

MARK STEVEN KAISER
CURRICULUM VITAE

January 2021

Address:

Department of Statistics
Iowa State University
Ames, Iowa 50011-1210 515/294-8871 email: mskaiser@iastate.edu

Education:

- B.S. Fisheries and Wildlife, Magna Cum Laude, 1979
University of Missouri, Columbia
- M.S. Fisheries and Wildlife, 1982
University of Missouri, Columbia
Thesis: Foraging Ecology of Green Herons
- M.A. Statistics, 1984
University of Missouri, Columbia
- Ph.D. Statistics, 1990
University of Missouri, Columbia
Major Professor: Paul L. Speckman
Thesis: Statistical Models for Limiting Factors in Ecology

Experience:

- 1985-1991: Mathematical Statistician, National Fisheries Contaminant Research Center, U.S. Fish and Wildlife Service, Columbia, Missouri
- 1989-1991: Elected Research Associate, School of Natural Resources, University of Missouri, Columbia
- 1990-1991: Adjunct Assistant Professor, Department of Statistics, University of Missouri, Columbia
- 1991-1997: Assistant Professor, Department of Statistics, Iowa State University
- 1995-: Faculty Member, Interdepartmental Major in Ecology and Evolutionary Biology, Iowa State University
- 1997-2003: Associate Professor, Department of Statistics, Iowa State University
- 2003- : Professor, Department of Statistics, Iowa State University

1998-2003 &
2008-: Director of Graduate Education, Department of Statistics, Iowa State University

Honors: Fellow, American Statistical Association, 2006
Regents Faculty Excellence Award, Iowa State University, 2009

Editorships:

2010-2016: Associate Editor, *Statistics and its Interface*

2004-2006: Editor, Applications and Case Studies, and Coordinating Editor, *Journal of the American Statistical Association*

1998-2003: Associate Editor, Applications and Case Studies, *Journal of the American Statistical Association*

2000-2008: Member, Editorial Board, *Environmetrics*

Journal Review:

American Statistician: 1992, 1998

Biometrics: 1999, 2000, 2003

Computational Statistics: 1994

Computational Statistics and Data Analysis: 2006, 2014

Environmental and Ecological Statistics: 1996, 2003

Environmetrics: 1997, 2012, 2013

Political Analysis: 2019

Journal of Agricultural, Biological and Environmental Statistics: 1998

Journal of the American Statistical Association: 1997, 1998, 2011

Journal of Computational and Graphical Statistics: 1995

Journal of Geophysical Research: 2002, 2003

Journal of Multivariate Analysis: 2006, 2009, 2011

Journal of the Royal Statistical Society, Series A: 1993

Journal of the Royal Statistical Society, Series B: 2011, 2019

Journal of the Royal Statistical Society, Series C: 2002, 2012

Journal of Statistical Planning and Inference: 2000, 2001, 2010

Journal of Transportation and Statistics: 2000

Scandinavian Journal of Statistics: 2002

Spatial Statistics 2014

Statistics and Probability Letters: 1996, 2008

Statistical Science: 1998

Ecology: 1995, 1997

Ecological Applications: 2007
Environmental Toxicology and Chemistry: 1991
Lake and Reservoir Management: 1992, 1993, 1994, 1995
Mathematical Geology: 1998
North American Journal of Fisheries Management: 1989
Spatial Statistics 2013
Technometrics: 2012, 2013
The American Naturalist: 2000
The Journal of Wildlife Management: 1989, 1990, 1991, 2009
Transactions of the American Fisheries Society: 1989
Wildlife Society Bulletin: 1992

Grant Proposal Review:

National Science Foundation, Division of Earth Sciences: 1997, 1998, 2003
National Science Foundation, Division of Mathematical Sciences: 1998, 2000, 2001, 2002, 2003
National Institutes of Health, National Institute of General Medical Sciences: 2002
U.S. Civilian Research and Development Program, Georgian-U.S. Bilateral Grants: 2001, 2002

Review Panels:

Environmental Protection Agency: 2003
National Science Foundation, Division of Mathematical Sciences: 2002
 National Science Foundation External Review of the Geophysical Statistics Project at the
 National Center for Atmospheric Research (chair): 2002
National Institutes of Health, Center for Scientific Review: 2001
 National Marine Fisheries Service, Panel Review of Red Snapper Research and
 Management in the Gulf of Mexico: 1997
 National Marine Fisheries Service, outside expert for Planning Meeting on Red Snapper
 Research in the Gulf of Mexico (response to external review): 1998
National Marine Fisheries Service, Northeast Fisheries Science Center, Calibration Workshop for
the FSV H.B. Bigelow research vessel, Woods Hole, MA: 2007

Other Professional Activities:

1992: Organizer, session on statistical analysis, Annual Meeting of the Society of
Environmental Toxicology and Chemistry, Cincinnati, Ohio
1997: Organizer, invited paper session, Biometric Society Spring Meeting, ENAR, Memphis, TN
1997: Organizer, invited paper session, Joint Statistical Meetings, SPES, Anaheim, CA
1997: Instructor, Applied Statistics Workshop (short course), American Fisheries Society,
Ames, IA
1998: Program Chair, Biometrics Section, American Statistical Association
1999: Member, Program Committee, International Biometrics Society, ENAR, for 1999 Spring
Meeting
2002: Invited Participant, National Science Foundation Workshop, "Statistics in the 21st Century"

- 2009: Chair of ASA Committee on Selection of an Editor for JASA Applications and Case Studies and Coordinating Editor
- 2012: Member of of ASA Committee on Selection of an Editor for JASA Applications and Case Studies and Coordinating Editor
- 2017: Instructor, Module on Sampling Methods for Production of Fishing and Aquaculture Statistics, Third Regional Training Course on Sampling Methods for Producing Core Data Items for Agriculture and Rural Statistics. Statistical Institute for Asia and the Pacific, United Nations Economic and Social Commission for Asia and the Pacific. Jakarta, Indonesia, October, 2017.

Grants:

- 1992-1993: Principal Investigator, “Models for the Abundance of Aquatic Birds as Related to Habitat Variables”, U.S. Fish and Wildlife Service, \$9,950
- 1992: Principal Investigator, “Applied Statistical Models Using Discrete Distributions with Extreme Classes”, Iowa State University, \$4,017
- 1994-1995: Principal Investigator (with F.J. Breidt and S.M. Nusser), “Statistical Review of Minnesota’s Fish Contaminant Monitoring Program”, State of Minnesota, \$79,350
- 1994-1997: Co-Investigator (with N. Cressie, S.N. Lahiri, D.H. Cook and J.J. Majure), “Spatial Statistical Research Applied to Ecological Resource Monitoring Programs”, U.S. Environmental Protection Agency, \$816,525
- 1997-1998: Principal Investigator (with N. Cressie, S.N. Lahiri and M. Daniels), “Use of Spatial Markov Random Field Models in Environmental Monitoring”, U.S. Environmental Protection Agency, \$89,715
- 1997-1999: Co-Investigator (with W.R. Stephenson, W.Q. Meeker and D.H. Cook), “Beyond Traditional Statistical Methods”, National Science Foundation, \$79,440
- 1998-2001: Principal Investigator (with M.J. Daniels, P. Dixon and S.N. Lahiri), “Development of Conditionally Specified Statistical Models for the Analysis of Environmental Studies”, National Science Foundation, Division of Mathematical Sciences, \$299,998
- 2001-2005: Principal Investigator (with D.L. Isaacson), “VIGRE in the Department of Statistics at Iowa State University” (training grant), National Science Foundation, Division of Mathematical Sciences, \$2,278,776
- 2002-2003: Principal Investigator (with P.Dixon), “Spatial Prediction of Sediment Categories for use in Ecological Response Modeling”, U.S. Geological Survey, \$26,890
- 2002-2006: Co-Investigator (D. Birt, PI), “Center for Research on Dietary Botanical Supplements”, National Institutes of Health, National Institute for Environmental Health Sciences and Office of Dietary Supplements, \$6,069,636 total for center, information on share for Dept. of Statistics not available but project supported a graduate student and included some summer salary and involved both Kaiser and Philip Dixon from Statistics.
- 2009: Co-Investigator (with P.C. Caragea and D.J. Nordman), “Statistical Analysis for the

- Effects Of Management Practices, Soil, and Weather on Corn Yield Differences in 'Normal minus 50' On-farm Nitrogen Trials in Iowa, Iowa Soybean Association, \$36,746
- 2010-2011: Co-Investigator (with Z. Zhu), "Real Time Performance Measurement for Highway Winter Maintenance Operations", Iowa Department of Transportation, \$50,067
- 2011-2012: Co-Principal Investigator (with P.C. Caragea) "Development of Hierarchical Models for Assessment of On-farm Fertilizer Trials", Iowa Soybean Association, \$31,000
- 2010-2013: Co-Principal Investigator (C. Phillips, Sandia NL, PI) "Statistically Significant Relational Data Mining", Sandia National Laboratories, \$1,699,000. ISU share \$235,000 (with D.J. Nordman)
- 2013-2014: Co-Principal Investigator (C. Phillips, Sandia NL, PI) "Statistically Significant Relational Data Mining", Sandia National Laboratories, additional renewal . ISU share \$138,000 (with D.J. Nordman)
- 2013-2014: Co-Principal Investigator (with Tina Greenfield, Iowa DOT and Z. Zhu) "Improving Estimation of Real-Time Traffic Speeds During Winter Weather", AURORA Program, through the Iowa Department of Transportation, \$130,000
- 2014-2016: Co-Principal Investigator (with Z. Zhu), "Data Driven Urban Traffic Prediction for Winter Performance Measurements", Midwest Transportation Center, \$75,000
- 2014: Co-Principal Investigator (with P. C. Caragea and V. Roy) "Hierarchical Statistical Models for the Analysis of On-Farm Agricultural Trials on Fungicide Use in Soybeans", Iowa Soybean Association, \$24,683.
- 2016-2017: Co-Principal Investigator (with E. Berg) "Development of a Master Sampling Frame for Fisheries and Aquaculture Statistics", United Nations, \$64,928.

Journal Publications:

- Casleton, E., Nordman, D. and Kaiser, M.S. (2020), Local structure graph models with higher-order dependence. *Canadian Journal of Statistics*. Published online 21 October 2020, <https://doi.org/10.1002/cjs.11573>.
- Kaplan, A., Kaiser, M.S., Lahiri, S.N. and Nordman, D.J. (2020), Simulating Markov random fields with a clique-based Gibbs sampler. *Journal of Computational and Graphical Statistics*, **29**, 286-296.
- Chyzh, O.V. and Kaiser, M.S. (2018), A local structure graph model: Modeling Formation of network edges as a function of other edges. *Political Analysis*. In press.
- Castleton, E., Nordman, D. and Kaiser, M.S. (2017), A local structure model for network analysis. *Statistics and Its Interface*, **10**, 355-367.
- Gougherty, A.V., Pazdernik, K.T., Kaiser, M. S. and Nutter, F.W., Jr. (2015). Evaluation of the sampling and testing efficiencies of Plum pox virus eradication programs in Pennsylvania and Ontario. *Plant Disease*, **99**, 1247-1253.

- Kaiser, M.S., Pazdernik, K.T., Lock, A.B. and Nutter, F.W. (2014) Modeling the spread of Plant disease using a sequence of binary random fields with absorbing states. *Spatial Statistics*, **9**, 38-50.
- Roy, V. and M.S. Kaiser. (2013), Bayesian regression for binomial response data with a family of link functions. *Statistical Methodology* **13**, 25-41.
- Kyveryga, P.M, Caragea, P.C., Kaiser, M.S. and Blackmer, T.M. (2013), Predicting Risk from Reducing Nitrogen Fertilization Using Hierarchical Models and On-Farm Data. *Agronomy Journal* **105**, 85-94
- Kaiser, M.S., Lahiri, S.N. and Nordman, D.J. (2012), Goodness of fit tests for a class of Markov random field models. *Annals of Statistics* **40**, 104-130.
- Kaiser, M.S., Caragea, P.C., and K. Furukawa. (2012), Centered parameterizations and limitations of Dependence in Markov random field models. *Journal of Statistical Planning and Inference* **142**, 1855-1863.
- Kaiser, M.S. and Nordman, D.L. (2012), Blockwise empirical likelihood for spatial Markov model assessment. *Statistics and Its Interface* **5**, 303-318.
- Cai, W., Kaiser, M.S. and Dekkers, J.C.M. (2012), Bayesian analysis of the effect of selection for residual feed intake on growth and feed intake curves in Yorkshire swine. *Journal of Animal Science*, **90**, 127-141.
- Wu, H., Kaiser, M.S., Rahardja, D. and Zhao, Y.D. (2011), Asymptotic properties of maximum likelihood estimators for spatial nonhomogeneous Poisson process models. *International Journal of Pure and Applied Mathematics*, **69**, 151-183.
- Cai, W., Kaiser, M.S. and Dekkers, J.C.M. (2011), Genetic analysis of longitudinal measurements of performance traits in selection lines for residual feed intake in Yorkshire swine. *Journal of Animal Science*, **89**, 1270-1280.
- Wang, Y., Kaiser, M.S., Larson, J.D., Nasevicuis, A., Roberg-Perez, S., Clark, K.J., Hackett, P.B, Ekker, S., McGrail, M. and Essner, J.J. (2010). Moesin 1 and Vcadherin are required in endothelial cells during in vivo tubulogenesis. *Development*, **137**, 3119-3128.
- Kaiser, M.S. and Caragea, P.C. (2009), Exploring dependence with data on spatial lattices. *Biometrics*, **65**, 857-865 .
- Caragea, P.C. and Kaiser, M.S. (2009), Autologistic models with interpretable parameters, *Journal of Agricultural, Biological and Environmental Statistics*, **14**, 281-300.
- Kaiser, M.S. and Nordman, D.J. (2008), Discussion of paper by Mendel Fygenon. *Statistica Sinica* **18**, 63-68 (contributed discussion subject to peer review).
- Senchina, D.S., McCann, D.A., Asp, J.M., Johnson, J.A., Cunnick, J.E., Kaiser, M.S. and Kohut, M.L. (2005), Changes in immunomodulatory properties of Echinacea spp. root infusions and tinctures stored at 4^o C for four days. *Clinica Chimica Acta* **355**, 67-82.
- Zhu, J., Eickhoff, J.C. and Kaiser, M.S. (2003), Modeling the dependence between number of trials and Success probability in beta-binomial-Poisson mixture distributions. *Biometrics* **59**, 955-961.
- Kaiser, M.S., Daniels, M.J., Furakawa, K. and Dixon, P. (2002), Analysis of particulate matter air Pollution using Markov random field models of spatial dependence. *Environmetrics* **13**, 615-628.

- Kaiser, M.S., Cressie, N. and Lee, J. (2002), Spatial mixture models based on exponential family conditional distributions. *Statistica Sinica* **12**, 449-474.
- Lee, J., Kaiser, M.S. and Cressie, N. (2001), Multiway dependence in exponential family conditional distributions. *Journal of Multivariate Analysis* **79**, 171-190.
- Daniels, M.J., Lee, Y-d. and Kaiser, M.S. (2001), Assessing sources of variability in measurement of ambient particulate matter. *Environmetrics* **12**, 547-558.
- Kaiser, M.S. and Cressie, N. (2000), The construction of multivariate distributions from Markov Random fields. *Journal of Multivariate Analysis* **73**, 199-220.
- Jones, J.R., Perkins, B.D., Witt, A., Kaiser, M.S., Thamasara, S., Siriworaku., M. and Benyasut, P. (2000), Limnological characteristics of some reservoirs in Thailand. *Verhandlungen – Internationale Vereinigung fur Theoretische und Angewandte Limnologie* **27**, 2158-2166.
- Cressie, N., Kaiser, M.S., Daniels, M.J., Aldworth, J., Lee, J., Lahiri, S.N. and Cox, L.H.(1999), Spatial analysis of particulate matter in an urban environment. In J. Gomez-Hernandez, A. Soares and R. Froidevaux, eds. *geoENV II – Geostatistics for Environmental Applications*, Dordrecht: Kluwer Academic.
- Lahiri, S.N., Kaiser, M.S., Cressie, N. and Hsu, N-J. (1999), Prediction of spatial cumulative Distribution functions using subsampling (with discussion). *Journal of the American Statistical Association* **94**, 86-110.
- Hubbard, M.W., Tsao, L-L., Klaas, E.E., Kaiser, M.S. and Jackson, D.H. (1998), Evaluation of transmitter attachment techniques on growth of wild turkey polts. *Journal of Wildlife Management* **62**, 1574-1578.
- Jones, J.R., Knowlton, M.F. and Kaiser, M.S. (1998), Effects of data aggregation on chlorophyll -phosphorus relations in Missouri reservoirs. *Journal of Lake and Reservoir Management* **14**, 1-9.
- Kaiser, M.S. (1997), Maximum likelihood estimation of link function parameters. *Computational Statistics and Data Analysis* **24**, 79-87.
- Kaiser, M.S. and Cressie, N. (1997), Modeling Poisson variables with positive spatial dependence. *Statistics and Probability Letters* **35**, 423-432.
- Kaiser, M.S. and Siev, D. (1997), Comparison of nonparallel immunoassay curves resulting from mixtures of competing antigens. *Statistics in Medicine* **16**, 1151-1166.
- Kaiser, M.S., Hsu, N-J., Cressie, N. and Lahiri, S.N. (1997), Inference for spatial processes using subsampling: A simulation study. *Environmetrics* **8**, 485-502.
- Kaiser, M.S. and Finger, S.E. (1996), A model for field toxicity tests. *Environmetrics* **7**, 215-229.
- Jergens, A.E., Moore, F.M., Kaiser, M.S., Haynes, J.S. and Kinyon, J.M. (1996), Morphometric evaluation of immunoglobulin A-containing and immunoglobulin G-containing cells and T cells in duodenal mucosa from healthy dogs and dogs with inflammatory bowel disease or nonspecific gastroenteritis. *The American Journal of Veterinary Research* **57**, 697-704.
- Monda, D.P., Galat, D.L., Finger, S.E. and Kaiser, M.S. (1995), Acute toxicity of ammonia (NH₃-N) in sewage effluent to *Chironomus riparius*: Using a generalized linear model. *Archives of Environmental Contamination and Toxicology* **28**, 385-390.
- Kaiser, M.S. , Speckman, P.L. and Jones, J.R. (1994), Statistical models for limiting nutrient relations in inland waters. *Journal of the American Statistical Association* **94**, 410-423.

- Cressie, N. and Kaiser, M.S. (1994), Comment on Ghosh, M. and Rao, J.N.K., Small area estimation: An appraisal. *Statistical Science* **9**, 76-90.
- Heglund, P.J., Jones, J.R., Frederickson, L.H. and Kaiser, M.S. (1994), Use of boreal forested wetlands by Pacific Loons (*Gavia pacifica*) and Horned Grebes (*Podiceps auritus* L.): relations with limnological characteristics. *Hydrobiologia* **279/280**, 171-183.
- Steadman, B.L., Stubblefield, W.S., LaPoint, T., Bergman, H.L. and Kaiser, M.S. (1991), Decreased survival of rainbow trout exposed to No. 2 fuel oil caused by sublethal preexposure. *Environmental Toxicology and Chemistry* **10**, 355-363.
- Kaiser, M.S. (1989), Interpretation of confidence intervals for median effective dose estimates. *Environmental Toxicology and Chemistry* **8**, 181-188.
- Kaiser, M.S. and Reid, F.A. (1987), A comparison of green-backed heron nesting in two freshwater ecosystems. *Colonial Waterbirds* **10**, 78-83.
- Jones, J.R. and Kaiser, M.S. (1987), Limnological characteristics of Lake of the Ozarks, Missouri II: measurements following formation of a large reservoir upstream. *Verhandlungen – Internationale Vereinigung fur Theoretische und Angewandte Limnologie* **23**, 997-1012.
- Kaiser, M.S. and Fritzell, E.K. (1984), Effects of river recreationists on green-backed heron behavior. *Journal of Wildlife Management* **48**, 561-567.
- Faaborg, J.R., Ardent, W.J. and Kaiser, M.S. (1984), Rainfall correlates of bird population fluctuations in a Puerto Rico dry forest: a 10 year study. *The Wilson Bulletin* **96**, 575-593.
- Niethammer, K.R. and Kaiser, M.S. (1983), Late summer food habits of three heron species in northeastern Louisiana. *Colonial Waterbirds* **6**, 148-153.
- Niethammer, K.R., Kaiser, M.S., Atkinson, R.D. and Baskett, T.S. (1983), Foods of the green-backed heron in the eastern Missouri Ozarks. *Transactions of the Missouri Academy of Science* **17**, 117-128.

Manuscripts Under Review:

- Casleton, E., Kaiser, M.S. and Nordman, D.J. Modeling transitivity in local structure graph models. Revision submitted to *Sankhya A*.
- Raza, M.M., Kaiser, M.S., Eggenberger, S. and Leandro, L.F. Time of soybean sudden death syndrome foliar symptom onset influences final disease intensity, yield, and yield components.
- Zhou, N., Friedberg, I. and Kaiser, M.S. Exploring the 3D spatial dependency of gene expression using Markov random fields.

Book Chapters:

- Kaiser, M.S. (2001), Markov Random Field Models. In A.H. El-Shaarawi and W.W. Piegorsch, eds., *Encyclopedia of Environmetrics*, New York: Wiley and Sons.

Presentations and Seminars: (since ISU employment)

Invited papers at national and international workshops and meetings: 35

Contributed papers at national and international workshops and meetings: 18
Contributed posters at national and international workshops and meetings: 14
Seminars at universities and federal agencies: 27

Selected Recent Presentations:

- Hur, E., Kaiser, M.S., Nilakanta, S., Jayashankar, P. and Johnston, W. A Random Graph Model for Agriculture Innovation Ecosystem. Presented (Hur) at the 2020 Annual Conference of the Decision Sciences Institute. Conference held online due to COVID-19.
- Hur, E. and Kaiser, M.S. Modeling the occurrence of terrorist attacks. Poster presentation (Hur), Joint Statistical Meetings, Denver, CO, 2019.
- Zhou, N. and Kaiser, M.S. Using Markov random fields to model gene expression in the 3D Genome. Poster presentation (Zhou), Intelligent Systems for Molecular Biology. Chicago, IL, July 2018.
- Chyzh, O.V. and Kaiser, M.S. Network analysis using a local structure graph model. Invited presentation, (Chyzh), International Methods Colloquium, November 2017 (this was a webinar, <https://www.methods-colloquium.com/video-archive>).
- Chyzh, O.V. and Kaiser, M.S. Network analysis using a local structure graph model. Invited presentation (Chyzh), Modeling Politics and Policy in Time and Space. Texas A&M University, April, 2017.
- Kaiser, M.S., Nordman D.L. and Seo, Y. Empirical likelihood tests for alternative spatial dependence Structures in Markov random fields. Invited paper, International Indian Statistical Association Conference on Statistics. Corvallis, OR, August, 2016.
- Kaiser, M.S. and Nordman, D.L. Empirical likelihood assessment of Markov random field models. Invited paper, Workshop on New Applications of Empirical Likelihood. Institute for Mathematical Sciences and National University of Singapore, Singapore, June 2016.
- Kaiser, M.S., Nordman D.L. and Seo, Y. Empirical likelihood tests for alternative spatial dependence Structures in Markov random fields. Invited paper, ICSA Applied Statistics Symposium, International Chinese Statistics Association, Atlanta, GA, June 2016.
- Wakeland, K., Kaiser, M.S. and Nordman, D.J. Negative dependence in Markov random field models. Poster, Joint Statistical Meetings, Chicago, IL, August 2016.
- Downey, J., Genschel, U. and Kaiser, M.S. A comparison of statistical methodology in the analysis of assessment data. Poster, U.S. Conference on Teaching Statistics, May 2015.
- Lyon, J., Genschel, U. and Kaiser, M.S. Using hierarchical models in assessment of teaching methods. International Conference on Teaching Statistics, July 2014.
- Kaiser, M.S. Modeling sequences of random fields over time. Invited seminar, Dept. of Statistics, Kansas State University, March 2014.
- Caragea, P.C., Bramer, L. and Kaiser, M.S. Improving wind speed and direction forecasts by combining process and stochastic spatio-temporal models. Joint Statistical Meetings Boston, August 2014.
- Kaiser, M.S. and Nordman, D.J. Assessing the scale of geophysical and environmental process models. Invited presentation at the 50th Anniversary Conference of the Department of Statistics, University of Missouri, Columbia, MO, October 2013.
- Kaiser, M.S. Modeling the spread of a plant disease using a sequence of binary random fields with absorbing states. Presented at Spatial Statistics 2013, Ohio State University, June 2013.

Hobbs, J.M. and Kaiser, M.S. Non-stationary spatio-temporal model for the hydrological cycle of the Central United States. Presented at Spatial Statistics 2013, Ohio State University, June 2013.

Wakeland, K. and Kaiser, M.S. Modeling spatial binary fields over time with dynamic Markov random fields. Poster, Joint Statistical Meetings, August 2013.

Wakeland, K. and Kaiser, M.S. Modeling spatial binary fields over time with dynamic Markov Random fields. . Presented at Spatial Statistics 2013, Ohio State University, June 2013.

Kaiser, M.S. and Nordman, D.J. Recent advances in assessing Markov random field models. Presentation at Los Alamos National Laboratory, Los Alamos, N.M., March 2013.

Teaching: (since ISU employment)

Honors 322N: Zombie Statistics: The Apocalypse and How to Avoid It (an undergraduate honors seminar course) Spring 21 (along with Genschel, Nordman, and Zigler)

Statistics 104: Introduction to Statistics, (undergraduate service level)
Fall 91, Fall 92, Fall 93 (two sections), Fall 95, Fall 98

Statistics 330: Probability and Statistics for Computer Scientists, (upper undergraduate service level) Fall 00

Statistics 341: Theory of Probability and Statistics I (upper undergraduate level)
Spring 05

Statistics 342: Theory of Probability and Statistics II (upper undergraduate level)
Fall 19

Statistics 401: Statistical Methods for Research Workers, (Master's service level, with some advanced undergraduates)
Spring 92, Spring 93, Spring 94, Fall 94, Spring 98, Summer 07, Summer 08, Spring 09, Summer 10, Spring 13

Statistics 415: Advanced Statistical Methods for Research Workers (Master's service level)
Spring 99, Spring 00, Spring 01 (all team taught)

Statistics 447: Statistical Theory for Research Workers (Master's service level)
Fall 99, Summer 02, Fall 02, Spring 05, Summer 05, Summer 11

Statistics 515: Theory and Application of Nonlinear Statistical Models (Master's level)
Fall 95, Fall 96, Fall 97, Fall 98, Fall 01

Statistics 506: Statistical Methods for Spatial Data (Master's level)
Spring 02, Spring 06, Spring 08, Spring 10, Spring 12, Spring 14

Statistics 520: Statistical Methods III (Master's level)
Fall 14, Fall 15, Fall 16, Fall 17

Statistics 534: Ecological Statistics (Master's level)
Spring 99

Statistics 565: Methods in Biostatistics and Epidemiology (Master's level)
Fall 18, Fall 20

Statistics 601: Advanced Statistical Methods (PhD level)
Spring 93, Spring 95, Spring 97, Spring 01, Spring 03, Fall 03, Fall 04, Fall 05, Fall 06, Fall 07, Fall 08, Fall 09, Fall 10, Fall 11, Fall 12, Spring 14, Spring 15,

Spring 16, Spring 17, Spring 18, Spring 19, Spring 21
Statistics 606: Advanced Spatial Statistics (PhD level)
Spring 07
Statistics 690: Advanced Statistical Applications (PhD level)
Spring 04, Spring 05, Spring 07, Spring 08, Spring 09, Spring 10, Spring 11, Spring
13

Course Development:

Courses introduced and developed at Iowa State University:
Statistics 515: Theory and Application of Nonlinear Statistical Models
Statistics 406: Statistical Methods for Spatial Data (originally co-listed with 506)
Statistics 506: Statistical Methods for Spatial Data (originally co-listed with 406)
Statistics 520: Statistical Methods III
Statistics 601: Advanced Statistical Methods
Statistics 690: Advanced Statistical Applications
Honors 322N: Zombie Statistics: The Apocalypse and How to Avoid It

Graduate Students Directed:

Siev, David : MS (non-thesis) July 1993
Paper: Estimating the Link Function in Generalized Linear Models with Binomial
or Multinomial Responses
Asdi, Yudiantri : MS (non-thesis) January 1994
Paper: The Estimation and Comparison of Diversity with Samples from Nonstatic
Ecological Communities.
Zhu, Weiye: MS (non-thesis) July 1994
Paper: Comparison of Mixture Models to Normal Approximations for the
Analysis of Count Data.
Tseng, Chi-Hong : MS (non-thesis) August 1994 (with F. J. Breidt)
Paper: Time Series Analysis of Daily Water Chemistry Variables in a Small Inland
Lake.
Kim, Daelyong : MS (non-thesis) December 1994
Paper: A Subset Selection Procedure for Mixtures of Normal Distributions.
Brown, Gordon: MS (non-thesis) July 1995
Paper: A Bayesian Hierarchical Analysis of an Ecological Nutrient Enrichment
Study.
Bruden, Dana: MS (non-thesis) May 1996
Paper: Aggregation Effects in Linear Models.
Li, Rong: MS (non-thesis) June 1996

- Paper: Goodness of Fit Diagnostics Based on Probability Integral Transformations.
- Lee, Jaehyung: PhD May 1997
Dissertation: Specification of Dependence Structures and Simulation-Based Estimation for Conditionally Specified Statistical Models.
- Yoder, Jill: MS (non-thesis) November 1997
Paper: Analysis of Groups of Binary Trials with Random Parameters.
- Lewin, Nicholas: MS (thesis) November 1998
Thesis: Modeling the Species-Area Curve.
- Wallendorf, Mike : PhD (co-major, with W. Clark, Animal Ecology), July 2000
Dissertation: Finite Mixture Models of Heterogeneous Capture Probabilities for Mark-Recapture Estimation of Closed Population Size.
- Colver, Erik: MS (non-thesis) July, 2001
Paper: Spatial Analysis of Nitrate and Total Nitrogen Loads in the Mississippi River Basin.
- Furukawa, K.: MS (non-thesis) July, 2001
Paper: Spatial Markov Random Field Models for Binary Data.
- Solanki, Aparna: MS (non-thesis) May, 2004
Paper: Spatial Point Processes in the Banking Industry.
- Guan, Jie: MS (non-thesis) June, 2004
Paper: Using Geostatistics to Improve the Relation Between Satellite Image and Soybean Yield Affected by Soybean Cyst Nematode.
- Furukawa, K.: PhD July, 2004
Dissertation: Development of Markov Random Field Models Based on Exponential Family Conditional Distributions.
- Eke, Alp: MS (non-thesis) July, 2004
Paper: The Use of Ratio Estimators for Estimating Total Catch in Commercial Marine Fisheries.
- Lu, Pengcheng: MS (non-thesis) July, 2004
Paper: Modeling Approaches for Simulation-based Spatial Point/Count Data.
- Wu, Han: PhD June, 2006
Dissertation: Poisson Process Models for a Combination of Points and Counts in Space.
- Jovaag, Kari : PhD (co-major ,with J. Dekker, Agronomy) July, 2006
Dissertation: Weedy Setoria Species-Group Seed Heteroblasty Blueprints Seedling Recruitment.
- Villanueva-Morales, Antonio: PhD July 2008
Dissertation: Psuedo-likelihood Estimation in Markov Random Field Models.
- Paul, Matthew: MS (non-thesis) July 2008
Paper: Issues in the Application of Conditionally Specified Binary Models
- Mueller, Kim: PhD July 2010
Dissertation: Multinomial Markov Random Field Models
- Cai, Weigou: PhD (co-major with J. Dekkers, Animal Science) July 2010

Dissertation: Quantitative Genetic and Statistical Aspects of Feed Efficiency by Analysis of the Selection Experiment for Residual Feed Intake in Yorkshire Pigs.
Tentinger, Amy: MS (non-thesis) December 2011
Paper: Predicting Locations Outside a Finite Spatial Domain with a Markov Random Field Model.

Zittnan, Christopher: MS (non-thesis) July 2013
Paper: Modeling Bias Between Forecasts and Observed High Temperatures: A linked Bayesian hierarchical approach.

Bramer, Lisa : PhD (co-major professor in Statistics with Petrutza Caragea) August 2013
Dissertation: Methods for Modeling and Forecasting Wind Characteristics.

Hobbs, Jonathan: PhD (co-major, with Chang Chen, Atmospheric Science) December 2013
Dissertation: Characterizing Diurnal and inter-annual Variability in the Atmosphere through Physical and Stochastic Models.

Casleton, Emily : PhD (co-major professor in Statistics with Daniel Nordman) May 2014
Dissertation: The Local Structure Graph Model for Network Analysis.

Ries, Daniel: MS (non-thesis) December 2014
Paper: Spatial Prediction: Variograms, Covariances, and Assumptions.

Foster, Robert: PhD December 2016
Dissertation: Topics in Empirical Bayes Analysis

Downey, Jillian: PhD (co-major professor in Statistics with Ulrike Genschel) December 2017
Dissertation: The Use of Hierarchical Models to Account for Data Structure in the Analysis of Data for Educational Studies

Wakeland, Kenneth: PhD December 2017
Dissertation: Exploring Dependence in Binary Markov Random Field Models

Seo, Yeon-jung: PhD (co-major professor in Statistics with Petrutza Caragea) August 2018
Dissertation: Selection and Assessment of Bivariate Markov Random Field Models.

Leos-Barajas, Vianey: PhD July 2019
Dissertation: Incorporating Multi-Scale Structures and Physiological Processes Into the Modeling of Animal Movement

Hur, Earl: MS (non-thesis) December 2019
Paper: Modeling the Occurrence of Terrorist Attacks

Zhou, Naihui: PhD (co-major in Statistics and BCB, with Ido Friedberg) May 2020
Dissertation: Statistical Methods to Improve the Analysis of Biological Data: Benchmarking Phenotypes, Protein Function Prediction and Spatial Modeling of Gene Expression.

Current Graduate Students:

Campbell, Christopher: MS
Hur, Earl: PhD (co-major Statistics and Human Computer Interaction)
Kueon, Jessica: MS

Mosaferi, Sepideh: PhD
McClernon, Kellie: PhD
Yu, Haihan: PhD (co-major professor in Statistics with Daniel Nordman)

Assistant Professors Mentored:

Petrutza Caragea, Statistics
Vivekenanda Roy, Statistics

Postdoctoral Fellows Mentored:

David Henderson: 1002-2003, VIGRE postdoctoral appointment
Michael Collyer: 2004-2005, VIGRE postdoctoral appointment

Undergraduates Mentored:

Ashley Bennett: 2003, VIGRE summer intern
Nicholas Larson: 2004, VIGRE summer intern
Mark McKelvey: 2004, VIGRE summer intern
Isreal Almodovar: 2009, Alliance program summer REU intern
Rolando Olivares: 2009, Alliance program summer REU intern
Roberto Toro: 2009, Alliance program summer REU intern
Gary Travell Williams: 2010: Alliance program summer REU intern

University Service: (excluding departmental committees)

1993-1994: Member, University Committee on Statistical Software Selection for Introductory Statistics Courses.
1995-2002: Member, Supervisory Committee for the Interdepartmental Major in Ecology and Evolutionary Biology
2002: Chair, Committee on the Internal Search for EEB Chair
2004-2007: Member, Graduate Council (chair in 2005-2006 and again 2006-2007)
A portion of these duties involved serving on multiple Graduate College committees for various awards, appeal panels for assistantship revocation, advisory committees on setting graduate stipend levels, postdoctoral policies, etc.
2007-2008: Chair, Committee on design of a core course for the Interdepartmental Major in Ecology and Evolutionary Biology
2007-2009: Chair, Curriculum Committee for the Interdepartmental Major in Ecology and Evolutionary Biology
2007-2009: Member, Supervisory Committee for the Interdepartmental Major in Ecology and Evolutionary Biology
2008: Member, University Search Committee for Honors Program Coordinator

- 2008-2010: Departmental contact and representative for the Iowa Alliance for Doctoral Studies in the Mathematical Sciences
- 2017: Graduate Council Committee on Role of Outside Member on Graduate Committees