

Yun Tao

University of California, Santa Barbara
Date of Birth: March 19, 1986
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Education

Postdoctoral Fellow, US Intelligence Community, Department of Evolution, Ecology & Marine Biology, University California, Santa Barbara, 2019-current (Advisor: Kevin Lafferty).

Postdoctoral Fellow, Department of Ecology, Evolution, & Organismal Biology, University California, Riverside, 2017-2018.

Postdoctoral Researcher, Center for Infectious Disease Dynamics, Penn State University, 2015-2017 (Advisors: Matthew Ferrari, Katriona Shea).

Ph.D. Ecology, University of California, Davis, 2014 (Advisor: Alan Hastings).

B.S. Ecology and Evolutionary Biology, University of Arizona, 2008 (Advisor: Peter Chesson).

Honors: Magna Cum Laude, Phi Beta Kappa.

Research

My research is focused at the interface of behavioral, disease, and population biology using mixed quantitative approaches to investigate the transient, hidden dynamics in complex biological systems. I have developed mathematical and computational frameworks for modeling large-scale ecological and movement patterns, predicting risks of zoonotic outbreaks, and informing disease management strategies in advance of epidemics.

PUBLICATIONS

Tao, Y., K. Shea, and M. Ferrari. Logistical constraints lead to an intermediate optimum in outbreak vaccination. *PLoS Computational Biology* (2018) 14.5: e1006161.

Tao, Y., L. Borger, and A. Hastings. Dynamic range size analysis of territorial animals: an optimality approach. *The American Naturalist* (2016) 188.4: 460-474.

Tao, Y., L. Borger, M. Lewis, N. Bharti, A. Hastings, and J. Potts. Movement before the end of time: prevalence, analyses, and applications of transient movement dynamics. *Ecology Letters*. Pre-submission accepted.

Epstein, J., S. Anthony, A. Islam, A. Kilpatrick, S. Khan, M. Sanchez, N. Ross, I. Smith, C., Zambrana-Torrel, **Y. Tao**, A. Islam, P. Quan, K. Olival, M. Khan, E. Gurley, M. Hossein, M. Field, M. Fielder, T. Briese, M. Rahman, C. Broder, G. Crameri, L. Wang, S. Luby, W. Lipkin, and P. Daszak. Nipah virus dynamics in bats and implications for zoonotic spillover to humans. *Science Advances*. In review.

Tao, Y., K. Shea, W. Probert, M. Tildesley, and M. Ferrari. Impact of delayed responses in 2001 UK foot-and-mouth outbreak. *nearing submission*

Tao, Y., A. Hastings, J. Potts, and L. Borger. Departing from steady-state: transient home range analysis via FiPy. *nearing submission*.

Tao, Y., A. Hastings, I. Hanski, and O. Ovaskainen. An individual-based stochastic model for arbitrarily fragmented landscapes. *nearing submission*.

Tao, Y., M. Rostal, A. Kemp, and P. Hosseni. Transient movement effects of ungulate Rift Valley Fever dynamics: method and analysis. *in prep*.

Tao, Y., C. Zambrana-Torrel, and K. Lee. On integrations of movement, economics, and disease modelings in ecological systems. *in prep*.

GRANTS

Intelligence Community Postdoctoral Research Fellowship (2019-2021), EcoHealthNet Research Exchange (2014), Academy of Finland Graduate Research Fellowship (2013–2014), NSF Graduate Research Opportunities Worldwide (2013–2014), NSF Travel Support for Junior Researchers (2013), Center for Population Biology Graduate Travel Grant (2011), NSF Graduate Research Fellowship (2010–2013), UC Davis Graduate Group of Ecology Block Grant (2008), Biomedical Research Abroad Fellowship (2007), University of Arizona Undergraduate Biology Research Fellowship (2006)

AWARDS

ESA Lotka-Volterra Award for Best Student Presentation in Theoretical Ecology (2010), University of Arizona Dean's List (2004–2008), Spirit of Discovery Award (2004), University of Arizona Provost Award (2004)

INVITED TALKS

Ecological Society of America Annual Meeting (2019), Department of Animal Ecology, University of Potsdam (2018), Leibniz Institute for Zoo and Wildlife Research (2018), Mathematics Department, Penn State University (2015), Department of Mathematical Sciences, University of Essex (2015), Department of Infectious Diseases, University of Cambridge (2015), School of Mathematics and Statistics, University of Sheffield (2015), Department of Ecology and Evolutionary Biology, Princeton University (2014), Metapopulation Research Centre, University of Helsinki (2013), Centre d'Etudes Biologiques de Chize (2011)

SELECT CONFERENCE PRESENTATIONS

Imperfect Livestock Outbreak Control: Variable Delays Responses in 2001 UK Foot-and-Mouth Outbreak, Ecology and Evolution of Infectious Disease Meeting, 2017

Intermediate Optimum in Outbreak Response Vaccination, Ecological Society of America Annual Meeting, 2017

Transient Movement Ecology, Symposium on Animal Movement and the Environment, 2014

The Dynamical Landfarers: Methods and Applications of Modeling Transient Home Ranges, Ecological Society of America Annual Meeting, 2012

Information Ecology: Mechanistically Merging Information Processing with Home Range Dynamics, Ecological Society of America Annual Meeting, 2010

VISITING RESEARCH

EcoHealth Alliance (2014), Metapopulation Research Centre, University of Helsinki (2013-2014; Advisors: Ilkka Hanski, Otso Ovaskainen), Department of Zoology, University of Oxford (2011)

UNIVERSITY TEACHINGS

Mathematical Modeling in Biology, University of California, Davis, 2009–2010.

JOURNALS REFEREED

The American Naturalist, Journal of Animal Ecology, Journal of Theoretical Biology, Mathematical Biosciences, Methods in Ecology and Evolution, Theoretical Ecology, Journal of Mathematical Biology, PLOS Computational Biology