

Dylan Tux Simpson

Curriculum vitae

Education

- (candidate) **Doctor of Philosophy**, *Rutgers University*, New Brunswick, NJ.
Ecology & Evolution
Advisor: Rachael Winfree
- 2018 **Master of Science**, *College of William & Mary*, Williamsburg, VA.
Biology
Advisor: Matthias Leu
- 2016 **Bachelor of Science**, *Western Washington University*, Bellingham, WA.
Environmental Science; *Magna cum laude*
Advisor: Rebecca Bunn

Publications

- in prep **Simpson, D.T.**, L. Weinman, M. Genung, M. Roswell, M. Teague, and R. Winfree. Many species, including rare species, are important for function of mutualist networks.
- 2019 **Simpson, D.T.**, M.S. Teague, J.K. Weeks, B.Z. Kaup, O. Kerscher, and M. Leu. Habitat amount, quality, and fragmentation associated with prevalence of the tick-borne pathogen *Ehrlichia chaffeensis* and occupancy dynamics of its vector, *Amblyomma americanum*. *Landscape Ecology* 34: 2435-2449. doi: 10.1007/s10980-019-00898-5
- 2019 Bunn, R.A., **D.T. Simpson**, L.S. Bullington, Y. Lekberg, and D.P. Janos. 2019. Revisiting the 'direct mineral cycling' hypothesis: Arbuscular mycorrhizal fungi colonize leaf litter, but why? *The ISME Journal* 13: 1891-1898. doi: 10.1038/s41396-019-0403-2
- 2019 **Simpson, D.T.**, M.S. Teague, J.K. Weeks, A.D. Lewis, P.M. D'Addio, J.D. Moore, J.A. Thompson, R.T. Canella, A.C. Harris, B.Z. Kaup, O. Kerscher, and M. Leu. 2019. Broad, multi-year sampling effort highlights complex dynamics of the tick-borne pathogen *Ehrlichia chaffeensis*. *Journal of Medical Entomology* 56(1): 162-168. doi: 10.1093/jme/tjy171

Presentations

- 2020 Winfree, R., **D.T. Simpson**, J. Reilly. *Mutualist networks and biodiversity-ecosystem functioning research*.
 - o Invited oral presentation - Ecological Society of America, Inspire Session
- 2020 Spencer, O.M., **D.T. Simpson**, M. Leu, O. Kerscher. *Temporal and spatial variation of Ehrlichia chaffeensis in the lone star tick (Amblyomma americanum)*.
 - o Poster – Virginia Mosquito Control Association
- 2019 **Simpson, D.T.**, L.R. Weinman, M.A. Genung, M. MacLeod, R. Winfree. *More pollinators are important to function in communities, relative to monocultures*.
 - o Oral presentation – Ecological Society of America

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- 2018 **Simpson, D.T.** and M. Leu. *Investigating the spatiotemporal distribution of a tick-borne pathogen, Ehrlichia chaffeensis.*
- o Invited oral presentation – Virginia Master Naturalists
- 2018 **Simpson, D.T.** *Investigating temporal heterogeneity of Ehrlichia chaffeensis prevalence.*
- o Oral presentation – William & Mary Graduate Research Symposium
- 2017 **Simpson, D.T.**, M. Leu, O. Kerscher, B. Kaup, M. Teague, J. Weeks, A. Lewis, P. D'Addio, A. Harris, R. Canella, J. Thompson, and J. Moore. *Investigating heterogeneity of Ehrlichia chaffeensis prevalence: multi-year dataset reveals influence of seasonal weather patterns.*
- o Oral presentation – Ecological Society of America
 - o Oral presentation – Virginia Academy of Sciences
- 2017 **Simpson, D.T.** *Global change and the exacerbation of zoonotic disease. Or: why is a conservation ecologist is studying ticks?*
- o Oral presentation – William & Mary Journal Club
- 2016 **Simpson, D.T.**, *Quantifying colonization of leaf litter by arbuscular mycorrhizal fungi in a temperate lowland forest.*
- o Poster – WWU Scholar's Week
- 2016 Anderson, R., B. McCadum, and **D.T. Simpson.** *Patterns of home range and habitat use by an ectothermic desert myrmecophile.*
- o Poster – Society for Integrative and Comparative Biology

Honors and Awards

- 2019 o Distinguished Thesis; William & Mary
- 2017 o Outstanding Teaching Assistant; William & Mary
- o Best Student Presentation; Entomology Section, Virginia Academy of Sciences
- 2016 o Presidential Scholar; Western Washington University
- o Outstanding Poster award; Undergraduate Research Symposium, Western Washington University

Grants and scholarships

- 2021 o \$5000 – (co-PI) – Core Facilities Utilization Grant, Rutgers University
- 2020 o \$1300 – Theodore Roosevelt Memorial Fund, American Museum of Natural History
- 2019 o \$32,204 – Graduate Fellowship, Rutgers University Institute of Earth, Ocean and Atmospheric Sciences
- 2018 o \$26,500 – Excellence Fellowship, Rutgers University School of Biological and Environmental Sciences

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- 2017
 - \$342 – Arts & Sciences Graduate Research Grant, College of William & Mary
 - \$200 – Ecological Society of America Disease Ecology Section student travel grant
 - \$500 – Arts & Sciences OGSR/Graduate Student Association Conference Funds, College of William & Mary
 - \$350 – Arts & Sciences Graduate Research Grant, College of William & Mary
- 2016
 - \$4000 – Recruitment Fellowship, College of William & Mary Dept. of Biology
- 2015
 - \$500 – Research grant, Western Washington University Office of Research and Sponsored Programs
 - \$2000 – Thomas Graham Memorial Scholarship, Huxley College of the Environment

Experience and service

Peer review.

Acted as a referee for the following journals:

- Ecology
- Ecology Letters

Teaching.

- Fundamentals of Ecological and Environmental Modeling – teaching assistant
 - Upper-level undergraduate course at Rutgers University
 - Covers basics of mathematical modeling in ecology, with an emphasis on mapping ecological concepts and principles to mathematical models
 - Provide personalized feedback and one-on-one support to students
- Plant Diversity and Evolution – teaching assistant
 - Upper-level undergraduate course at Rutgers University
 - Covers macroevolutionary patterns of global plant diversity, with a lab emphasizing the identification and description of major plant families and their member species
 - Designed and led remote lab activities, provide student support
- Advanced Ecological Data Analysis – guest instructor and teaching assistant
 - Graduate-level course at Rutgers University
 - Covers the use of many statistical methods common in ecology, building on the basics learned in undergraduate biostats
 - Designed lectures and exercises on maximum likelihood, model selection, and Bayesian methods
- Environmental Stewards – guest instructor
 - Continuing education course through Rutgers University and Duke Farms
 - Wrote and presented lecture on community and pollination ecology
- Conservation Ecology – guest instructor
 - Upper-level undergraduate course at Rutgers University
 - Selected readings and led discussion on energy, food, and population growth
- General biology – teaching assistant
 - Undergraduate course at William & Mary
 - Led laboratory exercises in topics ranging from field ecology to zebra fish ontogeny
- Statistics – workshops and lectures
 - Introduction to frequentist stats (for undergraduates)
 - Introduction to Bayesian modeling (for graduate students)
 - Introduction to R (for undergraduates)
 - Occupancy modeling (for mixed undergrad/grad)
 - Spatial autocorrelation and spatially explicit linear models (for mixed undergrad/grad)

Mentorship.

- Served as honors thesis committee member for Olivia Spencer – William & Mary
- Supervised an undergraduate research project on Firefly distribution modeling – Rutgers University
- Assisted two students with successful summer-research fellowship applications – William & Mary
- Supervised three undergraduate research assistants – William & Mary

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Outreach.

- Guest lesson on pollination for 3rd graders at Princeton Academy of the Sacred Heart
- Led workshop on tick ecology and safety with York County Park Service, in York County, Virginia

Service.

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- Treasurer for Rutgers' Ecology & Evolution Graduate Student Association
- Department representative to Rutgers AAUP-AFT

Analytical experience.

- Statistical analysis and modeling using R and JAGS
- Processing and analysis of remotely sensed data using ENVI and ArcGIS
- Spatial analysis using ArcGIS, FRAGSTATS, and Geospatial Modeling Environment

Field experience.

I have worked on a variety of field projects, including studies of:

- Intertidal species of the Salish Sea
- Lizards of the Great Basin desert
- Mycorrhizal fungus of the Pacific Northwest
- Ticks of southeastern US
- Bees of the Great Lakes and mid-Atlantic

Some relevant skills and techniques:

- Insect netting
- Pitfall and vane trapping
- Invertebrate ID
- Radio telemetry
- Fluorescent powder tracking

Lab experience.

- DNA extraction
- PCR
- Microscopy