

# Matthew K. Lau

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## Education

Ph.D. Biology, Northern Arizona University, NSF IGERT Fellow

*Advisor:* Dr. Thomas G. Whitham

M.S. Biology, Northern Arizona University, 2008

*Thesis:* Host species and site contribute to variation in foliar endophyte abundance, diversity and community composition.

*Advisor:* Dr. Nancy C. Johnson

B.S. Biology, Humboldt State University, 2004

*Emphasis:* Fungal Ecology

*Advisors:* Dr. Nathan J. Sanders and Dr. Terry W. Henkel

*Advanced Study:* Harvard Forest Summer Research Program in Ecology, Summer 2003

*Mentor:* Dr. Aaron M. Ellison

## Research Experience

Research Associate, Systems Ecology and Ecoinformatics Lab (Dr. Stuart Borrett), Summer 2011

Research Assistant, Cottonwood Ecology Group (Dr. Thomas G. Whitham), 2010-2011

Research Assistant, The Soil Ecology Lab (Dr. Nancy C. Johnson), 2005-2008

Research Assistant, Humboldt State University Ant Ecology Lab (Dr. Nathan J. Sanders), 2003

## Teaching Experience

Introduction to Programming in R (University of North Carolina Wilmington), Summer 2010

BIO181 Introductory Biology: The Unity of Life (Northern Arizona University), Fall 2010

BIO680 Introduction to Ecological Analyses in R (Northern Arizona University), Fall 2008

## Awards and Fellowships

Chateaubriand Fellowship (French Embassy), 2011-2012

NSF IGERT Fellowship (Northern Arizona University), 2008-2010

ARCS Foundation Scholarship (Phoenix Chapter), 2007-2008

ARCS Foundation Scholarship (Phoenix Chapter), 2006-2007

Northern Arizona University Minority Student Development Fellowship, 2005-2008

## Publications

Álvarez-Sánchez FJ, Johnson NC, Antoninka AJ, Chaudhary VB, Lau MK, Owen SM, Sánchez-Gallen I, Guadarrama P, & Castillo S (2012) Large-scale diversity patterns in spore communities of arbuscular mycorrhizal fungi. In M. Pagano, editor, *Mycorrhiza: Occurrence in Natural and Restored Environments*, Nova Science Publishers, New York (USA).

Bowker MA, Muñoz A, Martinez T & Lau MK 2012 Rare drought-induced mortality of juniper is enhanced by edaphic stressors and influenced by stand density. *Journal of Arid Environments* 76:9-16.

Lau MK, Whitham TG, Lamit LJ & Johnson NC (2010) Ecological & Evolutionary Interaction Network Exploration: Addressing the Complexity of Biological Interactions in Natural Systems with Community Genetics and Statistics. *JIFS* 7:17-25

Price LB, Johnson KE, Aziz M, Lau MK, Bowers J, Ravel J, Keim PS, Serwadda D, Wawer MJ & Gray RH (2010) The effects of circumcision on the penis microbiome. *PLoS One* 5(1):e8422.

Chaudhary VB, Lau MK & Johnson NC (2008) Macroecology of microbes – biogeography of the Glomeromycota. In V. Ajit, editor, *Mycorrhiza* (3rd Edition), Springer-Verlag, Germany.

Ellison AM, Chen J, Diaz D, Kammerer-Burnham C & Lau M (2005) Changes in ant community structure and composition associated with hemlock decline in New England. Pages 280-289 in B. Onkenand and R. Reardon, editors. *Proceedings of the 3rd Symposium on Hemlock Woolly Adelgid in the Eastern United States*. U.S. Department of Agriculture – U.S. Forest Service – Forest Health Technology Enterprise Team, Morgantown, West Virginia.

### *In Prep and Submitted Manuscripts*

Stone AC, Gehring CA, Lau MK, Cobb NS & Whitham TG (Submitted) Plant mediated indirect effects on communities reduce diversity andPlant mediated indirect genetic effects of scale herbivory alter arthropod community networks on a foundation tree.

Lau MK & Borrett SR (In Prep) An open-source package for ecological network analysis in R. Smith DS, Lamit LJ, Lau MK, Gehring CA & Whitham TG (In Prep) Change of plant traits by introduced elk negatively affects associated arthropod communities and network structure.

Lau MK, Arnold EA & Johnson NC (In Prep) Host species and site contribute to variation in foliar endophyte abundance, diversity and community composition.

## Presentations

Whitham TG, Lau MK, Lamit LJ, Smith DS, Busby PE, Schweitzer JA, Gehring CA, Allan GJ, Shuster SM and Newcombe G *A Community Genetics Approach for Understanding Microbial Community Structure and Feedbacks on a Foundation Tree Species*. Ecological Society of America Meeting (ESA), Pittsburgh, PA, August 2010

Lau MK, Keith AR and Whitham TG *Network structure is linked to the community stability of canopy arthropods associated with Populus angustifolia*. Ecological Society of America Meeting (ESA), Pittsburgh, PA, August 2010

Lau MK, Johnson NC, Whitham TG, Hagenauer LE, Lamit LJ and Lonsdorf EV *A Community Genetics Approach for Understanding Complex Biological Interactions*. 7th International Symposium on Integrated Field Science, Tohoku University, Sendai, Japan, October 2009

Lau MK, Hagenauer LE and Whitham TG *Assemblage-structuring force of species interactions varies spatially and temporally: Co-occurrence analysis of canopy arthropod distributions*. Ecological Society of America Meeting (ESA), Albuquerque, NM, August 2009

Lau MK, Johnson NC *Fungal foliar endophyte communities exhibit host species fidelity in woody plants of Arizona riparian forests*. Ecological Society of America Meeting (ESA), Milwaukee, WI, August 2008

Lau MK *Unusual absence of asymptomatic fungal leaf endophytes of Populus fremontii: a potential phytochemical mechanism*. (poster) Ecological Society of America Meeting (ESA), San Jose, CA, August 2007

Lau MK, Johnson NC *Do AMF cultivate their favorite bacteria? A hypothesis for a potential mechanism of AMF adaptation*. (poster) 5th International Conference on Mycorrhiza (ICOM5), Granada, Spain, July 2006

## Professional Activities

### *Article Reviewer*

*Botany* (formerly *The Canadian Journal of Botany*) (2011)

*Acta Oecologia* (2011)

*Nature* (2009)

### *Professional Memberships*

British Ecological Society (BES), 2008

American Association for the Advancement of Science (AAAS), 2008

Ecological Society of America (ESA), 2005-present

### *Meeting and Workshop Organization*

Workshop Coordinator, EU Sponsored White Paper Workshop on Foundation Species Genetics Research Directions, Flagstaff, AZ Spring 2011

Meeting Organizer, Western Mycorrhiza Gathering, Flagstaff, AZ, 2008

Workshop Organizer, IGERT Workshop: Bayesian Statistics in Ecology, Flagstaff, AZ, 2007

Meeting Organizer, Soil Ecology Society Conference, Moab, UT, 2007

### *Student Services*

President, Biology Graduate Student Association (Northern Arizona University), 2009-2011

Email List Curator, Biology Graduate Student Association (Northern Arizona University), 2008

Social Coordinator, Biology Graduate Student Association (Northern Arizona University), 2006

## **Contributed Software**

Matthew K. Lau and Raj Whitlock (2009) DiversitySampler: Functions for re-sampling a community matrix to compute diversity indices at different sampling levels.. R package version 2.0.

Matthew K. Lau (2009) DTK: Dunnett-Tukey-Kramer Pairwise Multiple Comparison Test Adjusted for Unequal Variances and Unequal Sample Sizes. R package version 3.0.

## **Language Proficiencies**

Programming: R,  $\LaTeX$ , Emacs, Unix, HTML and Octave/Matlab

## **References**

Thomas G. Whitham  
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Associate Professor  
University of Tennessee  
(865) 974-5231  
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Terry W. Henkel  
Associate Professor  
Humboldt State University  
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Aaron M. Ellison  
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Harvard Forest, Harvard University  
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