research and Classroom Education Undergraduate Research Course	Spring 2012
Behavioral Plasticity and Evolution Graduate seminar	Spring 2012
Continuing Teaching Education UF CALS Teacher's College, participant and graduate	Fall 2008
Sexual selection , University of Florida Graduate seminar	Spring 2008
Advances in Evolution , University of Montana Graduate/Undergraduate course	Fall 2006

MENTORING and OUTREACH

Graduate Students in my laboratory

Ummat Somjee (M.S. student, started September 2011)

Wendy Helmey-Hartman (Ph.D. student, started September 2009)

Scarlett Tudor (Ph.D. student, Co-advised with UF Biology Dept., 2008 – present)

Daniel Sasson (Ph.D. student, advised in UF Biology. One dissertation chapter is being conducted under my mentorship, 2008 - present)

Visiting International Students in my laboratory

Duncan Procter (M.Sc. student, visiting from University of Exeter, 2010)

Grant McDonald (Ph.D. student, visiting from Oxford University, 2010)

Katherine Short (M.Sc. student, visiting from University of Exeter, 2011)

Iain Gordon (M.Sc. student, visiting from University of Exeter, 2011)

Aitor Alvarez-Fernandez (M.Sc. student, visiting from University of Exeter, 2011)

University of Florida

Undergraduate Mentor. I actively seek out talented undergraduates to assist in research. I am currently advising seven undergraduates in my laboratory. Students have the opportunity to prepare manuscripts for publication and present work at conferences.

Visiting international graduate students (see above) mentor U.F. undergraduates, creating an exciting, international learning experience for all involved (January 2008 – present).

Undergraduate author papers based on work in my laboratory include the following (see also Peer-Reviewed Publications section):

Maxwell, C.W. *In review*. Signal detection in the leaf-footed cactus bugs, *Chelinidea vittiger*, and its implications with landscape connectivity. Mentors: **C.W. Miller & R.J. Fletcher, Jr.** *University of Florida Journal of Undergraduate Research*.

Nageon de Lestang, F. 2010. Effects of environmental heterogeneity on male-male competitive success, size, and scaling in a cactus bug, *Narnia femorata* (Hemiptera: Coreidae). Mentor: **C.W. Miller**. *University of Florida Journal of Undergraduate Research* 10: 1-6.

University of Florida

Outreach activities. All students in my laboratory participate in outreach activities each semester. Much of this work is intended to directly communicate our lab's research with K-12 students and the general public. Some examples of outreach include hosting high-school students, participating in "Bug Camp" for middle-school students, producing videos of our research for distribution through the internet, developing a Facebook page featuring work from my lab, and serving as judges for local science fairs (September 2008 – present).

University Relations Outreach Program

Guest lecturer. Invited participant in a University of Montana outreach program to Introductory Biology classes in high schools across Montana (2002-2006).

INVITED SEMINARS and CONFERENCE PRESENTATIONS

University of Central Florida. Orlando, FL (2011).

Behavior 2011. Bloomington, IN (2011).

Society for Integrative and Comparative Biology Meeting. Salt Lake City, UT (2011).

Entomological Society of America Annual Meeting. San Diego, CA (2010). Invited symposium speaker.

University of Missouri, Evolution and Ecology Seminar Series (2010). Invited Departmental seminar.

Evolution International Meeting. Portland State University (2010). Undergraduate student from my lab presented her outstanding research project.

Winter Animal Behavior Meeting. Steamboat Springs, CO (2009 & 2010). Invited.

Society for Integrative and Comparative Biology Annual Meeting. Boston, MA (2009)

Entomological Society of America Annual Meeting. Reno, NV (2008)

Gordon Conference – Genes and Behavior. Lucca, Italy (2008). Invited "Data blitz" talk.

University of Florida, Zoology Seminar Series (2007). Invited.

Association for the Study of Animal Behaviour Easter Meeting, Penryn, UK (2007).

Montana State University – Bozeman, Entomology Seminar Series (2006). Invited.

Animal Behavior Society Annual Meeting, Snowbird, UT (2006)

Evolution International Meeting. University of New York – Stonybrook (2006).

Society for Integrative and Comparative Biology Annual Meeting. Orlando, FL (2006).

Evolution International Meeting, University of Alaska – Fairbanks (2005).

Tupper Seminar, Smithsonian Tropical Research Institute (2004). Invited.

PREVIOUS RESEARCH POSITIONS

Genetics and Neurobiology, Dr. James H. Thomas, University of Washington (October 2000-June 2001). *Conservation Genetics,* Dr. Fred Allendorf, University of Montana. (December 1998-October 1999). *Salt Marsh Ecology,* Dr. Steven Pennings, University of Georgia Marine Institute (Fall 1998). *Wildlife Conservation Biology,* Dr. Dan Tyers,

USDA Forest Service, Gardiner, MT (Summer 1998). *Plant Physiological Ecology*, Dr. Kevin Rice, Dr. Jim Richards, University of California, Davis (Summer 1996). *Hughes Fellow* in the laboratory of Dr. Sonia Sultan, Wesleyan University (Fall 1996-Spring 1998).

MEMBERSHIP in PROFESSIONAL SOCIETIES

American Society of Naturalists	Animal Behavior Society
Entomological Society of America	Society for the Study of Evolution
European Society for Evolutionary Biology	Florida Entomological Society
Society for Integrative and Comparative Biology	

SERVICE to UNIVERSITY and SCIENTIFIC COMMUNITY

Editorial Board Member and Reviewing Editor for the Journal of Evolutionary Biology

Manuscript Reviewer: *Evolution; Evolutionary Ecology; Behaviour; Insect Behavior; New Phytologist; Florida Entomologist*

Grant Proposal Reviewer for the National Science Foundation

Judge, Graduate Student Talk Competitions: Society for Integrative and Comparative Biology 2009 & 2011, Entomological Society of America 2008.

Session Moderator, Society for Integrative and Comparative Biology 2011, Evolution Annual Meeting 2005.

University of Florida

Thesis and Dissertation Committee Member for 15 University of Florida students.

Graduate Seminar Committee Faculty Advisor and Chair. Mentor graduate students organizing the departmental seminar series (September 2009 – present).