

ANGELA LYNN PEACE

Associate Professor, Department of Mathematics and Statistics, Texas Tech University
a.peace@ttu.edu

RESEARCH INTERESTS

Mathematical Modeling, Applied Dynamical Systems, Differential Equations, Population dynamics, Theoretical Ecology, Mathematical Biology, Ecological Stoichiometry

EDUCATION

Ph.D. Applied Mathematics Aug 2014
Arizona State University, Tempe
Advisor: Yang Kuang
Dissertation: Stoichiometric Producer-Grazer Models Incorporating the Effects of Excess Food-Nutrient Content on Grazer Dynamics

M.A. Mathematics May 2011
Arizona State University, Tempe

B.S. Computational Mathematical Sciences May 2009
Arizona State University, Tempe

PROFESSIONAL EXPERIENCE

Associate Professor Began Sept. 2021
Assistant Professor 2015-2021
Department of Mathematics and Statistics
Texas Tech University, Lubbock

iDiv Sabbatical Fellow July 2022– Jan 2023
German Centre for Integrative Biodiversity Research
Leipzig, Germany

Postdoctoral Fellowship Aug 2014–July 2015
NIMBioS: National Institute for Mathematical and Biological Synthesis
University of Tennessee, Knoxville
Project Title: Stoichiometric food web models: How food quality affects population structures

Laboratory Research Assistant 2009–2012
School of Life Science, Arizona State University
I was involved in lab research in James Elser's lab on the stoichiometric approach to understanding population growth and the interactions between species. I maintained algal chemostats and zooplankton cultures and performed chemical analysis of carbon and phosphorus in organisms.

JOURNAL EDITOR

Mathematical Biosciences 2023

Mathematical Biosciences and Engineering (MBE) 2018-2019, 2023
Special Issue: Dynamical system models of biology, ecology, toxicology, and epidemiology
Special Issue: Resource Explicit Population Models, Vol: 16(1) 2019

AWARDED GRANTS

NSF Division of Mathematical Sciences

Sept. 2023-Aug. 2026

Role: PI Amount: \$249,798.00

Title: Structured Population Dynamics Subject to Stoichiometric Constraints

Co-PI: Gregory Mayer, The Department of Environmental Toxicology, TTU

Davis College of Agricultural Sciences & Natural Resources, TTU

July 2023-July 2024

Role: Co-PI, Amount: \$50,000

Title: Math and Ecology Synthesis for Agriculture (MESA) Network

PI: Matthew Barnes, Co-PIs: Amanda Laubmeier, Nicholas Smith, Texas Tech University

NSF Division of Mathematical Sciences

Sept. 2021-Aug. 2024

Role: Senior Personnel, Amount: \$275,585

Title: REU Site: Mathematical, Statistical and Computational Methods for Problems in the Life Sciences

PIs: Linda Allen, Leif Ellingson, Texas Tech University

NSF Division of Mathematical Sciences

Fall 2020

Role: PI, Amount: \$17,750

Title: XVIII Red Raider Minisymposium on Modeling in a Heterogeneous World

Co-PIs: Linda Allen, Kenneth Schmidt, Joshua Padgett, Wenjing Zhang, Texas Tech University

NSF EEID Directorate for Biological Sciences

June 2018 - May 2023

Role: Senior Personnel, Amount: \$2,494,511 (my TTU budget: \$165,356)

Title: Transmission pathways and immunological factors that affect invasion potential of the recently discovered pathogen, *Batrachochytrium salamandrivorans*

PI: Matt Gray, University of Tennessee, Knoxville

NSF Division of Mathematical Sciences

Sept. 2018 - Aug. 2021

Role: Co-PI, Amount: \$80,000, additional \$36,843 in student supporting supplemental grant

Title: Collaborative Research: Linking Pharmacokinetics to Epidemiological Models of Vector-Borne Diseases and Drug Resistance Prevention

NSF Division of Mathematical Sciences

Sept. 2016 - Aug. 2019

Role: PI, Amount: \$341,316

NSF Grant #: 1615697

Title: Robust Mathematical Models of Ecotoxicological Dynamics Subject to Stoichiometric Constraints

Co-PI: Gregory Mayer, The Department of Environmental Toxicology, TTU

Texas Tech University Seed Grants for Interdisciplinary Research

June. 2017 - Dec. 2018

Role: Co-PI, Amount: \$75,000

Title: TTURTLES: TTU Research Team Linking Education and Sciences

PI: Celine Godard, Department of Environmental Toxicology, TTU; Co-PI: Jerry Dwyer, College of Education, TTU

National Institute for Mathematical and Biological Synthesis, NSF

January 2018

Role: Workshop Organizer, Amount: travel expenses for 34 people

Investigative Workshop: Modeling Ecotoxicological Dynamics Subject to Stoichiometric Constraints

Co-Organizer: Paul Frost, Trent University, Canada

AWARDS

President's Excellence in Teaching Award <i>Texas Tech University</i>	2021
W. Dayawansa Award for Research and Teaching <i>Department of Mathematics and Statistics, TTU</i>	2021
Excellence in Research Award <i>College of Arts & Sciences Distinguished Alumni & Faculty Excellence program</i>	2018
Best Mentor Award <i>Department of Mathematics and Statistics, TTU</i>	2018
Excellence in Applied Math Research W. Dayawansa Award <i>Department of Mathematics and Statistics, TTU</i>	2017

JOURNAL PUBLICATIONS

* denotes students authors

51. Van de Waal DB, White LA, Everett R, Asik L, Borer ET, Frenken T, et al. Reconciling contrasting effects of nitrogen on host immunity and pathogen transmission using stoichiometric models. *Ecology*. 2023;p. e4170
50. Everett RA, Lewis AL, Kuerbis A, Peace A, Li J, Morgenstern J. Data driven mixed effects modeling of the dual process framework of addiction among individuals with alcohol use disorder. *PLoS one*. 2023;18(8):e0265168
49. Seabloom EW, Peace A, Asik L, Everett RA, Frenken T, González AL, et al. Dead or alive: carbon as a currency to integrate disease and ecosystem ecology theory. *Oikos*. 2023;p. e09880
48. Prosper O, Gurski K, Teboh-Ewungkem M, Peace A, Feng Z, Reynolds M, et al. Modeling Seasonal Malaria Transmission. *Letters in Biomathematics*. 2023;10(1):3–27
47. Gurski K, Peace A, Prosper O, Stepien T, Teboh-Ewungkem M. Mathematicians Navigating Parenthood: Lessons Learned, Methodologies, and Useful Solutions That Were Beneficial During the COVID-19 Pandemic. *Notices of the American Mathematical Society*. 2022;69(11):1918–1922
46. Li J, Broussard M, Tomer N, Jochym M, Fonseka D, Peace A, et al. Honey bee (*Apis mellifera*) hive placement is more influential than orchard layout on the fruit set of a dioecious crop. *Ecological Modelling*. 2022;472:110074
45. Chowdhury* MM, Islam MR, Hossain MS, Tabassum N, Peace A. Incorporating the mutational landscape of SARS-COV-2 variants and case-dependent vaccination rates into epidemic models. *Infectious Disease Modelling*. 2022;7(2):75–82
44. Borer ET, Paseka RE, Peace A, Asik L, Everett R, Frenken T, et al. Disease-mediated nutrient dynamics: Coupling host–pathogen interactions with ecosystem elements and energy. *Ecological Monographs*. 2022;92(2):e1510
43. Ibragimov A, Peace A. Light driven interactions in spatial predator-prey chemotaxis model in the presence of chemical agent. *TWMS Journal of pure and applied mathematics*. 2022;13(2):222–244

42. Islam* MR, Gray MJ, Peace A. Identifying the dominant transmission pathway in a multi-stage infection model of the emerging fungal pathogen *Batrachochytrium* Salamandrivorans on the Eastern Newt. In: *Infectious Diseases and Our Planet*. Springer; 2021. p. 193–216
41. Frenken T, Paseka R, González AL, Asik L, Seabloom EW, White LA. Borer ET, Strauss AT, Peace A, Van de Waal, DB. Changing elemental cycles, stoichiometric mismatches, and consequences for pathogens of primary producers. *Oikos*. 2021;
40. Borer ET, Asik* L, Everett RA, Frenken T, Gonzalez AL, Paseka RE. Peace A, Seabloom EW, Strauss AT, Van de WaalDB. Elements of disease in a changing world: modelling feedbacks between infectious disease and ecosystems. *Ecology Letters*. 2021;
39. Peace A, Frost PC, Wagner ND, Danger M, Accolla C, Antczak P, et al. Stoichiometric Ecotoxicology for a Multisubstance World. *BioScience*. 2021;71(2):132–147
38. Shakiba N, Edholm CJ, Emerenini BO, Murillo AL, Peace A, Saucedo O, et al. Effects of environmental variability on superspreading transmission events in stochastic epidemic models. *Infectious Disease Modelling*. 2021;6:560–583
37. Higgins R, Mills* CJ, Peace A. A Time Scales Approach for Modeling Intermittent Hormone Therapy for Prostate Cancer. *Bulletin of Mathematical Biology*. 2020;82(11):1–16
36. Ledder G, Russo SE, Muller EB, Peace A, Nisbet RM. Local control of resource allocation is sufficient to model optimal dynamics in syntrophic systems. *Theoretical Ecology*. 2020;p. 1–21
35. Paseka RE, White LA, Van de Waal DB, Strauss AT, González AL, Everett RA. Peace A, Seabloom EW, Frenken T, Borer ET. Disease-mediated ecosystem services: Pathogens, plants, and people. *Trends in Ecology & Evolution*. 2020;
34. Awoyemi* OM, Subbiah S, Velazquez* A, Thompson* KN, Peace AL, Mayer GD. Nitrate-N-mediated toxicological responses of *Scenedesmus acutus* and *Daphnia pulex* to cadmium, arsenic and their binary mixture (Cd/Asmix) at environmentally relevant concentrations. *Journal of Hazardous Materials*. 2020;p. 123189
33. Asik* L, Chen M, Peace A. The effects of excess food nutrient content on a tritrophic food chain model in the aquatic ecosystem. *Journal of Theoretical Biology*. 2020;491:110183
32. Awoyemi* OM, Subbiah S, Thompson* K, Velazquez A, Peace A, Mayer GD. Trophic-level interactive effects of phosphorus availability on the toxicities of cadmium, arsenic, and their binary mixture in media-exposed *Scenedesmus acutus* and media and dietary-exposed *Daphnia pulex*. *Environmental Science & Technology*. 2020;
31. Islam* MR, Peace A, Medina D, Oraby T. Integer Versus Fractional Order SEIR Deterministic and Stochastic Models of Measles. *International Journal of Environmental Research and Public Health*. 2020;17(6):2014
30. Peace A, Pattemore D, Broussard M, Fonseka D, Tomer N, Bosque-Pérez NA, et al. Orchard layout and plant traits influence fruit yield more strongly than pollinator behaviour and density in a dioecious crop. *PloS one*. 2020;15(10):e0231120
29. Chen M, Asik* L, Peace A. Stoichiometric knife-edge model on discrete time scale. *Advances in Difference Equations*. 2019;2019(1):1–16

28. Peace A, Wang H. Compensatory Foraging in Stoichiometric Producer–Grazer Models. *Bulletin of mathematical biology*. 2019;81(12):4932–4950
27. Hassan* MN, Peace A. Mechanistically derived Toxicant-mediated predator-prey model under Stoichiometric constraints. *Mathematical biosciences and engineering: MBE*. 2019;17(1):349–365
26. Peace A, ORegan SM, Spatz JA, Reilly PN, Hill RD, Carter ED, et al. A highly invasive chimeric ranavirus can decimate tadpole populations rapidly through multiple transmission pathways. *Ecological Modelling*. 2019;410:108777
25. Asik* L, Kulik* J, Long KR, Peace A. Seasonal Variation of Nutrient Loading in a Stoichiometric Producer–Consumer System. *Bulletin of Mathematical Biology*. 2019;p. 1–15
24. Hassan* MN, Asik* L, Kulik* J, Long K, Peace A. Environmental Seasonality on Predator–Prey Systems under Nutrient and Toxicant Constraints. *Journal of theoretical biology*. 2019;
23. Shaw AK, Igoe M, Power AG, Bosque-Pérez NA, Peace A. Modeling Approach Influences Dynamics of a Vector-Borne Pathogen System. *Bulletin of mathematical biology*. 2019;p. 1–18
22. Asik* L, Peace A. Dynamics of a Producer–Grazer Model Incorporating the Effects of Phosphorus Loading on Grazers Growth. *Bulletin of mathematical biology*. 2019;p. 1–17
21. Dissanayake* C, Juan L, Long KR, Peace A, Rana* MM. Genotypic Selection in Spatially Heterogeneous Producer-Grazer Systems Subject to Stoichiometric Constraints. *Bulletin of mathematical biology*. 2019;p. 1–17
20. Manore CA, Teboh-Ewungkem MI, Prosper O, Peace A, Gurski K, Feng Z. Intermittent Preventive Treatment (IPT): Its role in averting disease-induced mortality in children and in promoting the spread of antimalarial drug resistance. *Bulletin of mathematical biology*. 2019;81:193–234
19. Hassan* MN, Thompson* K, Mayer G, Peace A. Effects of Excess Food Nutrient on Producer-Grazer Model under Stoichiometric and Toxicological Constraints. *Mathematical biosciences and Engineering*. 2018;16(1):150–167
18. Rana* MM, Dissanayake* C, Juan L, Long KR, Peace A. Mechanistically derived spatially heterogeneous producer-grazer model subject to stoichiometric constraints. *Mathematical biosciences and Enigneering*. 2018;16(1):222–233
17. Chen M, Fan M, Xie C, Peace A, Wang H. Stoichiometric Food Chain Model on Discrete Time Scale. *Mathematical biosciences and Enigneering*. 2018;16(1):101–118
16. Asik* L, Kulik* J, Long KR, Peace A. Dynamics of a Stoichiometric Producer-Grazer System with Seasonal Effects on Light Level. *Mathematical Biosciences and Engineering*. 2018;16(1):501–514
15. Edholm CJ, Emerenini BO, Murillo AL, Saucedo O, Shakiba N, Wang X, et al. Searching for superspreaders: Identifying epidemic patterns associated with superspreading events in stochastic models. In: *Understanding Complex Biological Systems with Mathematics*. Springer; 2018. p. 1–29
14. Murphy CA, Nisbet RM, Antczak P, Garcia-Reyero N, Gergs A, Lika K, et al. Incorporating sub-organismal processes into dynamic energy budget models for ecological risk assessment. *Integrated environmental assessment and management*. 2018;

13. Murphy CA, Nisbet RM, Antczak P, Garcia-Reyero N, Gergs A, Lika K, et al. Linking Adverse Outcome Pathways to Dynamic Energy Budgets: A Conceptual Model. In: A Systems Biology Approach to Advancing Adverse Outcome Pathways for Risk Assessment. Springer; 2018. p. 281–302
12. Shaw AK, Peace A, Power AG, Bosque-Pérez NA. Vector population growth and condition-dependent movement drive the spread of plant pathogens. *Ecology*. 2017;98:2145–2157
11. Peace A, Poteat MD, Wang H. Somatic Growth Dilution of a toxicant in a predator–prey model under stoichiometric constraints. *Journal of theoretical biology*. 2016;407:198–211
10. Elser JJ, Kyle M, Learned J, McCrackin ML, Peace A, Steger L. Life on the stoichiometric knife-edge: effects of high and low food C: P ratio on growth, feeding, and respiration in three *Daphnia* species. *Inland Waters*. 2016;6(2):136–146
9. Peace A. Effects of light, nutrients, and food chain length on trophic efficiencies in simple stoichiometric aquatic food chain models. *Ecological Modelling*. 2015;312:125–135
8. Yamamichi M, Meunier CL, Peace A, Prater C, Rúa MA. Rapid evolution of a consumer stoichiometric trait destabilizes consumer–producer dynamics. *Oikos*. 2015;124(7):960–969
7. Teboh-Ewungkem MI, Prosper O, Gurski K, Manore CA, Peace A, Feng Z. Intermittent Preventive Treatment (IPT) and the Spread of Drug Resistant Malaria. In: Applications of Dynamical Systems in Biology and Medicine. Springer; 2015. p. 197–233
6. Peace A, Wang H, Kuang Y. Dynamics of a Producer–Grazer Model Incorporating the Effects of Excess Food Nutrient Content on Grazers Growth. *Bulletin of mathematical biology*. 2014;76(9):2175–2197
5. Burgess C, Peace A, Everett R, Allegri B, Garman P. Computational modeling of interventions and protective thresholds to prevent disease transmission in deploying populations. *Computational and mathematical methods in medicine*. 2014;2014
4. Diakite I, Edwards DA, Emerick B, Panaggio M, Peace AL, Raymond C, et al. Improving a Fuel Cell Assembly Process. *Mathematics-in-Industry Case Studies*. 2014;6(1)
3. Peace A, Zhao Y, Loladze I, Elser JJ, Kuang Y. A stoichiometric producer-grazer model incorporating the effects of excess food-nutrient content on consumer dynamics. *Mathematical biosciences*. 2013;244(2):107–115
2. Elser JJ, Loladze I, Peace AL, Kuang Y. Lotka re-loaded: modeling trophic interactions under stoichiometric constraints. *Ecological Modelling*. 2012;245:3–11
1. Elser JJ, Peace AL, Kyle M, Wojewodzic M, McCrackin ML, Andersen T, et al. Atmospheric nitrogen deposition is associated with elevated phosphorus limitation of lake zooplankton. *Ecology letters*. 2010;13(10):1256–1261

COMPLETED DOCTORAL STUDENTS

Md Nazmul Hassan

PhD August 2019

Department of Mathematics and Statistics, Texas Tech University

Dissertation Title: Ecotoxicological Dynamics Subject to Stoichiometric Constraints

Committee members: Angela Peace (chair), Linda Allen, Wenjing Zhang

Following position: Research postdoc at North Carolina State

Lale Asik

PhD May 2020

Department of Mathematics and Statistics, Texas Tech University

Dissertation Title: Environmental Variations in Stoichiometric Predator-Prey Models

Committee members: Angela Peace (chair), Linda Allen, Wenjing Zhang, Katharine Long

Following position: Tenure-track assistant professor at the University of the Incarnate Word

Md Rafiul Islam

PhD August 2020

Department of Mathematics and Statistics, Texas Tech University

Research: Analyzing Epidemic Models with Multiple Stages of Infection

Committee members: Angela Peace (chair), Linda Allen, Wenjing Zhang

Following position: Postdoc at the Department of Mathematics at Iowa State University

Dilini Fonseka

PhD August 2020

Department of Mathematics and Statistics, Texas Tech University

Dissertation title: Modeling Approaches to Understand Plant-Pollinator-Herbivore Interactions

Committee members: Angela Peace (chair), Linda Allen, Wenjing Zhang

Following position: Instructor and the director of the Quantitative Literacy Center at Southwestern college in Kansas

Ramiro Ramirez

PhD August 2020

Department of Mathematics and Statistics, Texas Tech University

Dissertation title: Stoichiometric Aquatic Food-Web Models Coupling Pelagic and Benthic Zones

Committee members: Angela Peace (chair), Amanda Laubmeier, Raegan Higgins

Following position: Postdoc at UT Health San Antonio

CURRENT GRADUATE STUDENTS

Mihrab Chowdhury

PhD expected 2024

Department of Mathematics and Statistics, Texas Tech University

Research Topic: Investigating the survival of the Eastern Newt on the emerging of Batrachochytrium salamandrivorans (Bsal) in a multi-stage coupled transmission system

Hridoy Bari

PhD expected 2024

Department of Mathematics and Statistics, Texas Tech University

Research Topic: Super-spreaders in epidemic models

COMPLETED MASTERS STUDENTS

Bridget Mann

MS Summer 2023

Department of Mathematics and Statistics, Texas Tech University

Report title: Modeling Spider Populations using Differential Equations

Committee members: Angela Peace (chair), Amanda Laubmeier

Randall Karr

MS Fall 2019

Department of Mathematics and Statistics, Texas Tech University

Report title: Trophic transfer efficiencies in competitive food chains under light and nutrient gradients

Committee members: Angela Peace (chair), Victoria Howle

Monir Uz Zaman

MS Summer 2018

Department of Mathematics and Statistics, Texas Tech University

Report title: Parameter Sensitivity Analysis on a Delay Differential Equation Model of Cancer

Committee members: Angela Peace (chair), Victoria Howle

Md Shah Alam

MS Fall 2018

Department of Mathematics and Statistics, Texas Tech University

Report title: Parameter Sensitivity Analysis of Dynamics of Ovarian Tumor Growth Model

Committee members: Angela Peace (chair), Aminur Rahman

UNDERGRADUATE RESEARCH MENTOR

Rachel Wissenbach, Nate Ward, Nicolette Gaston

Summer 2023 REU

Department of Mathematics and Statistics, Texas Tech University

Research Topic: Food Webs Subject to Stoichiometric Constraints, Coral-Zooxanthellae Symbiosis

Joel Garza

Summer 2020- Summer 2021

Texas Tech University, Honors College

Project: Mathematical models of Covid-19

Reagan Collins

Summer 2017- May 2020

Department of Mathematics and Statistics, Texas Tech University, Honors College

Project: Anti-angiogenic treatment of tumors using Agent-Based models in NetLogo.

Adam Harper

2015-2016

Department of Mathematics and Statistics, Texas Tech University, PRISM REU

Poster: Predicting how Ranavirus Affects the Chiricahua Leopard Frog

TEACHING EXPERIENCE

Associate Professor

Department of Mathematics and Statistics, Texas Tech University

Interdisciplinary graduate course: Mathematical Ecology

Fall 2023

Calculus III, class size 49

Fall 2023

Ordinary differential equations (engineers), class size 116

Spring 2022

Differential equations, graduate prelim course

Fall 2021

Higher math for engineers and scientists I, Undergraduate honors

Fall 2021

Assistant Professor

Department of Mathematics and Statistics, Texas Tech University

Calculus II, synchronize online, class size 96

Spring 2021

Calculus II, asynchronize online, class size 52

Fall 2020

Calculus II, class size 112

Spring 2020

Biomathematics for Undergraduates, Honors

Spring 2019

Calculus I, class size 124

Fall 2018

Calculus II, class size 110

Spring 2018

Honors Calculus II

Fall 2017

Graduate Course: Biomathematics I, Stochastic Models

Spring 2017

Graduate Course: Biomathematics II, Deterministic Models

Fall 2016

CONFERENCE/SEMINAR PRESENTATIONS

Mathematical Biology Seminar September 2023
Arizona State University Tempe, AZ

Talk: Nutrient-mediated pathogen transmission and host immunity in a stoichiometric disease model

SMB Annual Meeting July 2023
Society of Mathematical Biology Columbus OH

Organized session: The 10th anniversary of MBIs 2013 Workshop for Young Researchers

Talk: Adaptive foraging behaviors in food web models

Conference of Biological Stoichiometry March 2022
University of Nebraska-Lincoln Lincoln, Nebraska

Talk: Exploring stoichiometric foraging behaviors with models

BioMath Seminar Sept 7, 2022
German Centre for Integrative Biodiversity Research Leipzig, Germany

Talk: Population Dynamics Subject to Stoichiometric Constraints

BioMath Seminar March 2, 2022
Virginia Tech University Blacksburg, VA

Talk: Dynamical systems coupling disease and ecosystem ecology

Math Seminar Series Nov. 9, 2021
Cameron University Virtual

Talk: Modeling Frameworks that Integrate Disease and Ecosystem Ecology

2021 SIAM Conference on Dynamical Systems May 24, 2021
Society for Industrial and Applied Mathematics Virtual

Talk: Population dynamics of daphnia interacting with nutrients and light in a water column

Mathematical Biology Seminar April 2, 2021
Arizona State University Tempe, AZ

Talk: Modeling stoichiometric foraging behaviors

Professional Development Seminar March 29, 2021
Arizona State University Tempe, AZ

Talk: Navigating the Early Years: My Path from PhD to Tenure

Cardinal Math Talk February 11, 2021
University of the Incarnate Word San Antonio, TX

Talk: Modeling Frameworks that integrate Disease and Ecosystem Ecology

Biomathematics Seminar February 8, 2021
University of Alberta Alberta, CA

Talk: Stoichiometric Ecotoxicology: modeling frameworks unifying ecotoxicology with ecological stoichiometry

SIAM Texas-Louisiana Section

Society of Industrial and Applied Mathematics

Oct. 18, 2020

Texas A&M University

Minisymposium Organizer: Mathematical Advances in Ecology & Evolution

Talk: Modeling Stoichiometric Foraging Behaviors

Applied Mathematics Seminar

Integrative Biology Seminar, Oklahoma State

Sept. 25, 2020

Stillwater, OK

Talk: Modeling Stoichiometric Foraging Behaviors

SMB Annual Meeting

Society of Mathematical Biology

August 18, 2020

Virtual

Poster: A Simple model of pathogen-mediated nutrient dynamics

Applied Mathematics Seminar

Department of Mathematics and Statistics, Texas Tech University

April 29, 2020

Lubbock, TX

Talk: Using dynamical systems to improve pollination of Kiwifruit

Physical Chemistry Seminar

Department of Chemistry and Biochemistry, Texas Tech University

March 22, 2019

Lubbock, TX

Talk: Compensatory foraging in stoichiometric producer-grazer models

7th International Conference on Math Modeling and Analysis of Populations in Biological Systems

Arizona State University

Oct 2019

Tempe, AZ

Talk: Compensatory foraging in stoichiometric producer-grazer models

AFS and TWS joint Annual Meeting

American Fisheries Society, Wildlife Society

Sept 2019

Reno Nevada

Talk: Multiple Transmission Pathways in Mathematical Models of Bsal

SMB Annual Meeting

Society of Mathematical Biology

July 2019

Montreal, Canada

Minisymposium title: Resource explicit population models

Workshop on Ecological Stoichiometry and Ecotoxicology

Texas Tech University

August 28, 2018

Lubbock, TX

Talk: Modeling population dynamics under the theory of Ecological Stoichiometry

GRC: Unifying Ecology Across Scales

Gordon Research Conference

July 24, 2018

Maine, USA

Talk: Mathematical Modeling of Evolutionary Dynamics Subject to Stoichiometric Constraints

SMB Annual Meeting

Society of Mathematical Biology

July 15, 2018

Sydney, Australia

Talk: Modeling the role of superspreaders in infectious disease outbreaks

ICMB Annual Conference June 25, 2018
International Conference on Mathematical Biology Beijing, China
 Talk: Intermittent preventive treatment (IPT) and the spread of drug resistant malaria

Stoichiometric Ecotoxicology Investigative Workshop Jan 2018
NIMBioS National Institute for Mathematical and Biological Synthesis University of Tennessee
 Workshop Organizer
 Talk: Stage Structures Subject to Stoichiometric and Toxicological Constraints

SETAC annual meeting Nov 2017
Society of Environmental Toxicology and Chemistry Minneapolis, MI
 Talk: Modeling concurrent nutrient and toxicant stressors under dynamic energy budget theory

SIAM TTU Faculty Research Oct 2017
Department of Mathematics and Statistics Texas Tech University, Lubbock
 Talk: Modeling Trophic Interactions Under Stoichiometric Constraints

SMB annual meeting July 2017
Society of Mathematical Biology Salt Lake City, TU
 Poster: Ecotoxicological Models under Stoichiometric Constraints

Biomathematics Seminar April 2016
Department of Mathematics and Statistics Texas Tech University, Lubbock
 Talk: Tutorial on XPPAUT: Numerical Bifurcation Diagrams for ODEs

Online course on ranavirus biology March 2016
Ranaviruses: Emerging Pathogens of Ectothermic Vertebrates Global Ranavirus Consortium
 Guest Lecture title: SIR models of Ranavirus Spread

Applied Maths Seminar Nov 2015
Department of Mathematics and Statistics Texas Tech University, Lubbock
 Talk: Concurrent nutrient and contaminant stressors in predator prey systems

International Symposium on Biomaths and Ecology Education and Research Oct 2015
Intercollegiate Biomathematics Alliance Illinois State University
 Talk: Co-occurring nutrient and contaminant stressors in a predator-prey model

Biomathematics Seminar Sept 2015
Department of Mathematics and Statistics Texas Tech University, Lubbock
 Talk: Stoichiometric food web models: How food quality affects population structures

Fishheads Seminar July 2015
Oak Ridge National Laboratory Oak Ridge, Tennessee
 Talk: Ecotoxicological Stoichiometric model of Methylmercury bioaccumulation in Daphnia.

Conference on Biological Stoichiometry June 2015
Trent University Peterborough, Ontario, Canada
 Talk: Modeling the effects of co-occurring nutrient and contaminant stressors in aquatic systems

Micro and Macro Systems in Life Sciences Conference

June 2015

*Stefan Banach International Mathematical Center**Bedlewo, Poland*

Talk: Somatic growth dilution: Toxin predator-prey model under stoichiometric constraints

The Third SIAM Gators Conference

March 2014

*SIAM**University of Florida*

Poster presented: A stoichiometric producer-grazer model: incorporating the effects of excess food-nutrient content on consumer dynamics

2013 Workshop for Young Researchers in Mathematical Biology (WYRMB) Aug. 2013*Mathematical Biosciences Institute**The Ohio State University*

Talk: A stoichiometric producer-grazer model incorporating the effects of excess food-nutrient content on consumer dynamics. Travel support awarded by the Mathematical Biosciences Institute.

AARMS Mathematical Biology Workshop

July 2013

Atlantic Association for Research in the Mathematical Sciences *St John's, Newfoundland Canada*

Talk: Stoichiometric producer-grazer models. Travel support awarded by NSF.

Society for Mathematical Biology

June 2013

*Annual Meeting and Conference**Arizona State University*

Talk: The effects of excess food nutrient content on consumer dynamics in a Lotka-Volterra type model.

Association for the Sciences of Limnology and Oceanography

Feb 2013

*ASLO 2013 Aquatic Science Meeting**New Orleans, Louisiana*

Talk: A stoichiometric producer-grazer model incorporating the effects of the knife-edge.

WORKSHOPS AND TUTORIALS ATTENDED

Superspreaders and their role in epidemics: a stochastic approach

Jan 2019, July 2023

*American Institute of Mathematics, SQuaRE**San Jose, CA*

Working with collaborators to explore the effect of demographic and environmental variability on human-to-human disease transmission rates among superspreaders.

Optimizing pollination strategies

Jan 2019, June 2019

*The New Zealand Institute for Plant & Food Research Limited**New Zealand*

External collaborator team member

SESYNC workshop on disease and ecosystem processes

Nov 2018, Nov 2019, June 2019

*National Socio-Environmental Synthesis Center**Annapolis, MD*

Member of multi-disciplinary group working to create models that couple disease and nutrient ecology

WAMB! Women Advancing Mathematical Biology: Understanding Complex Builological Systems with Mathematics

April 2017

*Mathematical Biology Institute**The Ohio State University*

Co-leader with Dr. Linda Allen of a project entitled: Stochastic modeling of infectious diseases

Dynamic models to link molecular perturbations to individual impacts for ecological risk assessment of chemicals

April 2016

*NIMBioS National Institute for Mathematical and Biological Synthesis**University of Tennessee*

Member of multi-disciplinary group of molecular biologists, systems biologists, DEB and AOP modelers, ecotoxicologists and mathematicians with interest and expertise in developing dynamic, mechanistic models to predict impacts on individuals from high throughput assays used to screen chemicals for potential risk.

Vector Movement and Disease Working Group

March 2015, March 2016

NIMBioS National Institute for Mathematical and Biological Synthesis

University of Tennessee

The goals of this working group are to (i) develop a general understanding of how vector movement is driven by vector population dynamics, characteristics of host plants and landscapes, and community dynamics, and (ii) investigate the implications of vector movement for the dispersal of vector-borne plant pathogens.

Malaria-Leishmania Co-infection Investigative Workshop

May 2015

NIMBioS National Institute for Mathematical and Biological Synthesis

University of Tennessee

The focus of this workshop was to identify challenges for the control of malaria-leishmaniasis co-infections in South Asian and the African continent. The workshop also modeled the complexity involved in the propagation of these co-infections in resource limited regions

Woodstoich

August 2014

5 days of peace and stoichiometry

Sydney, Australia

A workshop on ecological stoichiometry and the related framework nutritional geometry. I participated on a team project on exploring connections between ecological stoichiometry and rapid evolution. Travel support awarded by NSF.

Evolutionary Quantitative Genetics Tutorial

August 2014

NIMBioS National Institute for Mathematical and Biological Synthesis

University of Tennessee

This workshop reviewed the basics of theory in the field of evolutionary quantitative genetics and its connections to evolution observed at various time scales.

WhAM! A Research Collaboration Workshop for Women in Applied Math

Sept 2013

Institute for Mathematics and its Applications

University of Minnesota

A workshop on dynamical systems with applications to biology and medicine. I participated on a team project on 'Intermittent Preventive Treatment and the Spread of Drug Resistance to Malaria'. Travel support awarded by Institute for Mathematics and its Applications.

Mathematical Problems in Industry

June 2013

29th Annual Workshop

Worcester Polytechnic Institute, Massachusetts

I participated on a team project collaborating with the company Pall on Changes in Capture Efficiency Due to Folding. Pall makes very fine porous filter media and are interested in predicting the changes that may occur in the ability of the membrane to capture particles of various sizes when the filter is folded. Travel support awarded by Institute for Mathematics and its Applications.

European Study Group with Industry

April 2013

91st Annual Study Group

University of Bristol, England

I participated on a team project collaborating with the Norwegian company Teknova/Elkem on modeling heat transfer and solidification in the process of continuous casting of silicon. Travel support awarded by Oxford Center for Collaborative Mathematics.

UK Graduate Modelling Camp 2013

April 2013

5th Annual Modelling Camp

St. Anthonys College Oxford, England

I participated on a team project on assessing molecular properties for oral drug delivery. Travel support awarded by Oxford Center for Collaborative Mathematics.

Mathematical Problems in Industry

June 2012

28th Annual Workshop

University of Delaware

I participated on a team project on Fuel Cell Assembly Process Flow for High Productivity. Travel support awarded by Institute for Mathematics and its Applications.

Graduate Student Mathematical Modeling Camp

June 2012

9th Annual Modeling Camp

Rensselaer Polytechnic Institute, New York

I participated on a team project on exploring models for advection and/or diffusion in the context of population dynamics models for adult and larval stage barnacles. Travel support awarded by NSF.

MATH OUTREACH

Society of Mathematical Biology Early Career Workshop and Mentor

2023

Columbus, Ohio

Talk: Thriving your way through Graduate School

Society of Mathematical Biology Early Career Workshop and Mentor

2022

Heidelberg, Germany

Talk: Navigating the early years: surviving the post doc years

Association for Women in Mathematics (AWM) student chapter, faculty mentor 2019-2023

Texas Tech University

Main faculty mentor for the AWM Raiders, a local chapter of the AWM.

Enhancing Diversity in Graduate Education (EDGE) Program Instructor Summer 2018

Texas Tech University

Linear Algebra Instructor for young women preparing for graduate school in Mathematics

Shake Hands with Your Future summer camp

July 2017

Texas Tech University

Summer camp for middle school students including lectures/labs on mathematical toxicology

15th Emmy Noether High School Mathematics Days

May 2017

Texas Tech University, Department of Mathematics and Statistics

Organized and conducted an educational workshop for high school girls entitled: Mathematical Toxicology: How can we predict the effects of pollutions?

South Plains Mathematics Fellows (SPMF) Program

Fall 2016

Texas Tech University, Department of Mathematics and Statistics

Mentor for undergraduate mathematics major

14th Emmy Noether High School Mathematics Days

May 2016

Texas Tech University, Department of Mathematics and Statistics

Organized and conducted an educational workshop for high school girls entitled: Can Math Help Prevent the Spread of Infectious Diseases?

Adventures in STEM Girls Camp

July 2015

NIMBioS, Knoxville, TN

Educational summer day program for middle school-aged girls including Interviews with scientists and mathematicians.

8th Annual Mathematical Field of Dreams Conference Nov 2014
Phoenix, AZ

Educational talk for undergraduates on research in the mathematical sciences at the Field of Dreams Conference organized by the National Alliance for Doctoral Studies in the Mathematical Sciences.

6th Undergraduate Research Conference at the Interface of Biology and Math Nov 2014
Knoxville, TN

Moderated session of undergraduate student talks and participated in networking activities.

SACNAS Annual Meeting Oct 2014
Los Angeles, CA

Mentored and judged at the the annual SACNAS (Society for Advancement of Hispanics/Chicanos and Native Americans in Science) meeting, Gave an educational talk in the Ecology and Evolution seminar.

Applied Math Bicycle Ride March 2014
Tempe Bicycle Action Group, AZ

Organized an applied math bicycle ride for Tempe Bicycle Action Group's Science Sunday Rides.

ASU Night of the Open Door March 2014
School of Mathematical and Statistical Sciences, Arizona State University

Volunteered as a member of the LogaRhythms Band to help present the applications of math to music at ASU's Night of the Open Door.

CryptoRally 2013 Nov 2013
School of Mathematical and Statistical Sciences, Arizona State University

Volunteered at ASU's CryptoRally 2013 undergraduate rally competition on cryptography

Sundevil Family Night at the AZ Science Center Oct 2012
School of Mathematical and Statistical Sciences, Arizona State University

Volunteered at Science, Technology, Engineering, and Mathematics (STEM) Sun devil Family Night at the AZ science center sponsored by ASU School of Life Sciences.

ACTIVITIES

Group Health Ride July 2012

Finisher in the Group Health Seattle to Portland bicycle ride, 204 miles in 2 days.

Covenant Health Knoxville Half Marathon March 2015

Finisher in the Half Marathon run of 13.1 miles through scenic Knoxville, TN.

DoubleYu, 202run Half Marathon Oct 2021

Finisher in the Half Marathon run of 13.1 miles through scenic Phoenix, AZ.