

## *Curriculum Vitae*

**JENNIFER A. HOETING**

Department of Statistics      970-491-2897 (office)  
Colorado State University      jah@lamar.colostate.edu  
Fort Collins, CO 80523-1877      www.stat.colostate.edu/~jah

### **Education**

Ph.D.                      Statistics, University of Washington, 1994  
M.S.                      Statistics, University of Washington, 1991  
B.S. with distinction      Statistics and Psychology, University of Michigan, 1988

### **Experience**

1994–present      Department of Statistics, Colorado State University  
                                 Professor, Associate Professor, and Assistant Professor  
2009–2010      Visiting Scientist, Commonwealth Scientific and Industrial Research Organisation  
                                 CSIRO Division of Mathematics, Informatics and Statistics, Brisbane, Australia  
2003              Visiting Professor, University of Otago, Department of Mathematics and Statistics  
                                 Dunedin, New Zealand (7 months)

### **Honors**

Colorado State University Alumni Association Best Teacher Award nominee, nominated by former students, 1999 and 2009  
Outstanding Science Mentor Award, Students as Leaders in Science, Colorado State University, 2008  
Colorado State University College of Natural Sciences Faculty Undergraduate Teaching Award, 2001-2002  
Women in Science Initiative award to recruit women to graduate programs in the sciences, University of North Carolina, Greensboro, Fall 1999  
National Science Foundation Academe/Industry Collaboration, Invited Member, 1995–1997  
University of Michigan Honor Roll, 1984–1988; Honors College, 1984–1986  
University of Michigan Alumni Scholarship for Excellence, 1984

### **Publications**

#### **Publications: Book**

Givens, Geof H. and Jennifer A. Hoeting (2005). *Computational Statistics*, John Wiley & Sons, New York, 418 pages. Book website with code and examples:  
[www.stat.colostate.edu/computationalstatistics/](http://www.stat.colostate.edu/computationalstatistics/)

#### **Publications: Peer Reviewed**

1. Meyer, M. C., A. Hackstadt, and J. A. Hoeting (2011). Bayesian Estimation and Inference for Generalized Partial Linear Models Using Shape-Restricted Splines. *Journal of Nonparametric Statistics*, **23**:4, 867-884.
2. Johnson, D. S. and J. A. Hoeting (2011). Bayesian Multimodel Inference for Spatial Regression Models. *PLoS ONE* 6(11): e25677. doi:10.1371/journal.pone.0025677.
3. Williams, M. S., E. D. Ebel, J. A. Hoeting (2011) “Bayesian Analysis for Food-Safety Risk Assessment: Evaluation of Dose-Response Functions within WinBUGS” *Journal of Statistical Software*, Vol 43, Code Snippet 2.
4. Johnson, D. S. and J. A. Hoeting (2011). Properties of Graphical Regression Models for Multidimensional Categorical Data, *Statistics and Probability Letters*. **81**, 1471-1475.

5. Burch, N., D. Estep, J. Hoeting (2011). Parameter Estimation and Directional Leverage With applications in differential equations. *Metrika*. Available online: DOI 10.1007/s00184-011-0358-4
6. Merrill, S. C., S. Walter, F. B. Peairs, and J. A. Hoeting (2011). Spatial Variability of Western Bean Cutworm (Lepidoptera: Noctuidae) Pheromone Trap Captures in Sprinkler Irrigated Corn in Eastern Colorado. *Environmental Entomology*, 40(3):654-600.
7. Higgs, M. D., J. A. Hoeting (2010). A Clipped Latent-Variable Model for Spatially Correlated Ordered Categorical Data. *Computational Statistics and Data Analysis*. 54:8, 1999-2011.
8. McClintock, B. T., J. A. Hoeting (2010). Bayesian analysis of abundance for binomial sighting data with unknown number of marked individuals. *Environmental and Ecological Statistics*, 17:317-332.
9. Schmidt, A., J. A. Hoeting, J. B. M. Pereira, P. P. Vieira (2010). Mapping Malaria in the Amazon Rain Forest: a Spatio-Temporal Mixture Model. In *The Handbook of Bayesian Analysis* (Anthony O'Hagan and Mike West, editors). Oxford University Press: Oxford, p 90-117.
10. Schliep, E. M., D. Cooley, S. R. Sain, J. A. Hoeting (2010). A Comparison Study of Extreme Precipitation from Six Different Regional Climate Models via Spatial Hierarchical Modeling. *Extremes*, 13:219-239.
11. Webb, C.T., J. A. Hoeting, G. M. Ames, M. I. Pyne, N. L. Poff (2010). A structured and dynamic framework to advance traits-based theory and prediction in ecology. *Ecology Letters*, 13: 267-283.
12. Givens, G. H., J. A. Hoeting, and L. Beri (2010). Factors that Influence Aerial Line Transect Detection of Bering-Chukchi-Beaufort Seas Bowhead Whales. *Journal of Cetacean Research and Management*, 11(1): 9-16.
13. Irvine, K, A. I. Gitelman, J. A. Hoeting (2007). Spatial Designs and Properties of Spatial Correlation: Effects on Covariance Estimation. *Journal of Agricultural, Biological and Environmental Statistics*, 12:4, 450-469.
14. Farnsworth, M. L., J. A. Hoeting, N. T. Hobbs, M. M. Conner, K. P. Burnham, L. L. Wolfe, E. S. Williams, D. M. Theobald, M. W. Miller (2007). The Role of Geographic Information Systems in Wildlife Landscape Epidemiology: Models of Chronic Wasting Disease in Colorado Mule Deer. *Veterinaria Italiana*, 43:3, 571-580.
15. Johnson, D. S., J. A. Hoeting and N. L. Poff (2006). Biological monitoring: A Bayesian Model for Multivariate Compositional Data. In *Bayesian Statistics and its Applications* (S. K. Upadhyay, U. Singh and D. K. Dey, editors), Anamaya publishers: New Delhi, p 270-289.
16. Hoeting, J. A., R. A. Davis, A. A. Merton, and S. E. Thompson (2006). Model Selection for Geostatistical Models. *Ecological Applications*, 16(1), 87-98.
17. Farnsworth, M. L., J. A. Hoeting, N. T. Hobbs, M. W. Miller (2006). Linking Mule Deer Movement Scales to the Spatial Distribution of Chronic Wasting Disease: A Hierarchical Bayesian Approach. *Ecological Applications*, 16(3), 1026-1036.
18. Reese, G. C., K. R. Wilson, J. A. Hoeting, C. H. Flather (2005). Factors affecting Species Distribution Predictions: A Simulation Modeling Experiment. *Ecological Applications*, 15:2, 554-564.
19. Hoeting, J. A., R. L. Tweedie and C. S. Olver (2003). Transform Estimation of Parameters for Stage-Frequency Data. *Journal of the American Statistical Association*, 98:463, 503-514.
20. Johnson, D. S. and J. A. Hoeting (2003). Autoregressive Models for Capture-Recapture Data: A Bayesian Approach. *Biometrics*, 59:340-349.
21. Hoeting, J. A., A. E. Raftery, and D. Madigan (2002). Bayesian Variable and Transformation Selection in Linear Regression. *Journal of Computational and Graphical Statistics*, 11:3, 485-507.
22. Heermann, D.F., J. A. Hoeting, S. E. Thompson, H. R. Duke, D. G. Westfall, G. W. Buchleiter, P. Westra, F. B. Peairs, and K. F. Fleming (2002). Interdisciplinary Irrigated Precision Farming Research. *Precision Agriculture*, 3, 47-61.

23. Hoeting, J. A., M. Leecaster, and D. Bowden (2000). An Improved Model for Spatially Correlated Binary Responses. *Journal of Agricultural, Biological, and Environmental Statistics*, **5**:1, 102–114.
24. Heermann, D.F., J. A. Hoeting, *et al.* (2000). Irrigated Precision Farming for Corn Production. In *Proc. of the Second International Conference on Geospatial Information in Agriculture and Forestry*, Lake Buena Vista, Florida, p. I-144–I-151.
25. Hoeting, J. A., D. Madigan, A. E. Raftery, and C. T. Volinsky (1999). Bayesian Model Averaging: A Tutorial (with discussion). *Statistical Science*, **14**:4, 382–417.
26. Heermann, D.F., J. A. Hoeting, *et al.* (1999). Interdisciplinary Irrigated Precision Farming Team Research. In *Proc. of 2nd European Conf. on Precision Agriculture* (J.V. Stafford, editor), 121–130.
27. Hoeting, J. A. and J. G. Ibrahim (1998). Bayesian Predictive Simultaneous Variable and Transformation Selection in the Linear Model. *Computational Statistics and Data Analysis*, **28**, 87–103.
28. Hoeting, J. A. and A. Olsen (1998). Are the fish safe to eat? Assessing mercury levels in fish in Maine lakes. *Statistical Case Studies: A Collaboration Between Academe and Industry* (R. Peck, L. Haugh, A. Goodman, editors), pages 1–13. ASA-SIAM.
29. Hoeting, J. A. and A. Olsen (1998). Book for students including the chapter “Are the fish safe to eat? Assessing mercury levels in fish in Maine lakes.” *Statistical Case Studies: A Collaboration Between Academe and Industry, Student Edition* (R. Peck, L. Haugh, A. Goodman, editors), pages 1–6. ASA-SIAM.
30. Hoeting, J. A. (1998). Sandbars in the Colorado River: an Environmental Consulting Project. *Statistical Science*, **13**, 9–13.
31. Raftery, A.E., D. Madigan, and J. A. Hoeting (1997). Bayesian Model Averaging for Linear Regression Models. *Journal of the American Statistical Association*, **92**, 179–191.
32. Hoeting, J. A., D. Madigan, and A. E. Raftery (1996). A Method for Simultaneous Variable Selection and Outlier Identification in Linear Regression. *Computational Statistics and Data Analysis*, **22**, 251–270.
33. Madigan, D., A. E. Raftery, C. T. Volinsky, and J. A. Hoeting (1996). Bayesian Model Averaging. *Integrating Multiple Learned Models (IMLM-96)*, (P. Chan, S. Stolfo, and D. Wolpert, editors), 77–83.

#### **Publications: Invited Comments, Invited White Papers, and Book Reviews**

- D. Cooley and J. A. Hoeting (2011) Discussion of “An explicit link between Gaussian fields and Gaussian Markov random fields: the stochastic partial differential equation approach” by F. Lindgren, H. Rue, and J. Lindstrom. *Journal of the Royal Statistical Society B*. **73**:4,470.
- K. Ogle, J. A. Hoeting, N. Cressie, R. Smith, S. Lele, R. McRoberts, L. Stefanski, G. Ziv (2011) White paper: “Measuring, Monitoring, and Forecasting Progress toward Sustainability,” in *Mathematical and Statistical Challenges for Sustainability*. A report of a National Science Foundation Workshop held November 15–17, 2010. p 102-118.
- Hoeting, J.A. (2009). The Importance of Accounting for Spatial and Temporal Correlation in Analyses of Ecological Data. *Ecological Applications*, **19**:3, 574–577.
- Hoeting, J. A. (2006). Some Perspectives on Modeling Species Distributions. Discussion of article by A. E. Gelfand, J. A. Silander, S. Wu, A. Latimer, P. O. Lewis, A. G. Rebelo, M. Holder. *Bayesian Analysis*, **1**:1, 93–98.
- Hoeting, J. A. (1997). Review of *Statistics and Data Analysis* by Siegel and Morgan, *The American Statistician*, **51**, 93–94.

#### **Publications: Submitted or under revision**

- Merton, A. A., J. A. Hoeting, C. T. Webb (2010). A Permutation Procedure for Spatially-Referenced Data. Submitted to *Environmetrics*.

Webb, C.T., A. A. Merton, J. A. Hoeting, R. S. Miller, M. L. Farnsworth, S. R. Swafford, T. J. DeLiberto, K. Pedersen, A. B. Franklin, R. G. McLean, K. R. Wilson, P. J. Doherty, Jr. (2011). Predicting Spatio-temporal Dynamics of Avian Influenza in Waterfowl in the United States. Submitted.

### **Publications: Other**

- Johnson, D. S. and J. A. Hoeting (2003). Random Effects Graphical Models for Multiple Site Sampling Technical Report 2003/15, Department of Statistics, Colorado State University.
- Hoeting, J. (2002). Methodology for Bayesian Model Averaging: An Update, In *Proceedings - Manuscripts of invited paper presentations, International Biometric Conference*, Freiburg, Germany, 231-240.
- Hoeting, J. A., R. L. Tweedie (2001). Parameter Estimation for Models of Biological Stage-Frequency Data, In *Proceedings of the Graybill Conference*, 2001, 177-210.
- Johnson, D.S., J. A. Hoeting, R. L. Tweedie (2001). Empirical Transform Estimation of Parameters in the Monomolecular Growth Model. Technical Report 2001-5, Department of Statistics, Colorado State University.
- Young, G., J. A. Hoeting, and B. G. Brown (2000). Applying the Autologistic Function with Covariates to Estimate Aircraft Icing Fields. In *Preprints 15th Conference on Probability and Statistics in the Atmospheric Sciences*. 8-11 May, Asheville, NC, American Meteorological Society (Boston), 50–53.
- Hoeting, J. A., M. Van Caster, and D. Bowden (1997). Technical report submitted to the U.S. Forest Service. Included 3 papers: 1. An Improved Model for Spatially Correlated Binary Responses, 2. Sampling Methodology for Detecting Rare Species, 3. Temporal Modeling of Probability of Species Presence.
- Hoeting, J. A., K. Varga, and B. Cluer (1997). Predicting Colorado River Sandbar Size Using Glen Canyon Dam Release Characteristics. Technical report for the National Park Service, 54 pp.
- Hoeting, J. A. (1994) Accounting for Model Uncertainty in Linear Regression. Ph.D. dissertation, Department of Statistics, University of Washington.

### **Software**

A number of my methodological papers have been accompanied by implementation software. I was the primary author of the AUTOLOGIT, BMA (for S-Plus) and SIMSEL programs listed below. Various co-authors wrote or co-wrote the other code. See my website for more information and to download the software: [www.stat.colostate.edu/~jah](http://www.stat.colostate.edu/~jah)

1. AUTOLOGIT: S-plus software to perform Bayesian estimation for an autologistic model with covariates. Hoeting, Leecaster, and Bowden (2000).
2. Autoregressive Models for Capture-Recapture Data: This winBUGS code performs Bayesian estimation for an AR(2) band-recovery model. Johnson and Hoeting (2003).
3. Bayesian abundance estimation for unknown number of marked individuals: Estimate abundance when sighting data are acquired from distinct sampling occasions without replacement, but the exact number of marked individuals is unknown. R and WinBUGS code to implement MCMC algorithm. McClintock and Hoeting (2009).
4. Bayesian Estimation and Inference for Generalized Partial Linear Models Using Shape-Restricted Splines. R code to implement MCMC algorithms. Meyer, Hackstadt, and Hoeting (2011).
5. BMA: R and S-Plus software to perform Bayesian model averaging (BMA) to account for model uncertainty in linear regression models, GLMs, and survival models. In R see <http://cran.r-project.org/src/contrib/Descriptions/BMA.html>. Hoeting, Madigan, Raftery, Volinsky (1999).
6. Model selection for geostatistical models: R code to compute AIC and MDL for geostatistical models. Hoeting, Davis, Merton, Thompson (2006).

7. Random Effects Graphical Regression Models for Multidimensional Categorical Data: This winBUGS code can be used to perform the discrete regression graphical modeling described in the accompanying paper. Johnson, Hoeting, Poff (2006).
8. SIMSEL: A set of XLISP-STAT functions to perform Bayesian Predictive Simultaneous Variable and Transformation Selection for regression, a criterion-based approach to model selection. Hoeting and Ibrahim (1998).

## **Grants and Contracts**

### **Current Grants and Contracts**

National Science Foundation Bayesian Hierarchical Modeling of Disease Dynamics - A Case Example Using Chronic Wasting Disease, Co-PI (PI: N.T. Hobbs, other Co-PIs: M. Miller, S. Tavener, M. Antolin, R. Boone) 2009-2014.	\$2,500,000
National Science Foundation Landscape Configurations in Yellowstone National Park: An Alternative State Stabilized by Herbivory?, Co-PI (PI: D. Cooper, other Co-PIs: D. Theobald, T. Hobbs, B. Baker) 2007-2011.	\$400,000
U.S. Environmental Protection Agency Basinwide Wetland Profile of the North Platte River Basin in Colorado, Co-PI (PI J. Lemly), 01/01/2009 - 12/31/2011.	\$297,818
U.S. Department of Agriculture, APHIS Modeling Avian Influenza, PI with C. Webb, 10/2009-8/2011.	\$141,696

### **Submitted**

National Science Foundation Long Term Research in Environmental Biology (LTREB): Understanding controls on state-transition on Yellowstones northern range (Co-PI, PI: N. T. Hobbs).	\$449,977
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### **Completed Grants and Contracts (PI, Co-PI, or similar)**

U.S. Department of Agriculture, Food Safety and Inspection Service Statistical Support for Chemical and Microbiological Risk Assessments, Sole PI, 9/2009-8/2010.	\$19,000
U.S. Department of Agriculture, APHIS-WS-NWRC Avian Influenza Risk Assessment for the United States: Modeling Pathways of Disease Spread by Wild Birds, Member of coordinating committee (similar to a CO-PI), 4/2007-4/2009.	\$500,000
National Science Foundation IGERT Program in Interdisciplinary Mathematics, Ecology and Statistics (PRIMES), Proposal co-author, 2003-2008.	\$3,261,000
U.S. Department of Agriculture, Agriculture Research Service Zero inflated Poisson models for agricultural data, Principal Investigator, 2007.	\$11,669
Environmental Protection Agency STARMAP: Applying Spatial and Temporal Modeling of Statistical Surveys to Aquatic Resources, Project P.I. for \$971,177 (Grant PIs: N.S. Urquhart and R. Davis) 2001-2006.	\$3,000,000
U.S. Department of Agriculture, Agriculture Research Service Statistical Modeling for Farming Operations, Principal Investigator, 2001-2006.	\$52,540

National Science Foundation New Approaches to Statistical Analysis of Ecological Data: Proposal for a Workshop, Proposal co-author, 2003.	\$37,975
National Science Foundation Methodology for Spatial Models for Binary Data, Principal Investigator, 1998–2000.	\$75,000
U.S. Department of Agriculture, Agriculture Research Service Statistical Modeling for Farming Operations, Principal Investigator (with R. Davis), 1997–2000.	\$115,000
Colorado State University Career Enhancement Grant, Principal Investigator, 1998.	\$545
United States Forest Service Surveying and Monitoring Rare Populations, Principal Investigator (with D. Bowden), 1995–7.	\$75,000
Thos. Y. Pickett & Company Colorado Property Assessment, Principal Investigator, 1996-7.	\$2300
Colorado State University Career Enhancement Grant, Principal Investigator, 1996.	\$4900
National Atmospheric Deposition Program The impact of catch efficiency on acid deposition concentrations, Principal Investigator, 1996.	\$5000
National Park Service Statistical Analysis of Aerial Photography Data Base from the GCES-II Test Flow Program, Principal Investigator, 1995–6.	\$10,650
National Atmospheric Deposition Program Acid Deposition, Principal Investigator, 1995.	\$9000
Colorado State University Investing in Instruction, Principal Investigator, 1995.	\$1000
Colorado State University Diversity Career Enhancement Grant, A Simultaneous Bayesian Method for Variable Selection, Outlier Identification, and Transformation Selection, Principal Investigator, 1995.	\$3800

**Completed Grants and Contracts, Investigator**

National Science Foundation Spatial and Temporal Dynamics of Prion Disease in Wildlife: Responses to Changing Land Use Investigator (PI: N.T. Hobbs) 2000-2005.	\$2,200,000
U.S. Department of Agriculture, Agriculture Research Service Multi-disciplinary precision farming strategies to increase profitability and sustainability in the Western Great Plains Investigator, 2000–03.	\$884,132
Colorado State University Agricultural Experiment Station, Interdisciplinary Research to Enhance Precision Farming Agronomic Outcomes, Investigator, 1997–2000.	\$100,000

**Presentations and Workshops**

**Short Courses and Workshops Conducted**

- “Methods for Monte Carlo Integration and Optimization”, CSIRO, Brisbane, Australia, with G. H. Givens, December 9, 2009.
- “Computational Statistics: Methods for Optimization and Monte Carlo Integration”, Joint Statistical Meetings, one day, Denver, CO, with G. H. Givens, August 4, 2008.
- “Computational Statistics: Methods for Optimization and Monte Carlo Integration”, Joint Statistical Meetings, one day, Seattle, WA, with G. H. Givens, August 6, 2006.
- “Computational Statistics: Methods for Optimization and Monte Carlo Integration with applications in R”, Alaska Chapter of the American Statistical Association, Juneau, AK, with G. H. Givens, July 18 and 19, 2006.
- “An Introduction to Bayesian Data Analysis,” NSF funded Program for Interdisciplinary Mathematics, Ecology, and Statistics Workshop on Bayesian Methods in Wildlife Population Monitoring, 2 hours, Fort Collins, CO, June 2006.
- “Computational Statistics: Methods for Optimization and Monte Carlo Integration”, Joint Statistical Meetings, one day, Minneapolis, MN, with G. H. Givens, August 2005.
- “Methods of integration for environmental problems in statistics: quadrature, Monte Carlo integration and Markov chain Monte Carlo methods”, Computational Environmetrics Conference, sponsored by the University of Chicago and the American Statistical Association Section on Statistics and the Environment, 1/2 day, Chicago, with G. H. Givens, Oct 2004.
- “Optimization methods for environmental problems in statistics: Numerical maximum likelihood, combinatorial optimization, EM Algorithm,” Computational Environmetrics Conference, sponsored by the University of Chicago and the American Statistical Association Section on Statistics and the Environment, 1/2 day, Chicago, with G. H. Givens, Oct 2004.

### **Invited Lectures**

- Joint Statistical Meetings, Miami, FL, “Evaluating Wetland Health: Multivariate multi-level latent variable models,” August 2011.
- Joint Statistical Meetings, Vancouver, Canada, “Statistical Challenges in Modeling Wildlife Diseases,” August 2010.
- Plenary session speaker, Bayes on the Beach, Stradbroke Island, Australia, “Modeling Spatially Correlated Ordinal Data”, October, 2009.
- Two hour tutorial session, Bayes on the Beach, Stradbroke Island, Australia, “Bayesian Model Averaging: An Overview”, October, 2009.
- Statistical Issues in Monitoring the Environment, sponsored by the American Statistical Association Section on Statistics and the Environment, Boulder, CO, “Distribution-free Comparison of Multiple Spatial Point Patterns,” October 2008.
- SAMSI Program on Environmental Sensor Networks, Durham, NC, “Hierarchical Bayesian Models”, January 2008.
- WNAR/IMS 2007, Irvine, CA, Spatial models for ordered categorical data,” June, 2007.
- Joint Statistical Meetings, Seattle, WA, “Geostatistical Modeling: Model Selection and Parameter Estimation,” August 2006.
- NSF funded Program for Interdisciplinary Mathematics, Ecology, and Statistics Workshop on Bayesian Methods in Wildlife Population Monitoring, Fort Collins, CO, June 2006, ‘WinBUGS Tutorial,’ invited talk.
- Conference on Uncertainty in Ecological Analysis, Ohio State University, Columbus, OH, “Modeling in the Presence of Uncertainty,” Invited discussant for papers by A. Gelfand and J. Breidt. April 2006.
- Joint Statistical Meetings, Minneapolis, MN, “Bayesian Models for a Multivariate Discrete Response,” August 2005.

International Conference on Bayesian Statistics and its Applications, Varanasi, India, “Biological monitoring: Bayesian models for a discrete multivariate response”, January 2005.

Science To Achieve Results (STAR) Environmental Research Seminar, EPA Region 8, Denver, CO, “Colorado State University’s EPA-Funded Program on Space-Time Aquatic Resources Modeling and Analysis Program (STARMAP),” May 2004 (with N.S. Urquhart).

Statistics in Ecology, NSF sponsored workshop, Jackson Hole, WY, “Model selection for geostatistical models”, December, 2003.

Case Studies in Bayesian Statistics, Workshop 7, Pittsburgh, PA, discussion of Alan Gelfand’s “Modeling Species Diversity Through Species Level Hierarchical Modeling,” September, 2003.

International Biometrics Conference, Freiburg, Germany, 2002, “Methodology for Bayesian Model Averaging: An Update.”

WNAR/IMS, Los Angeles, CA, “Autoregressive Models For Capture-Recapture Data,” 2002.

Joint Statistical Meetings, Atlanta, GA, 2001, “Mapping Rare Plant Species using the Autologistic Model with Covariates and a Measure of Sampling Effort.”

Graybill Conference, Fort Collins, CO, 2001, “Transform Estimation of Parameters for Biological Stage-Frequency Data.”

Interface, Chicago, IL, 1999, “An Improved Model for Spatially Correlated Binary Responses.”

National Center for Atmospheric Research, Boulder, CO, 1999, “Modeling Rare Species.”

Women’s Studies Science Initiative, University of North Carolina, Greensboro, NC, “Graduate School and Beyond,” 1999.

Joint Statistical Meetings, Anaheim, CA 1997, “Predictive Simultaneous Variable and Transformation Selection.”

U.S.D.A. Forest Service, Rocky Mountain Research Station, Fort Collins, CO, “Survey and Monitoring Methods for Rare Species at Risk,” 1997.

Colorado State University, Fort Collins, CO, McNair Minority Scholarship Program, “Graduate School: What is it really like?” 1997.

WNAR/IMS/IBS, Pullman, ID, 1996, “A New Method for Variable and Transformation Selection.”

WNAR/IMS/IBS, Pullman, ID, 1996, “Sandbars in the Colorado River: a statistical consulting project.”

WNAR/IMS/IBS, Pullman, ID, 1996, panel discussant on “Issues in Statistical Consulting for New Researchers.”

Joint Statistical Meetings, Chicago, IL, 1996, discussant for session “Bayesian Regression Model Specification and Implementation.”

Joint Statistical Meetings, Chicago, IL, 1996, “Are the fish safe to eat? Assessing mercury levels in fish in Maine lakes,” invited poster presentation.

American Statistical Association, Colorado-Wyoming Chapter, Boulder, CO, 1995, “Using Projects in Graduate Level Methods Classes.”

### **Departmental Seminars**

CSIRO (Commonwealth Scientific and Industrial Research Organisation), Canberra, Australia, “Statistics and Ecology”, March 2010.

CSIRO (Commonwealth Scientific and Industrial Research Organisation), Brisbane, Australia, “A Clipped Latent-Variable Model for Spatially Correlated Ordinal Data”, October 2009.

- North Carolina State University, Department of Statistics, Raleigh, NC, "Clipped Latent-Variable Spatial Models for Ordinal Data," January, 2008.
- Colorado State University, Natural Resources in Ecology Lab, Fort Collins, CO, "Spatial Modeling in Ecology," April 2008.
- University of Wyoming, Department of Statistics, Laramie, WY, "Clipped Latent-Variable Spatial Models for Ordinal Data," November 2007.
- University of Wisconsin, Department of Statistics, Madison, Wisconsin, "How and When to use Bayesian Model Averaging," October 2007
- The Ohio State University, Department of Statistics, Columbus, OH, "Model Selection and Parameter Estimation for Geostatistical Models," November 2006.
- Oregon State University, Department of Statistics, Corvallis, OR, "Model Selection for Geostatistical Models", April 2005.
- Colorado State University, Department of Mathematics, Fort Collins, CO, "A Statistical Model for a Multivariate Compositional Response", March 2005.
- University of Otago, Department of Mathematics and Statistics, Dunedin, New Zealand, "Statistical Models for Stream Ecology Data," March 2003.
- Duke University, Institute of Statistics and Decision Sciences, Durham, NC, 1999, "Bayesian Model Averaging for Spatial Prediction."
- University of North Carolina, Greensboro, Mathematics Department, Greensboro, NC, 1999 "Farming, Sandbars, and Fungi: Statistics and the Environment."
- Colorado State University, Dept. of Fisheries and Wildlife Biology, discussant for "Stat Lore," 1997.
- Colorado State University, Department of Computer Science, Fort Collins, CO, 1996, "Statistical Computing and Bayesian Model Averaging".
- University of Wyoming, Department of Statistics, Laramie, WY, 1996, "Simultaneous Predictive Variable and Transformation Selection."
- Colorado State University, Department of Chemical and Bioresource Engineering, Fort Collins, CO, 1996, "Statistics and Experimental Design. Why Bother?"
- Colorado State University, Department of Statistics, Fort Collins, CO, 1996, "Bayesian Simultaneous Predictive Variable and Transformation Selection in the Linear Model."
- Colorado State University, Department of Statistics, Fort Collins, CO, 1994, "Bayesian Model Averaging for Linear Regression Models."
- University of Colorado, Department of Preventive Medicine and Biometrics, Denver, CO, 1994, "Accounting for Model Uncertainty in Linear Regression."
- Carnegie Mellon University, Department of Statistics, Pittsburgh, PA 1994, "Accounting for Model Uncertainty in Linear Regression."
- Duke University, Institute of Statistics and Decision Sciences, Durham, NC, 1994, "Accounting for Model Uncertainty in Linear Regression."

### **Contributed talks and other conference contributions**

- Statistical Modelling and Inference Conference, Brisbane, Australia, February 2010, "A Bayesian Approach to Fitting Generalized Partial Linear Regression Models Using Shape-Restricted Splines," refereed contributed talk.

International Symposium on Veterinary Epidemiology and Economics, Durban, South Africa, July 2009, "Avian influenza in waterfowl: assessing the potential spread and impact on poultry in the United States based on wild waterfowl movement," contributed talk.

Fourth Annual Conference on Statistical Survey Design and Analysis for Aquatic Resources, Corvallis, OR, September 2005, "Geostatistical Modeling: Model Selection and Parameter Estimation," contributed talk.

Joint Statistical Meetings, Minneapolis, MN, August 2005, Statistical Methodological Developments in Natural Resources Surveys, session chair.

Conference on Statistical Survey Design and Analysis for Aquatic Resources, Corvallis, Oregon, August 2003, "Analysis and Modeling of Acid Neutralizing Capacity in the Mid-Atlantic Highlands Area," poster with B. Kellum and N.S. Urquhart.

International Workshop on Bayesian Analysis, University of California at Santa Cruz, August 2003, "Spatial Epidemiology of Chronic Wasting Disease in Colorado Mule Deer," poster with M. Farnsworth.

Joint Statistical Meetings, Indianapolis 2000, "Bayesian Model Averaging for Spatial Prediction," contributed talk.

Joint Statistical Meetings, Atlanta, 2001, "Empirical Processes, Repeated Measures and Mixed Models: Biometric Applications," session chair.

Case Studies in Bayesian Statistics Workshop 4, Pittsburgh 1997, "An Improved Model for Spatially Correlated Binary Responses," poster.

Joint Statistical Meetings, Orlando 1995, "A Bayesian Method for Simultaneous Variable and Transformation Selection in Linear Regression," contributed talk.

International Workshop on Model Uncertainty and Model Robustness, Bath, England, 1995, "Model Averaging for Linear Regression Models using Bayesian Simultaneous Variable, Outlier and Transformation Selection (SVOT)," poster with G. Gadbury.

North American Meeting of the International Society for Bayesian Analysis, Toronto, 1994, "Model Averaging and Accounting for Model Uncertainty in Linear Regression," contributed talk.

First World Conference of the International Society for Bayesian Analysis, San Francisco, 1993. "Variable Selection and Accounting for Model Uncertainty in Linear Regression," contributed talk.

## Teaching

### **Courses Taught at Colorado State University**

1. ST192 First Year Seminar in the Mathematical Sciences
2. ST204 Statistics for Business Students
3. ST301 Introduction to Statistical Methods
4. ST304/ST340 Multiple Regression Analysis
5. ST309 Statistics for Engineers and Scientists
6. ST350 Experimental Design
7. ST420 Probability and Mathematical Statistics I
8. ST472 Statistical Consulting
9. ST486 Practicum (Consulting Techniques)
10. ST511 Design and Data Analysis for Researchers I
11. ST512 Design and Data Analysis for Researchers II
12. ST540 Data Analysis and Regression
13. ST586 Practicum in Consulting Techniques
14. ST600 Statistical Computing
15. ST640 Design and Linear Models I
16. ST675D Computer Intensive Statistics
17. ST675K Bayesian Statistics
18. ST740 Models and Methodology for Spatially-Explicit Data
19. ST796 Advanced MCMC methods

### **Research Scientist Supervision**

Andrew Merton, November 2009–2011. Funded by USDA grant, “Modeling Avian Influenza.”  
Co-supervised with Colleen Webb.

### **Post-doctoral Supervision**

Man Sik Park, 2006. Funded under Environmental Protection Agency grant, “STARMAP: Applying Spatial and Temporal Modeling of Statistical Surveys to Aquatic Resources.”

Andrew Merton, May 2007–May 2009. Funded by USDA grant, “Avian Influenza Risk Assessment for the United States: Modeling Pathways of Disease Spread by Wild Birds.” Co-supervised with Colleen Webb.

### **Graduate Student Supervision**

Current Students

Chair of current Ph.D. committee

1. Nicholas Cummings
2. Erin Schliep
3. Libo Sun
4. Lulu Wang

Chair of current M.S. committee

1. Michael Buhnerkempe
2. Michael O’Brien
3. Lenae Anderson (exam option)

Member of current Ph.D. committee: 10

Member of current M.S. committee: 2

#### Former Students

##### Chair of Ph.D. committee

1. Amber Hackstadt, 2011, *Bayesian Shape-Restricted Regression Splines* (M. Meyer, co-adviser). Now Postdoctoral Associate, Johns Hopkins, Department of Biostatistics.
2. Alisa Wade Wilcox, 2009, *Anthropogenic Land Use Influences on Adjacent Ecological Systems: Implications for Conservation Planning* (co-advisor, Department of Geosciences). Now Postdoctoral Associate, National Center for Ecological Analysis and Synthesis.
3. Megan Dailey Higgs, 2007, *Clipped Latent-Variable Spatial Models for Ordered Categorical Data*. Now at Montana State University, Assistant Professor.
4. Andrew Merton, 2006, *Geostatistical Models: Model Selection and Parameter Estimation under Infill and Expanding Domain Asymptotics*, (R. Davis, co-advisor). Now Research Scientist, Colorado State University.
5. Devin Johnson, 2003, *Bayesian Analysis of State-Space Models for Discrete Compositions*. Now at the National Marine Mammal Laboratory, Alaska Fisheries Science Center, NOAA.
6. Sandra Thompson, 2000, *Bayesian Model Averaging and Spatial Prediction* (R. Davis, co-advisor). Now at Pacific Northwest National Laboratory, Richland, Washington.
7. Molly Leecaster, 1999, *The Autologistic Model with Covariates for Sample Data and Robust Sampling Designs Using Predicted Probability of Presence* (D. Bowden, co-advisor). Now at University of Utah, School of Medicine.

##### Chair of M.S. committee

1. Benjamin J. Bird, 2010. *A Handbook for Computational Statistics Including a New Application of Reversible Jump Markov Chain Monte Carlo for Gene Expression Clustering* (co-advised with Geof Givens)
2. Erin Schliep, 2009. *Spatial Hierarchical Modeling in Comparing Extreme Precipitation Generated by Regional Climate Models* (Co-advisor with Dan Cooley).
3. Eugene Davis, 2009. *Using Data Windowing to Reduce the False Positive Rate in Model Selection for Polymerase Chain Reaction Amplification Curves*.
4. Megan Baburek, 2009. *Bayesian Model Averaging in Economics*
5. Nathaniel Burch, 2009. *On Optimal Sampling Designs to Estimate Unknown Parameters in Partial Differential Equations via Markov Chain Monte Carlo*
6. Alexander Chen, 2009 (exam option M.S.)
7. Brett McClintock, 2008. *Bayesian Analysis of Abundance for Binomial Sighting Data with Unknown Number of Marked Individuals*.
8. Laura Beri, 2008. *Detection Function Analysis for a Bowhead Whale Population*, (co-advisor with G. Givens).
9. Doug Gorman, 2008. *A Comparison of Bayesian Models for Spatially Correlated Binary Lattice Data*.
10. Stephanie Fitchett, 2007. *An Investigation of Intensity of Sampling Locations in Spatial Modeling of Stream Chemistry*, (N.S. Urquhart, co-advisor)
11. Maggie Stanislawski, 2007, *Model Choice for Agricultural Data: A Comparison of Regression-type Models to Predict Weed Counts*
12. Julia Smith, 2006, *Modeling and Predicting Median Substrate Size in Oregon and Washington Streams Utilizing Geographic Information Systems*
13. Brett Kellum, 2003, *Analysis and Modeling of Acid Neutralizing Capacity in the Mid-Atlantic Highlands Area*
14. Andrew Leach, 2003, *A Comparison of Models for Predicting Corn Yield*
15. Melea Brown, 2002, *A Regression Model for Mercury Levels in Maine and a Comparison of the Effect of Outliers on Several Variogram Estimators*
16. Devin Johnson, 2000, *Empirical Transform Estimation of Growth Curve Parameters*

17. Greg Young, 2000, *Application of the Autologistic Model with Covariates to Estimate an Icing Field*
18. Kristina Varga, 1997, *Predicting Sandbar Size for the Colorado River*

Ph.D. committee member: 16

M.S. committee member: 32

### **Undergraduate Advising**

Undergraduate advisor for statistics majors, mathematics majors (statistics concentration), and statistics minors. 1998-present. Approximately 20-40 students per year.

### **Professional Service**

#### **Editorial Boards**

Associate Editor, *Journal of Agricultural, Biological, and Environmental Statistics (JABES)*, 2011-present.

Associate Editor, *Environmetrics*, 2010-present.

Associate Editor, *Journal of the American Statistical Association*, Theory and Methods, 2008-present.

Associate Editor, *Journal of the American Statistical Association*, Applications and Case Studies, 2001-2006.

#### **Grant Review Panels**

National Institutes of Health (November, 2001)

National Institutes of Health (July, 2002)

National Institutes of Health (April, 2003)

#### **Grant Refereeing**

National Science Foundation

#### **Manuscript Refereeing**

*The American Statistician*

*American Journal of Mathematical and Management Sciences*

*Bayesian Analysis*

*Canadian Journal of Statistics*

*Communications in Statistics*

*Computational Statistics and Data Analysis*

*Ecology*

*Ecological Applications*

*Journal of Agricultural, Biological and Environmental Statistics*

*Journal of the American Statistical Association*

*Journal of Computational and Graphical Statistics*

*Journal of Statistical Planning and Inference*

*Journal of Econometrics*

*Journal of the Royal Statistical Society B*

*Psychological Methods*

*Scandinavian Journal of Statistics*

*Statistics and Computing*

*Statistics in Medicine*

*Technometrics*

U.S. Department of Agriculture  
U.S. Forest Service

### **Professional offices**

Chair (elected), American Statistical Association, Section on Statistics and the Environment (Chair Elect in 2010)

Representative At-Large (elected), International Biometric Society, Western North American Region (WNAR), 2006-2008

Lindley Prize Committee (for innovative research in Bayesian statistics), International Society for Bayesian Analysis, 2007-8

Officer Nomination Committee, International Society for Bayesian Analysis, 2006

Publications chair (elected), American Statistical Association, Section on Statistics and the Environment 2005 and 2006

### **Conference Organization**

Conference Organizer

Joint Statistical Meetings Program Committee 2006, Institute of Mathematical Statistics, Contributed Session Organizer

Computational Environmetrics Workshop, American Statistical Association, Section on Statistics and the Environment, Chicago, IL, October 2004

Graybill Conference: Spatial Statistics – Agricultural, Ecological, and Environmental Applications, Fort Collins, CO, June 2004

Session organizer

Statistical Methods for Monitoring our Aquatic Resources, Joint Statistical Meetings, invited session for the Section on Statistics and the Environment, August 2005

Bayesian Solutions to Challenging Problems in Ecology, Joint Statistical Meetings, invited session for the Bayesian Statistics Section, August 2004

## Committees

### Department Committees at CSU

1. Executive Committee, 2003–2006, 2010–2011, 2011-2012
2. Promotion and Tenure Committee, 2011-2014
3. Undergraduate Committee:  
Chair, 1998–2009, 2010-present  
Member, 1997–1998
4. Undergraduate Advisor: 1998–2009, 2010-present
5. Faculty Hiring Committee:  
2011–2012, Assistant Professor search (committee chair)  
2010–2011, Associate/Full Professor search (committee chair)  
2010, Department Chairman search  
2004–2005, Assistant Professor position search  
2001–2002, Assistant Professor position search (2 positions)  
1999–2000, Assistant Professor position search  
1998–1999, Assistant Professor position search  
1999–2000, Associate/Full Professor position search  
1996–1997, Department Chairman search
6. Chair of Distance Program Coordinator search committee, 2005-2006
7. Graduate Screening Committee, 1996–1997
8. Seminar Organizer, 1998
9. Internship/Job Search Coordinator 1995–present. Evaluate resumes and provide assistance to Statistics graduate and undergraduate students seeking internships and permanent positions. Organize career panels and career related seminars targeted for Statistics students

### College of Natural Sciences (CNS) Committees at CSU

1. Women in Natural Science (mentor women in our college)  
Co-director 2010-present  
Grants and Awards Committee, 2007–2009
2. Search committee for Interim Associate Dean for Undergraduate Studies, Feb. 2009
3. CNS committee on PRISM (CSU's Plan for Researching Improvement and Supporting Mission), 2006–2009
4. Natural Sciences Learning Task Force, 2004–2005
5. Committee for Determining Future Directions in Undergraduate Education, Chair of sub-committee on interdisciplinary programs, 2001–2002
6. Department of Mathematics Undergraduate Committee, member 2000–present
7. Undergraduate Committee, 2002-present

### University and Other Committees at CSU

1. National Science Foundation IGERT, Program in Interdisciplinary Mathematics, Ecology and Statistics (PRIMES)  
PRIMES Council, 2003–2009  
Post-doc Hiring Committee: 2003-4  
Seminar Organizing Committee, 2003–2005  
Minority Participation Committee, 2003–2005
2. Hiring committee for the National Acid Deposition Program (NADP) through CSU's Natural Resources Ecology Laboratory (NREL), Fall, 1996
3. Hiring committee for the Department of Computer Science, 2004-2005

### Departmental Reviews

1. Colorado State University Internal Review Committee for the Department of Economics, 2005
2. University of Utah External Review Committee for the Masters of Statistics programs, Fall 2008