Toryn L. J. Schafer

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CONTACT INFORMATION	Department of Statistics and Data Science Cornell University Ithaca, NY 14853	847-274-1723 tls255@cornell.edu

EDUCATION

Cornell University, Ithaca, New York
Postdoctoral Associate, August 2020 - present

- Principal Investigator: David Matteson (Department of Statistics and Data Science)

University of Missouri, Columbia, Missouri
Ph.D., Statistics July 2020

- NSF Graduate Research Fellow, Aug 2016 - July 2020
- Dissertation Title: *Alternative Learning Strategies for Spatio-Temporal Processes of Complex Animal Behavior*
- Advisor: Christopher K. Wikle

M.A., Statistics Dec 2018

Colorado State University, Fort Collins, Colorado
B.S., Statistics and Wildlife Biology, December 2014

- *Magna Cum Laude* with Honors

PUBLICATIONS

Schafer, T.L.J., Wikle, C.K., and Hooten M.B. 2021. Bayesian inverse reinforcement learning for collective movement. *Accepted to Annals of Applied Statistics*

Che-Castaldo, J.P., Cousin, R., Daryanto, S., Deng, G., Feng, M.E., Gupta, R.K., Hong, D., McGranaghan, R.M., Owolabi, O.O., Qu, T., Ren, W., **Schafer, T.L.J.**, Sharma, A., Shen, C., Sherman, M.G., Sunter, D.A., Wang, L., and Matteson, D.S. 2021. Critical Risk Indicators (CRIs) for the electric power grid: A survey and discussion of interconnected effects. *Environment Systems and Decisions*.

Schliep, E.M., **Schafer, T.L.J.**, and Hawkey, M. 2021. Distributed lag models to identify the cumulative effects of training and recovery in athletes using multivariate ordinal wellness data. *Journal of Quantitative Analysis in Sports*. **17(3)**: 241-254.

Schafer, T.L.J., Wikle, C.K., Ballard, B.M., VonBank, J.A., and Weegman, M.D. 2020. Bayesian Markov model with Pòlya-Gamma sampling for estimating individual behavior transition probabilities from accelerometer classifications. *Journal of Agricultural, Biological and Environmental Statistics*. **25**: 365-382.

Schafer, T.L.J. and Wikle, C.K. 2019. Alternative learning strategies for collective animal movement. In *JSM Proceedings*, Statistical Computing Section. Alexandria, VA: American Statistical Association.

Schafer, T.L.J., Breck, S.W., Baruch-Mordo, S., Lewis, D.L., Wilson, K.R., Mao, J.S., and Day, T.L. 2018. American black bear den-site selection and characteristics in an urban environment. *Ursus*, **29**: 25-31.

WORKS IN PROGRESS
Available upon request

Owolabi, O.O., **Schafer, T.L.J.**, Smits, G.E., Sengupta, S., Ryan, S., Wang, L., Matteson, D.S., Sherman, M.G., and Sunter, D.A. Role of variable renewable energy penetration on electricity price and its volatility across independent system operators in the United States. *Under Review at Applied Energy*.

VonBank, J.A., Cunningham, S.A., **Schafer, T.L.J.**, Weegman, M.D., Link, P.T., Wikle, C.K., Kraai, K.J., Collins, D.P., and Ballard, B.M. Joint use of location and acceleration data to quantify habitat use transitions in arctic-nesting geese. *Under Review at Scientific Reports*.

Schindler, A.R., Cunningham, S.A., **Schafer, T.L.J.**, Sinnot, E.A., Clements, S.J., DiDonato, F.M., Mosloff, A.R., Walters, C., Shipley, A.A., Weegman, M.D., and Zhao, Q. Joint analysis of structured survey and citizen science data improves precision of bird population trends and the extent of improvement depends on life history strategy.

Davidow, M., Merow, C., Che-Castaldo, J.P., **Schafer, T.L.J.**, Duker, M., Corcoran, D., and Matteson, D.S. Clustering future scenarios based on predicted range maps. arXiv:2101.07408

Feng, M.E., **Schafer, T.L.J.**, Che-Castaldo, C., Sherman, M.G., Matteson, D.S., and Che-Castaldo, J.P. Novel biodiversity indicators based on finance metrics.

Cunningham, S.A., **Schafer, T.L.J.**, Wikle, C.K., Ballard, B.M., VonBank, J.A., Bearhop, S., Hilton, G.M., Walsh, A.J., Griffin, L., Fox, A.D., and Weegman, M.D. Quantifying the influence of behavioral contributions to reproductive attempts in geese of contrasting migration strategy.

Schafer, T.L.J., Wikle, C.K., McDermott, P.L., and Weegman, M.D. Hybrid statistical and deep neural models for ecological prediction of count data.

ORAL PRESENTATIONS	Leveraging information and costs between high frequency acceleration and spatial positioning monitors for animal behavior inference. (Invited) Joint Statistical Meetings, Washington, D.C. August, 2022.

Inverse reinforcement learning for animal movement data.

- (Invited) The Wildlife Society Annual Conference, Spokane, Washington. November, 2022.
- Women in Statistics and Data Science, Virtual. October, 2021.

Continuous shrinkage priors with dependence. Joint Statistical Meetings, Virtual. July, 2021.

Inverse reinforcement learning for agent-based models.

- (Invited) SAMSI Pros and Cons of ABMs for Epidemic Modeling, Virtual. June, 2021.
- (Invited) Joint Statistical Meetings, Virtual. August, 2020.

Inverse reinforcement learning for animal behavior from environmental cues. (Invited) ENAR 2020 Spring Meeting, Virtual. March, 2020.

Alternative learning strategies for collective animal movement. Joint Statistical Meetings, Denver, Colorado. August 2019

Estimating behavioral transition probabilities of greater white-fronted geese using non-homogenous Markov models. Joint Statistical Meetings, Vancouver, British Colubmia. July, 2018.

Black Bear Den Characteristics and Site Selection Near Urban Aspen, Colorado. The Wildlife Society Annual Conference, Pittsburgh, Pennsylvania. October, 2014.

- Awarded best undergraduate contributed paper.

POSTER PRESENTATIONS

Non-linear forecasting with echo state networks. Ecological Forecasting Initiative, Washington D.C. May, 2019.

Estimating environmental effects on behavioral transitions of geese.

- Missouri Natural Resources Conference, Osage Beach, Missouri. February, 2019.
- Statistics and the Environment section of the American Statistical Association biennial workshop, Asheville, North Carolina. October, 2018

AWARDS	NSF Graduate Research Fellowship	2016
	Benjamin A. Gilman International Scholarship	2013
GRANTS	Colorado Chapter of The Wildlife Society Travel Grant	Oct 2014
	Wayne Sandfort Student Travel Grant, Central Mountains and Plains Section of The Wildlife Society	Oct 2014

TEACHING EXPERIENCE

Graduate Instructor

University of Missouri, Statistics Dept., Columbia, MO.	2015-2017

    Introductory Statistical Reasoning (STAT 1200)
    Introduction to Probability and Statistics I (STAT 2500)
    Introduction to Probability and Statistics II (STAT 3500)

Teaching Assistant

Colorado State University, Biology Dept., Fort Collins, CO. 2011
    Biology of Organisms Lab (LIFE 103)

PROFESSIONAL
ACTIVITIES

Lead Organizer, Knowledge Discovery and Data Mining (KDD) 2021 Workshop
Data-Driven Exploration of Interconnected Risks in Complex Human-Natural Systems   Aug 2021

Assistant Editor, Data Science in Science

Graduate Student Mentorship

    Georgia Smits, Cornell University

Member, Early Career Women in Statistics Mutual Mentoring   2020-*Current*
Member, Ecological Forecasting Initiative Student Working Group   2019-*Current*
  • R-Shiny Working Group Leader   Jun - Nov 2020
Twitter Outreach, Code-RLadies   2019-2020
Organizer and Mentor, ASA Datafest Mid-MO   2017-2020
Mentor, Sports Statistics Initiative   2019-2020
Graduate Student Leader, Space-Time Reading Group   2018-2019
Vice President, Statistics Graduate Student Association   2015-2017

REFEREE

Ecology
Methods in Ecology and Evolution
Society for Petroleum Engineering Journal
Ursus

PROFESSIONAL
MEMBERSHIPS

American Statistical Association
Association for Computing Machinery
The Wildlife Society
American Geophysical Union