Carolyn Delevich

(262) 581 – 5315
cdelevic@uoregon.edu

272 Onyx Bridge
5289 University of Oregon
Eugene, OR 97403-5289

EDUCATION + PROFESSIONAL HISTORY

Graduate Student: PhD in Biology — 2020—current
Dept. of Biology, University of Oregon, Eugene, OR, USA

Dissertation: *Responses of plant-fungal mutualisms to environmental variation*

Advisor: Dr. Bitty Roy

Graduate Student: MS in Biological Sciences — 2016—2019
Dept. of Biological Sciences, California State Polytechnic University, Humboldt, Arcata, CA, USA

Dissertation: *Ectomycorrhizal fungal community assembly on seedlings of a Neotropical monodominant tree*

Advisor: Dr. Terry Henkel

Research Technician — 2015—2016
Duke University, Agence Nationale des Parcs Nationaux du Gabon, Makokou, Gabon

Project: *Pachyderms to pathogens: the cascading effects of megafauna loss on tropical tree recruitment*

Principal Investigator: Dr. John Poulsen

Intern — 2013—2015
Smithsonian Tropical Research Institute, Barro Colorado Island, Panama

Project: *Seed defense syndromes of tropical forest trees: emergent properties of seed dormancy, defense, and microbial interactions* (link)

Principal Investigators: Dr. Camilo Zalamea, Dr. James Dalling, Dr. A. Elizabeth Arnold, Dr. Adam Davis

Research Assistant — 2011—2013
The Ohio State University Herbarium, Columbus, OH, USA

Project: *Digitization of native plants of Ohio herbarium collection* (link)

Principal Investigators: Dr. Brandon Sinn, Dr. John Freudenstein

Undergraduate Student: BS in Biology — 2009—2013
College of Arts and Sciences, The Ohio State University, Columbus, OH, USA

CURRENT PROJECTS

Distributions of macrofungi: quantifying ecosystem and climate drivers of fungal reproduction
An NSF-funded multi-institutional collaboration.

Principal Investigators: Dr. Bitty Roy, Dr. Jeffrey Diez, Dr. John Conery, Heather Dawson, Dr. A. Elizabeth Arnold, Dr. Jana U'Ren, Dr. Serita Frey, Dr. Peter Kennedy, Dr. Matthew Smith, Dr. Andrew Wilson, Dr. D. Jean Lodge

Role: Graduate Student

- **bioinformatics**: designing a custom bioinformatics pipeline to process multi-platform sequencing data (PacBio, Illumina, Sanger), with a focus on maximum reproducibility and ease-of-use while maintaining flexible user input (e.g., filtering parameters, OTU thresholds)
- **data wrangling**: defining and implementing file naming conventions, structuring file hierarchical structures, canonizing best practices in file and data sharing, facilitating exchange of raw sequencing data across institutions
- **software design**: developing a Python-based program that pulls fungal collection data from top sources (e.g., MycoPortal, UNITE, GenBank) for a given geographic location; allows us to inventory previously known fungal distributions to compare to what may be uncovered by this study (see In Preparation manuscript 02)
- **data analysis**: utilizing multivariate statistics along with Bayesian frameworks to better understand how macrofungal community composition is influenced by burn history and dominant vegetation types across North America (see In Preparation manuscript 01)

Alaska Alders: tracking the diversity and abundance of *Alnus* fungal mutualists across a temperature gradient in an imperiled boreal forest

Dissertation project at the University of Oregon.

Role: Principal Investigator

- **bioinformatics**: combining information from PacBio sequencing of roots and sporocarps with Illumina sequencing of roots and soil; incorporating sequences from multiple gene regions, such as the ITS1 region from soils, the 16S region for arbuscular mycorrhizal fungi, and the ITS + LSU from sporocarp sequencing
- **data analysis**: employing Bayesian hierarchical modeling to understand how different fungal groups on alders respond to soil temperature

PUBLICATIONS

Published

01. Zalamea, P.C., Sarmiento, C., Arnold, A.E., Kuo, V., **Delevich, C.**, Davis, A.S., Brown, T.A., Dalling, J.W. (2023). Decadal survival of tropical pioneer seeds in the soil seed bank is accompanied by fungal infection and dormancy release. Functional Ecology 00, 1—11. https://doi.org/10.1111/1365-2435.14476
02. **Delevich, C.A.**, Koch, R., Aime, M.C., Henkel, T.W. (2021). Ectomycorrhizal fungal community assembly on seedlings of a Neotropical monodominant tree. *Biotropica* 53(6), 1486–1497. https://doi.org/10.1111/btp.12989
03. Zalamea, P.C., Dalling, J. W., Sarmiento, C., Arnold A. E., **Delevich, C.**, Berhow, M., Ndobegang, A., Gripenberg, S. (2018). Dormancy-defense syndromes and trade-offs between physical and chemical defenses in seeds. *Ecology* 99(9), 1988–1998. https://doi.org/10.1002/ecy.2419

In Revision

01. Collings, J.A., Cook, E.J., **Delevich, C.A.**, Diez, J.M. Soil mycobiome dissimilarity, independent of fungal guild, is associated with increased probability of plant coexistence.

In Preparation

01. **Delevich, C.A.** (CliMush Group). Macrofungal communities in litter and soil segregate by burn history and dominant vegetation types among sites across a broad geographic distribution.
02. **Delevich, C.A.**, Conery, J.S., Roy, B. A. MycoPull: An open tool for sourcing fungal species distribution information from public data repositories.

03. **Delevich, C.A.**, D'Angelo, H., Essene, A., Hiebert, T. Shek, K.L., Dinwiddie, D., Ho, D., Zavoshy, N., Meng, N., Massmann, A., Merrer, D., Gilbert, J., Peay, K.G., Lewis, J. D., McGuire, K. L. Major functional groups of fungi are spatially structured across soil types and horizons in a Bornean tropical forest.

EXHIBITIONS

Invisible Worlds — 2023—current
The American Museum of Natural History, New York, NY

Contribution: my scanning electron micrographs of roots colonized by ectomycorrhizal fungi were used as part of a permanent immersive exhibit (link)

GRANTS + AWARDS

PhD Student — 2021—present
University of Oregon

- 2024: International Student Travel Award, Mycological Society of America (link)
- 2021: Paul & Helen Weiser Memorial Scholarship, University of Oregon (link)
- 2021: William R. Sistrom Memorial Scholarship, University of Oregon (link)

MS Student — 2017—2019
Cal Poly Humboldt

- 2019: Student Scholarship, Oregon Mycological Society (link)
- 2018: Graduate Research Grant, Humboldt State University
- 2018: Verback Scholarship, Humboldt Bay Mycological Society
- 2018: James M. Trappe Mentor Student Travel Award, Mycological Society of America
- 2017: Verback Scholarship, Humboldt Bay Mycological Society
- 2017: Student Fellowship, Association of Tropical Biology & Conservation
- 2017: Graduate Award, Sonoma County Mycological Association (link)
- 2017: Jenning's Botany Award, Humboldt State University
- 2017: Woolford Fellowship, Eureka Rotary Club

Post-baccalaureate Intern — 2015
Smithsonian Tropical Research Institute

- 2015: Best Poster in Plant Science, New Phytologist (link)
- 2015: Travel Award, Smithsonian Tropical Research Institute

SELECT PRESENTATIONS

PhD Student — 2022—present
University of Oregon

- 2023: Mycological Society of America Annual Meeting, Flagstaff, AZ (poster)
- 2022: Mycological Society of America Annual Meeting, Gainesville, FL (poster)

MS Student — 2017—2019
Cal Poly Humboldt

- 2020: Oregon Mycological Society meeting, Portland, OR (link)
- 2019: Mycological Society of America Annual Meeting, Minneapolis, MN (poster)
- 2019: Humboldt Botanical Garden invited speaker, Eureka, CA (oral presentation)
- 2018: International Mycology Congress meeting poster, San Juan, PR (poster)

- 2017: Mycological Society of America Annual Meeting, Athens, GA (oral presentation)