

Pratha Sah

Curriculum Vitae

Research interests

Computational epidemiology, infectious disease ecology, public health, network analysis, data science.

Work experience

- 2017-current Postdoctoral associate: Center for Infectious Disease Modeling and Analysis, Yale School of Public Health, Yale University
- 2011-2012 Research assistant: Population Biology Laboratory, Indian Institute of Science Education and Research (IISER), Pune, India

Education

- 2012-2017 **Ph.D.**, *Quantitative ecology: Infectious disease modeling, network epidemiology*, Georgetown University, Washington, DC.
Thesis advisor: Dr. Shweta Bansal
- 2009-2011 **M.Sc.**, *Natural resources management*, The Energy and Resources Institute (TERI) University, New Delhi, India.
- 2006-2009 **B.Sc.**, *Zoology, Biotechnology (minor)*, Pune University, Pune, India.

Publications

- 2018 **Sah, Pratha**, Jan Medlock, Meagan C. Fitzpatrick, Burton H. Singer, and Alison P. Galvani. Optimizing the impact of low-efficacy influenza vaccines. *Proceedings of the National Academy of Sciences*, 115(20), 5151-5156.
- 2017 **Sah, Pratha**, Meagan C. Fitzpatrick, Abhishek Pandey, and Alison P. Galvani. HIV criminalization exacerbates subpar diagnosis and treatment across the United States: response to the 'Association of HIV diagnosis rates and laws criminalizing HIV exposure in the United States'. *AIDS*, 31(17), 2437-2439.
- 2017 **Sah Pratha**, Janet Mann and Shweta Bansal. Disease implications of animal social network structure: a synthesis across social systems. *Journal of Animal Ecology*.
- 2017 **Sah, Pratha**, Stephan T. Leu, Paul C. Cross, Peter J. Hudson and Shweta Bansal. Unraveling the disease consequences and mechanisms of modular structure in animal social networks. *Proceedings of the National Academy of Sciences*, 114(16), 4165-4170.

- 2016 **Sah, Pratha**, Kenneth E. Nussear, Todd C. Esque, Christina Aiello, Peter J. Hudson and Shweta Bansal. Inferring social structure and its drivers from refuge use in the desert tortoise, a relatively solitary species. *Behavioral Ecology and Sociobiology*, 70(8), 1277-1289.
- 2016 Aiello, Christina M., Kenneth E. Nussear, Todd C. Esque, Patrick G. Emblidge, **Pratha Sah**, Shweta Bansal, and Peter J. Hudson. Host contact and shedding patterns clarify variation in pathogen exposure and transmission in threatened tortoise *Gopherus agassizii*: implications for disease modelling and management. *Journal of Animal Ecology*, 85(3), 829-842.
- 2014 **Sah, Pratha**, Lisa Singh, Aaron Clauset and Shweta Bansal, Exploring community structure in biological networks with random graphs. *BMC Bioinformatics*, 15(1), 220.
- 2014 **Sah, Pratha**, and Sutirth Dey. Stabilizing spatially structured populations through Adaptive Limiter Control. *PLoS ONE*, 9(8), e105861.
- 2014 Aiello Christina M., Kenneth E. Nussear, Andrew D. Walde, Todd C. Esque, Patrick G. Emblidge, **Pratha Sah**, Shweta Bansal, and Peter J. Hudson. Disease dynamics during wildlife translocations: Disruptions to the host population suggest consequences for transmission as illustrated by desert tortoise spatial networks. 2014. *Animal Conservation*, 17, 27-39.
- 2013 **Sah, Pratha**, Joseph Paul Salve, and Sutirth Dey. Stabilizing biological populations and metapopulations by Adaptive Limiter Control. 2013. *Journal of Theoretical Biology*, 320 (7), 113-123.

Preprints

- 2017 **Sah, Pratha**, and Shweta Bansal. Identifying the dynamic contact network of infectious disease spread. *bioRxiv*, 169573.

Software

- INoDS** Inferring networks of infectious disease spread (Python)
- ModNet** Random modular network generator (Python)
- ASNR** Animal social network repository (HTML)
- Epidemic simulator** Simulate infectious disease spread in static or dynamic contact networks (Python)

Professional service

Co-organizer, *Integration of Empirical Data in Network Epidemiology*, Satellite session at NetSci 2018.

Manuscript reviewer, *Nature Communications*, *Proceedings of the Royal Society B: Biological Sciences*, *PLoS ONE*, *Ecology and Evolution*, *Peer J*, *Journal of Theoretical Biology*, *International Journal of Bioinformatics Research and Applications (IJBRA)*.

Teaching and Mentoring

- 2014-2017 **Co-mentorship**, *Five undergraduate students, including José David Mendez, who completed a senior thesis under my co-mentorship*, Bansal laboratory, Georgetown University.
- 2017 **Guest discussion**, *Stage structured models*, Course: Modeling Biological Populations, Georgetown University.
- 2016 **Invited guest lecturer**, *Modeling infectious disease spread in host populations*, Environmental Science II Master Course, George Washington University.
- 2014 **Teaching Fellow**, *Course: Modeling Biological Populations*, Biology Department, Georgetown University.
- 2013 **Lab Instructor**, *Course: Ecology*, Biology Department, Georgetown University.

Presentations

- 2017 ***Disease implications of sociality and network structure***, *Disease ecology section*, ESA 102th Annual Meeting , Portland, Oregon.
- 2017 ***Identifying Dynamic Contact Networks of Infectious Disease Spread***, *NetSci 2017*, Indianapolis, Indiana.
- 2017 ***Disease implications of animal social organization and network structure***, *Graduate research symposium*, Georgetown University.
- 2016 ***Identifying networks of infectious disease spread in wildlife populations***, *Work in progress seminar*, Biology department, Georgetown University.
- 2016 ***Inferring transmission mode and contact network in a wildlife population***, *Disease ecology section*, ESA 101th Annual Meeting , Ft Lauderdale, Florida.
- 2015 ***Modeling perturbations in dynamic contact networks: Ways forward***, *Ignite session: Heterogeneity in Animal Disease Ecology: Then and Now*, ESA 100th Annual Meeting , Baltimore, Maryland.
- 2015 ***Using (modular) random graphs to explore the effect of modular contact networks on wildlife disease spread***, *Disease ecology section*, ESA 100th Annual Meeting , Baltimore, Maryland.
- 2015 ***Burrow use patterns and disease spread in desert tortoise populations***, *Work in Progress Seminar*, Georgetown University, Washington, DC.
- 2014 ***Exploring community structure in ecological networks with random graphs***, *NetSci 2014 Satellite*, Complex Networks in Ecology, Berkeley, California.

Honors and awards

- 2018 Young Initiative Award for Satellite Meetings, NetSci 2018
- 2017 Volterra Award for Best Talk, ESA 2018
- 2017 Best student paper award in disease ecology, Ecological Society of America
- 2017 Nomination, Dr. Karen Gale Exceptional PhD Student Award, Georgetown University
- 2017 Outstanding Graduate Student Award, Biology Department, Georgetown University
- 2016 Semi-finalist, Early Career Researcher Prize, Journal of Animal Ecology

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- 2016 PLoS Early Career Travel Award
- 2014 MCED Young Modeler Award for Innovative Contributions to Ecological Modeling
- 2014 Best talk, Work in progress seminar, Biology Department, Georgetown University
- 2014 Cosmos Scholars Grant Program, Cosmos Club Foundation
- 2014 University of Washington SISMID scholarship for attending the Summer Institute in Statistics and Modeling in Infectious Diseases (SISMID 2014); University of Washington, Seattle, July 14 -18, 2014
- 2011 University topper and Gold medalist, MSc, TERI University
- 2010 Summer Research Fellowship, awarded by JNCASR, India
- 2009 State merit (7th rank) and scholarship, Graduate Excellence Examination, Pune, India

Professional development

- 2014 Summer Institute in Statistics and Modeling in Infectious Diseases (SISMID); University of Washington, Seattle
- 2014 NIMBioS Investigative Workshop: Interface Disease Models; Knoxville, Tennessee
- 2013 Python training workshop for Scientists and Engineers; Washington, DC
- 2013 Workshop on data-analysis with R; University of Maryland, Maryland
- 2011 International Conference on Mathematical Biology; Bangalore, India

Leadership positions held

- 2015-2016 **Co-president**, *Biology Organization of Graduate Students*, Georgetown University.
- 2014-2015 **Treasurer**, *Biology Organization of Graduate Students*, Georgetown University.
- 2013-2014 **Vice President**, *Graduate International Student Organization*, Georgetown University.
- 2013 **Graduate International Student Ambassador**, *Georgetown University*.
- 2012-2014 **Graduate Student Representative**, *Graduate Student Organization*, Georgetown University.

Membership

- 2017 Ecological Society of America

References

Shweta Bansal: Assistant Professor of Biology, Georgetown University. Email - shweta.bansal@georgetown.edu

Peter J. Hudson: Willaman Professor of Biology, Director of Huck Institutes of Life Sciences, Penn State University. Email - pjh18@psu.edu

Janet Mann: Vice Provost for Research and Professor of Biology and Psychology, Georgetown University. Email - mannj2@georgetown.edu