

# Fletcher W. Halliday

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## Education

- Aug 2010 – Dec 2017    Ph.D. Biology, University of North Carolina, Chapel Hill.  
“The community ecology of plant parasites: from coinfections to metacommunities.”  
Advisor: Prof. Dr. Charles E. Mitchell
- Aug 2006 – May 2008    B.S. Honors, Distinction. Molecular Environmental Biology, University of California, Berkeley.  
“Bird migration and habitat degradation mediate parasite dynamics in the marine snail, *Cerithidea californica*.”  
Advisor: Prof. Dr. Wayne P. Sousa
- Aug 2003 – May 2006    Biology and General Education. Santa Rosa Junior College, Santa Rosa, CA, USA

## Employment History

- Feb 2019 – Present    Postdoctoral Research Associate. Department of Evolutionary Biology and Environmental Studies, University of Zürich, CH  
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

- 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)

### Peer Reviewed Publications

- 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* \*co-first authors. 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
- 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)

### Pre-print publications

- Heckman, RW, **FW Halliday**, PA Wilfahrt. 2020. Contrasting effects of nutrients and consumers on tree colonization and growth during secondary succession. bioRxiv. DOI: 10.1101/2020.07.13.201129
- O’Keeffe, KR, **FW Halliday**, CD Jones, I Carbone, CE Mitchell. 2020. Parasites as niche modifiers for the microbiome: A field test with multiple parasites. bioRxiv. DOI: 10.1101/2020.03.31.018713
- Halliday, FW**, JR Rohr, A-L Laine. 2020. Biodiversity loss underlies the dilution effect of biodiversity. bioRxiv. DOI: 10.1101/2020.04.20.050377 (Now accepted at Ecology Letters)
- Halliday, FW\***, RM Penczykowski\*, B. Barrés, JL Eck, E Numminen, A-L Laine. 2020. Facilitative priority effects drive parasite assembly under coinfection. bioRxiv. \*co-first authors. DOI: 10.1101/2020.03.30.015495 (Now accepted at Nature Ecology & Evolution)
- Halliday, FW**, RW Heckman, PA Wilfahrt, CE Mitchell. 2019. Host community assembly modifies the relationship between host and parasite richness. bioRxiv. DOI: 10.1101/857151 (Now published at Global Change Biology)
- Wilfahrt, PA, **FW Halliday**, RW Heckman. 2019. Priority effects, consumer pressure, and soil resources independently alter plant diversity and resource strategies during a multi-year successional field experiment. bioRxiv. DOI: 10.1101/722264 (Now published at Journal of Ecology)
- Halliday, FW**, JR Rohr. 2018. Spatial scale moderates the shape of the biodiversity-disease relationship. bioRxiv. DOI: 10.1101/472902 (Now published at Nature Communications)

### **Invited Presentations**

- 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 (asterisk 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

- Szymon Czyzewski. 2020 – Present (University of Zürich; Master Student).
- Mikko Jalo. 2019 - 2020 (University of Helsinki; Master Student).
- 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).
- Markus Le. 2013 (University of North Carolina; Summer Research Fellow and Honors Student).
- Kristina Jacobs. 2013 (Howard University; NSF Research Experience for Undergraduates Program).

## Teaching activities

- 2019 – 2020 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

- 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 Co-organizer of UNC Biology Symposium workshop: Using online tools to foster science communication, with 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: *Ecology Letters*, *Journal of Ecology*, *Ecology*, *Molecular Ecology*, *New Phytologist*, *Trends in Ecology and Evolution*, *Basic and Applied Ecology*, *Oecologia*, *Journal of Applied Ecology*, *Oikos*, *Nature Climate Change*, *Trends in Parasitology*, *Journal of Animal Ecology*
- 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 Editor in Chief 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: <http://tinyurl.com/kqxbclx>
- 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