

Fletcher W. Halliday

Department of Evolutionary Biology
and Environmental Studies
University of Zürich, 8057, Zürich, CH

ORCID: [0000-0003-3953-0861](https://orcid.org/0000-0003-3953-0861) ResearcherID: [ABD-1950-2020](https://pubs.acs.org/author/ABD-1950-2020) Google Scholar ID: [8h7X2ooAAAAJ](https://scholar.google.com/citations?user=8h7X2ooAAAAJ)

Employment History

Jan 2022 - Present	Oberassistent (Senior Researcher). Department of Evolutionary Biology and Environmental Studies, University of Zürich, Switzerland
Feb 2019 – Dec 2021	Postdoctoral Research Associate. Department of Evolutionary Biology and Environmental Studies, University of Zürich, Switzerland Advisor: Prof. Dr. Anna-Liisa Laine
Mar 2018 – Feb 2019	Postdoctoral Research Associate. Integrative Biology Department, University of South Florida, FL, USA Advisor: Prof. Dr. Jason R. Rohr
Jan 2018 – Aug 2018	Postdoctoral Research Associate. Biology Department, University of North Carolina, NC, USA Advisor: Prof. Dr. Charles E. Mitchell
Aug 2010 – Jan 2018	Teaching Assistant and Graduate Research Fellow. Biology Department. University of North Carolina, NC, USA
Aug 2008 – Aug 2010	Biologist: URS Corporation, Environmental Sciences Division, Oakland, CA, USA
May 2007 – Dec 2009	Research Assistant: Department of Integrative Biology, UC Berkeley, Berkeley, CA, USA

Prizes, Awards, & Fellowships

2021	Ambizione Fellowship (Swiss National Science Foundation CHF 907,120)
2018	Outstanding Student Paper Award (Ecological Society of America Disease Ecology Section)
2017	Alma Holland Beers Scholarship (Biology Department, University of North Carolina \$1,500)
2017	W.C. Coker Summer Fellowship (Biology Department, University of North Carolina \$1,500)
2017	W.C. Coker Fellowship in Botany (Biology Department, University of North Carolina \$11,000)
2016	Alma Holland Beers Scholarship (Biology Department, University of North Carolina \$1,750)
2016	W.C. Coker Summer Fellowship (Biology Department, University of North Carolina \$1,750)
2015-2016	Dissertation Completion Fellowship (University of North Carolina \$16,500)
2012 – 2015	Graduate Research Fellowship (US National Science Foundation \$132,000)
2014	Mycological Graduate Scholarship (Sonoma Mycological Association \$1,500)
2011	Honorable Mention: Graduate Research Fellowship (US National Science Foundation)
2010 – 2011	Mrs. Coker Botanical Graduate Research Fellowship (Biology Department, University of North Carolina \$22,000)

Grant-funded research

2022 – 2026	Disease risk under environmental change and biodiversity loss – causes and consequences. PI: Fletcher W. Halliday (SNSF CHF 907,120 [\$989,129 USD]). I am sole PI of this grant, which is funded through the Swiss National Science Foundation Ambizione Fellowship Program.
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- 2016 – 2021 Multispecies interactions in the microbiome: dynamic responses of parasite individuals, populations, and communities. PI: Charles E. Mitchell (USDA-NIFA AFRI \$2,500,000). Co-PIs: Ignazio Carbone, Corbin D. Jones, James Umbanhowar.
This project is funded by the joint National Science Foundation, National Institutes of Health, and United States Department of Agriculture program in the Ecology and Evolution of Infectious Diseases. I am an investigator on the project, provided preliminary data, and cowrote the proposal.
- 2014 Joint ecological effects of a fungal mutualist and viral coinfection; REU Supplement to the project, “The community ecology of viral pathogens - Causes and consequences of coinfection in hosts and vectors.” PI: Charles E. Mitchell (NSF Research Experience for Undergraduates Program \$6,250).
As “Graduate Mentor” on the project, I recruited and mentored an undergraduate student to carry out an independent research project. I also designed the project and wrote the proposal.
- 2013 Virus co-infections and the effects of host identity, community composition, and resource supply on colonization and invasion of herbaceous communities; REU Supplement to the project, “The community ecology of viral pathogens - Causes and consequences of coinfection in hosts and vectors.” PI: Charles E. Mitchell (NSF Research Experience for Undergraduates Program \$6,250).
I collaborated with Robert Heckman as the “Graduate Mentors” on the project. I also designed the project and wrote the proposal.

Peer Reviewed Publications († denotes students that I have supervised)

- Heckman, RW, **FW Halliday**, PA Wilfahrt. *Accepted*. Nutrients and consumers impact tree colonization differently from performance in a successional old field. *Oecologia*.
- Halliday, FW***, M Jalo*†, A-L Laine. 2021. The effect of host community functional traits on plant disease risk varies along an elevational gradient. *eLife*. *joint first authorship, DOI: 10.7554/eLife.67340
- Sandel, B, C Pavelka, T Hayashi, L Charles, J Funk, **FW Halliday**, GS Kandlikar, AR Kleinhesselink, NJB Kraft, L Larios, T Madsen-McQueen, MJ Spasojevic. 2021. Predicting intraspecific trait variation among California’s grasses. *Journal of Ecology*. DOI: 10.1111/1365-2745.13673
- O’Keeffe, KR, **FW Halliday**, CD Jones, I Carbone, CE Mitchell. 2021. Parasites, niche modification, and the host microbiome: A field survey of multiple parasites. *Molecular Ecology*. DOI: 10.1111/mec.15892
- Halliday, FW***, RM Penczykowski*, B Barrés, JL Eck, E Numminen, A-L Laine. 2020. Facilitative priority effects drive parasite assembly under coinfection. *Nature Ecology & Evolution* *joint first authorship. DOI: 10.1038/s41559-020-01289-9
- Halliday, FW**, JR Rohr, A-L Laine. 2020. Biodiversity loss underlies the dilution effect of biodiversity. *Ecology Letters*. DOI: 10.1111/ele.13590 (*Featured on the cover*)
- Halliday, FW**, RW Heckman, PA Wilfahrt, CE Mitchell. 2020. Eutrophication, biodiversity loss, and species invasions modify the relationship between host and parasite richness during host community assembly. *Global Change Biology*. DOI: 10.1111/gcb.15165
- Wilfahrt, PA, **FW Halliday**, RW Heckman. 2020. Initial richness, consumer pressure, and soil resources independently alter plant diversity and resource strategies during a multi-year successional field experiment. *Journal of Ecology*. DOI: 10.1111/1365-2745.13396
- Greischar, MA, HK Alexander, F Bashey, AI Bento, A Bhattacharya, M Bushman, LM Childs, DR Daversa, T Day, CL Faust, ME Gallagher, S Gandon, CK Glidden, **FW Halliday**, KA Hanley, T Kamiya, AF Read, P Schwabl, AR Sweeny, AT Tate, RN Thompson, N Wale, HJ Wearing, P Yeh, and N Mideo. 2020. Evolutionary consequences of feedbacks between within-host competition and disease control. *Evolution, Medicine, and Public Health*. DOI: 10.1093/emph/eoaa004
- JR Rohr, DJ Civitello, **FW Halliday**, PJ Hudson, KD Lafferty, CL Wood, EA Mordecai. 2020. Towards common ground in the biodiversity–disease debate. *Nature Ecology and Evolution*. DOI: 10.1038/s41559-019-1060-6

- Wilfahrt, PA, **FW Halliday**. 2020. Plant pathogen and invertebrate herbivory protocol. *in* Halbritter, AH, et al., Handbook for standardized field measurements in terrestrial global-change experiments. *Methods in Ecology and Evolution*. DOI: 10.1111/2041-210X.13331
- Halliday, FW**, JR Rohr. 2019. Measuring the shape of the biodiversity-disease relationship across systems reveals new findings and key gaps. *Nature Communications*. DOI: 10.1038/s41467-019-13049-w
- Heckman, RW, **FW Halliday**, CE Mitchell. 2019. A growth-defense trade-off is general among native and exotic grasses. *Oecologia*. DOI: 10.1007/s00442-019-04507-9
- Halliday, FW**, RW Heckman, PA Wilfahrt, CE Mitchell. 2019. Past is prologue: Host community assembly and the risk of infectious disease over time. *Ecology Letters*. DOI: 10.1111/ele.13176
- Halliday, FW**, J Umbanhowar, CE Mitchell. 2018. A host immune hormone modifies parasite species interactions and epidemics: insights from a field manipulation. *Proceedings of the Royal Society B*. 285: 20182075. DOI: 10.1098/rspb.2018.2075
- Halliday, FW**, RW Heckman, PA Wilfahrt, CE Mitchell. 2017. A multivariate test of disease risk reveals conditions leading to disease amplification. *Proceedings of the Royal Society B*. 284: 20171340. DOI: 10.1098/rspb.2017.1340
- Halliday, FW**, J Umbanhowar, CE Mitchell. 2017. Interactions among symbionts operate across scales to influence parasite epidemics. *Ecology Letters*. 20: 1285–1294. DOI: 10.1111/ele.12825 (2018 Winner of the Ecological Society of America Disease Ecology section Outstanding Student Paper Award)
- Heckman, RW, **FW Halliday**, PA Wilfahrt, CE Mitchell. 2017. Effects of native diversity, soil nutrients, and natural enemies on exotic invasion in experimental plant communities. *Ecology*. 98: 1409-1418. DOI: 10.1002/ecy.1796
- Coyle, JR, **FW Halliday**, B Lopez, K Palmquist, PA Wilfahrt, AH Hurlbert. 2014. Using trait and phylogenetic diversity to evaluate the generality of the stress-dominance hypothesis in eastern North American tree communities. *Ecography*. 37: 814-826. DOI: 10.1111/ecog.00473 (Editor's Choice)

Invited Presentations

- Halliday, FW**. 2021. Biotic and abiotic drivers of disease risk in wild plant communities. Verena - The Viral Emergence Research Initiative
- Halliday, FW**. 2020. The role of host communities in regulating infectious disease risk. University of Neuchâtel Biology Seminar
- Halliday, FW**. 2019. Biotic and abiotic drivers of disease risk across space and time. University of Zurich Behaviour, Ecology, Environment, and Evolution Seminar
- Halliday, FW**. 2019. Diversity and interactions of plant parasites: from host organs to communities. CSU Monterey Bay School of Natural Sciences
- Halliday, FW**. 2017. Diversity and interactions of foliar fungal parasites, from host organs to communities. University of Virginia EBio Seminar
- Halliday, FW**. 2016. Are symbiont communities “typical” ecological communities? Invited presentation at the annual UNC Biology Symposium (one of two graduate student speakers).
- Halliday, FW**, CE Mitchell. 2015. Diversity and interactions of foliar fungal parasites, from host organs to communities. Ecological Society of America, Baltimore MD (In the Organized Oral Session: Integrating host and symbiont community ecology across scales)

Contributed Presentations († denotes students that I have mentored)

- Halliday, FW**. 2019. Biotic and abiotic drivers of disease risk in wild plant communities. Wild Plant Pathosystems, Schmitten, Germany (Oral Presentation)
- Halliday, FW**, & KR O’Keeffe. 2019. Drivers of foliar parasite metacommunity structure in California grasslands. Wild Plant Pathosystems, Schmitten, Germany (Poster)
- Jalo, M†, **FW Halliday**, & A-L Laine. 2019. How do elevation and biodiversity affect disease risk in natural plant populations? Wild Plant Pathosystems, Schmitten, Germany (Poster)

- Halliday, FW**, & JR Rohr. 2019. Evaluating the frequency and common drivers of within-host priority effects during coinfection. Ecology and Evolution of Infectious Diseases Conference, Princeton NJ (Poster)
- Halliday, FW**, J Umbanhowar, CE Mitchell. 2018. A defense hormone and viral infection modify parasite epidemics and within-host priority effects in a grass host. Ecology and Evolution of Infectious Diseases Conference, Glasgow SCT (Poster)
- Halliday, FW**, J Umbanhowar, CE Mitchell. 2016. Seasonal variation, within-host priority effects, and fungal interactions jointly influence parasite epidemics in a grass host. Wild Plant Pathosystems, Helsinki FI (Oral presentation)
- Halliday, FW**, J Umbanhowar, CE Mitchell. 2016. Seasonal variation, within-host priority effects, and fungal interactions jointly influence parasite community assembly in a grass host. Ecology and Evolution of Infectious Diseases, Ithaca NY (Oral Presentation)
- Halliday, FW**, CE Mitchell. 2014. Uncovering the structure of foliar parasite metacommunities in California grasslands. Ecological Society of America, Sacramento CA (Oral presentation)
- Rose-Person A†, Papper PD†, Graziani A, Cade J†, Cabanero D†, Pickett ZJ†, Boylan J† and **FW Halliday**. 2014. Examining the ecology of *Puccinia coronata*: An emerging infectious disease on the invasive grass, *Phalaris aquatica*, in northern California. Ecological Society of America Sacramento CA (Poster)
- Halliday, FW**, E Grason, VAG Bastazini, K Benes, HK Burgess, N Johnson, J Lefcheck, J Parrish 2014. Biodiverse Perspectives: Using online tools to foster communication among graduate students. North American Congress for Conservation Biology, Missoula MT (Poster)
- Halliday, FW**, RW Heckman, PA Wilfahrt, CE Mitchell. 2013. Effects of host diversity and resource availability on foliar parasite diversity. Ecological Society of America, Minneapolis MN (Poster)
- Lefcheck, J, VG Bastazini, **FW Halliday (presenting author)**, HK Burgess, C Robinson, RL Nesteruk, CJ Maranto, J Parrish. 2013. BioDiverse Perspectives: Blogging to foster communication among graduate students. Ecological Society of America, Minneapolis MN (Poster)
- Halliday, FW**, RW Heckman, PA Wilfahrt, CE Mitchell. 2013. Effects of host diversity and resource availability on foliar parasite diversity. Evolution and Ecology of Infectious Diseases, State College PA (Poster)

Supervision of Junior Researchers

- Li Zhao 2021 – Present (University of Zürich on exchange from Peking University, China; BSc Student) Thesis: Adaptation and acclimation to soil and climate as drivers of specific leaf area along a 1100m elevation gradient.
- Szymon Czyzewski. 2020 – Present (University of Zürich; MSc Student). Thesis: Predicting plant community-level trait distributions across environmental gradients: do disease and herbivory matter?
- Mikko Jalo. 2019 - 2020 (University of Helsinki; MSc Student). Thesis: Disease risk decreases in diverse plant communities observed along an elevational gradient.
- Ben Robb. 2014 (Wake Forest University; NSF Research Experience for Undergraduates Program).
- Prahlada Papper. 2014 (Santa Rosa Junior College; Independent Student Researcher).
- Robert Price. 2013 & 2014 (University of North Carolina; Independent Student Researcher).
- Nguyen Huynh An “Markus” Le. 2013 (University of North Carolina; Summer Research Fellow and Honors Student). Thesis: Contributing Factors in Host Breadth of Fungal Plant Pathogens.
- Kristina Jacobs. 2013 (Howard University; NSF Research Experience for Undergraduates Program).

Teaching activities

- 2019 – 2021 Ecology and Evolution at the Heart of the Wicked Problems (with Anna-Liisa Laine, Jenalle Eck, Anna Norberg, Mikko Tiusanen, and Luiz Domeignoz-Horta). University of Zürich
- 2016 – 2017 Teaching Assistant: Introductory Ecology and Evolution. University of North Carolina
- 2011 – 2012 Teaching Assistant: Introductory Ecology and Evolution. University of North Carolina

Scientific Meetings and Working Groups

- 2021 Organizer of proposed oral session for the 2022 Ecological Society of America Conference: “The role of within-species variation and ecological context in a trait-based ecology of infectious diseases” with co-organizers Pieter Johnson, Tara Stewart Merrill, and Mark Wilber.
- 2020 - Present Participant in synthesis working group on priority effects at the Synthesis Centre (sDiv) of the German Centre for Integrative Biodiversity Research (iDiv).
- 2020 Participant in the workshop, “Structural equation modeling - from theory to practice” at the University of Zürich
- 2019 Participant in NSF-funded Research Coordination Network Workshop: “Evolutionary Consequences of Feedbacks Between Within-host Competition and Disease Control”
- 2016 Organizer of UNC Biology Symposium workshop: Using online tools to foster science communication, with co-organizer Kayleigh O’Keeffe
- 2011 - 2015 Participant in NSF-funded Dimensions of Biodiversity distributed graduate seminar

Institutional Responsibilities and Commissions of Trust

- 2012 - Present Peer review in the following journals: *American Naturalist*, *Basic and Applied Ecology*, *Ecology*, *Ecology Letters*, *Functional Ecology*, *Global Ecology and Biogeography*, *Journal of Applied Ecology*, *Journal of Ecology*, *Molecular Ecology*, *Nature Climate Change*, *New Phytologist*, *Oecologia*, *Oikos*, *Plant Pathology*, *Trends in Ecology and Evolution*, *Trends in Parasitology*
- 2020 External grant reviewer for the Agence Nationale de la Recherche (ANR), France program: Maladies infectieuses et environnement.
- 2010 – 2018 Served in various leadership roles in the Biology Department at UNC, including student ambassador for graduate recruitment, Graduate Students Association representative for faculty meetings, and organizer of graduate research seminars.
- 2008 –2010 As a consultant for URS Corporation, I served as lead or coauthor on nine technical publications, including restoration and revegetation plans, annual monitoring reports, mitigation designs, endangered species act consultations, and wetland delineations throughout the state of California, USA

Outreach

- 2019 Contributor to Nature Ecology and Evolution Community Blog
- 2013 - 2016 Co-organizer and Managing Editor of BioDiverse Perspectives – a research blog, written by graduate students, that received over 100,000 page views and accolades from the California Academy of Science, The Nature Conservancy, and The National Science Foundation. I also represented BioDiverse Perspectives as a model for science communication at four national conferences, and wrote about my own research.
- 2011 - 2015 Developed and organized Santa Rosa Junior College-UNC Chapel Hill joint research program for undergraduates investigating host-pathogen ecology. This project exposed junior college-level students to ecological research by engaging them in a long-term research project. In 2014, we presented a poster of our research findings at the Ecological Society of America conference.
- 2013 - 2014 Editor at ScienceSeeker.org, a science collective aimed at organizing the entire range of science reporting, analysis, and discussion that take place through online blogs.
- 2013 Participant in Scientists with Stories: a science media workshop funded by Innovate@Carolina and the UNC Morehead Planetarium.

Active memberships in scientific societies

Ecological Society of America – Disease Ecology Section & Early Career Ecologist Section

British Ecological Society

Eurasian Dry Grassland Group – A working group of the International Association for Vegetation Science and a member of the European Forum for Nature Conservation and Pastoralism