

Trevor D. Ruiz

Statistics Department
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Research interests: time series, model selection, high-dimensional data, biological and ecological applications.

Teaching areas: applied statistics, probability & mathematical statistics, data science.

A. Education

- 2020 Ph.D. Statistics, Oregon State University, Corvallis, OR.
2017 M.S. Statistics, Oregon State University, Corvallis, OR.
2015 Graduate Certificate in Applied Statistics, Portland State University, Portland, OR.
2011 B.A. Philosophy, Reed College, Portland, OR.

B. Academic Appointments

- 2023-present Assistant Professor, Statistics Department, California Polytechnic State University, San Luis Obispo. San Luis Obispo, CA.
2020-2023 Visiting Assistant Professor, Department of Statistics and Applied Probability, University of California, Santa Barbara. Santa Barbara, CA.

C. Publications

In reverse chronological order by section; † indicates student coauthor; § indicates co-lead.

- In preparation 10. **Trevor D. Ruiz**, Aléa J. Seifert[†], Emma N. Hamilton[†], Catherine M. Mispagel[†], Jose Garcia[†], and Emily E. Bockmon. Affine-invariant inference for local trend similarity in nonstationary time series, with application to biogeochemical decoupling in an estuary.
- Submitted 9. Camille C. Pawlak, Reed J. Kenny, **Trevor D. Ruiz**, Julia C. Schedler, Kaviya Veerasingham[†], Andrew Pineda, G. Andrew Fricker, Thomas W. Gillespie, Matthew K. Ritter, and Jennifer M. Yost. New allometric equations for urban trees. *Submitted to Urban Forestry and Urban Greening*.

8. Haley A. Moniz[§], **Trevor D. Ruiz**[§], Océane Da Cunha, Nicole E. Yee[†], Emma M. Reardon[†], Scott M. Boback, and Emily N. Taylor. Thermal ecology drives reproductive energy expenditure in free-ranging female prairie rattlesnakes. *Submitted to Journal of Zoology*.
- Peer reviewed 7. Erin V. Satterthwaite[§], **Trevor D. Ruiz**[§], Nastassia V. Patin, Michaela N. Alksne, Len Thomas, Julie Dinasquet, Robert H. Lampe, Katherine G. Chan[†], Nicholas A. Patrick[†], Andrew E. Allen, Simone Baumann-Pickering, and Brice X. Semmens. Microbial and small zooplankton communities predict density of baleen whales in the southern California Current Ecosystem. *PLOS One*, 21(5):e0334209, 2026.
[\[paper\]](#) [\[code\]](#) [\[data\]](#)
6. **Trevor D. Ruiz**, Sharmodeep Bhattacharyya, and Sarah C. Emerson. Sparse estimation of parameter support sets for generalized vector autoregressions by resampling and model aggregation. *Journal of Statistical Computation and Simulation*, 95(8):1666–1681, 2025.
[\[paper\]](#) [\[preprint\]](#) [\[code\]](#)
5. Haley A. Moniz, Jack H. Buck, Hayley L. Crowell, Scott M. Goetz, **Trevor D. Ruiz**, Emily N. Taylor, and Scott M. Boback. High thermal quality rookeries facilitate high thermoregulatory accuracy in pregnant female rattlesnakes. *Journal of Thermal Biology*, 124:103948, 2024.
[\[paper\]](#) [\[code\]](#) [\[data\]](#)
4. Awino M. E. Ojwang[§], **Trevor D. Ruiz**[§], Sharmodeep Bhattacharyya, Shirshendu Chatterjee, Peter S. Ojiambo, and David H. Gent. A general framework for spatio-temporal modeling of epidemics with multiple epicenters: application to an aerielly dispersed plant pathogen. *Frontiers in Applied Mathematics and Statistics*, 7:721352, 2021.
[\[paper\]](#)
3. **Trevor D. Ruiz**, Sharmodeep Bhattacharyya, Mahesh Balasubramanian, and Kristofer E. Bouchard. Sparse and low-bias estimation of high dimensional vector autoregressive models. In *Learning for Dynamics and Control*, volume 120 of *Proceedings of Machine Learning Research*, pages 55–64, 2020.
[\[paper\]](#)
2. Mahesh Balasubramanian, **Trevor D. Ruiz**, Brandon Cook, Prabhat, Sharmodeep Bhattacharyya, Arival Shrivastava, and Kristofer E. Bouchard. Scaling of union of intersections for inference of Granger causal networks from observational data. In *2020 IEEE International Parallel and Distributed Processing Symposium (IPDPS)*, pages 264–273, 2020.
[\[paper\]](#)
1. David H. Gent, Sharmodeep Bhattacharyya, and **Trevor D. Ruiz**. Prediction of spread and regional development of hop powdery mildew: A network

analysis. *Phytopathology*, 109(8):1392–1403, 2019.
[\[paper\]](#)

D. Software

Released **Trevor D. Ruiz**, Aléa J. Seifert[†], Catherine M. Mispagel[†], Emma N. Hamilton[†], and Andres Efen Rocha Jayasinha[†]. *lomad: Local Moving Average Decoupling*, 2026. R package version 0.1.0.
[\[source\]](#)

E. Funding

Awards 2025-2026 PI, Statistical modeling of dynamic seawater chemistry in Morro Bay. Santa Rosa Creek Foundation Mini Grant Program, Center for Coastal Marine Sciences, California Polytechnic State University. \$19,732.

2024-2025 PI, Statistical methods for environmental genomics. Research, Scholarship, and Creative Activities (RSCA) Grant Program, Division of Research, California Polytechnic State University. \$17,900.

Submittals PI, Improved inference and interpretation of ecological association networks. Teacher-Scholar Mini Grant Program, Division of Research, California Polytechnic State University, 2026 award cycle. *Not funded*.

PI, Development and application of envelope methods for inference of low dimensional structure in eDNA metabarcoding data. LEAPS-MPS Program, Division of Mathematical Sciences, NSF, 2025 award cycle. *Not funded*.

co-PI, Technology transfer and computational reproducibility for data-driven research. Teacher-Scholar Mini Grant Program, Division of Research, California Polytechnic State University, 2025 award cycle. *Not funded*.

Other 2026-2027 Research support on *Structure Separation Distance* (PI: G. Andrew Fricker, WUI Fire Institute, Cal Poly).

F. Teaching

In reverse chronological order by last quarter taught and institution; cross-listed courses separated by “/” (*e.g.*, STAT101/201); course sequences separated by “-” (*e.g.*, STAT101-102). Note Cal Poly transitioned to semesters in Fall 2026; semester catalog course numbers replace quarter equivalents where applicable.

Cal Poly STAT5710 Applied stochastic processes: W26, F26

STAT3530 Applied linear models: F26

STAT218 Applied statistics for life sciences: W24, S24, W25, S25, Su25, S26

STAT590 Graduate seminar in statistics: W25, W26

STAT425 Probability theory: F23, F24, F25

UCSB PSTAT197A-B-C Data science capstone: W22, S22, F22, W23, S23
 PSTAT100 Data science concepts and analysis: S21, W22, S22, S23
 PSTAT126 Regression analysis: Su21, F21
 PSTAT120 Probability and statistics: F20, W21, Su21, F21
 PSTAT131/231 Introduction to statistical machine learning: W21, S21

G. Student Mentorship

In alphabetical order by graduation year.

Cal Poly

Thesis supervision

Emi Degembe, B.S./M.S. Statistics 2027
 Visruth Kandali, B.S./M.S. Statistics 2027
 Aléa Seifert, B.S./M.S. Statistics 2027
 Nicole Yee, B.S./M.S. Statistics 2027
 Jose Garcia, B.S./M.S. Statistics 2026
 Nathan Greenfield, M.S. Statistics 2026
 Ruben Jimenez, B.S./M.S. Statistics 2026 (committee)
 Alex Yuan, B.S./M.S. Statistics 2026 (best thesis award)
 Kyle Bistrain, B.S./M.S. Statistics 2025
 Katherine Chan, B.S./M.S. Statistics 2024
 Bena Smith, M.S. Statistics 2024 (committee)

Research mentorship

Julien Fiechter, B.S./M.S. Statistics 2028
 Otis Hunt, B.S./M.S. Statistics 2028
 Barbara Ibrahim, B.S./M.S. Statistics 2028
 Emma Hamilton, B.S./M.S. Statistics and B.S. Applied Mathematics, 2027
 Catherine Mispagel, B.S./M.S. Statistics 2027
 Carson Neubert, B.S./M.S. Statistics 2027
 Eden Schott, B.S. Statistics 2027
 Maleah Townsend, B.S. Environmental Management & Protection 2027
 Alvaro Ramos, B.S./M.S. Statistics 2027
 Kaviya Veerasingam, B.S. Statistics 2027
 Allen Choi, B.S./M.S. Statistics 2026
 Emma Reardon, B.S. Environmental Management & Protection 2026
 Andres Rocha, B.S. Statistics and B.S. Applied Mathematics, 2026
 Gabrielle Low, B.S. Statistics 2025
 Tomas Ludin, B.S. Computer Engineering 2025
 Nick Patrick, B.S. Statistics 2025
 Samantha Ward, B.S. Statistics 2025

UCSB

Research mentorship

Jai Uparkar, B.S. Statistics 2024
 Ellen Burrell, B.S. Statistics & B.S. Political Science 2023
 Jennifer Park, B.S. Economics & B.S. Statistics 2023
 Annie Adams, B.S. Statistics 2022
 Nick Alexander, B.S. Statistics 2022
 Mallika Gupta, B.S. Financial Mathematics 2022
 Annie Huang, B.S. Linguistics & B.S. Statistics 2022
 Prerana Kottapalli, B.S. Physics 2022
 Cristian Razo, B.S. Statistics 2022
 Lawrence Su, B.S. Electrical and Computer Engineering 2022
 Priscilla Siow, B.S. Statistics 2022
 Will Howard, B.S. Statistics 2021
 Shuyun Tang, B.S. Statistics 2021
 Tommy Wang, B.S. Statistics 2021

H. Service

Dept.	2026-2027 Director, Statistics Frost Summer Undergraduate Research Program
	2025-2027 Coordinator, Department Seminar
	2026-2027 Committee Member, Search Committee, Tenure Track Recruitment
	2025-2026 Committee Member, Search Committee, Tenure Track Recruitment
	2025-2026 Faculty Consultant, Statistical Consulting Service
	2023-2024 Committee Member, Search Committee, Tenure Track Recruitment
Profession	Reviewer for: Nature Communications Biology; Journal of Statistics and Data Science Education.

I. Presentations

In reverse chronological order by section; † indicates student coauthor; * indicates presenter.

Invited

Trevor D. Ruiz*, Sharmodeep Bhattacharyya, and Sarah C. Emerson. Network recovery from multivariate time series. Statistics Department Seminar, California Polytechnic State University, San Luis Obispo, CA, USA, November 16, 2023.

Trevor D. Ruiz*, Awino M. E. Ojwang', Sharmodeep Bhattacharyya, Shirshendu Chatterjee, Peter S. Ojiambo, and David H. Gent. A general framework for spatio-temporal modeling of epidemics with multiple epicenters: application to an aerially dispersed plant pathogen. Department of Statistics and Applied Probability Seminar, University of California, Santa Barbara, Santa Barbara, CA, USA, October 21, 2020.

- Contributed** **Trevor D. Ruiz***. Borrowing strength across taxonomic levels for inference of ecological association networks from amplicon sequencing data. Accepted abstract (contributed talk), International Statistical Ecology Conference, Mérida, Yucatan, Mexico, January 10-15, 2027.
- Trevor D. Ruiz***, Erin V. Satterthwaite, Nastassia V. Patin, Michaela N. Alksne, Len Thomas, Julie Dinasquet, Robert H. Lampe, Katherine G. Chan[†], Nicholas A. Patrick[†], Andrew E. Allen, Simone Baumann-Pickering, and Brice X. Semmens. Statistical prediction with amplicon data: modeling the ecological habitat of baleen whales. Accepted abstract (contributed talk), 2026 Global eDNA Conference, Seattle, WA, USA, October 28-30, 2026.
- Trevor D. Ruiz***, Aléa J. Seifert[†], Jose Garcia[†], Julia C. Schedler, and Emily E. Bockmon. Inference of trend decoupling in nonstationary bivariate time series. Contributed talk, IMS International Conference on Statistics and Data Science, Sevilla, Spain, December 15-18, 2025.
- Trevor D. Ruiz***, Nicholas A. Patrick[†], Katherine G. Chan[†], and Erin V. Satterthwaite. Variable selection and covariate adjustment in log-contrast models for ecological metabarcoding time series data. Contributed talk, IMS International Conference on Statistics and Data Science, Nice, France, December 16-19, 2024.
- Trevor D. Ruiz*** and Erin V. Satterthwaite. Using environmental DNA to identify ecological indicators associated with marine mammal abundances. Contributed talk, Ocean Observing in California, San Diego, CA, USA, May 14-16, 2024.
- Trevor D. Ruiz*** and Sharmodeep Bhattacharyya. Sparse estimation in high dimensional time series. Contributed poster, Challenges in the Statistical Modeling of Stochastic Processes for the Natural Sciences, Banff International Research Station, Banff, Alberta, Canada, July 9-14, 2017.
- Mentored student presentations** Nicole E. Yee^{*†}, Allen Y. Choi[†], **Trevor D. Ruiz**, Haley A. Moniz, and Emily N. Taylor. Modeling variation in rattlesnake populations across geographic and climatic gradients with multilevel functional regression. Accepted abstract (poster presentation), International Statistical Ecology Conference, Mérida, Yucatan, Mexico, January 10-15, 2027.
- Nicole E. Yee^{*†}, Allen Y. Choi[†], **Trevor D. Ruiz**, Haley A. Moniz, and Emily N. Taylor. Geographic and environmental drivers of rattlesnake thermoregulation and metabolism. Poster presentation, Bailey College of Science and Mathematics 2026 Student Research Conference, Cal Poly, San Luis Obispo, CA, USA, May 14-15, 2026.

Kaviya Veerasingam^{*†}, Camille C. Pawlak, Reed J. Kenny, Julia C. Schedler, and **Trevor D. Ruiz**. Urban forest tree allometry. Poster presentation, Bailey College of Science and Mathematics 2026 Student Research Conference, Cal Poly, San Luis Obispo, CA, USA, May 14-15, 2026.

Aléa J. Seifert^{*†}, Jose Garcia^{*†}, **Trevor D. Ruiz**, and Emily E. Bockmon. Quality control of Morro Bay estuarine monitoring data to detect disruptions in oxygen-pH coupling. Poster presentation, Bailey College of Science and Mathematics 2026 Student Research Conference, Cal Poly, San Luis Obispo, CA, USA, May 14-15, 2026.

Barbara E. Ibrahim^{*†}, Emi Degembe[†], Lucy Nelson[†], **Trevor D. Ruiz**, and Alexis Pasulka. Using association networks to explore the ecology of harmful algal blooms in California coastal waters. Poster presentation, Bailey College of Science and Mathematics 2026 Student Research Conference, Cal Poly, San Luis Obispo, CA, USA, May 14-15, 2026.

Nicholas A. Patrick^{*†}, Nathan Greenfield^{*†}, and **Trevor D. Ruiz**. Partial partial least squares regression: a hybrid approach to dimension reduction. Poster presentation, Bailey College of Science and Mathematics 2025 Student Research Conference, Cal Poly, San Luis Obispo, CA, USA, May 15-16, 2025.

Nicole E. Yee^{*†}, Emma M. Reardon^{*†}, **Trevor D. Ruiz**, Haley A. Moniz, and Emily N. Taylor. Modeling the baseline metabolic needs of prairie rattlesnakes (*Crotalus viridis*) based on reproductive status. Poster presentation, Bailey College of Science and Mathematics 2025 Student Research Conference, Cal Poly, San Luis Obispo, CA, USA, May 15-16, 2025.

Emma M. Reardon^{*†}, Nicole E. Yee[†], **Trevor D. Ruiz**, Haley A. Moniz, and Emily N. Taylor. Effects of reproductive status on standard metabolic rate of the prairie rattlesnake (*Crotalus viridis*) at high elevation site with a short active season. Poster presentation, 72nd Annual Meeting of the Western Section of The Wildlife Society, Visalia, CA, USA, February 3-7, 2025.

Shannon Rumsey^{*†}, Edward Ho[†], Chunting Zheng[†], Nealson Setiawan[†], Jennifer Park[†], Meghan Elcheikhali, **Trevor D. Ruiz**, Arinbjörn Kolbeinsson, and Eric J. Daza. Identifying case onset points for early detection of influenza-like illness. Poster presentation, ACM SIGKDD Conference on Knowledge Discovery and Data Mining, Long Beach, CA, USA, August 6-10, 2023.

Lyndsey Umsted^{*†}, Justin Liu[†], Piero Trujillo[†], Ellen Burrell[†], Laura Baracaldo Lancheros, **Trevor D. Ruiz**, Evgeny Noi, Enbo Zhou, and Somayeh Dodge. Understanding and modeling human mobility response to california wildfires. Poster presentation, ACM SIGKDD Conference on Knowledge

Discovery and Data Mining, Long Beach, CA, USA, August 6-10, 2023.

Mallika Gupta^{*†}, Annaliese Adams^{*†}, **Trevor D. Ruiz**, and Erin V. Satterthwaite. A scrollytelling primer on hypoxia: developing a data storytelling tool to communicate ocean observing data to california citizens. Contributed talk, CalCOFI Conference 2022: Innovative Techniques and Novel Applications of Time Series Data to Marine Resource Management, La Jolla, CA, USA, December 5-7, 2022.