Derek Sonderegger
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Education

Ph.D.	Statistics, Colorado State University, 2010
M.S.	Statistics, Montana State University, 2004
B.S.	Mathematics, Montana State University, 2000
B.S.	Computer Science, Montana State University, 2000

Academic Positions

Aug 2011 to present – Assistant professor, Northern Arizona University
Feb 2010 to Aug 2011 – Post-doctoral research assistant, Washington State University and University of Wyoming

Research Interests

Statistics: Nonparametric Function Estimation, Fiducial Inference, Spatial and Temporal statistics, Generalized Linear Models, Measurement Error, Bayesian statistics, MCMC.
Ecology: Change point detection, Carbon and Nitrogen cycles under elevated CO_2.

Honors

2010 – Boes Award for Excellence in Teaching – CSU Statistics Dept
2008 – James L., M. Leslie & Edna Madison Memorial Award for Outstanding Graduate Student in Mathematics or Statistics – CSU
2004 – NSF IGERT Fellowship under CSU PRIMES program
2000 – Montana State University Outstanding Undergraduate Mathematics Student

Publications

Sonderegger, D.L., Ogle, K., R. D. Evans, Ferguson, S. and Nowak, R.S, 2013. Temporal dynamics of root growth under long-term exposure to elevated CO_2 in the Mojave Desert. *New Phytologist* **198**(1): 127-138

Clements, W. H., Vieira, N. K. M., and **Sonderegger, D. L.** 2010. The use of ecological thresholds to assess recovery in lotic ecosystems. *Journal of the North American Benthological Society* **29**(3):1017-1023

Sonderegger, D.L., Wang, H., Huang, Y., and Clements, W.H. 2009. Effects of measurement error on the strength of concentration-response relationships in aquatic toxicology. *Ecotoxicology* **18**:824-828

Sonderegger, D.L., Wang, H., Clements, W.H., and Noon, B.R. 2009. Using SiZer to detect thresholds in ecological data. *Frontiers in Ecology and the Environment* **7**:190-195

Publications (in press)

Sonderegger, D.L. and Hannig, J. 2013. Fiducial theory for free-knot splines. In T.N. Sriram (Ed.) *Springer Festschrift in honor of Professor Hira L. Koul.* Springer.

Manuscripts (in process)

Sonderegger, D.L., Ogle, K., and Evans, R. D. Leaf δ15N and δ13C as temporal integrators of

Grants
July 2013 – June 2014. NAU Faculty Grants Program. *Synthesizing global viral abundances.* PI: Derek Sonderegger. $7500

Dissertation – Co-advisors Jan Hannig and Haonan Wang
We are interested in estimating the number and location of knot points for smoothing splines using fiducial inference. We show the asymptotic normality of the fiducial distribution of the model parameters in the case where the number of knot points is known. We then provide a method for picking the correct number of knot points and demonstrate the methods effectiveness.

Consulting
Fall 2009. Worked in the Graybill Statistical Laboratory at CSU, which provides statistical consulting to researchers across the university.
Fall 2012. Primary consulting statistician for NAU's Statistical Consulting Lab, providing consulting services to researchers across the university.

Teaching
STA 571, Statistical Methods II, Northern Arizona University
STA 570, Statistical Methods I, Northern Arizona University
Stat 315, Statistics for Engineers and Scientists, Colorado State University
Stat 301 (3 times), Introduction to Statistics, Colorado State University
Stat 216 (4 times), Elementary Statistics, Montana State University
Math 181, Calculus and Analytical Geometry I, Montana State University
Lab Sections, Biology 102, Introduction to Biology, Montana State University

Talks
JSM Annual Meeting 2012 – Fiducial Inference for Free-Knot Splines
NAU Forestry Dept. Coloquium 2012 – Temporal effects under long-term elevated CO_2 in the Mojave Desert.
NAU Math Dept Colloquium 2011 – Using smoothing splines and bootstrapping to address measurement error with application in aquatic toxicology.
ESA Annual Meeting 2010 – Temporal dynamics of root growth under long-term exposure to elevated CO2 in the Mojave Desert.
Sandia National Labs February 2009 - Regression Splines: Applications and Fiducial Theory.
CSU SOARS April 2009 – Introduction to the Bootstrap.
CO/WY ASA Fall Meeting 2007 – Using SiZer to detect features in ecological data.
CSU SOARS March 2007 – Introduction to smoothing.

Conference Posters
AGU annual meeting 2011 – Leaf $\delta15N$ and $\delta13C$ as temporal integrators of biogeochemical processes at the Mojave Desert FACE experiment
Graybill Conference 2007 – Identifying and estimating uncertainty in ecological thresholds
ESA 2002 – Water transport, conduit size variation and cascading cavitation in *Pinus albicaulis*: Results from a model.

Pre-PhD Employment
>Spring 06, Fall 06, Spring 07, Fall 07, Fall 08 – Research Assistant
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>Fall 04, Fall 05, Spring 08, Spring 09 – Teaching Assistant. Lectured 3 days per week, assigned and graded homework and quizzes, wrote exams, and assigned grades
>
>Summer 2005 – PRIMES Research Fellow. Cohort project modeled Bovine Tuberculosis at the National Elk Refuge, Jackson WY
>
>Summer 04 – Research Assistant under Dr Kurt Vogel. Investigation of Retinal Motion in Adaptive Optics Scanning Laser Ophthalmoscopy. Implemented and tested a novel feature tracking algorithm in Matlab
>
>Fall 01 to Spring 04 – Teaching Assistant. Lectured 3 days per week, assigned and graded homework, assigned grades
>
>May 2000 to June 2001 – Software Engineer. Harbor Technology. Worked with client Dell Computers to expand scope of human resources database and user interface.

R-Packages
>Sonderegger, D.L. (2008) SiZer. R package version 0.1-3

Professional Memberships – ASA, IMS, ESA

Computation Languages – R, SAS, Mathematica, Matlab, C/C++

References

Kiona Ogle
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Department of Biological Sciences
Washington State University
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Department of Statistics and
    Operations Research
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    Conservation Biology.
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