Dylan J. Baldassari

djb587@nau.edu

Research Interests

My research interests center around the diverse interactions between plants and symbiotic fungi, biogeographic and topo-edaphic drivers of plant-fungal community ecology, and biogeochemical cycles. How these interactions change with, or could help to mitigate, threats including climate change, altered disturbance regimes, and invasive species are of particular interest to me.

Education

2022-Present Ph.D. Biological Sciences, Northern Arizona University, ECOSS
Advisor: Dr. Michelle Mack
My dissertation work investigates plant and microbial distribution and dispersal under the context of advancing/expanding plant distributions and thawing permafrost; how these shifts affect ecosystem processes (C, N, and P turnover) is at the core of my work.

2019-2022 M.S. Biology, University of Wisconsin – La Crosse
Advisors: Dr. Tom Volk and Dr. Todd Osmundson
My thesis investigates the diversity, ecology, and biogeography of needle-inhabiting endophytic fungi in whitebark pine, a threatened, keystone tree species found in high-elevation forests in western North America. By sampling across gradients of elevation, habitat isolation, and disease (white pine blister rust) prevalence, I am addressing questions related to the roles of habitat, dispersal limitation and ecological interactions in shaping these fungal communities; the biocontrol potential of endophytic fungi against white pine blister rust, and the factors that affect pathogen dynamics and their role in driving whitebark pine population declines.

2015-2018 B.S. Biology, University of Wisconsin – La Crosse
Environmental Science Concentration,
Minors: Chemistry and Statistics

2014-2015 B.S. Biology, University of Hawai'i at Manoa
Completed Freshman Year Coursework

Professional Experience

2022-Present Graduate Teaching Assistant, Northern Arizona University; Microbiology.
I was responsible for instructing the laboratory component of this course which included giving introductory lectures, instructing students on protocols and methodologies, and grading for two lab sections of ~20 students each semester.

2019-2021 Graduate Teaching Assistant, University of Wisconsin – La Crosse; Biology for the Informed Citizen, Introductory Biology, and Organismal Biology.
I was responsible for instructing the laboratory component of these courses which

included giving introductory lectures, instructing students on protocols and methodologies, and grading for three lab sections of 20 students each semester.

2018-2021 Teaching Assistant, University of Wisconsin – La Crosse; Mycology, Medical Mycology.
I assisted and occasionally led these two fungal concentrated courses under the guidance of Dr. Tom Volk. I was responsible for lab and specimen preparation, instructing students on fungal culturing, histological preparation, species identification using macroscopic and microscopic features, and other techniques used to study fungi.

2018 REU Technician, Institute of Arctic Biology/ Bonanza Creek LTER, AK
Advisors: Dr. Roger Ruess and Dr. Syndonia Bret-Harte
I assisted a master's student in data collection for his thesis work, which focused on landscape-level biochemical impacts of a nitrogen fixing shrub (Siberian Alder) in arctic and boreal forest ecosystems. Additionally, I designed and performed my own study, collecting and analyzing growth metrics of alder that I have used to create habitat and latitude specific allometric equations for the boreal forest and arctic.

2017-2018 Green Fund Coordinator, University of Wisconsin – La Crosse
I was responsible for advising students on writing grants that promoted sustainability on campus, presenting these grants to university governing bodies, and making recommendations on proposed sustainability projects.

2016-2018 Undergraduate Research Technician, University of Wisconsin – La Crosse
Advisor: Dr. Barrett Klein
My work in this lab focused on the effects of sleep deprivation in the insect family Hymenoptera. I trained and mentored new lab members on protocols, methods, and IR-photography/film that we used to investigate the links between cognition and sleep; developing a new standard for defining sleep in insects using response thresholds.

2016-Present Owner of DB General Contracting LLC.
I established a professional painting company in the spring of my sophomore year of college, which later evolved into general contracting (carpentry, remodeling, flooring, etc.). To date, I have completed over 40 full time bids to the satisfaction of clients. I have been solely responsible for the completion of these projects and for managing the four part-time employees that I hired over the course of these five years.

2015-Present Conservationist Photographer
Publicly releasing photos with a message to promote conservation and respect for wildlife. Website: https://thedylanbaldassari.squarespace.com/
Social Media: https://www.instagram.com/thedylanbaldassari/

Grants and Scholarships

2020	SOMA Scholarship, Sonoma County Mycological Association ($1,400)
2020	Oregon Mycological Society Scholarship, Oregon Mycological Society ($1,500)
2020	Graduate Student Professional Travel Grant, UW-La Crosse ($600)
2020	Research Service and Educational Leadership Grant, UW-La Crosse ($2,500)
2019	Graduate Student Professional Travel Grant, UW-La Crosse ($300)
2019	Student Faculty Organization Grant, UW-La Crosse ($300)
2018	Mini Green Fund Grant, UW-La Crosse ($5,000)
2017	Undergraduate Research and Creativity Grant, UW- La Crosse ($1,500)
2017	Mini Green Fund Grant, UW-La Crosse ($1,500)

Skills

R Programming

Four years of research experience and additional coursework have built a strong foundation of knowledge in statistical analysis. My research experience using R ranges from developing linear and non-linear allometric equations for plant growth, to mixed effect modeling of heavy metal accumulation in soils, predicting climate sensitivity patterns based on dendrology, comparative analysis of sleep behavior in insects, and population-level assessments of pathogen prevalence. I have experience developing graphics, models, and functions and am very familiar with the vegan package.

Molecular Biology, DNA Sequencing and Bioinformatics

I have significant experience performing DNA extraction using a wide variety of methods (rapid and traditional, including optimizing methods for use on recalcitrant tissues), performing PCR using standard, barcoded, and dual-indexed multiplex primer sets, agarose gel electrophoresis, and sample preparation for Sanger and Illumina sequencing. I have experience with multiple sequence alignment, paralog identification, gene finding, searching for domains and motifs in proteins, using 3D visualization software to model proteins and protein docking, extracting expression data from multiple databases, building primers, gene expression mapping, and comparative genomics. I am well-versed in modern sequence databases and digital molecular biology tools used to perform bioinformatic research. I have gained additional skills in command-line computing basics and informatics tools for NGS quality control and microbiome analysis (QIIME2, Trimmomatic, AMPtk, and phyloseq) during the data analysis phase of my masters.

Other Lab Skills

I have ample experience culturing fungi and bacteria, filming insect behavior using infrared cameras, mounting and preparing fungal specimens for a variety of microscopic analyses, utilizing fluorescent microscopy, HPLC, gas chromatography, and spectrophotometry.

Field

I have experience performing a variety of field research methodologies including plot and transect sampling, assessing pathogen prevalence and intensity, soil assessment, disease monitoring, tree and soil coring, habitat assessment, utilizing the relevé method of assessing plant species composition, camera trapping, species identification (insect,

fungal, and plant), eDNA collection and analysis, and allometric measurement. Much of this field work has been performed in the rugged and challenging backcountry of Alaska's boreal forest and arctic tundra, as well as the high-elevation subalpine of Montana's Rocky Mountains.

Other Field Skills

I have spent extensive time in the backcountry hunting, fishing, skiing, and backpacking. I am proficient in grizzly bear and avalanche safety/mitigation protocols. I have accrued a variety of skills in backcountry survival and have found these to be useful when performing and preparing for fieldwork.

Heavy and Light Machinery/Equipment Skills

I have been using both heavy and light machinery from an early age to complete construction, landscaping, farming, and occasionally research projects. Machine use experience includes but is not limited to ATV, outboard, snowmobile, skid loader, excavator, hydraulic lift, chainsaw, GPS, and a wide variety of tools used in carpentry, glasswork, and plumbing.

Presentations and Invited Talks

2021	Oregon Mycological Society, Monthly Meeting, *Invited Speaker* Fungi in the Sky: Subalpine fungal invaders, defenders, and reserves.
2021	Research and Creativity Symposium, UW-La Crosse, *Poster*. Endophytic fungal diversity in whitebark pine and spruce: Links between species assemblage, biogeography, and blister rust occurrence.
2020	Mycological Society of America, Annual Conference, *Poster* White pine blister rust in the Rocky Mountains: Linking endophyte assemblage, tree line dynamics, and island biogeography.
2020	Students For Sustainability, UW-La Crosse, *Invited Speaker* Finding purpose as an undergrad; jobs in research and sustainability.
2019	Plant Microbe Research Symposium, UW-La Crosse, *Poster* Mitigation strategies for white pine blister rust.
2019	Research and Creativity Symposium, UW-La Crosse, *Poster* Sleep loss may adversely affect learning in honeybees.
2018	Aquinas High School AP Biology Class, La Crosse WI, *Invited Speaker* Metabolic adaptations: ultra-marathon running, fuel consumption, and genetic light-switches.
2018	Research and Creativity Symposium, UW-La Crosse, *Poster* Sleep loss may adversely affect learning in honeybees.

Service and Community

Clubs:	
2019- 2021	President, Mycology Club, UW-La Crosse
2018-2019	Vice President, Mycology Club, UW-La Crosse
2017-2018	Secretary, Students For Sustainability, UW-La Crosse
Committee(s):	
2017-2018	Grant Coordinator, Joint Committee on Environmental Sustainability,

UW-La Crosse

Societies/Chapters:

2019-Present Mycological Society of America, Student member
2019-Present Trout Unlimited, Member, Coulee Region Chapter 278
2018-Present Backcountry Hunters and Anglers, Member, La Crosse Chapter
2017-Present Theodore Roosevelt Conservation Partnership, Member

Certifications

Open Water Scuba Diver
Professional Association of Diving Instructors (PADI Diver Level II – Autonomous Diver)