

# W. Christopher Strickland

227 Ayres Hall  
1403 Circle Drive  
University of Tennessee, Knoxville  
Knoxville, TN 37996-1320

Email: [cstric12@utk.edu](mailto:cstric12@utk.edu)  
Office Phone (865) 974-2461  
Fax: (865) 974-6576

<http://www.christopherstrickland.com/>

<https://math.utk.edu/labs/strickland/>

<https://github.com/mountainindust>

## OVERVIEW

Dr. Strickland is an applied mathematician at the University of Tennessee, Knoxville, where he leads an interdisciplinary research group focused on mathematical and computational models of behavior-driven systems — including animal movement and collective dynamics in complex environments, the social and policy dynamics of disease and substance-use epidemiology, and emerging work on perception-based modeling of decision-making. His approach combines mechanistic modeling, large-scale simulation in Python, and careful mathematical analysis in collaboration with ecologists, applied mathematicians, and quantitative scientists from related disciplines.

His research has been supported by over \$1 million in federal and foundation funding as PI and Co-PI with grants from the NSF, the VA (via Oak Ridge National Laboratory), the Simons Foundation, and Burroughs Wellcome Fund. His nearly 30 publications span mathematics, biology, and public health; he has advised seven doctoral students; and he develops and maintains *Planktos*, an open-source agent-based modeling framework. He is particularly drawn to leading interdisciplinary teams on problems that combine deep technical substance with real-world application and welcomes inquiries about leadership roles and major collaborations across academic, industry, and government partnerships.

## PROFESSIONAL APPOINTMENTS

### **Associate Professor**

August 2023-Present

Assistant Professor: August 2017-July 2023

University of Tennessee, Knoxville

Department of Mathematics and adjunct in Department of Ecology & Evolutionary Biology

### **Postdoctoral Researcher**, Joint Appointment

August 2014-July 2017

Statistical and Applied Mathematical Sciences Institute (SAMSI) (Aug. 2014 – July 2016), and

University of North Carolina, Chapel Hill, Department of Mathematics

Postdoctoral mentors: Profs. Laura Miller & Richard Smith

Research under the Program on Mathematical and Statistical Ecology involving dispersal dynamics, tipping points, and savanna structure. Helped lead collaborations spanning over six fields of science and mathematics and teams of up to twelve researchers.

Mentor and supervisor for three undergraduate students working on various research projects.

## EDUCATION

### **Ph.D. in Mathematics**

December 2013

Colorado State University, Fort Collins, CO

Advisers: Profs. Gerhard Dangelmayr & Patrick Shipman

Dissertation title: The Mathematical Modeling and Analysis of Nonlocal Ecological Invasions and Savanna Population Dynamics (defended 10-16-2013)

## M.S. in Mathematics

August 2007

University of Florida, Gainesville, FL

Adviser: Prof. Philip Boyland

Thesis title: Bifurcations of the Degree-Two Standard Family of Circle Maps

## B.S. in Mathematics and B.A. in French, minor in physics, *summa cum laude*

May 2005

University of Mississippi, Oxford, MS

Sally McDonnell Barksdale Honors College Graduate

Honors thesis: Mind, Gödel, and the Incompleteness of Human Thought

## GRANTS, HONORS & AWARDS

**UT AgResearch, AgResearch Strategic Action Plan (ASAP) SPRINT Phase 2.** *Integration of real-time monitoring and advanced data science for precision control of flies and mastitis in dairy farms.* **Co-PI**, \$61,690 (approx. \$200,000 total), July 2024 – June 2026.

**NSF-DMS-2410988, Mathematical Biology.** *Collaborative Research: RUI: The fluid dynamics of organisms filtering particles at the mesoscale.* **PI**, \$170,333 (collaborative total: \$469,842), Sept. 2024 – Aug. 2027.

**Oak Ridge National Lab (Prime Sponsor: U.S. Department of Veterans Affairs).** *Quantifying Environmental Factors for Opioid Use Disorder.* **PI**, \$617,243 (UTK total: \$804,062), Feb. 2023 – May 2026.

American Institute of Mathematics, SQuaREs (Structured Quartet Research Ensembles). Funded for three week-long collaborative visits at AIM (approx. \$3000 per year), 2023-2026.

**Auburn University (Prime Sponsor: NSF).** *NSF INCLUDES Alliance: The Alliance of Students with Disabilities for Inclusion, Networking, and Transition Opportunities in STEM (TAPDINTO-STEM).* **Co-PI**, \$237,122, 2021-2025.

**Simons Foundation.** *Collaboration Grant for Mathematicians*, **PI**, \$42,000, 2018-2023.

Contract work: *Consulting services relating to population modeling with potential connections to the homeless population of Houston, TX.* **PI**, \$5,000, 2020-2023.

**Burroughs Wellcome Fund.** *Enhancing Quantitative and Data Science Education for Graduate Students in Biomedical Science*, **Senior Personnel** (\$149,823), 2018-2020.

National Institute for Mathematical and Biological Synthesis (NIMBioS) short-term visitor proposal. *Foraging and Social Interaction in the Formation of Locust Hopper Bands*, funded for a four-day, collaborative research visit (approx. \$6,100), 2020.

Institute for Advanced Study (IAS) Summer Collaborators Program. Research program chosen for funding by the School of Mathematics for a two-week collaborative visit of six people, 2019.

Selected and funded participant in the AMS Mathematics Research Community: Agent-based Modeling in Biological and Social Systems, 2018-2019.

Cross Disciplinary Prize Winner, International Conference on Mathematical Methods and Models 2015.

Yates Summer Graduate Fellowship, 2013.

Summer Graduate Research Assistantship (competitive), CSU Mathematics Department, 2011.

Center for Interdisciplinary Mathematics and Statistics (Colorado State University) Fellowship, 2009.

Honors Societies: Phi Beta Kappa, Phi Kappa Phi, others

## PUBLICATIONS

1. Percy, L.B., Queen, O., Jodoin, V., Lenhart, S., Strickland, W.C. (2026). Construction and Data-driven Analysis of a Stochastic, Individual-based Opioid Epidemiology Network Model. *Mathematical Modelling and Numerical Simulation with Applications*, 5(4), 3.
2. Bouka, M., Strickland, W.C. (2025). Strong information delay as a driver of epidemic waves: mathematical modeling for drug trends and epidemic bio-preparedness. *Theoretical Population Biology*, 167, Feb. 2026, 22-39.
3. Percy, L., Lenhart, S., Strickland, W.C. (2024). Structural instability and linear allocation control in generalized models of substance use disorder. *Mathematical Biosciences*, 371, 109169.
4. Elzinga, D.C., Strickland W.C. (2023). Generalized stressors on hive and forager bee colonies. *Bulletin of Mathematical Biology*, 85(112).

5. Elzinga, D.C., Beckford, C., Strickland, W.C. (2023). A mathematical model of the impacts of climate change on the winter tick epizootic in moose. *Ecological Modelling*, 483, 110421.
6. Gross, L.J., McCord, R.P., LoRe, S., Ganusov, V.V., Hong, T., Strickland, W.C., Talmy, D., von Arnim, A.G., Wiggins, G. (2023). Prioritization of the concepts and skills in quantitative education for graduate students in biomedical science. *PLOS ONE*, 18, 1-12.
7. Hamlet, C., Strickland, W.C., Battista, N., Miller, L.A. (2023). Multiscale flow between the branches and polyps of gorgonians, *Journal of Experimental Biology*, 266(5): jeb244520.
8. Phillips, T., Gaoue, O.G., Lenhart, S, Strickland W.C. (2023). Modeling the effects of size-dependent harvesting strategies on the population dynamics of tropical trees. *Mathematical Biosciences*, 355, 108953.
9. Strickland, W.C., Battista, N.A., Hamlet, C.L., Miller, L.A. (2022). Planktos: An agent-based modeling framework for small organism movement and dispersal in a fluid environment with immersed structures. *Bulletin of Mathematical Biology*, 84(72).
10. Smith, K.V., DeLong, K.L, Boyer, C.N., Thompson, J.M., Lenhart, S.M., Strickland, W.C., Burgess, E.R., Tian, Y., Talley, J., Machtinger, E.T., Trout Fryxell, R.T. (2022). A call for the development of a sustainable pest management program for the economically important pest flies of livestock: a beef cattle perspective. *Journal of Integrated Pest Management*, 13(1), 14.
11. Phillips, T., Lenhart, S., Strickland, W.C. (2021). A data-driven mathematical model of the heroin and fentanyl epidemic in Tennessee. *Bulletin of Mathematical Biology*, 83(97).
12. Senter, M., Douglas, D.R., Strickland, W.C., Thomas, S., Talkington, A., Miller, L.A., Battista, N.A. (2020). A semi-automated finite difference mesh creation method for use with immersed boundary software including IB2d and IBAMR. *Bioinspiration & Biomimetics*, 16, 016008.
13. Bernoff, A.J., Culshaw-Maurer, M., Everett, R.A., Hohn, M., Strickland, W.C., Weinburd, J. (2020). Agent-based and continuous models of hopper bands for the Australian plague locust: How resource consumption can mediate pulse formation and geometry, *PLOS Comp. Bio.*, 16(5), e1007820.
14. Ozalp, K., Miller, L., Dombrowski, T., Braye, M., Dix, T., Pongracz, L., Howell, R., Klotsa, D., Pasour, V., Strickland, W.C. (2020). Experiments and agent based models of zooplankton movement within complex flow environments, *Biomimetics*, 5(1), 2.
15. Beckman, N.G., Aslan, C.E., Rogers, H.R., Kogan, O., Bronstein, J.L., Bullock, J.M., Hartig, F., HilleRisLambers, J., Zhou, Y., Zurrell, D., Brodie, J.F., Bruna, E.M., Cantrell, S.R., Decker, R., Effiom, E.O., Fricke, E.C., Gurski, K., Hastings, A., Johnson, J., Loiselle, B.A., Miriti, M.N., Neubert, M.G., Pejchar, L., Poulsen, J.R., Pufal, G., Razafindratsima, O.H., Sandor, M., Shea, K., Schreiber, S.J., Schupp, E.W., Snell, R.S., Strickland, C., Zambrano, J. (2019). Advancing an interdisciplinary framework to study seed dispersal ecology, *AoB Plants*, plz048.
16. Rogers, H., Beckman, N., Hartig, F., Johnson, J.S., Pufal, G., Shea, K., Zurell, D., Bullock, J.M., Cantrell, R.S., Loiselle, B., Pejchar, L., Razafindratsima, O.H., Sandor, M., Schupp, E.W., Strickland, C., Zambrano, J. (2019). The total dispersal kernel: a review and future directions, *AoB Plants*, plz042.
17. Battista, N.A., Percy, L.B., Strickland, W.C. (2019). Modeling the prescription opioid epidemic, *Bulletin of Mathematical Biology*, 81(7), 2258-2289.
18. Aslan, C.E., Beckman, N.G., Rogers, H., Bronstein, J., Zurell, D., Hartig, F., Shea, K., Pejchar, L., Neubert, M., Poulsen, J., HilleRisLambers, J., Miriti, M., Loiselle, B., Effiom, E., Zambrano, J., Schupp, E., Pufal, G., Johnson, J., Bullock, J., Brodie, J., Bruna, E., Cantrell, S., Decker, R., Fricke, E., Gurski, K., Hastings, A., Kogan, O., Razafindratsima, O., Sandor, M., Schreiber, S., Snell, R., Strickland, C., Zhou, Y. (2019). Employing plant functional groups to advance seed dispersal ecology and conservation, *AoB Plants*, 11(2), plz006.
19. Snell, R.S., Beckman, N.G., Fricke, E., Loiselle, B., Carvalho, C., Jones, L., Lichti, N., Lustenhouwer, N., Schreiber, S., Strickland, C., Sullivan, L., Cavazos, B., Giladi, I., Hastings, A., Holbrook, K., Jongejans, E., Kogan, O., Montano-Centellas, F., Rudolph, J., Rogers, H., Zwolak, R., Schupp, E. (2019). Consequences of intraspecific variation in seed dispersal for plant demography, communities, evolution, and global change, *AoB Plants*, 11(4), plz016.
20. Battista, N., Strickland, C., Barrett, A., Miller, L.A. (2018). IB2d Reloaded: an updated Python and MATLAB implementation of the immersed boundary method, *Mathematical Methods in the Applied Sciences*, 41(18), 8455-8480.

21. Strickland, C., Miller, L.A., Santhanakrishnan, A., Hamlet, C., Battista, N.A., Pasour, V. (2017). Three-dimensional low Reynolds number flows near biological filtering and protective layers, *Fluids*, 2(62).
22. Strickland, C., Kristensen, N.P., Miller, L.A. (2017). Inferring stratified parasitoid dispersal mechanisms and parameters from coarse data using mathematical and Bayesian methods, *Royal Society Interface*, 14(130), 20170005.
23. Strickland, C., Pearson, D.A., Shipman, P.D. (2017). Formation of square lattices in coupled pattern-forming systems. *BIOMATH*, 5(2), 1612181.
24. Battista, N., Strickland, C., Miller, L.A. (2017). IB2d: A Python and MATLAB implementation of the immersed boundary method. *Bioinspiration & Biomimetics*, 12(3), 036003.
25. Strickland, C., Liedloff, A., Cook, G.D., Dangelmayr, G., Shipman, P.D. (2016). The role of water and fire in driving tree dynamics in Australian savannas. *Journal of Ecology*, 104(3), 828-840.
26. Strickland, C., Dangelmayr, G., Shipman, P.D., Kumar, S., Stohlgren, T.J. (2015). Network spread of invasive species and infectious diseases, *Ecological Modelling*, 309-310, 1-9.
27. Strickland, C., Dangelmayr, G., Shipman, P. (2014). Modeling the presence probability of invasive plant species with nonlocal dispersal, *Journal of Mathematical Biology*, 69(2), 267-294.
28. Shipman, P.D., Faria, S.H., Strickland, C. (2013). Towards a continuous population model for natural language vowel shift, *Journal of Theoretical Biology*, 332, 123-135.

### UPCOMING PUBLICATIONS

- Eversman, K., Spannaus, A., Campbell, R., Percy, L.B., Trafton, J., Kapadia, A., Strickland, W.C. A modeling study of the opioid epidemic for vulnerable communities in Knoxville, Tennessee. Submitted.
- Bernoff, A.J., Everett, R.A., Hohn, M.E., Maclean, J., Strickland, W.C., Weinburd, J. Modelling locust alignment: parameter and model identification via field data. In preparation.
- Strickland, W.C., Battista, N.A., Knight, M., Chapman, K., Hall, T., Harsha, A.S., Yizzi, E. Planktos: Exploring small organism interaction with dynamic 2D structures in fluid flow. In preparation.
- Strickland, W.C., Bernoff, A.J. A weighted model of perception and decision-making between unequal targets of finite size. In preparation.
- Percy, L.B., Strickland, W.C. A modeling study of individual susceptibility to alcohol and opioid use disorders using deterministic and stochastic approaches. In preparation.

### COMPUTER SKILLS

Primary languages: Python (11+ yrs.) including NumPy, SciPy, Matplotlib, Cython, PyCUDA, Pandas, NetworkX, multiprocessing, Pytest, Pillow, PyMC, VTK/PyVista, Sphinx, and more. MATLAB (10+ yrs.), Git, and LaTeX with BibTeX. See <https://github.com/mountaindust> for examples.

Intermediate knowledge of Lightroom, Premiere Pro, and Photoshop. Some exposure to C/C++, Unix, Mathematica, VisIt, COMSOL, and HTML. Other software experience includes Acrobat, Beamer, AI photo and video editing, digital audio editing, MS Office.

### TEACHING EXPERIENCE

**Assistant & Associate Professor**, University of Tennessee, Knoxville Aug. 2017-Present  
 Instructor of record for Honors Calc 2 & 3, Differential Equations, Honors Intro. to Abstract Math, Mathematical Ecology I & II (grad), Models in Biology, Readings in Mathematics, Adv. Math Ecology (grad), Mathematics for the Life Sciences I, Mathematical Biology seminar

**Postdoctoral Lecturer**, University of North Carolina, Chapel Hill Aug.-Dec. 2015 & 2016  
 Instructor of record for a senior undergrad course on mathematical modeling (25 students). Duties include supervising a graduate teaching assistant and a university funded graduate research consultant.  
 Instructor of record for Introduction to Ordinary Differential Equations (55 students).  
 Mentor and supervisor for an undergraduate student working on research projects (April-Present).

**Instructor**, Colorado State University January-May 2014  
 Instructor of record for Calculus for Biologists I and Calculus for Business Majors (200 students)

**Graduate Teaching Assistant**, Colorado State University Jan.-May 2009 & Jan. 2010-Dec. 2013  
 Instructor of record for Calculus for Biologists II (3 semesters), a course which covers linear algebra, multivariable calculus, and differential equations; Introduction to Ordinary Differential Eqns (3 semesters); Calculus for Biologists I; and Calculus for Scientists and Engineers I.

**Adjunct Faculty**, Santa Fe College January-June 2008  
 Instructor of record for classes of approx. 30 students in Survey of Calculus and College Algebra.

**Teaching Assistant**, University of Florida August 2005-August 2007  
 Lectured Survey of Calculus and held discussion class for Survey of Calculus, Pre-Calculus, College Algebra, and Liberal Arts Mathematics.

### STUDENT AND POSTDOC MENTORING

Margie Knight, UTK, PhD advisor	Sept. 2024-Present
Melissa Pulley, UTK, PhD advisor	Aug. 2024-Present
Anirudhha Harsha, UTK, (undergrad) Knox Math Lab	Jan. 2026-May 2026
Tyler Hall, UTK, (undergrad) Knox Math Lab	Aug. 2025-May 2026
Koe Chapman, UTK, Undergraduate Research, Knox Math Lab	Feb. 2025-May 2026
Ryan Campbell, UTK, PhD advisor	Feb. 2022-May 2026
Kimberlyn Eversman, UTK, postdoctoral mentor (Veterans United)	June 2025-Jan. 2026
Kimberlyn Eversman, UTK, PhD advisor	Sept. 2021-May 2025
Martina Bouka, UTK, MS Mathematics (PhD program, Charité Univ. of Medicine)	Aug. 2023-May 2024
Leigh Percy, UTK, PhD Mathematics, MS in Statistics (postdoc, U Pittsburgh)	Jan. 2020-Aug. 2023
David Elzinga, UTK, PhD Mathematics, MS in Statistics (TTF at UW LaCrosse)	Jan. 2020-May 2023
Owen Queen, UTK, Undergraduate research (Research Assoc., Harvard Med 2023; PhD Comp. Sci. Program, Stanford 2024)	Jan. 2020-May 2022
Vincent Jodoin, UTK, Undergraduate research (Grad School, Univ. Kentucky)	Jan. 2020-July 2020
Tricia Phillips, UTK, PhD co-advisor (TTF at Birmingham-Southern Univ.)	Oct. 2017-July 2020
James Zak, UNC-CH, Honors thesis advisor, indep. study (industry, KPMG)	Jan. 2017-May 2018
Leigh Percy, UNC-CH, Independent study, Directed Exploration in Math	Jan. 2017-May 2018
Ao Zeng, UNC-CH, Independent study (Grad School, Carnegie Mellon)	April 2016-June 2017

#### **PhD Committee Member for 12 additional students**

Amber, Young, Vincent Jodoin, Chiara Mattamira, Kelechi Akwataghibe, David Garber, Brian Oye, Maggie Sullens, Wencil Mackenzie, Mohammed Al-Mamun, Hannah Thompson, Danielle Burton, Le Yin, and Logan Perry

#### **Masters Project Committee Member for 8 additional students**

Anne Ngo, Taiwo Alabi, Ebenezer Acquah, Treece Burgess, Hannah Conner, Hoa Thieu Ly (Wally), Guilherme Silva, and Kyla Linn

### INVITED CONFERENCES, WORKSHOPS, & SEMINARS

Society for Mathematical Biology Annual Meeting, Graz Austria	July 2026
Mini-symposium organizer: <i>Collective dynamics at multiple scales</i>	
Invited talk: <i>How perception and neural weighting can drive the geometry of decision-making in target pursuit</i>	
Interdisciplinary Center for Data-driven Modeling in Biology, UC Riverside	May 2026
Invited seminar: <i>Planktos: An agent-based modeling framework for collective behavior in fluid flow around immersed structures</i>	
NeuroNET-CoLAB Workshop, UTK	January 2026
Invited talk (one of seven): <i>The neural-ring model for decision-making in individuals and collectives: an overview</i>	
American Institute of Mathematics, SQuaREs workshop	January 2026

Masamu CRN Virtual Colloquia Series (International Audience) October 2025  
Invited colloquium: *Mathematical modeling and analysis of opioid use disorder epidemiology*

SIAM Dynamical Systems, Denver Colorado May 2025  
Invited talk: *Planktos: An agent-based modeling framework for collective behavior in fluid flow around immersed structures*

The University of Georgia Applied Math Seminar March 2025  
Invited seminar: *Population- and individual-level dynamics: opioid use disorder and collective behavior around structures*

The University of Tennessee Grand Challenges Summit February 2025  
Awarded presentation in “Overcoming Addiction” grand challenge area:  
*A mathematics-based approach to opioid epidemiology in Tennessee*  
<https://grandchallenges.tennessee.edu/2025-summit/>

American Institute of Mathematics, SQuaREs workshop November 2024

Max Planck Institute of Animal Behavior, Dept. of Collective Behavior. Konstanz, Germany Oct. 2024  
Two-week funded research stay plus invited colloquium talk: *Individual-based models of collective motion: locusts and organisms within fluid flow around immersed structures*

Society for Mathematical Biology Annual Meeting, Seoul Korea July 2024  
Mini-symposium organizer (2 sessions): *Novel modelling approaches for disease and management of biological systems*  
Invited talk: *Re-examining incidence rates in models of infectious disease and substance use disorder*

Joint Mathematics Meetings January 2024  
Invited talk: *Generalized stressors on hive and forager bee colonies*

American Institute of Mathematics, SQuaREs workshop May 2023

Virginia Tech, Mathematical Biology Seminar November 2022  
Invited seminar: *Using mechanistic models to advance theory in opioid use disorder epidemiology*

Auburn University, Applied Math Seminar October 2022  
Invited seminar: *Using mechanistic models to advance theory in opioid use disorder epidemiology*

SIAM Life Sciences July 2022  
Minisymposium organizer: *Novel Approaches in Compartmental Models of Disease*

ORNL Biostatistics and Multiscale Modelling Seminar June 2022  
Invited seminar: *Using mechanistic models to advance theory in opioid use disorder epidemiology*

Workshop meeting of the MRC Locust Group (funded by Harvey Mudd College) May 2022

Southeast Center for Mathematics and Biology June 2021  
Invited undergraduate seminar: *Locusts, plankton, and opioid use: examples of agent-based modeling in mathematical biology*

International Cassiopea Workshop May 2021  
Invited talk: *Introducing Planktos: an agent-based modeling framework for small organisms in fluid flow*

Center for Quantitative Medicine at UConn Health February 2021  
Invited seminar: *Using mechanistic models to advance theory in opioid addiction epidemiology*

Joint Mathematics Meetings January 2021  
Invited talk: *Using agent-based models to explore network dynamics in addiction epidemiology*

NIMBioS workshop meeting of the MRC Locust Group December 2020

University of Arizona November 2020  
Invited seminar: *Modeling the prescription opioid epidemic*

Claremont Center for the Mathematical Sciences March 2020  
Invited colloquium: *Modeling the prescription opioid epidemic*  
Invited seminar: *Approaches to modeling dispersal and swarm behavior at multiple scales*

Joint Mathematics Meetings January 2020  
Invited talk: *Agent-based and continuous models of locust hopper bands*

The 11<sup>th</sup> Annual Undergraduate Research Conference at the Interface of Biology and Mathematics November 2019  
Invited, plenary talk: *Bugs and drugs: two approaches to modeling systems with social impact in mathematical biology*

AMS Fall Southeastern Sectional Meeting	November 2019
Invited talk: <i>Modeling the prescription opioid epidemic</i>	
Society for Mathematical Biology Annual Meeting, Montreal Canada	July 2019
Mini-symposium organizer: <i>Agent-based models in mathematical biology</i>	
Invited talk: <i>Modeling movement and persistence of small organisms in flow</i>	
SIAM Conference on Applications of Dynamical Systems	May 2019
Invited talk: <i>Modeling movement, invasion, and persistence of small organisms in flow</i>	
SIAM Mathematics of Planet Earth, 2018	September 2018
Invited talk: <i>Modeling the opioid epidemic</i>	
Society for Mathematical Biology Annual Meeting, Sydney Australia	July 2018
Invited talk: <i>Flow and movement of organisms through protective layers</i>	
AMS MRC: Agent-based Modeling in Biological and Social Systems	June 2018
Invited and fully funded participant, career panelist	
SIAM-SEAS Annual Meeting, 2018	March 2018
Invited talk: <i>Modeling the opioid epidemic</i>	
SIAM Student Chapter Colloquium, Colorado State University	February 2018
Invited talk: <i>Modeling invasive dispersal at multiple scales</i>	
National Socio-Environmental Synthesis Center (SESYNC): Seed Dispersal Workshop (participant, fully funded)	May 2016
Modern Math Workshop and SACNAS annual meeting	October 2015
Invited talk as SAMSI postdoctoral representative: <i>A stochastically driven model for savanna water resource dynamics</i>	
SIAM Conference on Applications of Dynamical Systems	May 2015
Mini-symposium co-organizer: <i>Dynamics on networks and network topology in ecology and epidemiology</i>	
Invited talk: <i>Network spread and control of invasive species and infectious diseases</i>	
SAMSI Transition Workshop	May 2015
Invited talk: <i>Modeling dispersal patterns of parasitoid wasps</i>	
International Conference on Advances in Interdisciplinary Statistics and Combinatorics	October 2014
Invited talk: <i>Modeling savanna water resource dynamics with stochastic daily rainfall</i>	
AMS 2012 Fall Western Section Meeting	October 2012
Invited talk: <i>Modeling the nonlocal dispersal of invasive species</i>	

### OTHER PRESENTATIONS AND WORKSHOPS

Society for Integrative and Comparative Biology (SICB) Annual Meeting	January 2023
Contributed talk: <i>Planktos: an agent-based framework for small organisms in fluid and around structures at the meter scale</i>	
SIAM Life Sciences	July 2022
Contributed talk: <i>Planktos: An Agent-Based Modeling Framework for Small Organisms in Fluid and Around Structures</i>	
Governor's School Math Open House, UTK	June 2021
Invited high-school seminar: <i>Locusts, plankton, and opioid use: examples of agent-based modeling in mathematical biology</i>	
Dynamics Days US 2018	January 2018
Contributed poster: <i>Modeling the opioid epidemic</i>	
BIOMATH 2017: Kruger National Park, South Africa	June 2017
Contributed talk: <i>Modelling the spread of parasitoid wasps from point release</i>	
Joint Mathematics Meetings	January 2017
Contributed talk: <i>Modelling the spread of parasitoid wasps from point release</i>	
69 <sup>th</sup> Annual Meeting of The APS Division of Fluid Dynamics	November 2016
Contributed talk: <i>Low Reynolds number flow near tiny leaves, stems, and trichomes</i>	
ECMTB/SMB Annual Meeting, Nottingham UK	July 2016
Contributed talk: <i>Modelling the spread of parasitoid wasps from point release</i>	

Society for Experimental Biology Annual Meeting, Brighton UK	July 2016
Contributed talk: <i>Modelling the spread of parasitoid wasps from point release</i>	
BIOMATH 2015: International conference on Mathematical Methods and Models in Biosciences and Young Scientists School	June 2015
Winner of the Cross Disciplinary Prize for the contributed talk: <i>A stochastically driven model for savanna water resource dynamics</i>	
SAMSI: Developing, Maintaining, and Employing Large Computational Frameworks for the Ecological Sciences	April 2015
SAMSI: Multivariate Models in Ecology (attended)	March 2015
Society for Integrative and Comparative Biology SouthEast Regional Meeting	October 2014
Contributed talk: <i>A mathematical model for savanna water resource dynamics</i>	
SAMSI Opening Workshop (attended)	August 2014
2013 Annual Conference & Meeting for the Society for Mathematical Biology	June 2013
Contributed talk: <i>Modeling non-local invasive spread on continuous domains coupled with a vector-based transportation network</i>	
Joint Mathematics Meetings	January 2013
Contributed talk: <i>Modeling the nonlocal spread of invasive plant species in heterogeneous landscapes</i>	
The 9 <sup>th</sup> AIMS Conference on Dynamical Systems, Differential Equations and Apps.	July 2012
Contributed talk: <i>Modeling the nonlocal dispersal of invasive species</i>	
Nonlocal PDEs, Variational Problems and their Applications,	Feb. 2011
Poster Presentation: <i>Modeling the nonlocal dispersal of invasive plant species</i>	
SIAM Student Workshop: Introductory Matlab Series	Oct. & Nov. 2011
Seminar Talk: <i>Parallel Programming Using MatlabMPI</i>	
Seminar Talk: <i>Object-Oriented Programming (in Matlab)</i>	

### EXTENDED RESEARCH VISITS

CSIRO Darwin laboratory: Berrimah, Australia	June-August 2011
Research: Analyzed and restructured the FLAMES model for Australian savanna ecosystems	

### LANGUAGE SKILLS

Conversational French, Basic Spanish

### SERVICE & OUTREACH

• Computational Social Science Steering Committee, voting member (3-year term)	2024-2027
• Advisory Committee (elected, 2-year term)	Fall 2025-Spring 2027
• SIAM Student Chapter Advisor	Fall 2023-Present
• Graduate Student Admissions & Assistantship Committee	Spring 2022-Spring 2024, Spring 2026
• Hiring Committee	Fall 2025
• Enhanced Retention committee	Fall 2025
• APR Recommendations Task Force	Spring 2025
• Graduate Committee	Spring 2025
• Undergraduate Scholarship Committee	Spring 2025
• Course Development Committee (Math 153)	Spring 2024-Fall 2024
• Communications and Technology Committee	Fall 2022-Spring 2024
• Mathematical Biology Course Cluster chair	Fall 2021-Spring 2024
• First-year graduate student advising	Summer 2021-Spring 2024
• Honors Day Committee (Chair 2020-22)	2018-2022
• Advisory Committee (appointed by Dept. Head)	Fall 2019-Spring 2021
• Colloquium Committee, (Chair Fall 2019-20)	Fall 2018-Spring 2020

- IDP data science concentration steering committee, member Fall 2019
- Allen Medal Committee (Chair 2019) 2018-2019
- NSF Panelist Spring 2018
- Prospective Undergraduate Liaison Fall 2017-Spring 2019
- SAMSI Undergraduate Workshop, Lead Organizer May 2015
- Mathematica Demonstration Programmer Summer 2010 and Fall 2012  
Developed teaching demos for Bio Calc I and an undergraduate geology course
- Incoming Graduate Teaching Assistant Mentor Fall 2012  
Responsible for supervision/performance review of first year graduate teaching assistant
- iGEM Mentor, Colorado State University June-August 2012  
Undergrad math mentor for the International Genetically Engineered Machine competition
- Vice President, SIAM Colorado State University Student Chapter August 2011-June 2012  
VP accomplishments include a trip to the Google Boulder office and a MATLAB workshop.
- Volunteer, Department of Mathematics Math Day, Colorado State University 2009-2013

### **MEMBERSHIPS**

Society for Mathematical Biology

Society for Industrial and Applied Mathematics (SIAM)