

**CONTACT
INFORMATION**

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**RESEARCH
INTERESTS**

I am interested in the global dynamics of ecological systems, and how mathematical differences between ecological models (either deterministic or stochastic) can lead to various long-term behaviors. For my thesis work, I analyzed how random, environmental factors affected single-species and multispecies persistence. Currently, I am using a mixture of tools from classical ODE theory, combinatorics, and algebraic topology to understand coarse dynamics of systems of interacting species.

EMPLOYMENT**Rutgers University – New Brunswick**

Position: Mathematical and Physical Sciences Ascending 2021 -
Postdoctoral Research Fellow

Mentor: [Dr. Juan Bonachela](#)

Rutgers University – New Brunswick

Position: Hill Assistant Professor 2019 - 2021

Mentor: [Dr. Konstantin Mischaikow](#)

EDUCATION**University of California, Davis**

Ph.D., Applied Mathematics 2012 - 2019

Thesis: [Persistence of Single and Multispecies Systems in the Face of Environmental Uncertainty](#)

Adviser: [Dr. Sebastian J. Schreiber](#)

University of California, Berkeley

B.A., Pure Mathematics, Italian Studies	2007 - 2012
UC Education Abroad Program - Bologna, Italy	2012

PUBLICATIONS

W.S. Cuello, J.R. Gremer, A. Sih, P.C. Trimmer, D.L. Venable, and S.J. Schreiber. “Extinction Risk of Sonoran Desert Annuals Following Potential Changes in Precipitation Regimes.” In prep.

W.S. Cuello and S.J. Schreiber. “A Mathematical Framework for Multispecies Systems Undergoing Small Environmental Fluctuations.” In prep.

P.H. Crowley, P.C. Trimmer, O. Spiegel, S.M. Ehlman, **W.S. Cuello**, and A. Sih. “[Predicting habitat choice after rapid environmental change.](#)” The American Naturalist 193, no. 5 (2019): 619-632.

W.S. Cuello, J.R. Gremer, P.C. Trimmer, A. Sih, and S.J. Schreiber. “[Predicting evolutionarily stable strategies from functional responses of Sonoran Desert annuals to precipitation.](#)” Proceedings of the Royal Society B 286, no. 1894 (2019): 20182613.

W.S. Cuello, T.A.T. Janes, J.M. Jessee, M.A. Venecek, M.E. Sawyer, C.R. Eklund, and M.V. Evans. “[Physiologically based pharmacokinetic \(PBPK\) modeling of metabolic pathways of bromochloromethane in rats.](#)” Journal of toxicology 2012 (2012).

AWARDS/FELLOWSHIPS

Mathematical and Physical Sciences Ascending Postdoctoral Research Fellowship (MPS-Ascend) (\$300,000)	2021-2024
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NJ-NExT Fellow Professional development program for academic careers	2021-2022
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William K. Schwarze Scholarship Award for excellence in teaching and scholarship (\$10,000)	Spr. 2017
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UC Davis GGAM Departmental Fellowship Semester-long funding for graduate research	2013, ‘14, ‘15, ‘17
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INTERNSHIPS/RESEARCH PROGRAMS/SEMINAR TALKS

Tulane University, New Orleans, LA Seminar Presentation	Fal. 2019
University of California, Davis, Davis, CA MathBio Seminar – Thesis Presentation & Exit Seminar	Spr. 2019
Zuse Institute Berlin, Berlin, Germany Graduate-Level Research in Industrial Projects for Students in Berlin (GRIPS)	Sum. 2017
North Carolina State University, Raleigh, NC Research Experience for Undergraduates (REU+)	Sum. 2011

OUTREACH/VOLUNTEERING/SERVICE

Rutgers University Research Experience for Undergraduates (REU)	Sum. 2020, '21
UC Davis Stem Cafe Tutor at the Women's Resources and Research Center (WRRC)	2014 - 2018
California State Summer School for Mathematics and Science (COSMOS) (UC Davis)	Sum. 2016
Co-organizer of UC Davis Qualifying Exam Workshop for Graduate Groups of Applied and Pure Mathematics	Win. 2016
California State Summer School for Mathematics and Science (COSMOS) (UC Davis)	Sum. 2015
Referee for Journal of Dynamics and Differential Equations	
Referee for Journal of Mathematical Biology	

CONFERENCES/WORKSHOPS/SEMINARS

Computational Persistence Workshop – Purdue	Nov. 2021
NJ-Mathematical Association of America Meeting	Apr. 2021
NJ-NExT Fellows Workshop	Apr. 2021
Theoretical Ecology Seminar Series	2020-2021

UC Davis DataLab Introduction to Git Workshop	Dec. 2020
Banff International Research Station	May 2020
Nat'l Institute for Math and Bio Synthesis (NIMBioS) Math Modeling of Malaria Transmission by Mosquitoes	Apr. 2020
University of Delaware, Newark, Delaware Workshop on Topology: Identifying Order in Complex Systems	Nov. 2019
Centre de Recherches Mathématiques: Topological and Rigorous Computational Methods for High Dimensional Dynamics	Apr. 2019
MSRI Stochastic Partial Differential Equations	Jul. 2014
GGAM Mini-Conference	Jan. 2014
GGAM Mini-Conference	Jan. 2013

TEACHING

Rutgers University – New Brunswick (Lecturer)

Discrete and Probabilistic Models in Biology (Math 338)	Spr. 2021
Intro to Abstract Algebra I (Math 351)	Fal. 2020
Intro to Linear Algebra (Math 250)	Fal. 2020
Intro to Real Analysis I (Math 311)	Spr. 2020
Discrete and Probabilistic Models in Biology (Math 338)	Spr. 2020
Mathematical Statistics (Math 481)	Fal. 2019

University of California – Davis (TA and Lecturer)

2012 - 19

Precalculus (TA)
(Math 12)

Short Calculus (TA)
(Math 16B)

Calculus for Biologists (IOR, TA)
(Math 17A,B,C)

Calculus for Math and Engineering (TA)
(Math 21A,B,C,D)

History of Mathematics (TA)
(Math 111)

Ordinary Differential Equations (TA)
(Math 119A)

Mathematical Biology (TA)
(Math 124)

Real Analysis (TA)
(Math 125A)

Applied Mathematics (TA)
(Math 207C)

MEMBERSHIPS/ORGANIZATIONS

[Mathematical Associations of America – New Jersey](#)

[DIMACS](#)

[TRIPODS: DATA-Inspire](#)

[Association for Women in Mathematics Student Chapter of Rutgers University](#)