

ENVIRONMENTAL SCIENCE & MANAGEMENT

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

PhD Student in Focus



Crysta Gantz

Crysta is a 4th year PhD student advised by Dr. Angela Strecker. She studies landscape genetics and the ecology of freshwater zooplankton.

Crysta is originally from Seattle, Washington, but moved to Scotland to pursue a master's degree, after earning a B.S. at the University of Washington. She then worked as a biologist at the University of Florida and the University of Notre Dame. Some of her past work includes ecological risk assessment of non-native plants and fish and environmental DNA (eDNA) detection of non-native plants, fish, crayfish, and clams.

Crysta's current work is in desert lakes in Eastern Washington, studying the impacts of hydrologic alterations on zooplankton diversity. She has also worked as a research assistant with the Center for Lakes and Reservoirs with Dr. Mark Sytsma and Rich Miller on zebra mussel detection and research.



A Note from the Chair: Dr. Jennifer Morse

Greetings, ESM students, faculty, alumni, and friends. Like many of you, I have been working from home for over two months. With the

soundtrack of helicopters monitoring crowds of pro-testers, I am writing this note-from-the-chair from a very different viewpoint than I had in the beginning of fall term. Since September, PSU has been mired in a budget crisis that led to a university-wide hiring freeze. In the spring, we made a rapid switch to remote learning in response to the coronavirus pandemic, and now are facing uncertainty about returning to campus in Fall 2020. Just recently, we received news that some of our staff and faculty will be furloughed this summer. These are extraordinary times, and it's important to acknowledge that all of us have been facing major challenges, in just getting through each day.

In the last week, the civil unrest and upheaval in Portland and nationwide following the murders of George Floyd, Breonna Taylor, Ahmaud Arbery, and too many others have risen to the forefront of our attention. People of color, particularly Black Americans, in our communities are disproportionately bearing the pain and harm of historical and current systemic injustices. I want to offer my support for calls for justice and an end to police brutality, across the country and on this campus, our community is still reeling from the

death of Jason Washington, who was senselessly killed by campus police in 2018. As two examples, we will be renewing our efforts to embed more diverse voices and perspectives throughout our curriculum and participating in a Town Hall discussion to solicit input from community members about what ESM can do to eradicate racism in STEM disciplines.

In times of crisis, it is easy to feel discouraged by the things that are happening at PSU and around the world. During these times, we can look for inspiration to those around us who are engaged, day-to-day, to keep things going. In ESM, we have plenty of stellar examples in our community of people being innovative and resourceful, sometimes behind the scenes. For instance, Dr. Yangdong Pan and his team of GTAs in ESM 322/325 Environmental Risk Assessment (Olamide Alo, Alana Simmons, and Vanessa Robertson-Rojas), working with our excellent new lab coordinator, Becca Wilson-Oueneko, have received high praise for finding innovative solutions to deliver lecture and lab courses in remote formats, including video demonstrations and virtual GIS tutorials. Dr. Brian Turner and Dr. Joe Maser, jointly teaching ESM 4/524 Wetland Ecology, have led virtual field trips that have also been well-received. In the ESM office, Emma Spadaro and Samantha Kemp have implemented creative ways to share information and stay in touch with the department, and our new Department Manager, Sherie Huffman, has risen to these challenges and kept us organized and on track with poise and clarity. The work Dr. Haeffner and others have started with respect to diversity, equity, and inclusion in STEM disciplines is an important step toward cultural change in environmental science and management. I feel lucky to work alongside (even virtually!) with such brilliant and passionate people, who are profoundly dedicated to the success of our students and department.

As is typical in newsletters, we recognize the impressive accomplishments of those featured in this issue: Rosie Wood (Environmental Science major), Kirsten Wright (MEM student), Alex Bans (MS student), Crysta Gantz (PhD student), Dr. Erin Rivers (alumna), and Dr. Sarah Carvill (faculty). But beyond their individual work, I also wish to highlight the energy, ingenuity, and perseverance that they have demonstrated, and the incredible, wide-ranging support and resources that our department community provides to make these successes possible.

As we prepare to send the Class of 2020 graduates off toward their future careers and adventures, I celebrate them for their resilience, flexibility, and success despite these challenging circumstances. To all of you, I congratulate you on getting to the end of a wild academic year! While keeping in mind the uncertainties and challenges that remain, I wish you all a healthy, restful, reflective, and restorative summer.

Graduate in Focus



Alex Vijay Bans

Alex Vijay Bans is an Oregon native and a first-generation Indo-Fijian American MS student from Portland State University. He is co-advised by Dr. Jennifer Morse and Dr. Olyssa Starry. He is currently studying the metal and nutrient dynamics of an ecoroof located in North Portland and its associated roof and environmental variables. He is also an intern for the Stormwater Manual Management Group of the Bureau of Environmental Services (BES), City of Portland. In the past he's been a research and teaching assistant for PSU's Green Building Research Laboratory, the ESM/Biology departments, and the University Honors College.

Alex took a meandering path through the fields of ornithology/wildlife biology and plant ecology to find his interests in the intersections between ecosystem ecology, water quality, and urban planning/sustainability. His favorite natural ecosystems to explore are wetlands and coastal systems. His favorite bird is the American Robin (*Turdus migratorius*). He personally identifies with the Douglas Fir (*Pseudotsuga menziesii*). Alex is always ready to nerd out on science and it is recommended that you talk to him.

Graduate in Focus



Kirsten Wright

As a graduate student in Dr. Gerwing's forest ecology lab, Kirsten's research examined the effects of climate change on plant phenology. In collaboration with her community partner, Oregon Metro, Kirsten is working to establish phenology data-collection protocol for fragile plant populations that may be threatened by climate change. The goal is to identify vulnerable species and guide conservation strategies. Kirsten began exploring her interest in plant conservation and environmental stewardship twenty years ago while teaching in the Bay Area. Her fieldwork has included ecological study and restoration in oak prairie and woodlands, riparian zones, fragile dune ecosystems and the forested foothills of the Himalayas in Nepal.

After returning to Oregon, Kirsten left teaching to pursue a career in plant ecology. She earned a bachelor's degree in Biology (focus in Botany) at Portland State University while engaged in fieldwork with Oregon Metro. Kirsten also began working with the PSU Herbarium and the Rae Selling Berry Seed Bank. In 2017, Kirsten began graduate studies in Environmental Management at PSU, to expand on her previous work in plant conservation. Kirsten completed her MEM degree in March and looks forward to continued involvement in regional plant conservation projects.



Faculty in Focus: Dr. Sarah Carvill

Sarah Carvill joined the ESM Department in Fall 2019 to manage the MEM and PSM programs and teach both graduate and undergraduate undergraduate students. Her courses reflect her academic training in environmental policy, as well as her postdoctoral work as a legislative policy analyst and on the staff of a regulatory agency. Dr. Carvill's experience in government bolstered her belief in collaboration, and her interest in preparing environmental scientists to leverage their training in diverse contexts. She is excited to work with ESM's rich network of community partners, and to support graduate students in figuring out what they want to contribute through their careers and how to achieve those goals.

Dr. Carvill's own research has been focused at the intersection of natural resource management and pollution control policy in the Western United States. She has studied how California has attempted to control sediment runoff from timber harvesting through regulation, and how Superfund cleanup articulates with cattle ranching in Montana. Her courses introduce students to the major U.S. environmental laws, the successes and failures of those statutes, and the tensions inherent in policy design, and she is looking forward to digging into those subjects in Policy Considerations (ESM 222) in the coming academic year.



Alumni in Focus: Dr. Erin Rivers

Erin completed her PhD in Earth, Environment, and Society in 2019 as a student of Dr. Jennifer Morse. Erin is an ecohydrologist and watershed biogeochemist focused on addressing runoff and nonpoint source pollution concerns, and her dissertation research investigated nitrogen removal in green storm-water management systems (e.g. rain gardens, bio-swales) across the US. During her time at PSU, Erin was a fellow of the National Science Foundation's Integrative Graduate Education and Research Trainee (IGERT) program and a volunteer for Johnson Creek Watershed Council where she became passionate about interdisciplinary research, community partnerships, and watershed outreach and engagement.

Erin's research investigates watershed best management practices in soils, streams, and green stormwater infrastructure. Erin is currently a postdoctoral fellow in Soil Sciences at North Carolina State University where she is researching how to improve urban soils that have been disturbed through construction and development. In the fall of 2020, Erin will be joining the Department of Watershed Sciences at Utah State University as Assistant Professor and Extension Specialist of Water Quality where she will have the opportunity to partner with state agencies and communities to address water quality concerns in Utah.

Environmental Science and Management Departmental Awards:

Undergraduate Research Award:
Rosie Wood

Graduate Research Award:
Britta Baechler

Leadership in Sustainability (Undergraduate):
Angela Arrington

Leadership in Sustainability (Graduate):
Dorothy Horn

Graduate Teaching Award:
Clare McClellan

NTTF Teaching:
Brian Turner

Outstanding contributions to ESM Department (Faculty):
Sarah Carvill

Departmental Service Award (Undergraduate):
Samantha Kemp

Departmental Service Award (Graduate):
Taylor Dodrill, Lara Gansen and Victoria Avalos (AESS Team)

ESM Staff award:
Sherie Huffman and Emma Spadaro

Staff appreciation outside of ESM:
Sarah Bartlett

Undergrad in Focus



Rosie Wood

The interplay between humanity and the natural world is clearly seen in the current Anthropogenic Era. Environmental Science & Management Honors undergraduate Rosie Wood has embraced a paradigm that shifts away from the historical false-separation between humanity and the natural world, towards a more integrated perspective. Rosie has pursued a number of environmental systems & management topics to better understand the ways human communities interact with their environments. To unpack these relationships she began exploring microplastics as a novel contaminant with Dr. Elise Granek in the Applied Coastal Ecology Lab in 2019.

For her senior thesis, she is developing two characterized baselines of sea surface microplastics off the coast of the Olympic Peninsula. In September 2019 she sampled on the NOAA research vessel *Bell M. Shimada*, and presented her proposal and methods at the Seattle Aquarium's Microplastic Methodology Workshop. Rosie & Dr. Granek intend to submit the results for publication after she graduates.

Rosie plans to design a long-term monitoring regime for a rural permaculture property & develop her skills while assisting in the recovery of a Philadelphia brown-field site. Her experience as a green roof researcher, and urban ecology & contaminants will prove useful as the Philadelphia owner has interests in sustainable green building, passive energy technology, and environmental rehabilitation.