

HENRY R. SCHARF

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RESEARCH EMPLOYMENT *Assistant Professor* 2023–Current
University of Arizona, Tucson, Arizona

Adjunct Professor 2023–Current
San Diego State University, San Diego, California

Assistant Professor 2019–2023
San Diego State University, San Diego, California

Postdoctoral Fellow 2018–2019
Colorado State University, Fort Collins, Colorado

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

PUBLICATIONS Ellwanger, A. L., K. S. Morrow, A. K. Dhawale, **H. R. Scharf**, P. O. Ngakan, E. P. Riley (In Review). Balancing risk and reward: Toward resilient human-primate coexistence in a rapidly changing environment in Sulawesi, Indonesia.

Trinidad, J.*, **H. R. Scharf**, P. O. Ngakan, E. P. Riley (2025). Roadside dining: The collective movement behavior of Sulawesi Moor macaques in a provisioning context. *American Journal of Primatology*, 87: e23727.

Scharf, H. R., J. Schierbaum*, H. Matsumoto, T. Assal (2024). Predicting species-level vegetation cover using large satellite imagery data sets. *Journal of Agricultural, Biological and Environmental Statistics*, 1–20.

McFadden A. J.*, A. D. Stow, P. J. Riggan, R. Tissell, J. O’Leary, **H. R. Scharf** (2024). Estimating Fire Radiative Energy Density with Repeat-Pass Aerial Thermal-Infrared Imaging of Actively Progressing Wildfires. *Fire*, 7(6):179.

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.

Bouilil, 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.

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. Fossdick, D. S. Johnson, J. M. London, and J. W. Durban.

*Student contributor

(2016). Dynamic social networks based on movement. *Annals of Applied Statistics*, 10(4), 2182–2202.

SPONSORED RESEARCH	<i>Focused Next Steps for Behavioral and Physiological Response Studies with Social Delphinids off Southern California</i>	2024–2026
	Office of Naval Research, Marine Mammals and Biology. Primary Institution: Southall Environmental Associates, Inc. Sub-Award to UofA: \$130,000. Role: Senior personnel. Status: Terminated 2025-04-03 with \$48,000 remaining.	
	<i>Factors affecting provisioning and foraging in rapidly changing landscapes</i>	2023–2026
	National Science Foundation, SBE. Total Award: \$329,849. Role: Co-PI. Status: Funded	
	<i>Collaborative Research: Pacific Alliance for Low-Income Inclusion in Statistics & Data Science</i>	2022–2028
National Science Foundation, S-STEM. Total Award: \$5,000,000. Role: Co-PI 2022–2023. Status: Funded		
<i>Visualizing trajectory uncertainty</i>	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		
INVITED CONFERENCE PRESENTATIONS	<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> The Wildlife Society Annual Conference, Cleveland, OH Symposium: <i>Animal movement: Advances in movement modeling and their applications</i>	2018
	<i>Imputation approaches for animal movement modeling</i> Joint Statistical Meetings, Vancouver, BC, Canada Invited session	2018
	<i>Dynamic Social Networks Based on Movement</i> Joint Statistical Meetings, Chicago, IL Student paper award winner (ENVR)	2016
DEPARTMENTAL SEMINARS	<i>A strategy for avoiding particle degeneracy in recursive Bayesian inference</i> Department of Statistics, Pennsylvania State University	2024
	<i>Predicting species-level vegetation cover using large satellite imagery data sets</i> Department of Ecosystems Science and Management, Pennsylvania State University	2024
	<i>Hierarchical statistical models can fuse multiple data sources and account for dependence in observational data</i> School of Natural Resources and the Environment, University of Arizona	2024
	<i>Detecting changes in dynamic social networks based on unlabeled movement data</i> Department of Mathematics and Statistics, California State University Long Beach	2021
	<i>Movement data reveal dynamic social relationships</i> Department of Statistics, University of British Columbia	2021
	<i>Movement data reveal dynamic social relationships</i> Department of Statistics, Kansas State University	2021
	<i>Multi-layered convolutional Gaussian process models for animal movement</i> Computational Sciences Research Center, San Diego State University	2020
	<i>Statistical models for heterogeneous animal movement</i> Department of Statistics & Data Science, University of Texas at Austin	2019
CONTRIBUTED PRESENTATIONS	<i>A strategy for avoiding particle degeneracy in recursive Bayesian inference</i> Joint Statistical Meetings, Portland, OR, USA	2024
	<i>A strategy for avoiding particle degeneracy in recursive Bayesian inference</i> Western North American Region of The International Biometric Society annual meeting , Fort Collins, CO, USA	2024

<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

TEACHING

<i>Environmental Statistics</i> (Arizona: MATH/STAT/BIOS 574E)	Fall 2024
<i>Design of Experiments</i> (Arizona: MATH/STAT 571B)	Spring 2024
<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
	<i>Introduction to Statistical Learning</i> (SDSU: STAT 596)	Fall 2019
ADVISING	<i>Masters students</i>	
	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
	<i>Undergraduate students</i>	
	Elena Dubocanin	Winter 2022
WORKSHOPS & SHORT COURSES	<i>Workshop: Statistical Models for Animal Movement</i>	
	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
	<i>Training in Bayesian Modeling for Practicing Ecologists.</i>	2016
	Co-instructor	
	NSF-supported two-week workshop	
	Intensive training in Bayesian modeling	
	Colorado State University, Fort Collins, CO	
	<i>R Workshop</i>	2015
	Co-instructor	
	Day-long tutorial on R for ecologists	
	Colorado State University, Fort Collins, CO	
	<i>Tutorial on Parallel Programming in R</i>	2015
	Co-Developer	
	Workshop on Parallel Computing, UC Boulder/CSU	
	<i>Tutorial on Parallel Programming in R</i>	2015
	Co-Developer	
	Conference on Statistical Practice 2015, New Orleans, LA	
AWARDS	ISBA Savage Award - Applied Methodology	2018
	<i>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.</i>	
	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
SERVICE	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 Stat</i>	2021–Current 2023–Current
	Reviewer for the following journals: <i>Annals of Applied Statistics</i> <i>Advances in Statistical Analytics</i> <i>Bayesian Analysis</i> <i>Biometrics</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>Journal of the Royal Statistical Society: Series C</i> <i>Network Science</i> <i>Ecological Monographs</i> <i>Ecology</i> <i>Ecology and Evolution</i> <i>Ecosphere</i> <i>Methods in Ecology and Evolution</i> <i>Movement Ecology</i> <i>Network Science</i> <i>Proceedings of the Royal Society: Series B</i> <i>PLOS ONE</i>	
SOFTWARE	Scharf, H. R. , K. Dinh*, H. Rosales*, A. Rivera* (2025). anipaths: Animation of observed trajectories using spline- or state-space model-based interpolation. R package version 0.10.5.	

*Student contributor

COMMITMENT TO DIVERSITY	Panelist: 2019 Career Issues Panel Women in Science Symposium	2019
	Panel moderator, organizer: Women in Science Symposium	2018
	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>	
	<i>Career issues</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.	2015–Current
OTHER CONFERENCES & WORKSHOPS	Participant in NIMBioS Investigative Workshop <i>Transients in Biological Systems</i> .	2019
	Member of the working group <i>Network Models</i> in the SAMSI 2014-15 Program on Mathematical and Statistical Ecology (ECOL).	2014–2015
	Pan-American Advanced Studies Institute (Buzios, Brazil) Workshop focused on spatiotemporal statistics, with a special emphasis on international collaboration.	2014
	Design and Analysis of Experiments Conference	2012
PROFESSIONAL AFFILIATIONS	International Biometric Society WNAR region	2017–Current
	International Society for Bayesian Analysis	2017–Current
	Institute of Mathematical Statistics	2015–Current
	American Statistical Association ENVR section	2013–Current