# ELIZABETH SANDER

October 23, 2015

## EDUCATION

Fourth-year doctoral student in Ecology and Evolution at the University of Chicago. Focusing on characterzing the Tatoosh intertidal system using network and time series modelling approaches. Advisors: Dr. Stefano Allesina and Dr. J. Timothy Wootton.

Bachelor of Arts. University of Vermont, Burlington, VT. Major: Mathematics, concentration in statistics. Minor: Biology. Honors College Scholar. Graduated *Summa cum laude* in May 2012 with a 4.0 GPA.

## EMPLOYMENT

**Software Engineering Intern.** Developed an R package using S4 classes to integrate R online with a large-scale sensor database. Williston, VT. 2012.

**Tutor.** One-on-one instruction in statistics, biology, math, and computer science. University of Vermont, Burlington, VT. 2011-2012.

**Survey Methodology Intern.** Designed and carried out a pilot survey to census university students, and wrote and presented official reports. United States Census Bureau, Suitland, MD. 2010.

## COMPUTER EXPERIENCE

R, including packages such as ggplot2 and igraph. Experience extending Python with R code.

C, especially using GSL, and experience extending Python and R with C code.

Python, especially with the scipy/numpy and igraph modules.

LaTeXused for writing documents and beamer presentations.

Other mathematical and statistical software, including Mathematica, MATLAB, SAS, JMP, and Minitab.

Comfortable using SVN and GIT version control systems.

## PUBLICATIONS

Wootton, J.T., **E.L. Sander**, A.K. Henry, and G. Barabás. Temporal variability predicts species importance in an ecological interaction network. *In review.*

**Sander, E.L.**, J.T. Wootton, and S. Allesina. What can Interaction Webs Tell Us About Species Roles? PLos Comput Biol 11(7), e1004330.

Smith, M.J., **E.L. Sander**, G. Barabás, and S. Allesina. 2015. Stability and feedback levels in food web models. Ecology Letters.

Allesina, S., **E.L. Sander**, M.J. Smith, and S. Tang. Superelliptical laws for complex networks. *Published on ArXiv.*

Chao, A.C., N.J. Gotelli, T.C. Hsieh, **E.L. Sander**, K.H. Ma, R.K. Colwell, and A.M. Ellison. 2014. Rarefaction and extrapolation with Hill numbers: a unified framework for sampling and estimation in biodiversity studies. Ecological Monographs 84(1):45-67.

## PRESENTATIONS

What can Interaction Webs Tell Us About Species Roles? Presented at ICTP-SAIFR Mathematical Biology Summer School. January 2015.

Both Trophic and Non-Trophic Interactions Determine Group Structure in the Tatoosh Mussel Bed Network. Presented at the Ecological Society of America. August 2014.

Sample Size Dependency of Hill Numbers. Presented at University of Vermont Undergraduate Research Conference. Spring 2012.

Factors Impacting Sex Ratio in Gynodioecious Angiosperm *Polemonium foliosissimum*. Presented at University of Vermont Undergraduate Research Conference. Fall 2010.

Statistical Simulation to Test Trapping Efficiency of Eastern Spiny Softshell Turtles (*Apalone spinifera spinifera*) at Undergraduate Research Conference at the Interface of Biology and Mathematics (UBM). October 2009.

Morphological Data and the M$k$ Model: Convergence of Topologies. Presented at Northeast Undergraduate Research Development Symposium. Spring 2009.

## FUNDING

Hinds fund recipient. Awarded to collect interaction strength data on Tatoosh Island in Washington State. 2013-2014.

NSF Graduate Research Fellowship Program (GRFP). Funded for three years between 2013-2018.

## PROFESSIONAL AFFILIATIONS

Ecological Society of America

University of Chicago Biological Sciences Division Dean's Council member. Spring 2013-present.

Have reviewed papers for Ecology Letters, Journal of Theoretical Biology, and the Journal of Complex Networks.

## AWARDS

Hannah Howard Award, May 2012. Awarded for achieving highest GPA in the University of Vermont College of Arts and Sciences Class of 2012.

Deans List, Fall 2008-May 2012.

Barry Goldwater Award alternate, April 2009.

Mortar Board Honor Society Sophomore Award, May 2009. Given by the University of Vermont chapter of the Mortar Board Honor Society for scholarship, leadership, and service.