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Research interests and goals

I am a mathematical, statistical, and computational biologist. My interests include host-parasite interactions, especially the evolution of virulence; spatial community dynamics; generalized linear mixed models; and parameter estimation and inference for nonlinear dynamical models.

I work at the interface between statistics and ecology, developing new methods that appropriately account for uncertainties and link statistical summaries and estimates with meaningful ecological and evolutionary parameters.

Education

B.S., Physics and Mathematics (*summa cum laude*), Yale University: Jan. 1990. (DeForest Physics Prize 1990; Arthur D. Stanley Mathematical Prize 1989)

Ph.D., Zoology, Cambridge University, Nov. 1993. Dissertation: *Population Dynamics of Measles Epidemics in Developed Countries*. (Paul Mellon Scholarship) Supervisor: Dr. Bryan Grenfell

Employment

Professor 7/2010–present
Departments of Mathematics & Statistics and Biology, McMaster University.

Associate Professor 9/2005–6/2010
Assistant Professor 8/1999–8/2005
Department of Zoology, University of Florida. Theoretical ecology.

Research Associate 10/1993–8/1999
Department of Ecology and Evolutionary Biology, Princeton University. Modelling of problems in climate change, plant ecology, spatial population dynamics.

Grant funding

Semimechanistic models for ecology and epidemiology. NSERC Discovery. 1/Apr/2023 – 30/Mar/2028, $284,000.

CANMOD: CANadian Network for MODelling infectious Disease. NSERC Emerging Infectious Diseases Modelling Initiative. Co-applicant. Full grant (David J. D. Earn, Caroline Colijn, co-PIs): 1/Aug/2021 – 31/Mar/2026. Subcontract to BMB/McMaster: $70,000, 1/Aug/2021 – 31/Mar/2023.

Connecting theory with data in host-parasite evolution. NSERC Discovery. 1/Apr/2016 – 30/Mar/2023, $215,000.

Collaborative Research: Linking predator functional diversity to prey dynamics through the functional response. NSF. 1/Sep/2016 - 31/Aug/2019. $314,475.00. Collaborator. Co-PIs: James Vonesh, Michael McCoy, Jeremy Wojdak.

Learning from the 2014-15 West Africa Ebola epidemic: advancing real-time outbreak analysis to inform public-health decision making. CIHR. 1/August/2015 - 1/August/2016. $121,400. Co-investigator. PI: Jonathan Dushoff

Population-level effects of suppressing fever. Seed grant, Institute for Infectious Disease Research, McMaster University. $30,000. David J. D. Earn, Benjamin M. Bolker, Marek Smieja, Mark Loeb.

Sampling methods for health surveys in difficult settings: a simulation study. CIHR. 1/Apr/2013 – 1/Apr/2015, $182,000. Harry Shannon, Roman Viveros-Aguilera, Benjamin M. Bolker.

Linking theory with data in spatial ecology and epidemiology. NSERC. 1/Apr/2010 – 30/Mar/2015, $130,000.

Sigma virus in *Drosophila*: a model system for the evolution of virulence. co-PI with M. L. Wayne (PI), R. D. Holt (co-PI). NIH. $US 1,469,972, 15/Apr/2009 – 14/Apr/2012.

Spatial Ecology and Evolution: Quantitative Training in Biology, Statistics, and Mathematics. co-PIs: C. W. Osenberg, M. Martcheva, E. Bruna, M. Christman. NSF IGERT $US 2,958,113, 15/Sep/2008 – 14/Sep/2013.

Emerging wildlife diseases: Threats to amphibian biodiversity (large collaborative proposal: Collins, Cohen, Davidson, Longcore, Storfer main PIs) National Science Foundation, Integrative Research Challenges in Environmental Biology $US 149,787 (FL/BMB), $1,140,627 (total grant), 01/Jan/2003 – 31/Dec/2005

Cryptic density dependence: the effects of spatial, ontogenetic, and individual variation in reef fish populations. Co-PI with C. W. Osenberg and C. St. Mary. NSF, Biological Oceanography program. $US 695,242, 01/Sep/2001 – 31/Aug/2005.

Development of a hierarchical model to estimate sea turtle rookery contributions to mixed stocks in foraging habitats. Co-PI with Karen Bjorndal and Alan Bolten. National Marine Fisheries Service, Pelagic Fisheries Research Program (subcontract through University of Hawai'i). $US 98,892, 01/Jan/2003 – 31/Dec/2004.

Fisheries habitat: a field assessment of the effects of artificial reefs and its role in fisheries management. Co-PI with C. W. Osenberg and C. St. Mary. National Sea Grant Program, 2000-2002.

Teaching

Workshops

Mixed models. Conference on Applied Statistics in Agriculture and Natural Resources. Ames, Iowa. 13 May 2024

Introduction to reproducible public health analysis with R. McMaster Public Health Association, Cross-

roads in Public Health. McMaster University. 16 March 2019.

Generalized linear mixed models. Griffiths University, Brisbane, Australia. 21 July 2019

Beyond linear-type models: general purpose maximum likelihood estimation in R. R à Quebec 2019, Québec. 16 May 2019

Generalized linear mixed models. Goettingen University, Goettingen, Germany. 27–29 January 2019

Generalized linear mixed models. UNAM, Morelia, Mexico. 16–18 July 2018.

Generalized linear and mixed models. Jagiellonian University, Krakow, Poland. 23–27 April 2018.

Software and Data Carpentry workshops. McMaster University. 18 – 19 May 2017; 27 – 28 July 2017; 14 – 15 December 2017.

Mixed models and evolution of virulence. University of Puerto Rico Rio Piedras, San Juan, Puerto Rico. 25 – 29 April 2016.

Mixed models. University of Ottawa, Ottawa, Ontario: 24 – 25 January 2016.

Ecological models and reproducible research. Centre for Ecological Sciences, Indian Institute of Science, Bangalore, India: 29 June – 6 July 2015.

Mixed models. Alaska chapter of the American Statistical Society. Chena Hot Springs, Alaska, 18 – 19 August 2014.

Summer Institute (ecological analysis and synthesis). NCEAS (National Center for Ecological Analysis and Synthesis), Santa Barbara, CA, 4 – 8 August 2014; 24 June – July 5 2013.

Joint 2013 MBI-NIMBioS-CAMBAM Summer Graduate Workshop. NimBIOS (National Institute for Mathematical and Biological Synthesis), Knoxville, TN, 19 – 23 June 2013.

Mixed models. UQAM, Montreal, Quebec. 30 – 31 September 2012.

Mixed models. Center for Conservation Biology, NTNU, Trondheim, Norway. 28 August – 2 September 2011.

Ecological models and data. CONICET, Mendoza, Argentina. 29 June – 10 July 2009.

ICTP (International Centre for Theoretical Physics) Workshop on Theoretical Ecology and Global Change. Trieste, Italy. March 9 – 12 2009.

ELME (Enhancing Linkages between Mathematics and Ecology), Maximum Likelihood Analysis in Ecology. University of Michigan, W. K. Kellogg Biological Station, June 30 – July 3 2008.

Introduction to R for disease ecologists (3 days): Colorado State University, Fort Collins, CO: May 2005 and June 2008; UC Santa Barbara, June 2011; University of Michigan, Ann Arbor, MI: May 2012

Ecological models and data in R (1 day): Miami University of Ohio, Oxford, OH: 18 February 2008.

Graduate students

Current Ph.D. students: Michael Agronah (CSE), Allan Roberts (Biology), Kala Studens (Statistics), Hyuna Seo (Statistics: co-supervision with N. Balakrishnan)

No current Master's students.

Ph.D. students graduated:

- University of Florida: John Poulsen, Toshinori Okuyama, Greg Babbitt (co-chair), Claudia Romero (co-chair), Jada-Simone White (co-chair), Zy Biesinger (co-chair), Swati DebRoy (Mathematics: co-chair), Mollie Brooks.
- McMaster University: Morgan Kain (Biology), Michael Li (Biology: co-chair)

Master's students (thesis): Evan Mitchell, Kala Studens (Statistics); Jennifer Freeman (Computational Science & Engineering), Greg Forkutza (Statistics)

Master's students (project): Keya Biswas; Michael Richard; Michael Li; Ahsan Bhatti (Statistics); Vivek Thampi (Math); Martin Stelmach, Jason Pekos (Computational Science & Engineering)

Undergraduate thesis students

(co-supervised with M. Lovric) Cody Koykka; (co-supervised with S. Balshine) Rachel Charney, Claire Danukarjanto; Aaron Jacobs; (co-supervised with A. Sevigny) Matthew Blackshaw; Evan Mitchell; Nick Luymes; Deep Inamdar; Robert E. White; (co-supervised with J. Stearns) Nurefsan Davulcu; Jordyn Walton; Jon Jarvis; Sang Woo Park; Queenie Zheng; Haoyu Ji

Undergraduate summer projects

NSERC USRA: Alan Wong, Aaron Berk, Michael Birch, Sang Woo Park

Courses

McMaster University

STATS 720, "Statistical modeling"	fall 2023, fall 2024
BIO 4AE03, "Ecology and Evolution of Infectious Disease"	winter 2022, winter 2023, fall 2023
STATS 790, "Statistical learning"	winter 2023
MATH 4MB3, "Mathematical biology"	winter 2021
MATH 1MP3, "Introduction to mathematical/scientific programming"	winter 2015, 2016, 2017, fall 2019
BIO 1M03, "Ecology and Evolution"	fall 2014, 2015, winter 2018, fall 2018, fall 2020
BIO 3SS3, "Population Ecology"	winter 2014
BIO 708, "Quantitative methods in ecology and evolution" (with J. Dushoff)	winter 2011, 2013, 2015, 2017, 2019, 2024
MATH 747, "Topics in mathematical biology"	winter 2012

STAT 4C03/6C03, "Generalized linear models" fall 2011, fall 2013, fall 2018

MATH 2E03/MATH 3MB3, "Introduction to Modeling" fall 2010, 2017

STAT 744, "Topics in Statistics" (Mixed models; data visualization; etc.) fall 2015, fall 2019, fall 2021

STAT 756, "Topics in Biostatistics" winter 2011

University of Florida

"Integrated Principles of Biology II" (introductory majors): evolution and ecology, genetics
spring 2001, 2003, 2004, 2008

"Integrative Principles" (first-year graduate): Life History and Biol. Dynamics modules, coordinator spring 2001, fall 2002, 2003, 2006, 2008

"Ecology and Evolution of Infectious Disease" (upper-level undergraduate) fall 2000, spring 2002, 2004, 2007, 2009

"Ecological Models and Data" (graduate course) spring 2000, fall 2001, 2003, 2005, 2007, 2009, spring 2010

Graduate seminars in theoretical and statistical ecology: "Foundations and Frontiers in Ecology" (fall 2003), "Introduction to Mathematical Models in Ecology" (spring 2005), "Neutral theory in ecology" (fall 2006), "Statistical methods in ecology" (fall 2007), "Bayesian statistics for ecologists" (spring 2008), "Community phylogenetics" (fall 2008)

Research workshops

Banff International Research Station Banff, Alberta: 27 July – 2 August 2019
"New Mathematical Methods for Complex Systems in Ecology"

US Army Research Office Salt Lake City, Utah: 13 – 14 December 2015
"Mathematics and the Quest for Fundamental Principles of Biology"

NCEAS Santa Barbara, CA: 9-10 September 2015
"Coordinating Data Intensive Science Education and Training"

Swiss National Science Foundation Zurich, Switzerland: 16 – 21 August 2015
"Development of advanced mixed modeling software"

NIMBioS: 10 – 15 May 2015 Knoxville, Tennessee
"Dispersal biogeography"

Banff International Research Station Banff, Alberta: 11 – 18 August 2013
Focused working group, "Advancing deterministic algorithms for mixed-effects modelling in R" (Co-organizer)

National Center for Ecological Analysis and Synthesis (NCEAS) Santa Barbara, CA: 18-22 March 2013
Disease Induced Extinction

Zentrum für interdisziplinäre Forschung (ZiF) Bielefeld, Germany: June 2012.
Working group in "Stochastic dynamics: Mathematical Theory and Applications"

National Center for Ecological Analysis and Synthesis (NCEAS) Santa Barbara, CA: 10–14 January, 17–21

July 2011,
Nonlinear modeling working group

National Evolutionary Synthesis Center (NESCent) Raleigh-Durham, NC: 10–14 December 2008
Comparative Methods in R Hackathon

National Center for Ecological Analysis and Synthesis (NCEAS) Santa Barbara, CA: 1–5 November 2007
Trophic cascades working group

Mathematical Biosciences Institute, Ohio State University Columbus, OH: January–March 2006
Theme year in ecology and evolution

Isaac Newton Institute for Mathematical Sciences, Cambridge University
Cambridge, England: November–December 2001
Workshop: Scaling Biological Systems from Cells to Populations"

NCEAS Santa Barbara, CA: 1999–2000
Higher-Order Interactions working group

Selected presentations

Invited (last 5 years)

Conference on Applied Statistics in Agriculture and Natural Resources Ames, Iowa: 14 May 2024
"Progress and challenges in open-source multilevel modeling"

Stockholm University (remote) 8 June 2022
"No Free Lunch in Inference"

Canadian Statistical Sciences Institute (CANSSI) Ontario
Data Sciences Applied Research and Education Seminar webinar: 31 January 2022
"No Free Lunch in Inference"

Ecological Forecasting Initiative webinar: 1 November 2021
"Mixed models"

James Cook University Townsville, Australia: 27 June 2019
"Ecological synthesis across scales: West Nile virus in individuals and communities"

Australian Institute of Marine Science Townsville, Australia: 24 June 2019
"Ecological synthesis across scales: West Nile virus in individuals and communities"

University of New South Wales Sydney, Australia: 7 June 2019
"Ecological synthesis across scales: West Nile virus in individuals and communities"

Yale University New Haven, CT, USA: 4 May 2017
"Eco-evolutionary virulence of pathogens: the devil is (still) in the details"

East Carolina University Greenville, NC, USA: 23 February 2017
"Eco-evolutionary virulence of pathogens: the devil is (still) in the details"

Contributed (last 5 years)

International Statistical Ecology Conference — Swansea, Wales: 16 July 2024
Shape-constrained models for functional responses

International Statistical Ecology Conference — Saint Andrews, Scotland: 3 July 2018
Do not use multimodel averaging to understand multifactorial systems

Ecology & Evolution of Infectious Disease — Glasgow, Scotland: 30 May 2018
Epidemiological changes in plague

Publications

ORCID: 0000-0002-2127-0443. Also see publications on Google Scholar.

Articles in press

[1] M. McGillycuddy, G. Popovic, B. M. Bolker, and D. I. Warton (April 2025) Parsimoniously fitting large multivariate random effects in glmmTMB. *Journal of Statistical Software*, **112**:1–19.

Articles published in peer-reviewed journals

[1] A. McLean, S. Zarini, E. S. McCallum, J. R. Marentette, M. A. Koops, B. M. Bolker, and S. Balshine (February 2025) Twenty years in the making: Long term population dynamics of an invasive fish in a contaminated ecosystem. *Biological Invasions*, **27**(2). https://link.springer.com/10.1007/s10530-025-03542-3.

[2] L. Eckert, J. S. Miller, J. L. Fitzpatrick, S. Balshine, and B. M. Bolker (March 2025) Parental care drives the evolution of male reproductive accessory glands across ray-finned fishes. *Evolution*, p. qpaf062.

[3] M. Agronah and B. Bolker (April 2025) Investigating statistical power of differential abundance studies. *PLOS ONE*, **20**(4):e0318820.

[4] H. S. Shannon, P. D. Emond, B. M. Bolker, and R. Viveros-Aguilera (May 2024) A simulation study of sampling in difficult settings: Statistical superiority of a little-used method. *Statistical Journal of the IAOS*, **40**(2):375–385.

[5] T. L. Parsons, B. M. Bolker, J. Dushoff, and D. J. D. Earn (2024) The probability of epidemic burnout in the stochastic SIR model with vital dynamics. *Proceedings of the National Academy of Sciences*, **121**(5):e2313708120.

[6] D. J. D. Earn, S. W. Park, and B. M. Bolker (July 2024) Fitting epidemic models to data: A tutorial in memory of Fred Brauer. *Bulletin of Mathematical Biology*, **86**(9):109. https://doi.org/10.1007/s11538-024-01326-9.

[7] B. M. Bolker (June 2024) Multimodel approaches are not the best way to understand multifactorial systems. *Entropy*, **26**(6):506. https://www.mdpi.com/1099-4300/26/6/506.

[8] K. Studens, B. M. Bolker, and J.-N. Candau (2023) Predicting the temperature-driven development of stage-structured insect populations with a Bayesian hierarchical model. *Journal of Agricultural, Biological, and Environmental Statistics*, **29**:536–552.

[9] M. A. Moritz, E. Batllori, and B. M. Bolker (2023) The role of fire in terrestrial vertebrate richness patterns. *Ecology Letters*, **26**:563–574.

[10] S. Cygu, H. Seow, J. Dushoff, and B. M. Bolker (2023) Comparing machine learning approaches to incorporate time-varying covariates in predicting cancer survival time. *Scientific Reports*, **13**(1):1370.

[11] S. W. Park, B. M. Bolker, S. Funk, C. J. E. Metcalf, J. S. Weitz, B. T. Grenfell, and J. Dushoff (2022) The importance of the generation interval in investigating dynamics and control of new SARS-CoV-2 variants. *Journal of the Royal Society Interface*, **19**(191):20220173.

[12] M. W. McCoy, E. Hamman, M. Albecker, J. Wojdak, J. R. Vonesh, and B. M. Bolker (August 2022) Incorporating nonlinearity with generalized functional responses to simulate multiple predator effects. *PeerJ*, **10**:e13920.

[13] A. Gharouni, F. Abdelmalek, D. J. Earn, J. Dushoff, and B. M. Bolker (2022) Testing and isolation efficacy: Insights from a simple epidemic model. *Bulletin of Mathematical Biology*, **84**:66.

[14] D. P. Rosati, M. H. Woolhouse, B. M. Bolker, and D. J. D. Earn (September 2021) Modelling song popularity as a contagious process. *Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences*, **477**(2253):20210457. Publisher: Royal Society.

[15] S. W. Park, K. Sun, D. Champredon, M. Li, B. M. Bolker, D. J. Earn, J. S. Weitz, B. T. Grenfell, and J. Dushoff (2021) Forward-looking serial intervals correctly link epidemic growth to reproduction numbers. *Proceedings of the National Academy of Sciences*, **118**(2).

[16] I. Papst, M. Li, D. Champredon, B. M. Bolker, J. Dushoff, and D. J. D. Earn (2021) Age-dependence of healthcare interventions for COVID-19 in Ontario, Canada. *BMC Public Health*, **21**:706.

[17] N. A. Brown, N. S. Houpt, N. L. Yee, J. E. Curtis, B. M. Bolker, F. Juanes, and S. Balshine (2021) Consequences of nest site selection vary along a tidal gradient. *Journal of Animal Ecology*, **90**(2):528–541.

[18] B. M. Bolker, M. R. Grasselli, and E. Holmes (2021) Sensitivity analysis of an integrated climate-economic model. *SIAM Journal on Financial Mathematics*, **12**(2):SC–44.

[19] S. W. Park, B. M. Bolker, D. Champredon, D. J. Earn, M. Li, J. S. Weitz, B. T. Grenfell, and J. Dushoff (2020) Reconciling early-outbreak estimates of the basic reproductive number and its uncertainty: framework and applications to the novel coronavirus (SARS-CoV-2) outbreak. *Journal of the Royal Society Interface*, **17**(168):20200144.

[20] S. W. Park and B. M. Bolker (2020) A note on observation processes in epidemic models. *Bulletin of Mathematical Biology*, **82**(3):1–8.

[21] D. J. Earn, J. Ma, H. Poinar, J. Dushoff, and B. M. Bolker (2020) Acceleration of plague outbreaks in the second pandemic. *Proceedings of the National Academy of Sciences*, **117**(44):27703–27711.

[22] B. M. Bolker, E. J. Bolker, and E. D. Bolker (2020) A curious possible prime pattern. *Mathematics Magazine*, **93**(2):132–135.

[23] M. van de Kerk, D. P. Onorato, J. A. Hostetler, B. M. Bolker, and M. K. Oli (2019) Dynamics, persistence, and genetic management of the endangered Florida panther population. *Wildlife Monographs*, **203**(1):3–35.

[24] M. Li, B. M. Bolker, J. Dushoff, J. Ma, and D. J. Earn (2019) Patterns of seasonal and pandemic influenza-associated health care and mortality in Ontario, Canada. *BMC Public Health*, **19**(1):1–9.

[25] D. L. Karelus, J. W. McCown, B. K. Scheick, M. van de Kerk, B. M. Bolker, and M. K. Oli (2019) Incorporating movement patterns to discern habitat selection: black bears as a case study. *Wildlife Research*, **46**(1):76–88.

[26] M. P. Kain and B. M. Bolker (2019) Predicting West Nile virus transmission in North American bird communities using phylogenetic mixed effects models and eBird citizen science data. *Parasites & Vectors*, **12**(1):1–22.

[27] J. Dushoff, M. P. Kain, and B. M. Bolker (2019) I can see clearly now: Reinterpreting statistical significance. *Methods in Ecology and Evolution*, **10**(6):756–759.

[28] M. Brooks, K. Kristensen, M. Darrigo, P. Rubim, M. Uriarte, E. Bruna, and B. Bolker (2019) Statistical modeling of patterns in annual reproductive rates. *Ecology*, p. e02706.

[29] A. Shenkin, B. Bolker, M. Peña-Claros, J. C. Licona, N. Ascarrunz, and F. E. Putz (2018) Interactive effects of tree size, crown exposure and logging on drought-induced mortality. *Phil. Trans. R. Soc. B*, **373**(1760):20180189.

[30] M. Li, J. Dushoff, and B. M. Bolker (2018) Fitting mechanistic epidemic models to data: A comparison of simple Markov chain Monte Carlo approaches. *Statistical Methods in Medical Research*, **27**:1956–1967.

[31] M. P. Kain, I. M. Cattadori, and B. M. Bolker (2018) The evolutionary response of virulence to host heterogeneity: a general model with application to myxomatosis in rabbits co-infected with intestinal helminths. *Evolutionary Ecology Research*, **19**(3):257–278.

[32] D. Champredon, M. Li, B. M. Bolker, and J. Dushoff (2018) Two approaches to forecast Ebola synthetic epidemics. *Epidemics*, **22**:36–42.

[33] A. P. H. Bose, K. M. Cogliati, N. Luymes, A. H. Bass, M. A. Marchaterre, J. A. Sisneros, B. M. Bolker, and S. Balshine (2018) Phenotypic traits and resource quality as factors affecting male reproductive success in a toadfish. *Behavioral Ecology*, **29**:496–507.

[34] S. W. Park and B. M. Bolker (March 2017) Effects of contact structure on the transient evolution of HIV virulence. *PLOS Computational Biology*, **13**(3):e1005453.

[35] M. M. Maslej, B. M. Bolker, M. J. Russell, K. Eaton, Z. Durisko, S. D. Hollon, G. M. Swanson, J. A. Thomson Jr, B. H. Mulsant, and P. W. Andrews (2017) The mortality and myocardial effects of antidepressants are moderated by preexisting cardiovascular disease: A meta-analysis. *Psychotherapy and Psychosomatics*.

[36] M. Li and B. M. Bolker (2017) Incorporating periodic variability in hidden Markov models for animal movement. *Movement Ecology*, **5**(1).

[37] D. L. Karelus, J. W. McCown, B. K. Scheick, M. van de Kerk, B. M. Bolker, and M. K. Oli (2017) Effects of environmental factors and landscape features on movement patterns of Florida black bears. *Journal of Mammalogy*, **98**:1463–1478.

[38] M. P. Kain and B. M. Bolker (2017) Can existing data on WNV infection in birds and mosquitos explain strain replacement? *Ecosphere*, **8**(3):e01684.

[39] M. E. Brooks, K. Kristensen, K. J. van Benthem, A. Magnusson, C. W. Berg, A. Nielsen, H. J. Skaug, M. Mächler, and B. M. Bolker (2017) glmmTMB balances speed and flexibility among packages for zero-inflated generalized linear mixed modeling. *R Journal*, **9**:378–400.

[40] A. Abadi, A. Alyass, S. R. du Pont, B. Bolker, P. Singh, V. Mohan, R. Diaz, J. C. Engert, S. Yusuf, H. C. Gerstein, *et al.* (2017) Penetrance of polygenic obesity susceptibility loci across the body mass index distribution. *The American Journal of Human Genetics*, **101**(6):925–938.

[41] A. C. Stier, B. M. Bolker, and C. W. Osenberg (2016) Using rarefaction to isolate the effects of patch size and sampling effort on beta diversity. *Ecosphere*, **7**(12).

[42] E. J. González, C. Martorell, and B. M. Bolker (2016) Inverse estimation of integral projection model parameters using time series of population-level data. *Methods in Ecology and Evolution*, **7**(2):147–156.

[43] A.-H. Ghenu, B. M. Bolker, D. J. Melnick, and B. J. Evans (2016) Multicopy gene family evolution on primate Y chromosomes. *BMC Genomics*, **17**:157.

[44] A. Shenkin, B. Bolker, M. Peña-Claros, J. C. Licona, and F. E. Putz (2015) Fates of trees damaged by logging in Amazonian Bolivia. *Forest Ecology and Management*, **357**:50–59.

[45] K. E. Langwig, J. Voyles, M. Q. Wilber, W. F. Frick, K. A. Murray, B. M. Bolker, J. P. Collins, T. L. Cheng, M. C. Fisher, J. R. Hoyt, *et al.* (2015) Context-dependent conservation responses to emerging wildlife diseases. *Frontiers in Ecology and the Environment*, **13**(4):195–202.

[46] M. Kain, B. Bolker, and M. McCoy (2015) A practical guide and power analysis for GLMMs: detecting among treatment variation in random effects. *PeerJ*, **3**:e1226.

[47] K. M. Cogliati, C. Danukarjanto, A. Pereira, M. Lau, A. Hassan, A. Mistakidis, B. Bolker, B. D. Neff, and S. Balshine (2015) Diet and cannibalism in plainfin midshipman *Porichthys notatus*. *Journal of Fish Biology*, **86**(4):1–48.

[48] M. Birch and B. M. Bolker (2015) Evolutionary stability of minimal mutation rates in an evo-epidemiological model. *Bulletin of Mathematical Biology*, **77**:1985–2003.

[49] D. Bates, M. Maechler, B. M. Bolker, and S. Walker (2015) Fitting linear mixed-effects models using lme4. *Journal of Statistical Software*.

[50] J. Voyles, A. M. Kilpatrick, J. P. Collins, M. C. Fisher, W. F. Frick, H. McCallum, C. K. R. Willis, D. S. Blehert, K. A. Murray, R. Puschendorf, E. B. Rosenblum, B. M. Bolker, T. L. Cheng, K. E. Langwig, D. L. Lindner, M. Toothman, M. Q. Wilber, and C. J. Briggs (October 2014) Moving beyond too little, too late: Managing emerging infectious diseases in wild populations requires international policy and partnerships. *EcoHealth*, **12**:1–4.

[51] M. van de Kerk, D. P. Onorato, M. A. Criffield, B. M. Bolker, B. C. Augustine, S. A. McKinley, and M. K. Oli (2014) Hidden semi-Markov models reveal multiphasic movement of the endangered Florida panther. *Journal of Animal Ecology*, **84**:576–585.

[52] O. Ovaskainen, D. Finkelshtein, O. Kutoviy, S. Cornell, B. Bolker, and Y. Kondratiev (2014) A general mathematical framework for the analysis of spatiotemporal point processes. *Theoretical Ecology*, **7**(1):101–113.

[53] E. S. McCallum, R. E. Charney, J. R. Marenette, J. A. M. Young, M. A. Koops, D. J. D. Earn, B. M. Bolker, and S. Balshine (April 2014) Persistence of an invasive fish (*Neogobius melanostomus*) in a contaminated ecosystem. *Biological Invasions*, **16**:2449–2461.

[54] J. Ma, J. Dushoff, B. M. Bolker, and D. J. D. Earn (2014) Estimating initial epidemic growth rates. *Bulletin of Mathematical Biology*, **76**(1):245–260.

[55] D. J. D. Earn, P. W. Andrews, and B. M. Bolker (2014) Population-level effects of suppressing fever. *Proceedings of the Royal Society Series B*, **281**:20132570.

[56] K. M. Cogliati, A. F. Mistakidis, J. R. Marentette, A. Lau, B. M. Bolker, B. D. Neff, and S. Balshine (2014) Comparing population level sexual selection in a species with alternative reproductive tactics. *Behavioral Ecology*, **25**(6):1524–1533.

[57] B. Pasch, B. M. Bolker, and S. M. Phelps (November 2013) Interspecific dominance via vocal interactions mediates altitudinal zonation in neotropical singing mice. *The American Naturalist*, **182**(5):E161–E173.

[58] D. S. LeBauer, M. C. Dietze, and B. M. Bolker (2013) Translating probability density functions: From R to BUGS and back again. *R Journal*, **5**(1):207–209.

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Professional service

Associate editor of *American Naturalist*.

Reputation $> 100,000$ on Stack Overflow

Member, Science Advisory Board, National Center for Ecological Analysis and Synthesis (2010-2018)

Reviewer, Faculty of 1000 (2011-2016)

Vice-chair (2007-08) and chair (2008-09), Theoretical Ecology section of the Ecological Society of America.

Ms. reviewer for *Basic and Applied Ecology*, *Biology Letters*, *BioControl*, *BioScience*, *Bulletin of Mathematical Biology*, *Ecography*, *Ecological Applications*, *Ecological Modelling*, *Ecological Monographs*, *Ecology*, *Ecology Letters*, *Frontiers in Ecology*, *Evolution*, *J. Animal Ecology*, *J. Applied Ecology*, *J. Comp. Graphical Statistics*, *J. Ecology*, *J. Infectious Diseases*, *J. Roy. Soc. Interface*, *J. Statistical Software*, *J. Theoretical Biology*, *Mathematical Biosciences*, *Methods in Ecology and Evolution*, *Nature*, *Oecologia*, *Oikos*, *Plant Ecology*, *PLoS Computational Biology*, *PLoS Biology*, *PNAS*, *Proc. Roy. Soc. B*, *Science*, *SIAM*, *Southwestern Naturalist*, *Theoretical Ecology*

Book reviewer for Princeton University Press, Blackwell, Springer, Wiley, Oxford University Press.

Grant reviewer for NSERC, MITACS (Mathematics of Information Technology and Complex Systems: Canada), National Science Foundation, Research Council of Norway, Engineering and Physical Sciences Research Council (UK), National Environment Research Council (UK), Finnish Academy of Sciences, Academy of Sciences of the Czech Republic, Swiss National Science Foundation, French Agence National de Recherche.

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