Personal Statement Mandy Slate

“*Passion is lifted from the earth itself by the muddy hands of the young; it travels along grass-stained sleeves to the heart*.” Richard Louv

My formative years were spent literally digging a foundation from which the academic in me could sprout. For twelve years, subsistence farming, horticulture, and natural building filled nine months of my year, succeeded by three months of traveling and teaching in South America, Central America, and Southeast Asia. I relished spending the majority of my time abroad in tiny villages teaching sustainable farming practices and alternative building methods while learning new languages and becoming part of new communities. Fulfilling beyond words, these experiences left me frustrated by the disconnection between environmental education and its implementation. To make a difference, I realized I would have to work at a larger scale. This understanding, coupled with my preceding passion for plants brought me to Portland State University (PSU). Funded by the Ford Family Foundation, my Biology degree combined disciplines such as geology, ecology, chemistry, and biology that focused my interests and made the answers I sought more reachable. Independent research on the role of bryophytes in ecological communities illuminated a unique system through which I could ask larger ecological questions.

My involvement with expert bryologists at PSU, Dr. S.M. Eppley and Dr. T.N. Rosenstiel placed me at the forefront of modern bryophyte research. Assimilating the ecological and physiological expertise of these mentors prepared me for research in the understudied field of bryophyte ecophysiology. Overlooked but ubiquitous in most ecosystems, the minute microcosm surrounding mosses brings me as close as possible to a full-scale picture of the dynamic soil-plant interface and the interactions occurring there. Bryophytes are rapidly emerging as a model system due to their global ubiquity and importance to ecosystems worldwide including nutrient cycling, control of soil hydrology and temperature, and facilitation of vascular plants and microarthropods[1](#_ENREF_1). Utilizing and expanding these model systems will strengthen the predictive accuracy of global carbon and nitrogen cycling dynamics, allowing informed predictions about the anthropogenic impacts on nutrient fluxes in ecosystems.

I have always had a passion for mentorship, and so I am grateful for the opportunity I had at PSU to train and work closely with four female undergraduate volunteers. Helping these women, who came from diverse backgrounds, to clarify their aspirations and navigate through academic and logistic hurdles was incredibly fulfilling. I was honored to be nominated by PSU faculty as student employee of the year for my work in the Eppley-Rosenstiel lab and specifically for the role I took with incoming undergraduates.

I have now begun at the University of Montana what I hope to be the beginning of a long teaching career. Guiding students through the process of biological discovery allows me to further my ambition of instilling a better understanding in our populace of the intricacies and interrelatedness of the natural world. I hope to develop a class specifically for high school seniors and first year undergraduates to address these associations in the hopes of helping the next generation better understand how they fit into the tight web of life.

Professional relationships I’ve developed through the last three years have forged collaborations that will in the upcoming years be fruitful learning experiences. Working with the American Bryological and Lichenological Society, I am developing a program to fund a new scholarship for bryological and lichenological field research, a field traditionally poorly funded. Connections within this organization allowed me to organize the first bryophyte-centered foray in collaboration with the Ecological Society of America, which resulted in an inventory of bryophytes at Oxbow Regional Park in Portland, Oregon. Collaborations with lichenologists, mycologists, and entomologists over the last few years have not only furthered my understanding of my area of interest but allowed the forging of collaborative research projects with professionals outside my normal circle, furthering the intellectual impact of these undertakings.

As a single mother throughout my undergraduate career, I have continually advocated for and served as a role model for women wanting to defy the odds stacked against their success. I have been asked to serve on panels intended to encourage my cohort to clearly express and recognize their unlimited potential. Through PSU, I was associated with a one-on-one mentorship program in which I was paired with a single mother just beginning her college career. Currently, I volunteer with the Women’s Opportunity Research Development program in Missoula, Montana to better connect with and inspire homeless single mothers deciding to return to college. These mentorship experiences allow me to share my own experiences as well as continually learn from those of others. By facilitating networking, instilling inspiration, and assisting scholastic efforts, I can work with other women to integrate career, personal, and societal goals. I will continue to promote these associations in the hopes that more under-represented students will find the strength to succeed academically.

Outside of academia, my direct community involvement has included seven years of volunteering in public gardens, both botanical and educational. Working with youth and adults, I have used these experiences as opportunities to demonstrate plant-soil interactions. Such experiences help engage communities to better value and appreciate their environments and the interconnectedness of our fragile ecosystems. I am working to instill an appreciation of plants in the non-science community. In Portland Public Schools, I had the privilege of organizing and implementing both a community garden and a classroom demonstration for underserved elementary school students. Watching the magical glimmer in children’s eyes as they witness their first germinating seed or relish its first fruit is an experience to cherish. Interactions like these will help infuse the next generation with the awareness and skills needed to proceed both as environmental advocates and stewards of our natural resources.

Through these associations, I have clarified my ambition to fuel an appreciation and awareness of science in others by teaching and sharing the beauty and necessity of the plant kingdom, in order to better prepare the scientists of tomorrow. An NSF Graduate Research Fellowship would free up the time and energy required to continue working within both the academic and non-academic communities as I help to create an environmentally aware populace that recognizes the significance of science and its vital contributions to society. Support from NSF would also provide the financial stability my family requires, while bestowing me with the credibility needed to most effectively share my findings within the scientific community. It is my hope that research on bryophyte nutrient cycling will inspire a re-evaluation of their synergistic role in our ecosystems and demonstrate the many ecosystem functions which mosses provide to ecological systems.

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1 Cornelissen, J. H. C., Lang, S. I., Soudzilovskaia, N. A. & During, H. J. Comparative Cryptogam Ecology: A Review of Bryophyte and Lichen Traits that Drive Biogeochemistry. *Annals of Botany* 99, 987-1001 (2007).