7 June 2023

Dear Professor *** and hiring committee,

I am writing to apply for your research group's postdoc in snow gum dieback. I learned of this position from Dr. ***, whom I am working with this summer. I am a PhD candidate in Biology at the University of Oregon, and my research focuses on plant-soil-fungi interactions and how these interactions relate to carbon and nutrient cycles. Throughout my time as a student and as a staff researcher, I have gained extensive experience in all aspects of the research process from data collection and analysis to funding applications to team leadership. My current project focuses on plant ecophysiology and carbon fluxes, and I would be excited to continue expanding that focus with the snow gum dieback project in your group. Three major projects connecting plant traits and carbon cycles form the core of my thesis.

- **Organism form to function**. I analyzed natural abundance $\delta^{13}C$ as a proxy for water-use efficiency and interspecific leaf trait variation to answer *how does drought stress in Pacific Northwest grasslands alter the relationship between plant structure and function?* My results are published in JGR Biogeosciences (doi.org/10.1029/2022JG007060).

- **Community structure to function**. I used gaseous $\delta^{13}C$ and $\delta^{15}N$ tracers, plant traits, and fungal DNA-based network analyses in a large scale field experiment to answer *how do common mycorrhizal networks function with their associated plant communities?* My results are currently under review as an invited submission at Proceedings of the Royal Society B and are available as a preprint on bioRxiv (doi.org/10.1101/2022.10.05.511035).

- **Individual form to community function**. I am working on a greenhouse experiment connecting above- and belowground traits with measured individual and community CO_2 fluxes to test *how can we use temporal variation of plant traits to better predict carbon fluxes?* As an extension of this project, I am also collaborating on an international project to connect inter- and intraspecific leaf traits with carbon cycles in Norwegian heathlands.

I have six seasons of experience conducting field research in a variety of ecosystems and settings during both my undergraduate and graduate degrees. I am a confident programmer in R code, including teaching people who are new to coding. For the past three years, I have managed the launch of a long-term reforestation experiment, including extensive communication with community members as well as mentoring and leading a team at a variety of career stages.

This position studying snow gum dieback will give me the opportunity to expand my knowledge of eddy covariance fluxes and how on the ground measurements can inform ecosystem modeling frameworks while contributing my experience in plant ecophysiology, soil processes, and fieldwork leadership in challenging conditions. I see this post-doctoral position as an opportunity for me to grow from an experienced student researcher to an established scientist, a key point on my career path towards a faculty position leading my own research group. My view of science has been shaped through the wide variety of people and landscapes I have encountered through international experiences. I am excited to continue expanding this broad perspective by working in Canberra.

Thank you for your time and consideration,

Hilary Rose Dawson
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