

# ENVIRONMENTAL SCIENCE & MANAGEMENT

D i s c o v e r y   s t a r t s   h e r e

## Faculty in Focus



### Dr. Melissa Haeffner

This is Assistant Professor Melissa Haeffner's third year at PSU and she is excited to work with fellow researchers who are passionate about cross-discipline collaboration. Collaboration drew her to PSU as she believes that partnership between physical and social sciences is crucial to scientific application. Dr. Haeffner anticipates teaching Environmental Justice in Winter 2021 and connecting with students who are eager to learn. Her freshman inquiry class works on a project called OregonWaterStories.com, which collects water stories and water identities in Oregon. Her courses include applied, experiential learning components that students can use to build skills and critical thinking for engagement in their community.

Dr. Haeffner's focus is socio-hydrological and hydrosocial systems. Her research contributes to the knowledge of watersheds and how they shape urban water infrastructure development. Her ongoing research investigates water insecurity and justice in municipal water systems and the links between policies, infrastructural and environmental conditions, and household behavior. Her work focuses on how social, political, and biophysical factors structure access to water, drawing attention to issues of equality in access to natural resources. She has researched water-related issues in Mexico, Ghana, Antarctica, Siberia, and the United States.



Dr. Jennifer Morse

## A Note from the Chair:

Greetings, ESM students, faculty, alumni, and friends! I hope you're enjoying the beautiful fall weather and getting settled into your fall routines. I'm happy to be writing to you in my first year as chair of the department. I have exciting news about the ESM department to share with you. The ESM department continues to offer cutting edge undergraduate and graduate course work across 2 undergraduate degrees, 3 Masters degrees, and our shared Doctoral program in the School of the Environment. We are also actively engaged in serving the Portland community and beyond, with numerous research projects and collaborations with community partners across a range of areas including environmental justice, air and water quality, natural resources policy, and marine invasions.

We are pleased to announce that we have hired two new faculty to the department. Dr. Alex Brewer joins us as a teaching faculty for the environmental chemistry series and other general education courses. Dr. Brewer's expertise is in chemistry and environmental toxins. We would also like to welcome Dr. Sarah Carvill. Dr. Carvill's experience is in environmental policy, and she will be directing the masters in professional science management and teaching several of our policy and management courses.

In this newsletter, you'll find exciting information about the work our faculty and students are accomplishing to serve the environmental needs of our region. You'll also find updates about two important ESM programs - The Berry Seed Bank and the Environmental Professional Program. I'm looking forward to the academic year and excited about working with everyone.

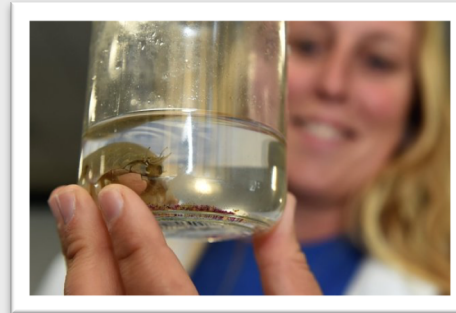


## The Environmental Professional Program:

**Introducing the Environmental Professional Program's Advanced River Restoration Certificate:**

The Environmental Professional Program's River Restoration Certificate is the first of its kind in the country and is designed to extend the knowledge

## Graduate in Focus



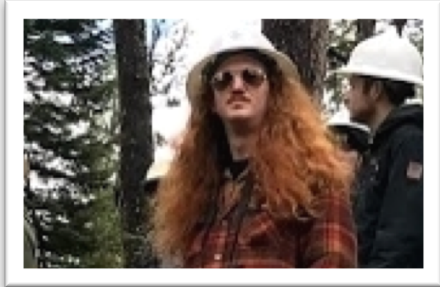
### **Dorothy Horn**

Dorothy is a 3rd year PhD Student at Portland State University in Dr. Catherine de Riveras lab, where she studies the impacts of microplastics on near shore marine organisms.

Dorothy grew up in southern California going to the beach every weekend with her family. In high school she wanted to be a large animal veterinarian but without the means to attend college she instead joined the Marine Corps. After returning home she eventually decided to go back to school. She finished her bachelor's degree at California State University Channel Islands in Environmental Science and Biology and that is where her research started. Dorothy worked with the National Park Service and the US Fish and Wildlife Service as a Park Ranger where she taught community groups about the California Condor and other cool wildlife in their backyards.

Dorothy moved to Portland to start her PhD in Marine Ecology in 2017. She received the National Science Foundation graduate research fellowship, which has allowed her to investigate what happens to crabs and fish when they ingest microplastics. Her research has taken her along the coast of Oregon, California, the California Channel Islands, Hawaii and Costa Rica.

## Undergrad in Focus



### **Ian Connelly**

For centuries, scientists have investigated empirical phenomena. Environmental science is a culmination of one aspect of this trend that specifically investigates how the myriad of systems in the world function. While science falls short of explaining the “why” of existence due to its reliance on empirical evidence, environmental science is able to explain the “how” of existence by investigating the multifaceted aspects of the natural and unnatural world. By utilizing environmental science, humanity can determine how it should work with the ebb and flow of existing harmoniously with the natural world.

After switching majors from computer engineering, Ian realized that their academic home was within the environmental science department. There is a presence of family and community that is inherent within this department that stems from everyone’s unwavering motivation to strive toward a better future.

Summer, 2019, Ian conducted work with Dr. Chris Butenhoff and James for the Center for Climate and Aerosol Research (funded by the NSF to create research experiences for undergraduates). They are in the process of analyzing the functionality and accuracy of the Weather Research and Forecasting (WRF) model to be able to predict the amount of CO<sub>2</sub> emitted from the Portland metropolitan area. From their findings, local agencies will be able to quantify the amount of CO<sub>2</sub> being released from Portland and determine if we are meeting deadlines established by the Climate Action Plan. This will establish a stepping stone for the Portland area to progress in the reduction of greenhouse gas emissions. The application of environmental science allows us to build a better future for ourselves and our descendants.

and skills of environmental professionals. Now, the Advanced Certificate in River Restoration builds upon core concepts from previous courses. With courses taught by regional and national experts, the curriculum focuses on collaboration, restoration, and applied field expertise.

To earn the Advanced Certificate, students must be enrolled in courses through the Environmental Professional Program and have already earned their River Restoration Certificate.

To find out more about EPP courses, please visit:

[www.pdx.edu/environmental-professional-program](http://www.pdx.edu/environmental-professional-program)



## The Rae Selling Berry Seed Bank:

The Rae Selling Berry Seed Bank & Plant Conservation Program is the Science Research & Teaching Center’s best-kept secret. You can help change that by joining us in our plant conservation mission as a volunteer! The first repository for seeds of rare and endangered plants of the Pacific Northwest, the Seed Bank has been a part of Portland State University’s environmental programs since 2011. That was the final year of The Berry Botanic Garden, a Portland non-profit since 1978, first location of the

Seed Bank. PSU became the new home of this internationally respected conservation entity.

Inspired by the legacy of stellar Portland plants-woman, Rae Selling Berry, the Seed Bank was founded in 1983 through a grant from the Meyer Memorial Trust. The Bank now contains millions of seeds from more than 400 species native to our region. Most of the collections are sent to us by state, federal and tribal agencies with a mandate to preserve endangered species on their lands. Off-site conservation techniques, such as seed banking, are meant to be but part of the tools used in an integrated conservation strategy. Aldo Leopold, the father of wildlife conservation, said, "To keep every cog and wheel is the first precaution of intelligent tinkering," and that is largely our role.

In addition to processing seeds for long term storage, we participate in reintroduction and augmentation of plant populations, growing plants from our banked seeds and establishing them in new, favorable sites. About half of the known populations of the Western lily (*Lilium occidentale*), for example, had been destroyed or died out when, in partnership with the Coos Bay District BLM, we began a reintroduction project in 1996. We continue to monitor this population of the lovely native lily.

Citizen's Rare Plant Watch is our most recent and volunteer-intensive program. Most of the activities take place between April and September and consist of field trips to collect data from rare plant populations. Our volunteers might be the first in decades to knowingly see a given plant in some corner of Oregon.

To be on our email list, contact Kris Freitag at [kfreitag@pdx.edu](mailto:kfreitag@pdx.edu) or 5-2468. Visit the Seed Bank in the Science Research and Teaching Center B1-81. Our web site is [www.pdx.edu/seed-bank](http://www.pdx.edu/seed-bank).

## Alumni in Focus



### Erin Poor

Erin is an avid outdoorswoman who has been hiking trails in the Pacific Northwest since she could walk. Her passion for nature and curiosity about stream systems brought her to Portland State University where she completed a Bachelors of Environmental Studies and a Masters of Environmental Management. Throughout her schooling Erin volunteered for a variety of organization that work to improve the health of her local watershed, including the Tualatin Watershed Council and the Tualatin Riverkeepers. Her volunteer work provided her with opportunities to network with people who hold a variety of jobs related to environmental issues. Eventually these connections led to a research opportunity that connected her to the U.S. Geological Survey (USGS). While working on her masters, Erin was hired by the USGS as a student employee. After completing her masters, Erin transitioned to a hydrologist position at the Survey, where her work focuses on issues facing urban streams.

At the USGS, Erin runs multiple continuous water quality monitors and participates in studies that examine the effects of urbanization on local waterways. Erin has played a key role in an important study examining the effects of beavers on urban streams. This study quantified the ability of beaver dams to attenuate stormwater and trap and store sediment, and also examined the effects of beaver dams on water quality. The results from the study provided local resource managers with science that informed strategic management and planning decisions.