Lauren V. Ash

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EDUCATION

2022 PhD, University of Vermont, Department of Biology, Advisor Dr. Nicholas Gotelli,
The effect of amphibian host ecology and evolution on the pathogen dynamics of *Ranavirus*

2014 Master of Research, University College London, UK, Advisor Dr. Kate Jones
Centre for Biodiversity and Environment Research; Biodiversity, Evolution & Conservation degree

2012 Bachelor of Science, University of Florida
Wildlife Ecology and Conservation with an emphasis on Wildlife Ecology; minor in French

RESEARCH INTERESTS

I am a quantitative ecologist and evolutionary biologist broadly interested in the interactions among species, the environment, and pathogens. I use an integrated approach and combine field, molecular, and computational techniques to address topics in the fields of community and disease ecology and evolution, such as species distributions, pathogen transmission dynamics, underlying genetic mechanisms, and how biotic and abiotic stressors influence these relationships. I work to apply the results of my research to conservation and management efforts.

PEER-REVIEWED PUBLICATIONS

(6) **Ash L. V**., K.M. Campião, C. P. Teixeira, N.J. Gotelli. 2024. *Ranavirus* and helminth parasite co-infection of invasive American bullfrogs in the Atlantic Forest, Brazil. *International Journal for Parasitology: Parasites and Wildlife* https://doi.org/10.1016/j.ijppaw.2024.100924

(5) Campião K. M., J. A. L. Rico, G. S. Monteiro, **L. V. Ash**, C. P. Teixeira, N. J. Gotelli. 2024. High Prevalence and concomitant infection of *Eustrongylides* sp. and *Ranavirus* in the invasive American Bullfrog in Brazil. *Parasitology International* (Case Report) https://doi.org/10.1016/j.parint.2024.102875

(4) Oda F.H., S. Ferreira dos Anjos, J. E. Paula Lima, **L. V. Ash**, K. M. Campião, and D. J. Rodrigues. 2021. Three is a crowd: Conspecific multi-male spawning in the Spotted Toad *Rhaebo guttatus* (Schneider, 1799). Austral Ecology https://doi.org/10.1111/aec.13014

(3) **Ash L. V.**, R. E. Marschang, J. M. Rijks, and A. Duffus. 2020. The Fourth International Symposium on Ranaviruses: Summary of North American Herpetological Content and Points of Interest: 4th International *Ranavirus* Symposium. The Journal of North American Herpetology https://doi.org/10.17161/jnah.vi.13539

(2) Rijks J. M., B. Saucedo, J. L. Brunner, P. Hick, D. Lesbarrères, A. Duffus, **L. V. Ash**, and R. E. Marschang. 2018. Report on the 4th International Symposium on Ranaviruses 2017. Journal of Herpetological Medicine and Surgery 28:13-18 https://doi.org/10.5818/17-10-131.1

(1) Brodie J., **L. V. Ash**, I. Tittley, and C. Yesson. 2018. A comparison of multispectral aerial and satellite imagery for mapping intertidal seaweed communities. Aquatic Conservation https://doi.org/10.1002/aqc.2905

MANUSCRIPTS IN PREPARATION

(4) **Ash L.V**., L.L. Willard, K.K. Harrod, C.J. Tucker; K.J. Linthicum, A. Anyamba, S. Gibson, B.A. Han, A.M. Kramer. Remote Sensing for Enhanced Surveillance of Mosquito-borne Diseases. *The Lancet Planetary Health*

(3) **Ash L. V.**, A. Slamin, M.J. Degelsmith, J.W. Barlow, N.J. Gotelli, L. Stevens. Increased mortality from *Ranavirus* infection associated with haplotypes of the Major Histocompatibility Complex (MHC) in wood frog (*Lithobates sylvaticus*) tadpoles. *Molecular Ecology*

(2) **Ash L. V.** and N.J. Gotelli. Increased amphibian diversity leads to an amplification effect in *Ranavirus* across Vermont pond communities. *Ecology*

(1) **Ash L. V.**, E.J. Farnsworth, and N.J. Gotelli. Predicting the current distribution of the rare endemic New England wildflower *Liatris novae-angliae* using historical data. *Diversity and Distributions*

RESEARCH

2025 **Predicting abundance of *Aedes aegypti* using multi-scale high resolution satellite imagery**
University of South Florida, Advisor Dr. Andrew Kramer

The aims of the project are 1) to identify potential areas of *A. aegypti* distribution at different scales, 2) to characterize relationships between climatic, socioeconomic, and physical parameters and the *A. aegypti* abundance, 3) to recommend the best-available remote sensing source of assessing mosquito abundance, and 4) to predict future expansion risk areas of *A. aegypti* distribution under climate change scenarios.

2023 **Pest species atlas and forecasting shifting ranges with climate change**
University of Vermont, Advisor Dr. Nicholas Gotelli

Worked as a part-time data scientist under an NSF EPSCoR grant, I utilize large climatic datasets to assess the current distribution of a range of New England pest species (e.g. spotted wing *Drosophila*, emerald ash borer) and predict their future distribution under varying climate change scenarios

2022 **The effect of amphibian host ecology and evolution on the pathogen dynamics of *Ranavirus***

University of Vermont, Advisor Dr. Nicholas Gotelli

Dissertation focused on understanding host-pathogen-abiotic interactions: I investigated the relationship between *Ranavirus* prevalence and host biodiversity; used experimental and molecular techniques to determine how the evolution of host genetic diversity influences Wood Frog tolerance and resistance; and determined the effects of virus and macroparasite co-infection in invasive bullfrogs of Brazil

2022 **Predicting the distribution of the rare, endemic wildflower *Liatris novae-angliae var. scariosa* using logistic regression and machine-learning algorithms**

University of Vermont, Advisor Dr. Nicholas Gotelli

Used historical absence records from Natural Heritage Programs across New England to identify important predictors of habitat suitability (i.e. land use) and to compare the predictive performance of logistic regression and machine-learning algorithms in SDMs

2022 **Investigating the natural co-occurrence of *Pseudogymnoascus destructans*, the causative agent of White-Nose Syndrome, and potential biocontrol agent *Trichoderma polysporum***

University of Vermont; led by undergraduate Lilly Carrol, collaborating with Alyssa Bennet (VT FWS)

Collected soil and cave wall samples from Vermont bat hibernacula to test for the presence of *Pd* and *Tp* and determine whether there is a pattern of co-occurrence

2014 **Developing a tool for the monitoring of seaweed habitat change**

Natural History Museum, London, Advisors Prof. Juliet Brodie and Dr. Chris Yesson

Created models using high-resolution imagery and field survey data with QGIS and R to determine whether seaweed habitats can be accurately differentiated through remote sensing technology

2014 **Anthrax risk map of Africa: incorporating ecological theory into disease modeling**

University College London, Advisors Dr. Kate Jones and Dr. David Redding

Created MAXENT, Boosted Regression Tree, and Generalized Linear Models using predictors that incorporated ecological factors, as well the standard bioclimatic variables

TEACHING

2022 – 2024 **Visiting Assistant Professor (Middlebury College)**

Cell Biology and Genetics

Taught 4 laboratory sections and conducted cell cultures; the course introduced basic concepts and tools of cellular biology; students conducted three experimental investigations over the semester: flagellar regeneration, photosynthesis and light, and long-term atrazine exposure in H295R or BLTK1 cells.

Ecology and Evolution

Lecture section focused on learning fundamental concepts of ecology and evolution

Reproducible Biology in R

I created and taught an intensive J-term (4 week) course in which students learned how to use computational programs and tools essential for reproducible science, including tidyverse packages in R, Rmarkdown, GitHub, shell commands, and LaTeX.

2021 – 2022 **Visiting Laboratory Instructor (Middlebury College)**

Ecology and Evolution laboratory (undergraduate Biology majors)
Cell Biology and Genetics laboratory (undergraduate Biology majors)

2015 – 2022 **Graduate Teaching Assistant (UVM)**

Computational Biology (BIOL 381)

Laboratory section for foundational methods in computer programming in R and modern computational tools for analysis, writing, and presenting. Taught graduate and advanced undergraduate students for 5 semesters between 2017-2022

Ecology and Evolution (BCOR 102)

Laboratory section focused on answering ecological and evolutionary questions using field and computational methods (using R). Taught undergraduate Biology majors for 7 semesters between 2015-2021. In Fall 2018, I co-coordinated 8 lab sections, edited weekly manuals, and led TA meetings.

Exploring Biology (BCOR 12)

Laboratory section focused on the introduction to biological and ecological concepts. Taught early undergraduate Biology majors for 2 semesters in 2016 and 2019

Guest lecturer (UVM)

2020 – 2021 Field Herpetology: Ranaviruses, sampling methods, and disease terminology
2018 – 2022 Computational Biology: Data manipulation with the R package dplyr

MENTORSHIP

2022 – 2024 Amelia Grosskopf, Middlebury College, Cell Biology and Genetics TA
2020 – 2023 Lilly Carroll, UVM undergraduate APLE grant recipient ($1500)
2020 – 2022 Maddy Degelsmith, UVM Undergraduate Research credit, Lake Champlain Research Consortium Grant recipient ($1020)
2018 – 2022. Raymond Looney, Undergraduate Research credit, Accelerated Master's student, Simon Fellowship recipient ($5000)
2020 – 2021 Ryan Doyle, Laboratory research assistant
2017 – 2020 Adam Slamin, Undergraduate Research credit, APLE award recipient ($500)
2017 – 2020 Abbi Smith, Undergraduate Research credit, Summer Undergraduate Research Fellowship recipient ($5000)
2017 – 2020 Sarah Clarke, Undergraduate Research credit

2020 Sophia Markus, Undergraduate Research credit
2019 – 2020 Danielle Urban, Undergraduate Research credit
2018 – 2020 Hannah Lewis, Undergraduate Research credit
2018 – 2020 TJ Mandelkorn, Undergraduate Research credit
2018 Zooey November, Fieldwork assistant, Rubenstein Summer Internship recipient
2017 – 2018 Piotr Sowulewski, Laboratory research work study, Barbara Kay Research Fund recipient ($500)
2017 – 2018 Conor Kiely, Undergraduate Research credit
2017 Portia Smith, Fieldwork assistant and Undergraduate Research credit
2016 – 2017 Sarah Cuprewich, Fieldwork assistant and Undergraduate Research credit
2016 – 2017 Sophia Semen, Fieldwork and laboratory research assistant
2016 Aswini Cherukuri, Fieldwork research assistant

GRANTS AND AWARDS

2021 Best Graduate Student Poster Award - 2nd place, Northeast Natural History Conference $200
2019 Graduate Teaching Assistant of the Year (Biology department and UVM Graduate College – awarded to 2 GTAs across the university each year) $200
2019 University of Vermont Ronald Suiter Prize $1000
2019 The University of Vermont John Wheeler Award $2000
2018 Best Graduate Student Poster Award, NEPARC conference $100
2018 University of Vermont Dr. Roberto Fabri Fialho Research Award $1850
2018 University of Vermont's Art of Biology (photography contest) 1st place
2017 UVM Biology Graduate Research Development Award $500
2017 Global *Ranavirus* Consortium Travel Grant $1500
2017 The University of Vermont Graduate College Summer Fellowship $2000
2016 The University of Vermont John Wheeler Award $2000
2013 University College London scholarship £2000
2007 – 2011 Florida Academic Scholars Award full tuition scholarship ~$50,000

PROFESSIONAL DEVELOPMENT

2024 VectorByte workshop on time-dependent data analysis
Arlington, VA
2019 Parasitology of amphibians and reptiles
Universidade Federal de Mato Grosso, Sinop, MT, Brazil
2017 Conservation Medicine and Amphibian and Reptile Disease
American Museum of Natural History Course, Southwestern Research Station
2015 Software Carpentry assistant, UVM
2012 Wildlife Field Techniques: small mammal trapping, avian and bat mist netting, alligator capture and tagging, camera trapping, radio telemetry, and aquatic salamander tagging. Gainesville, FL

PRESENTATIONS

2023 Vermont Wildlife Disease Meeting (oral presentation)
2021 University of Vermont graduate seminar (oral presentation)
2021 Northeast Natural History Conference (poster presentation)
2020 Vermont Wildlife Disease Meeting, remote (oral presentation)
2019 9th Congress of Brazilian Herpetology, Campinas, São Paulo, Brazil (oral presentation)
2019 5th International Ranavirus Symposium, Townsville, Australia (oral presentation)
2019 University of Vermont student research conference (poster presentation)
2019 University of Vermont graduate seminar (oral presentation)
2018 Annual Vermont State Park Interpreter Meeting, Castleton, VT (invited talk)
2018 Northeast Partners in Amphibian and Reptile Conservation conference, Springfield, MA (poster)
2018 Vermont Wildlife Disease Meeting, Colchester, VT (oral presentation)
2018 Northeast Natural History Conference, MA (talk and disease ecology session moderator)
2018 University of Vermont graduate seminar (oral presentation)
2017 Northeast Partners in Amphibian and Reptile Conservation conference, VA (poster)
2017 4th International Ranavirus Symposium, Budapest, Hungary (poster)
2017 University of Vermont graduate seminar (oral presentation)
2016 University of Vermont graduate seminar (oral presentation)
2015 University of Vermont graduate seminar (oral presentation)

SOCIETY MEMBERSHIPS

Ecological Society of America (ESA)
Global Ranavirus Consortium (GRC)
Northeast Partners in Amphibian and Reptile Conservation (NEPARC)
American Society of Ichthyologists and Herpetologists (ASIH)