

Brandon Hollingsworth

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EDUCATION & POSITIONS

2026-Present	Assistant Professor. Department of Epidemiology and Biostatistics. University of South Carolina. Columbia, SC
2024-2026	Research Assistant Professor. Department of Epidemiology and Biostatistics. University of South Carolina. Columbia, SC
2021-2024	Post-Doctoral Research Fellow. Cornell Institute of Host Microbe Interactions and Disease. Entomology Department. Cornell University. Ithaca, NY
2020-2021	Post-Doctoral Research Associate. Institute for Global Health and Infectious Diseases. University of North Carolina at Chapel Hill. Chapel Hill, NC.
2020	PhD. Biomathematics. North Carolina State University. Raleigh, NC. Co-Advisors: Drs. Alun L. Lloyd and Michael H. Reiskind
2015	B.S. Mathematics. University of Southern Mississippi. Hattiesburg, MS.
2008	B.S. Biology. University of Mississippi. University, MS.

PUBLICATIONS

2026	Hughes, A., Laporta, G.Z., Dye-Braumuller, K., Self, S.C.W., Hollingsworth, B.D. , Nolan, M.S. Deforestation's Impact on Brazilian <i>Culex</i> mosquitoes and arboviral spillover risk. <i>Acta Tropica</i> 280 108161
2026	Huxley, P.J., Brown, J.J., St. Laurent, B., Johnson, B., Cheun, O.Y., Asamoah, A., Hollingsworth, B.D. , Bump, E.R., Wimberly, M.C., Pascual, M., Johnson, L.R., Murdock, C.C. Beyond Temperature: Relative Humidity Systematically Shifts Juvenile Thermal Performance and Projected Population Growth in a Malaria Vector. <i>Ecology Letters</i> . 29 (6) e70416
2026	Liao, H., Hollingsworth, B.D. , et al. Completion of Paired Serological Testing Algorithms for Spotted Fever Rickettsiosis and Ehrlichiosis, North Carolina: 207-2020. <i>Clinical Infectious Diseases</i> 82 (3), 548-555
2025	Brown Marusiak, A., Moskashi, N., Gaindomenico, D. A., Hollingsworth, B. D. , Reiskind, M. H., Barabrin, A. M., Williams, C., Delamater, P., Boyce, R.M. Spatial and clinical epidemiology of spotted fever rickettsioses and ehrlichiosis, North Carolina, 2010–2019. <i>PLoS Neglected Tropical Diseases</i> 19 (8), e0013406
2025	Lee, G., Hollingsworth, B.D. , et al., Impact of Revised Diagnostic Testing Algorithms and Case Definitions on Lyme Disease Surveillance in a Low-Incidence State: An Interrupted Time Series Analysis. <i>Clinical Infectious Diseases</i> , 81 (2), 403-406

2025 Shattuck, A. V., **Hollingsworth, B. D.**, et al. Field-validation of multiple species distribution models shows variation in performance for predicting *Aedes albopictus* distributions at the invasion edge. *Parasites & Vectors* 18 (1) 488

2025 Liao, H., **Hollingsworth, B.D.**, Cassidy, C.A., Zychowski, D., Ursery, L., Giandomenico, D.A., Boyce, R.M. Completion of paired serological testing algorithms for spotted fever rickettsiosis and ehrlichiosis, North Carolina: 2017-2020. *Clinical Infectious Diseases*, ciaf176

2025 **Hollingsworth, B. D.**, Wiener, M., Giandomenico, D. A., Commins, S. P., Boyce, R. M. Environmental risk and Alpha-gal Syndrome (AGS) in the Mid-Atlantic United States. *PLoS Climate* 4 (4), e0000528

2024 Lee, G., **Hollingsworth, B.D.**, Giandomenico, D. A., Fisher, T. G., Williams, C, Boyce, R. M. Impact of revised diagnostic testing algorithms and case definitions on Lyme disease surveillance: an interrupted time series analysis, 2017–2023. *Clinical Infectious Diseases*, ciae545

2024 **Hollingsworth, B. D.**, Cho, C., Vella, M., Roh, H., Sass, J., Lloyd, A. L., Brown, Z. S. Economic optimization of *Wolbachia*-infected *Aedes aegypti* release to prevent dengue. *Pest Management Science* 80 (8), 3829-3838

2024 Xu, E., Goel, V., Baguma, E., **Hollingsworth, B.**, Brown-Marusiak, A., Muhindo, R., Ntaro, M., Mulogo, E. M., Boyce, R. M. Evolution of spatiotemporal risk of malaria infection after a pragmatic chemoprevention program in response to severe flooding in rural western Uganda. *The Journal of Infectious Diseases* 229 (1), 173-182

2024 Cassidy, C., ..., **Hollingsworth, B.D.**, et al. Comparison of commercially available, rapid, point-of-care C-reactive protein assays among children with febrile illness in southwestern Uganda. *PLOS Global Public Health* 4 (1), e0002727

2023 Howerton, E., ... **Hollingsworth, B. D.**, et al. The effect of governance structures on optimal control of two-patch epidemic models. *Journal of Mathematical Biology* 87 (5), 74

2023 **Hollingsworth, B. D.**, Grubaugh, N. D., Lazzaro, B., Murdock, C. C., Leveraging the mosquito virome to understand mosquito ecology and mosquito-borne disease transmission. *PLoS pathogens* 19 (8), e1011588

2023 **Hollingsworth, B. D.**, Sandborn, H., Baguma, E., Ntaro, M., Mulogo, E. M., Boyce, R. M. Comparing field-collected versus remotely-sensed variables to model malaria risk in the highlands of western Uganda. Submitted: *Malaria Journal* 22 (1), 197

2023 Holcomb, K. M., ... **Hollingsworth, B. D.**, et al. Evaluation of an open forecasting challenge to assess skill of West Nile virus neuroinvasive disease prediction. *Parasites and Vector* 16 (1), 1-13

2022 Brown Marusiak, A., **Hollingsworth, B. D.**, et al. "Patterns Testing for Tick-Borne Diseases and Implications for Surveillance in the Southeastern US." *JAMA Network Open* 5.5, e2212334-e2212334.

2022 Boyce, R. M., **Hollingsworth, B. D.**, et al. "Dihydroartemisinin-piperaquine chemoprevention and malaria incidence after severe flooding: evaluation of a

	pragmatic intervention in rural Uganda." <i>Clinical Infectious Diseases</i> 74.12 (2022): 2191-2199.
2022	Abernathy, H. A., Hollingsworth, B. D. , et al. "Prevalence of Knock-Down Resistance F1534S Mutations in <i>Aedes albopictus</i> (Skuse)(Diptera: Culicidae) in North Carolina." <i>Journal of Medical Entomology</i> (2022).
2022	Figurskey, A. C., Hollingsworth B. , et al. "Effectiveness of autocidal gravid trapping and chemical control in altering abundance and age structure of <i>Aedes albopictus</i> ." <i>Pest Management Science</i> (2022).
2020	Hollingsworth, B. , Okamoto, K., Lloyd, A. L. After the Honeymoon, the Divorce: Unexpected Outcomes of Disease Control Measures Against Endemic Diseases. <i>PLoS Computational Biology</i> . <i>PLoS computational biology</i> 16.10: e1008292.
2020	Reiskind, M.H., Styers, D., Hayes, I., Richards, S.L., Doyle, M., Reed, E.M.X., Hollingsworth, B. , and Byrd, B.D. Short-term, Large-area Survey of Container <i>Aedes</i> spp. (Diptera: Culicidae): Presence and Abundance is Associated with Fine-scale Landscape Factors in North Carolina, USA. <i>Environmental Health Insights</i> 14: 1178630220952806.
2020	Hollingsworth, B. , Hawkins, P., Lloyd, A. L., Reiskind, M. H. Efficacy and Spill-over of Yard-scale Control of <i>Aedes albopictus</i> using Barrier sprays and Larval Habitat Management in Raleigh, NC. <i>Journal of Medical Entomology</i> . doi:10.1093/jme/tjaa016
2019	Sudweeks, J., Hollingsworth, B. , Blondel, D., et al. Locally Fixed Alleles: A method to localize gene drive to island populations. <i>Scientific Reports</i> 9, 15821. doi:10.1038/s41598-019-51994-0
2019	Hoyle, K. S., Gutierrez, K. S., Harper, L. A., Hollingsworth, B. D. , & Blanchard, M. R. Jumping to conclusions: Developing biomathematical predictive models. <i>Science Scope</i> 42(8), 70-76.

INVITED & CONTRIBUTED TALKS

2024	<i>Epidemiology and Biostatistics Departmental Seminar (Invited)</i> Location: University of South Carolina Title: Combining ecology and epidemiology to understand vector-borne disease risk in a shifting landscape
2024	<i>International Association of Landscape Ecology (Invited)</i> Location: Oklahoma City, OK Title: Invasion and population dynamics of <i>Aedes albopictus</i> in heterogeneous landscapes.
2023	<i>First Semester Veterinary Student Seminar (Invited)</i> Location: Ross University School of Veterinary Medicine Title: Using viruses to understand the movement of the mosquito <i>Aedes aegypti</i> on St Kitts

2022	<i>Cornell Institute for Host Microbe Interactions and Disease Annual Symposium (Contributed)</i> Location: Cornell University Title: Efficacy and Spillover of Yard-scale control of <i>Aedes albopictus</i> using barrier sprays and larval habitat management in Raleigh, NC
2020	<i>Entomological Society of America (Contributed)</i> Location: Virtual Title: Targeted treatments against <i>Aedes (Stegomyia) albopictus</i> (Diptera: Culicidae) in heterogeneous landscapes: insights from a data-driven model
2019	<i>North Carolina Mosquito & Vector Control Association Annual Conference (Invited)</i> Location: Carolina Beach, NC Title: Efficacy and Spillover of Yard-scale control of <i>Aedes albopictus</i> using barrier sprays and larval habitat management in Raleigh, NC
2019	<i>Genetic Engineering and Society Symposium (Invited)</i> Location: North Carolina State University, Raleigh, NC Title: Preventing Dengue using <i>Wolbachia</i> Infected Mosquitoes: Developing Optimal Release Strategies on an Uncertain Time Horizon
2019	<i>ASU Mathematical Biology Seminar (Invited)</i> Location: Arizona State University, Temp, AZ Title: Targeting heterogeneity: Yard-scale treatments to reduce citywide <i>Aedes</i> populations
2019	<i>Seventh International Conference on Mathematical Modeling and Analysis of Populations in Biological Systems (Contributed)</i> Location: Arizona State University, Tempe, AZ Title: Matching Treatment to Scale: Using Yard-Scale Treatments for the Control of <i>Ae. albopictus</i>
2019	<i>Society for Mathematical Biology (Invited)</i> Location: University of Montreal, Montreal, Quebec, Canada Title: Targeting Heterogeneity: Using Yard-scale Treatments to Reduce City-wide <i>Aedes</i> Populations
2019	<i>Genomic Sciences and Biomathematics Joint Symposium (Contributed)</i> Location: North Carolina State University, Raleigh, NC Title: Yard-scale Control of <i>Aedes albopictus</i> in Raleigh, NC
2018	<i>Genomic Sciences and Biomathematics Joint Symposium (Contributed)</i> Location: North Carolina State University, Raleigh, NC Title: After the Honeymoon, the Divorce: Unexpected Outcomes of Disease Control Measures
2015	<i>Undergraduate Research Symposium (Contributed)</i> Location: University of Southern Mississippi, Hattiesburg, MS Title: Testing the Fictitious Time Interval Method for approximating nonlinear, nonhomogeneous PDE's on one dimensional differential equations

POSTERS

2024	<i>American Society of Tropical Medicine and Hygiene</i> Location: New Orleans, LA Title: Population structure of the Aedes albopictus Virome in Suffolk County, Long Island, NY
2024	<i>Ecology and Evolution of Infectious Disease</i> Location: Stanford University, Palo Alto, CA Title: Invasion Dynamics of Aedes albopictus in a Heterogeneous Landscapes
2023	<i>American Society of Tropical Medicine and Hygiene</i> Location: Chicago, IL Title: Comparison of estimates of malaria transmission intensity derived from the facility-based test positivity rate versus household, malaria-indicator style surveys
2020	<i>CDC Vector Week</i> Location: Ft. Collins, CO Title: Evaluation and modeling of targeted yard-scale barrier controls as a precision treatment against <i>Ae. albopictus</i>
2018	<i>Forging Integrated Expertise in Graduate Education Seminar</i> Location: North Carolina State University, Raleigh, NC Title: A Mathematician in the Field: Using Field Experiments to Inform Mathematical Models of Vector Control
2018	<i>Ecology and Evolution of Infectious Disease</i> Location: University of California, Santa Barbara, Santa Barbara, CA Title: After the Honeymoon, the Divorce: Unexpected Outcomes of Disease Control Measures
2017	<i>Graduate Research Symposium</i> Location: North Carolina State University, Raleigh, NC Title: The Divorce Effect: Modeling unintended consequences of stopping disease control programs

TEACHING & MENTORING EXPERIENCE

2026-Present	<i>Ph.D. Advisor – Luis Quintanilla Vásquez</i> Location: University of South Carolina
2026-Present	<i>Ph.D. Committee Member – Nyame Murtala</i> Location: University of South Carolina
2026	<i>Undergraduate Research Mentor – Maven Busby</i> Location: University of South Carolina

2026-Present	<i>Undergraduate Research Mentor – Namya Gupta</i> Location: University of South Carolina
2026-Present	<i>Undergraduate Research Mentor – Sophia Doe</i> Location: University of South Carolina
2026-Present	<i>Undergraduate Research Mentor – Emma Thompson-Landrum</i> Location: University of South Carolina
2026-Present	<i>Undergraduate Research Mentor – Caroline Luton</i> Location: University of South Carolina
2025-Present	<i>Undergraduate Research Mentor – Kennedy Flynn</i> Location: University of South Carolina
2025-Present	<i>Undergraduate Research Mentor – Maddie Toth</i> Location: University of South Carolina
2024-2025	<i>Master’s Committee Member – Allison Hughes</i> Location: University of South Carolina
2024	<i>Guest Lecture – Epi 394</i> Location: University of South Carolina Provided a guest lecture on the history, ecology, and epidemiology of Malaria
2024-Present	<i>PhD. Committee Member – Anna Shattuck</i> Location: Cornell University
2022	<i>Instructor of Record – Freshman Biology Seminar</i> Location: Cornell University Designed and lead a discussion-based class entitled “Cutting through the noise” focused on critical thinking and quantitative results.
2021-2022	<i>Research Mentor – Maggie Weiner</i> Location: University of North Carolina – Chapel Hill Masters project using remote-sensed data to map the risk of Alpha-gal allergy in the mid-Atlantic
2020	<i>Instructor of Record – Differential Equations</i> Location: North Carolina State University Lead problem sessions and discussions and wrote and graded exams for a seven-week summer course.
2019-2020	<i>Graduate Mentor – Leah Rolf</i> Location: North Carolina State University

	Undergraduate research project on modeling the evolution of insecticide treatment in response to commercial mosquito treatments in private residences. Developing a primer on vector-borne disease modeling.
	<i>Instructor of Record – Calculus 1 for Life and Management Sciences</i>
2019	Location: North Carolina State University Independently developed lecture material for 185 students three times a week, wrote tests, and oversaw two lecture assistants.
	<i>Lecture Assistant – Discrete Mathematics</i>
2019	Location: North Carolina State University
	<i>Graduate Mentor – Jaye Sudweeks</i>
2016-2019	Location: North Carolina State University Oversaw her undergraduate research project on modeling the Locally Fixed Allele approach to releasing gene drives in island mice populations, which was published. Mentored her through the grad school application process (enrolled at University of British Columbia in 2019).
	<i>Lecture Assistant – Calculus 1, Differential Equations</i>
2015-2016	Location: North Carolina State University
	<i>Teaching Assistant – Introductory Biology for Majors Lab</i>
2007-2008	Location: University of Mississippi

FUNDING & AWARDS

2026	University of South Carolina ASPIRE - Seroepidemiology of <i>Naegleria fowleri</i> : Understanding exposure patterns in South Carolina and nationwide – University of South Carolina – PI - \$15,000
2025	Department of Defense - A pathogen- and vector-agnostic workflow for vector-borne disease diagnostics, detection, and early-outbreak response – University of South Carolina – Co-PI - \$3,210,000
2025	National Institutes of Health - Moving toward targeted arbovirus control: using the virome to determine <i>Aedes</i> dispersal and population structure – University of South Carolina – Co-PI - \$275,000
2022	HATCH Federal Capacity Funds – Taming the tiger: Understanding mosquito population connectivity to improve mosquito control – Cornell University – Written with Courtney Murdock and Brian Lazzaro
2021	Lucas Outstanding Research Award – North Carolina State University
2021	Cornell Institute for Host Microbe Interactions and Disease Post-Doctoral Fellow (T32) – Cornell University
2020	Research Training Group (RTG) Fellowship – North Carolina State University

2019	Travel Award – Seventh International Conference on Mathematical Modeling and Analysis of Populations in Biological Systems
2016-2018	Research Training Group (RTG) Fellowship – North Carolina State University
2016	Lucas Citizenship Award – North Carolina State University
2015	2 nd place Undergraduate Research Symposium – University of Southern Mississippi

IN THE NEWS

2025	<i>The Guardian</i> - Explosive increase of ticks that cause meat allergy in US due to climate crisis Author: Oliver Milman
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OTHER PROJECTS

2020	<i>Mathematical Research Community: Dynamics of Infectious Diseases: Ecological Models Across Multiple Scales</i> Location: Virtual Worked with a community of mathematical modelers to identify and address issues with modeling infectious diseases across multiple scales.
2020	<i>Centers for Disease Control Aedes Challenge</i> Location: North Carolina State University Led interdisciplinary team on a project predicting county-level <i>Aedes</i> presence around the United States
2020	<i>Centers for Disease Control West Nile Virus Forecasting Challenge</i> Location: North Carolina State University Led interdisciplinary team in developing a mechanistic model for predicting cases of neuro-invasive WNV in U.S. counties using socioeconomic and climatic factors
2019	<i>Centers for Disease Control Aedes Challenge</i> Location: North Carolina State University Led team on a project using a statistical model to predict county-level <i>Aedes</i> presence around the United States using spatial data
2015	<i>Undergraduate Project</i> Location: University of Southern Mississippi Testing the Fictitious Time Interval Method for approximating nonlinear, nonhomogeneous PDE's on one dimensional differential equations
2008	<i>Senior Thesis</i> Location: University of Mississippi Wildlife Epizootics: A simulation testing the importance of density dependence in disease models

OUTREACH

2018-2019	<i>Emerging Scholars Academy</i>
	Location: North Carolina State University, Raleigh, NC Organized and ran a hands-on activity to introduce underrepresented high school students to disease modeling
2017	<i>STEM CC</i>
	Location: North Carolina State University Science House, Raleigh, NC Designed three hour-long activities to introduce middle school students the principals of mathematical biology and helped train educators from rural, underrepresented schools to conduct the activities
2017	<i>Triangle Science and Technology Expo</i>
	Location: North Carolina Museum of Natural History Designed outreach material and activities to teach school-aged children about mosquitoes and mathematics. Organized and participated in the outreach program
2016-2019	<i>BugFest</i>
	Location: North Carolina Museum of Natural History, Raleigh, NC Participated in outreach activities teaching school-aged children about mosquito ecology
2016-2018	<i>State of the Sciences</i>
	Location: North Carolina State University College of Science, Raleigh, NC Designed, organized, and participated in outreach to introduce school-age children and their families to disease modeling using mosquito-borne disease as the motivating example.