

**TOM E.X. MILLER***Curriculum vitae*

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**EDUCATION**

- Ph.D. (Biology), University of Nebraska - Lincoln, 2007  
Advisor: Dr. Svata M. Louda
- B.A. (Biology), Colgate University, 2002

**ACADEMIC POSITIONS AND AFFILIATIONS**

- 2011 – present: Godwin Assistant Professor, Department of Ecology and Evolutionary Biology, Rice University
- 2012 – present: Affiliated scientist, Sevilleta Long-Term Ecological Research (LTER)
- 2012 – present: Affiliated faculty, Rice Institute of Biosciences and Bioengineering
- 2009 – 2011: Huxley postdoctoral fellow, Department of Ecology and Evolutionary Biology, Rice University
- 2007 – 2008: USDA postdoctoral fellow, Department of Biological Science, Florida State University

**RESEARCH FUNDING (> \$10,000)**

- PENDING: National Science Foundation DEB, Population and Community Ecology, “Testing the role of sex structure in range boundary formation”, pre-proposal submitted 1/23/2014 (PI)
- PENDING: National Science Foundation DEB, Population and Community Ecology, “Population collision at a grassland-shrubland ecotone”, pre-proposal submitted 1/23/2014 (PI, coPIs S. Collins, D. Peters)
- Rice University Faculty Initiatives Fund (\$50,000), “Causes and consequences of skewed sex ratios at the range margins of a dioecious plant”, 2013-2014 (PI, coPI: G. Saxer)
- National Science Foundation DEB, Population and Community Ecology-1145588 (\$560,000 + \$14,700 REU supplements), “Ecological dynamics of vertically transmitted symbionts in hosts with complex life histories”, 2012-2016 (PI, coPI: J.A. Rudgers)
- US Department of Agriculture CSREES-2007-02270 (\$125,000), “Predicting invasive spread by exotic insect pests: empirical and theoretical tests of alternative invasion models”, 2007-2010 (PI)

**PUBLICATIONS** (\*undergraduate advisee, †graduate advisee, ‡corresponding author)In review or revision

- Jacquemyn, H., Williams, J.L., †Ochocki, B., Brys, R. and **T.E.X. Miller**. Population dynamics of the long-lived perennial orchid *Orchis purpurea* under climate change: a stochastic demographic analysis. *Journal of Ecology* (in review)

2014

- \*Ohm, J.R. and ‡**Miller, T.E.X.** Balancing anti-herbivore benefits and anti-pollinator costs of defensive mutualists. *Ecology* (in press)
- **Miller, T.E.X.** and J.A. Rudgers. 2014. Niche differentiation in the dynamics of host-symbiont interactions: symbiont prevalence as a coexistence problem. *American Naturalist* 183:506-518
- **Miller, T.E.X.** 2014. Plant demographic structure as a source of heterogeneity in the quantity and quality of rewards to animal mutualists. *Journal of Ecology* 102:496-507
- \*Snyder, K.T., Freidenfelds, N., and ‡**T.E.X. Miller**. 2014. Consequences of sex-selective harvesting and harvest refuges in experimental metapopulations. *Oikos* 123:309-314

2013

- **Miller, T.E.X.** and B.D. Inouye. 2013. Sex and stochasticity affect range expansion of experimental invasions. *Ecology Letters* 16:354-361  
-Faculty of 1000 selection
- \*Yule, K.M., **T.E.X. Miller**, and J.A. Rudgers. 2013. Costs, benefits, and loss of vertically transmitted symbionts affect host population dynamics. *Oikos* 122:1512-1520

2012

- Williams, J.L., **T.E.X. Miller**, and S.P. Ellner. 2012. Avoiding unintentional eviction from integral projection models. *Ecology* 93:2008-2014
- **Miller, T.E.X.**, J.L. Williams, E. Jongejans, R. Brys, and H. Jacquemyn. 2012. Evolutionary demography of iteroparous plants: incorporating non-lethal costs of reproduction into integral projection models. *Proceedings of the Royal Society Series B* 279:2831-2840
- Rudgers, J.A., **Miller, T.E.X.**, Ziegler, S.M., and K.D. Craven. 2012. There are many ways to be a mutualist: endophytic fungus reduces plant survival but increases population growth. *Ecology* 93:565-574

2011

- Lee, C.T., **Miller, T.E.X.**, and B.D. Inouye. Consumer effects on the vital rates of their resource can determine the outcome of competition between consumers. *American Naturalist* 178:452-463  
-Faculty of 1000 selection
- **Miller, T.E.X.** and B.D. Inouye. 2011. Confronting two-sex demographic models with data. *Ecology* 92: 2141-2151

- **Miller, T.E.X.** and V.H.W. Rudolf. 2011. Thinking inside the box: community-level consequences of stage-structured populations. *Trends in Ecology and Evolution* 26:457-466
- **Miller, T.E.X.**, Shaw, A.K., Inouye, B.D., and M.A. Neubert. 2011. Sex-biased dispersal and the speed of two-sex invasions. *American Naturalist* 177:549-561
- Holland, J.N., Chamberlain, S.A., and **T.E.X. Miller**. 2011. Consequences of ants and extrafloral nectar for a pollinating seed-consuming mutualism: ant satiation, floral distraction, or plant defense? *Oikos* 120: 381-388

#### 2010

- **Miller, T.E.X.**, J.C. Legaspi, and B. Legaspi. 2010. Experimental test of biotic resistance to an invasive herbivore provided by potential plant mutualists. *Biological Invasions* 12: 3563-3577
- **Miller, T.E.X.** and B. Tenhumberg. 2010. Contributions of demography and dispersal parameters to the spatial spread of a stage-structured insect invasion. *Ecological Applications* 20: 620-633

#### 2009

- \*Rominger, A.J., **T.E.X. Miller**, and S.L. Collins. 2009. Relative contributions of neutral and niche-based processes to the structure of a desert grassland grasshopper community. *Oecologia* 161:791-800
- \*Robbins, M. and ‡**T.E.X. Miller**. 2009. Patterns of ant activity on *Opuntia stricta* (Cactaceae), a native host-plant of the invasive cactus moth, *Cactoblastis cactorum* (Lepidoptera: Pyralidae). *Florida Entomologist* 92: 391-393
- **Miller, T.E.X.**, S.M. Louda, K.A. Rose, and J. Eckberg. 2009. Impacts of insect herbivory on cactus population dynamics: experimental demography across an environmental gradient. *Ecological Monographs* 79: 155-172
- Takahashi, M., S.M. Louda, **T.E.X. Miller**, and C.W. O'Brien. 2009. Occurrence of the biological control weevil, *Trichosiromus horridus* (Panzer), on a newly acquired native host plant and on a pre-adapted, targeted exotic thistle. *Environmental Entomology* 38: 731-740

#### 2008

- **Miller, T.E.X.**, B. Tenhumberg, and S.M. Louda. 2008. Herbivore-mediated ecological costs of reproduction shape the life history of an iteroparous plant. *American Naturalist* 171: 141-149
  - Featured article of February 2008 issue
  - Featured on [This Week in Evolution](#)
  - Winner of the 2009 *American Naturalist* best student paper award
- **Miller, T.E.X.** 2008. Bottom-up, top-down, and within-trophic level pressures on a cactus-feeding insect. *Ecological Entomology* 33: 261-268

#### 2007

- **Miller, T.E.X.** 2007. Does having multiple partners weaken the benefits of facultative mutualism? A test with cacti and cactus-tending ants. *Oikos* 116: 500-512
- **Miller, T.E.X.** 2007. Demographic models reveal the shape of density dependence for a specialist insect herbivore on variable host-plants. *Journal of Animal Ecology* 76: 722-729

## 2006

- **Miller, T.E.X.**, A.J. Tyre, and S.M. Louda. 2006. Plant reproductive allocation predicts herbivore dynamics across spatial and temporal scales. *American Naturalist* 168: 608-616

## **AWARDS AND DISTINCTIONS**

- Editorial board member, *Ecology* (2013 – present)
- “Favorite Professor” of Rice student-athlete, 2013
- *American Naturalist* Best Student Paper Award, 2009
- Folsom Distinguished Dissertation Award, University of Nebraska, 2008 (university-wide award for outstanding doctoral research)
- U.S. Department of Agriculture National Research Initiative, Post-doctoral fellowship, 2007-2010
- U.S. Department of Education, Graduate Assistance in Areas of National Need (GAANN) Fellowship, 2002-2007
- University of Nebraska Maude Fling Fellowship, 2006-2007 (declined)
- University of Nebraska Bukey memorial graduate fellowship, 2006-2007 (university-wide fellowship for finishing PhD student)
- Christopher Oberheim Memorial Award for biology students showing great promise in research. Colgate University, 2002
- President, Beta Beta Beta Biological Honor Society. Colgate University Chapter, 2001-2002
- Student representative, search committee for plant/animal interactions faculty position, Colgate University, 2001
- Trimmer Prize for excellence in scientific composition, Colgate University, 2001
- Undergraduate Research Fellow (REU), Bermuda Biological Station for Research, 2000

## **INVITED SEMINARS**

- Botanical Society of America Annual Meeting, Symposium on modeling plant reproductive strategies, Boise, ID, July 2014
- University of New Mexico, Department of Biology, January 2014
- Michigan State University, Department of Ecology, Evolution, and Organismal Biology and Kellogg Biological Station, November 2013
- Ecological Society of America Annual Meeting, Minneapolis, August 2013 (Organized oral session on sex-structured population dynamics)

- Ecological Society of America Annual Meeting, Minneapolis, August 2013 (“Ignite” session on eco-evolutionary dynamics)
- University of New Mexico Sevilleta Field Station, May 2013
- Louisiana State University (Department of Biology), November 2012
- ETH Zurich (Institute for Integrative Biology), June 2012
- Texas A&M University (Dept. Ecosystem Science and Management), November 2011
- University of Houston (Dept. of Biology and Biochemistry), October 2011
- Iowa State University (Dept. of Ecology, Evolution, and Organismal Biology), September 2011
- Ecological Society of America Annual Meeting, Austin, Texas, August 2011 (Organized oral session on spatial spread dynamics)
- Sevilleta Long-Term Ecological Research Site, May 2011
- National Center for Ecological Analysis and Synthesis, Santa Barbara, CA, April 2011
- University of Oklahoma (Dept. of Botany and Microbiology), March 2011
- Mathematical Biosciences Institute Workshop (Ohio State University), Ecology and Control of Invasive Species, February 2011
- Virginia Commonwealth University (Dept. of Biology), February 2011
- University of Iowa (Dept. of Biology), February 2011
- University of Florida (Depts. of Biology and Entomology), October 2010
- Texas A&M University (Dept. of Entomology), September 2010
- University of British Columbia (Dept. of Zoology), January 2010
- Portland State University (Dept. of Biology), January 2010
- Florida State University (Dept. of Biological Science), November 2009
- New Mexico State University (Dept. of Biology), May 2009
- Rice University (Dept. of Ecology and Evolutionary Biology), March 2008
- University of Texas – Austin (Dept. of Integrative Biology), Feb. 2008
- Mississippi State University (Dept. of Biology), Nov. 2007
- Florida State University (Dept. of Biological Science), Oct. 2007
- University of Nebraska (School of Biological Sciences), Apr. 2007
- University of Nebraska (Dept. of Mathematics), Mar. 2007
- University of Nebraska (Ecology, Evolution, and Behavior Group), Sep. 2006
- Sevilleta LTER Summer Seminar, Jul. 2006
- Nebraska Interdisciplinary Science Symposium, Sep. 2005

## **CONTRIBUTED TALKS**

- Evolutionary Demography Society, Odense, Denmark, Oct. 2013
- Ecological Society of America Annual Meeting, Portland, Oregon, Aug. 2012
- Ecological Society of America Annual Meeting, Pittsburgh, Pennsylvania, Aug. 2010
- Ecological Society of America Annual Meeting, Albuquerque, New Mexico, Aug. 2009

- Ecological Society of America Annual Meeting, San Jose, California, Aug. 2007
- Ecological Society of America Annual Meeting, Memphis, Tennessee, Aug. 2006
- Ecological Society of America Annual Meeting, Montreal, Canada, Aug. 2005
- University of Nebraska Graduate Student Symposium, Feb. 2005
- Sevilleta LTER Annual Research Symposium, Jan. 2005
- University of Nebraska Graduate Student Symposium, Feb. 2004

## **TEACHING EXPERIENCE**

- Rice EEB graduate core course (3-4 lectures; 2010 – present)
- Insect Biology, Rice University, Spring 2010, Fall 2010, Fall 2012, Fall 2013
- Insect Biology Lab, Rice University, Spring 2010 and Fall 2010
- Plant Diversity, Rice University, Spring 2009
- Guest lecturer: Introductory Biology, Florida State University, 2008
- Instructor: Ecological Interactions (co-taught with advisor), UN-L, Fall 2006
- Teaching assistant: Introductory Biology, University of Nebraska, Spring 2006
- Writing Tutor: The Writing Center, Colgate University, 2001-2002
- Teaching assistant: Ecology, Colgate University, 2000-2002

## **GRADUATE STUDENTS**

- Brad Ochocki (PhD student, 2012 – present)
- Andrew Bibian (MS student, 2012 – present, NSF-GRFP recipient)
- Michelle Downey (PhD student, 2012 – present)
- Michelle Sneek (PhD student, 2012 – present)
- Emily Schultz (PhD student, 2013 – present, NSF-GRFP recipient)

## **POSTDOCS**

- Aldo Compagnoni (2013 – present)

## **GRADUATE COMMITTEE SERVICE**

- Ben Van Allen (Rice EEB)
- Brian Maitner (Rice EEB)
- Juli Carillo (Rice EEB)
- Nick Rasmussen (Rice EEB)
- Christopher Dibble (Rice EEB)
- Christopher Roy (Rice EEB)
- Sayantani Dastidar (University of Houston Biology and Biochemistry)
- Brandon Harper (Rice Earth Science)
- Dayne Jordan (University of Houston Biology and Biochemistry)

- Benjamin Lewis (University of Houston Biology and Biochemistry)

## **UNDERGRADUATE RESEACH MENTORSHIP**

- Rachel Hodge, Rice Century Scholar, 2013-
- Emily Begnel, EBIO 306, 2012-
- Natalie Wagner, EBIO 306, 403/404, 2012-
- Jesse Passman, EBIO 306, 403/404, 2012-
- Adam Geiger, EBIO 306, 403/404, 2011-
- Olivia Ragni, EBIO 306, 403/404, 2012-
- Marion Donald, EBIO 306, 403/404, 2012-
- Rande Patterson, EBIO 306, 403/404, 2011-
- Sunil Bellur, EBIO 306, 2011-2012
- Johanna Ohm, EBIO 306, 403/404, 2011-2013 (Ohm and Miller *in review*, currently in PhD program at Penn State)
- Rebecca Searle, EBIO 306, 403/404, 2011-2013
- Tatiana Fofanova, EBIO 403/404, 2011/12
- Kate Snyder, EBIO 403/404, 2011/12 (Snyder et al. 2014)
- Kelsey Yule, EBIO 403/404, co-advised with J. Rudgers, 2010/2011(Yule et al. 2013, currently in PhD program at University of Arizona)
- Meredith Robbins, Florida State University senior thesis, 2007/8 (Robbins and Miller 2009, currently in veterinary school at University of Florida)
- Alejandro Benhumea, Sevilleta LTER REU, University of Texas – El Paso, 2006
- Andrew Rominger, Sevilleta LTER REU, Stanford University, 2006 (Rominger et al. 2009, oral presentation at ESA 2009, currently in PhD program at UC-Berkeley)
- Rene Aguilera, Sevilleta LTER REU, University of New Mexico, 2005

## **UNIVERSITY SERVICE**

- Director of Graduate Studies, Department of Ecology and Evolutionary Biology (2012 – present)
- Rice University Arboretum Committee (2012 – present)
- Chair, Huxley search committee (Spring 2013)
- Chair, Faculty search committee (2013/14)
- Biochemistry and Cell Biology search committee (Fall 2013)

## **PROFESSIONAL SERVICE**

- Editorial board member, *Ecology* (2013 - )
- Invited instructor, Enhancing Linkages between Mathematics and Ecology (ELME), Kellogg Biological Station, June 2014

- Vice-chair (2009-2010), Plant Population Ecology section of the Ecological Society of America
- Grant proposal reviews:  
National Science Foundation panelist (Population and Community Ecology and Evolutionary Ecology): 2008, 2011, 2012, 2014  
NSF *ad hoc* reviewer  
Binational Agricultural Research and Development Fund  
Swiss National Science Foundation
- Co-organizer (with H. Caswell, M. Neubert, and A. Shaw) of Organized Oral Session on Sex-structured population dynamics, ESA meeting 2013
- Manuscript reviews:  
*Acta Oecologia, American Naturalist, Annals of Botany, Austral Ecology, Basic and Applied Ecology, Biological Invasions, Biological Journal of the Linnean Society, Ecological Entomology, Ecology, Ecology Letters, Evolutionary Ecology, Frontiers in Ecology and the Environment, Journal of Applied Entomology, Journal of Arid Environments, Journal of Theoretical Biology, Landscape Ecology, Methods in Ecology and Evolution, New Phytologist, Oecologia, Oikos, Plant Biology, Plant Ecology, PLOS Biology, PLOS One, Proceedings of the Royal Society B*
- Professional Societies: Ecological Society of America (including membership in the Plant Population Ecology section); American Society of Naturalists; American Association for the Advancement of Science; Sigma Xi

## **OUTREACH**

- Annual visits to A.P. Biology classes at Jefferson Davis H.S., Houston, TX
- Annual visits to Spring Creek Nature Center, Spring, TX
- Instructor in the AP Summer Institute (2013), a program that promotes science education among A.P. Biology teachers
- “EEB Academy”, Summer internship program for Houston-area high school students, run by Miller Lab graduate students