

# HENRY R. SCHARF

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**CONTACT INFORMATION** Department of Mathematics (520) 360-9579  
University of Arizona hscharf@math.arizona.edu  
Tucson, AZ <https://www.math.arizona.edu/~hscharf/>

**RESEARCH EMPLOYMENT**

Assistant Professor	2023–Current
University of Arizona, Tucson, Arizona	
Assistant Professor	2019–2023
San Diego State University, San Diego, California	
Postdoctoral Fellow	2018–2019
Colorado State University, Fort Collins, Colorado	

**EDUCATION**

<b>Colorado State University, Fort Collins, Colorado USA</b>	
PhD in Statistics	2017
Advisor: Mevin Hooten	
MS in Statistics	2014
<b>University of Arizona, Tucson, Arizona USA</b>	
MEd in Teaching and Teacher Education	2008
BS in Mathematics and Physics	2007
<i>Cum laude</i> with Honors	

**PUBLICATIONS**

Williams, P. J., X. Lu, **H. R. Scharf**, M. B. Hooten (2023). Embracing asymmetry in nature: How to account for skewness in ecological data. *Ecological Informatics*, 75: 102085.

Boulil, Z. L.\*, J. W. Durban, H. Fearnbach, T. W. Joyce, S. G. M. Leander, **H. R. Scharf** (2023). Detecting changes in dynamic social networks using multiply-labeled movement data. *Journal of Agricultural, Biological and Environmental Statistics* 28: 243–259.

**Scharf, H. R.** (2022). Local indicators of spatial association (LISA). *Wiley StatsRef: Statistics Reference Online*.

**Scharf, H. R.**, X. Lu, P. J. Williams, M. B. Hooten (2022). Constructing flexible, identifiable and interpretable statistical models for binary data. *International Statistical Review*, 90: 328–345.

Raiho, A. M., **H. R. Scharf**, C. A. Roland, D. K. Swanson, S. E. Stehn, and M. B. Hooten (2022). Searching for refuge: A framework for identifying site factors conferring resistance to climate-driven vegetation change. *Diversity and Distributions*, 28(4), 793–809.

**Scharf, H. R.**, A. M. Raiho, S. Pugh, C. A. Roland, D. K. Swanson, S. E. Stehn, M. B. Hooten (2022). Multivariate Bayesian clustering using covariate-informed components with application to boreal vegetation sensitivity. *Biometrics*, 78: 1427–1440.

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\*Student contributor

Reimer, J. R., J. Arroyo-Esquivel, J. Jiang, **H. R. Scharf**, E. M. Wolkovich, K. Zhu, C. Boettiger (2021). Noise can create or erase long transient dynamics. *Theoretical Ecology*, 14: 685–695.

**Scharf, H. R.** (2021). Statistical analysis of animal movement: Understanding behavior through hierarchical parametric models. *Notices of the American Mathematical Society*, 68(6), 911–924.

**Scharf, H. R.**, F. Buderman (2020). Animal movement models for multiple individuals. *Wiley Interdisciplinary Reviews: Computational Statistics*, e1506.

**Scharf, H. R.**, M. B. Hooten, R. R. Wilson, G. M. Durner, T. C. Atwood (2019). Accounting for phenology in the analysis of animal movement. *Biometrics*, 75: 810–820.

Hooten, M. B., **H. R. Scharf**, J. M. Morales (2019). Running on empty: Recharge dynamics from animal movement data. *Ecology Letters*, 22, 377–389.

Hooten, M. B., **H. R. Scharf**, T. J. Hefley, A. T. Pearse, M. D. Weegman (2018). Animal movement models for migratory individuals and groups. *Methods in Ecology and Evolution*, 9, 1692–1705.

**Scharf, H. R.**, M. B. Hooten, D. S. Johnson, J. W. Durban (2018). Process convolution approaches for modeling interacting trajectories. *Environmetrics*, e2487.

**Scharf, H. R.**, M. B. Hooten, D. S. Johnson (2017). Imputation approaches for animal movement modeling. *Journal of Agricultural, Biological and Environmental Statistics*, 22(3), 335–352.

Hefley, T. J., K. M. Broms, B. M. Brost, F. E. Buderman, S. L. Kay, **H. R. Scharf**, J. R. Tipton, P. J. Williams, and M. B. Hooten. (2017). The basis function approach to modeling autocorrelation in ecological data. *Ecology*, 98(3), 632–646.

**Scharf, H. R.**, M. B. Hooten, B. K. Fosdick, D. S. Johnson, J. M. London, and J. W. Durban. (2016). Dynamic social networks based on movement. *Annals of Applied Statistics*, 10(4), 2182–2202.

## SPONSORED RESEARCH

*Factors affecting provisioning and foraging in rapidly changing landscapes* 2023–2026

National Science Foundation, SBE.  
Total Award: \$329,849. Role: Co-PI.  
Status: Funded

*Collaborative Research: Pacific Alliance for Low-Income Inclusion in Statistics & Data Science* 2022–2028

National Science Foundation, S-STEM.  
Total Award: \$5,000,000. Role: Co-PI.  
Status: Funded

*Visualizing trajectory uncertainty* 2021–2022

University Grants Program, SDSU.  
Total Award: \$10,000. Role: PI.  
Status: Funded

	<i>Broadening the impact and accessibility of animal movement models</i>	2020–2021
	University Grants Program, SDSU. Total Award: \$10,000. Role: PI. Status: Funded	
<b>INVITED CONFERENCE PRESENTATIONS</b>	<i>Predicting fine-scale taxonomic variation in landscape vegetation using large satellite imagery data sets</i>	2023
	EnviBayes Workshop on Complex Environmental Data, Fort Collins, CO, USA	
	<i>Detecting changes in dynamic social networks using unlabeled movement data</i>	2022
	Joint Statistical Meetings, Washington D.C., USA	
	<i>Detecting changes in dynamic social networks based on unlabeled movement data</i>	2021
	CMStatistics, London, UK	
	<i>Multivariate Bayesian clustering using covariate-informed components with application to boreal vegetation sensitivity</i>	2021
	Joint Statistical Meetings, Seattle, WA, USA	
	<i>Statistical models for dependent trajectories with application to animal movement</i>	2019
	Joint Statistical Meetings, Denver, CO, USA Topic contributed session for ISBA Savage Award finalists	
	<i>Animal movement models for migratory individuals and groups</i>	2018
	The Wildlife Society Annual Conference, Cleveland, OH Symposium: <i>Animal movement: Advances in movement modeling and their applications</i>	
	<i>Imputation approaches for animal movement modeling</i>	2018
	Joint Statistical Meetings, Vancouver, BC, Canada Invited session	
	<i>Dynamic Social Networks Based on Movement</i>	2016
	Joint Statistical Meetings, Chicago, IL Student paper award winner (ENVR)	
<b>DEPARTMENTAL SEMINARS</b>	<i>Detecting changes in dynamic social networks based on unlabeled movement data</i>	2021
	Department of Mathematics and Statistics, California State University Long Beach	
	<i>Movement data reveal dynamic social relationships</i>	2021
	Department of Statistics, University of British Columbia	
	<i>Movement data reveal dynamic social relationships</i>	2021
	Department of Statistics, Kansas State University	
	<i>Multi-layered convolutional Gaussian process models for animal movement</i>	2020
	Computational Sciences Research Center, San Diego State University	

	<i>Statistical models for heterogeneous animal movement</i> Department of Statistics & Data Science, University of Texas at Austin	2019
<b>CONTRIBUTED PRESENTATIONS</b>	<i>Identifying species-level vegetation cover using Sentinel-2 imagery</i> ASA Section on Statistics and the Environment Workshop, Provo, Utah	2022
	<i>Accounting for phenology in the analysis of animal movement</i> International Statistical Ecology Conference, University of St. Andrews, Scotland	2018
	<i>Process convolution approaches for modeling interacting trajectories</i> Joint Statistical Meetings, Baltimore, MD	2017
	<i>Process convolution approaches for modeling interacting trajectories</i> Statistics Department at Colorado State University, Fort Collins, CO. Poster	2017
	<i>Dynamic Social Networks Based on Movement</i> International Statistical Ecology Conference, Seattle, WA	2016
	<i>Spatiotemporal Models for Animal Social Structure</i> Joint Statistical Meetings, Seattle, WA	2015
	<i>Spatiotemporal Models for Animal Social Structure</i> Statistical and Applied Mathematical Sciences Institute ECOL: Transitional Workshop Research Triangle Park, NC	2015
	<i>Dynamic social networks based on movement</i> Graduate Student Showcase, Fort Collins, CO. Poster	2015
	<i>Spatiotemporal models for animal social structure</i> Statistics Department at Colorado State University, Fort Collins, CO. Poster	2015
	<i>Novel visualization and analysis for extreme-scale wind turbine simulations</i> Conference on Data Analysis, Santa Fe, NM. Poster	2014
<b>TEACHING</b>	<i>Advanced Statistical Regression Analysis</i> (Arizona: MATH/STAT 571A)	Fall 2023
	<i>R Programming and Data Science</i> (SDSU: STAT 410)	Spring 2023 Fall 2022
	<i>Bayesian Statistics</i> (SDSU: STAT 676)	Spring 2022
	<i>Applied Spatio-Temporal Statistics</i> (SDSU: STAT 596/696)	Spring 2023 Spring 2021 Spring 2020
	<i>Statistical Computing</i> (SDSU: STAT 580)	Fall 2022 Fall 2021 Fall 2020

*Introduction to Statistical Learning* (SDSU: STAT 596)

Fall 2019

**ADVISING**

*Masters students*

Hugo Rosales Portillo

Summer 2023

Angelica Rivera

Spring 2023

Navid Nezamabadi

Summer 2022

Jonathan Schierbaum

Spring 2022

Zaineb Boulil

Spring 2021

Jennifer Betancourt

Spring 2021

Kristine Dinh

Spring 2021

*Undergraduate students*

Elena Dubocanin

Winter 2022

**WORKSHOPS &  
SHORT COURSES**

*Workshop: Statistical Models for Animal Movement*

Co-instructor

Day-long workshop on animal movement modeling with examples in R

International Association for Landscape Ecology annual meeting  
Fort Collins, CO, USA

2019

International Statistical Ecology Conference  
University of St. Andrews, Scotland

2018

*Training in Bayesian Modeling for Practicing Ecologists.*

2016

Co-instructor

NSF-supported two-week workshop

Intensive training in Bayesian modeling

Colorado State University, Fort Collins, CO

*R Workshop*

2015

Co-instructor

Day-long tutorial on R for ecologists

Colorado State University, Fort Collins, CO

*Tutorial on Parallel Programming in R*

2015

Co-Developer

Workshop on Parallel Computing, UC Boulder/CSU

*Tutorial on Parallel Programming in R*

2015

Co-Developer

Conference on Statistical Practice 2015, New Orleans, LA

**AWARDS**

ISBA Savage Award - Applied Methodology

2018

*The Savage Award, named in honor of Leonard J. "Jimmie" Savage, is bestowed each year to two outstanding doctoral dissertations in Bayesian econometrics and statistics.*

Amount: \$750 + \$500 travel support

	James L., M. Leslie, & Edna Madison Memorial Award <i>This award is given each year to the student selected by the statistics faculty at Colorado State University as the outstanding graduate student in the Department of Statistics and/or the Department of Mathematics</i> Amount: \$675	2017
<b>SERVICE</b>	Program Officer: International Society for Bayesian Analysis Section on Environmental Statistics (EnviBayes)	2023-2024
	Award committee for ISBA Savage Award - Applied Methodology for outstanding dissertations in Bayesian econometrics and statistics	2021
	Secretary: American Statistical Association Section on Statistics and the Environment (ENVR)	2020
	Treasurer: American Statistical Association Section on Statistics and the Environment (ENVR)	2019
	Associate Editor: <i>Data Science in Science</i>	2021–Current
	Reviewer for the following journals: <i>Annals of Applied Statistics</i> <i>Computational Statistics and Data Analysis</i> <i>Environmetrics</i> <i>Environmental and Ecological Statistics</i> <i>Journal of Agricultural, Biological, and Environmental Statistics</i> <i>Journal of Computational and Graphical Statistics</i> <i>Ecological Monographs</i> <i>Ecology</i> <i>Methods in Ecology and Evolution</i> <i>Network Science</i> <i>Proceedings of the Royal Society: Series B</i> <i>PLOS ONE</i>	
<b>R PACKAGES</b>	<b>Scharf, H. R.</b> , K. Dinh*, H. Rosales*, A. Rivera* (2023). anipaths: Animation of observed trajectories using spline- or state-space model-based interpolation. R package version 0.10.2.	
<b>COMMITMENT TO DIVERSITY</b>	Panelist: 2019 Career Issues Panel Women in Science Symposium	2019
	Panel moderator, organizer: Women in Science Symposium Topics of discussion included: <i>Practical suggestions for recruiting, retaining, and promoting women</i> <i>Insight into implicit and explicit bias</i> <i>Tips to initiate your own Career Issues small group</i> <i>Networking opportunities with men and women from academic, industry and the Front Range community to promote gender equality</i>	2018

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\*Student contributor

	<i>Career issues</i>	<i>2015–Current</i>
	Graduate student-initiated discussion group made up of students, and junior, mid-career, and senior faculty from multiple departments. Topics included: strategies for career advancement for women, awareness of systemic sexism in academia, and increasing participation of women in academia and STEM fields in particular.	
<b>OTHER CONFERENCES &amp; WORKSHOPS</b>	Participant in NIMBioS Investigative Workshop <i>Transients in Biological Systems</i> .	<i>2019</i>
	Member of the working group <i>Network Models</i> in the SAMSI 2014-15 Program on Mathematical and Statistical Ecology (ECOL).	<i>2014–2015</i>
	Pan-American Advanced Studies Institute (Buzios, Brazil) Workshop focused on spatiotemporal statistics, with a special emphasis on international collaboration.	<i>2014</i>
	Design and Analysis of Experiments Conference	<i>2012</i>
<b>PROFESSIONAL AFFILIATIONS</b>	International Biometric Society WNAR region	<i>2017–Current</i>
	International Society for Bayesian Analysis	<i>2017–Current</i>
	Institute of Mathematical Statistics	<i>2015–Current</i>
	American Statistical Association ENVR section	<i>2013–Current</i>