

Laurel Braden Symes
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EDUCATION AND EMPLOYMENT

2015 Neukom Fellow, Dartmouth College (Biology sponsor: Hannah ter Hofstede,
 Psychological and Brain Sciences sponsor: Thalia Wheatley)
2014 Post-doctoral Fellow at University of Wisconsin, Milwaukee (advisor: Gerlinde Hobel)
2014 Short-term Fellow at Smithsonian Tropical Research Institute (advisor: Rachel Page)
2013 PhD Dartmouth College (advisor: Mark McPeck)
2007 Denison University, B. S. Biological Sciences
2006 Organization for Tropical Studies—Costa Rica (Duke University affiliated)

RESEARCH INTERESTS

- Sensory ecology and communication
- Speciation, sexual selection, and mate recognition
- Artificial neural networks and neurobiology

PUBLICATIONS

* Indicates undergraduate or high school student co-author; + Indicates citizen scientist co-author

In review:

Symes LB. Male signals and female mate recognition in the tree cricket *Oecanthus forbesi*. *In review at Behavioral Ecology and Sociobiology*.

Symes LB. Intra- and interpopulation variation in female responses to male signals: The importance of community composition in shaping tree cricket behavior. *In review at Evolutionary Ecology*.

Published and in press:

Symes LB, Ayres MP, Cowdery C* and Costello RA*. Signal diversification in *Oecanthus* tree crickets is defined by energetic, morphometric, and acoustic trade-offs. *In revision at Evolution*.

Symes LB and Price, TD. 2015 Sexual stimulation and sexual selection. *The American Naturalist* 185(4).

Symes LB, Serrell N, and Ayres MP. 2015. A practical guide for mentoring scientific inquiry. *Bulletin of the Ecological Society of America* 96(2): 352-367.

Rodríguez RL, Araya-Salas M, Gray DA, Reichert M, **Symes LB,** Wilkins MR, Safran RJ and Höbel G. 2015. How acoustic signals scale with individual body size: common trends in static allometry across diverse taxa. *26(1): 168-177.*

Symes LB. 2014. Species composition affects the shape of mate response functions. *Evolution* 68: 205-213.

Costello RA* and **Symes LB.** 2014. Effects of anthropogenic noise on male signaling behaviour and female phonotaxis in *Oecanthus* tree crickets. *Animal Behaviour* 95: 15-22. (**Undergraduate senior thesis and best student poster in Animal Behavior at SICB 2015*).

Scordato ESC, **Symes LB,** Mendelson TC and Safran RJ. 2014. The role of sexual selection in speciation: how often is ecology measured? *The Journal of Heredity* 105(Special issue): 782-794.

- Symes LB** and Collins NC⁺. 2013. A new species of tree cricket from the southwestern United States. *Journal of Orthoptera Research* 22: 87-91.
- Safran RJ, Scordato ESC[^], **Symes LB**[^], Rodriguez RL and Mendelsen TC. 2013. Contributions of natural and sexual selection to the evolution of premating reproductive isolation: a research agenda. *Trends in Ecology and Evolution* 28:643-650. [^]*Equal authorship*
- Rodriguez RL, Boughman JW, Gray DA, Hebets EA, Hobel G and **Symes LB**. 2013. Diversification under sexual selection: the relative roles of mate preference strength and the degree of divergence in mate preferences. *Ecology Letters* 16: 964-974.
- Safran RS, Flaxman S, Kopp M, Irwin D, Evans MR, Funk WC, Gray DA, Hebets EA, Seddon N, Scordato ESC, **Symes LB**, Tobias JA, Toews D and Uy A. 2012. A robust new metric of phenotypic distance to estimate and compare multiple trait differences among populations. *Current Zoology* 58: 426-439.
- Collins N⁺ and **Symes LB**. 2012. *Oecanthus walkeri*: A new species of tree cricket from Texas. *Journal of Orthopteran Research*. *Journal of Orthoptera Research* 21: 51-56.
- McPeck MA, **Symes LB**, Zong DM* and McPeck CL*. 2011. Species recognition and patterns of population variation in the reproductive structures of a damselfly genus. *Evolution* 65: 419-428.
- Schultz TD, Anderson CN and **Symes LB**. 2008. The conspicuousness of colour cues in male pond damselflies depends on ambient light and visual system? *Animal Behaviour*. 76: 1357-1364.
- Paul P and **Symes LB**. 2008. Ballistocardiography in the physics classroom. *The Physics Teacher* 46:300-302.

In preparation:

Symes LB and Höbel G. Hearing the light: Audiovisual integration affects leader preferences in gray tree frogs. *In preparation for Animal Behavior*.

Symes LB, Mendelson TC, Safran RA, Scordato ESC, Rodriguez RL, Hebets EA, Servedio MR and Hobel G. Sexual selection as a process opposing divergence and incipient speciation. *In preparation for TREE*.

Kopp M, Servedio M, Rodríguez RL, Scordato ESC, Safran RJ, Mendelson TC, **Symes LB**, Stern C, Hauber M, Balakrishnan C, Zonana D. Mechanisms of assortative mating: connecting theory and empirical research. *In preparation for The American Naturalist* (Perspective piece).

DATA ARCHIVES

Symes, LB. 2014. Data from *Species composition affects the shape of mate response functions*. Dryad data depository. DOI:10.5061/dryad.87tk7

Symes, LB 2013. Recordings and metadata for more than 600 individual *Oecanthus* crickets. Macaulay Library of Natural Sound, Cornell University.

WORKING GROUPS AND SHORT COURSES

Toward a unified evolutionary theory of decision-making in animals. NESCent working group. April 2013 – Nov 2014.

An integrative evolutionary approach to examine sexual selection as a mechanism of speciation,
NESCent Working Group 2009-2011.
Sound Recording Workshop. Macaulay Library of Natural Sounds, Lab of Ornithology, Cornell University.
June 2009.
Sound Analysis Workshop. Bioacoustics Research Program, Lab of Ornithology, Cornell University.
June 2010.

TEACHING EXPERIENCE

Courses, University of Wisconsin

Ecology 310 (General Ecology, Spring 2015)

Graduate Teaching Assistant,

Dartmouth College

Biology Foreign Studies Program
(Costa Rica and Cayman Islands Winter 2010)
Biostatistics (Winter 2009)
Ecology (Spring 2008)
Marine Biology (Fall 2007)

Guest Seminars

Louisiana State University (2011)
University of Wisconsin Milwaukee (2012)

Guest Lectures,

Dartmouth College Undergraduate Courses

Predation (Ecology 2012)
Cooperation (Intro Biology 2012)
Physiology of Communication
(Physiological Ecology 2011)
Bioacoustics (FSP 2010)
Mangrove Ecology (FSP 2010)
Sponge Biology (FSP 2010)
Biochemistry and Reef Structure (FSP 2010)
Arthropod Lab (FSP 2010)
Intro to Statistics (FSP 2010, Ecology 2008)
Succession: Processes and Theories (Ecol 2008)
Marine Fisheries and Harvesting Policies
(Marine Biology 2007)

Other Teaching Experience

GK-12 Teaching Fellowship. Teaching five classes per week in a 7th grade science classroom and helping teachers design inquiry-based activities to incorporate into their curriculum. Fall 2012 through Spring 2013.

ADVISING AND MENTORING

Research mentor Sam Ott. Fall 2014.

WISP (Women in Science Project) Mentor. Sarah Heyborne. Winter and Spring 2013.

Senior Research Mentor. Robin Costello. Effects of anthropogenic noise on insect behavior and community composition. 2012-2013. *Published in Animal Behaviour (Costello and Symes 2014).*

Summer Research Mentor. Lisa Carson. Latitudinal variation in the life-history of *Oecanthus* tree crickets. Summer 2012. *In preparation for publication.*

WISP (Women in Science Project) Mentor. Lisa Carson. Eight to ten hours per week. Winter and Spring 2012. *Published in Transactions of the Entomological Society of America (Collins et al 2014)*

Community structure and insect acoustics. Janel DiBiccari. Field research and sound recording. Summer 2011.

HHMI Mentor. Colleen Cowdery. Fall 2011 and Winter 2012. *Manuscript in revision at Evolution.*

WISP (Women in Science Project) Mentor. Colleen Cowdery. Eight to ten hours per week. Winter and Spring 2011.

Effects of anthropogenic noise on insect community structure. Jen Fownes. Ten week leave-term independent research project. Forty hours per week. Fall 2010.

MENTORED MANUSCRIPTS

* Indicates undergraduate student, + Indicates citizen scientist

Brown N*, Fownes J*, Grear* M and O'Donnell D*. 2010. Blindfolded birdwatching: The effect of harmonics on the localization of bird calls. *Dartmouth Undergraduate Journal of Science*. 2010(Summer).

Collins N+, Berghe EVD and Carson LM*. 2014. Two new species of *Neoxabea*, three new species of *Oecanthus*, and documentation of two other species in Nicaragua (Orthoptera: Gryllidae: Oecanthinae). *Transactions of the American Entomological Society*. 140: 163-184.

GRANTS, AWARDS, HONORS

2014 Smithsonian Tropical Research Institute Short-term Fellowship
2013 Hannah Croasdale Research and Teaching Graduation Award
2012-2013 NSF GK-12 Fellow (Stipend support)
2012 Orthopterists Society Research Fund (\$800)
2012 Huyck Preserve Grant (\$2600 and three weeks lodging for three people)
2011 Huyck Preserve Grant (\$2600 and three weeks lodging for two people)
2010 Department nominee for Filene Teaching Award
2010 Gilman Grant (\$1500)
2010 Orthopterists' Society Research Fund (\$1000)
2010 Graduate Studies Grant (\$1000)
2009 Graduate Research Fellowship (GRFP) Honorable Mention
2008 GRFP Honorable Mention
2007-2008 GAANN Grant, Dartmouth College (stipend and research expenses)
2007 President's Medal, Denison University
2007 GRFP Honorable Mention
2005-2007 Anderson Scholarship in the Sciences (full tuition scholarship, summer stipend and research expenses)
2006 Battelle Memorial Institute Grant (travel expenses for research in Costa Rica: \$1148)
2005 Arend/McBride Summer Field Biology Scholar (summer stipend and research expenses)
2004 Denison Summer Scholar Award (summer stipend and research expenses)
2003-2007 Denison Faculty Scholarship for Achievement (full tuition)

PRESENTATIONS AT MEETINGS

2014 L. B. Symes, E.S.C Scordato, R.J. Safran, and T.C. Mendelson. The interaction of ecology in sexual selection and speciation. Evolution meeting, Durham, NC. *Organized symposium*.
2013 L. B. Symes. Species composition affects the shape of female response functions. Evolution Meeting, Snowbird, UT.
2011 L. B. Symes. Sexual selection and species recognition in *Oecanthus* tree crickets. Acoustic Communication in Animals Meeting, Ithaca, NY.
2008 L. B. Symes and M. A. McPeck. Interpopulation Variation in Structures Used in Mate Recognition by *Enallagma* Damselflies. Evolution Meeting, Minneapolis, MN.
2006 L. B. Symes and T. D. Schultz. Polychromatism in the damselfly *Enallagma civile* and assessment of the male mimicry hypothesis. Annual Meeting of the Ecological Society of America. Memphis, TN.

OUTREACH ACTIVITIES

Howard Hughes Medical Institute Mentoring Program: Six week program teaching hands-on science in sixth and eighth grade class rooms (2008 and 2009, respectively)
Montshire Museum of Science Camp-In Program: Program for grade school and middle school students. Four hour program that includes leading night walks, discussions about social insects, chemistry experiments, and star gazing. 2007-2010.
Montshire Museum Ephemeral Zoo: Costumed volunteer performing natural history skits. 2007.

SELECTED GRADUATE ACTIVITIES

2012 Graduate representative on search committee for physiology position

REFEREE

Animal Behaviour, Ecological Applications, Evolution, Proceedings of the Royal Society B

REFERENCES

Dr. Mark A. McPeck. Biology Department. Dartmouth College.

Dr. Rebecca Safran. Department of Ecology and Evolutionary Biology. University of Colorado at Boulder.

Dr. Hannah ter Hofstede. Biology Department. Dartmouth College.

Dr. Gerlinde Höbel. Biology Department. University of Wisconsin - Milwaukee.