ENVIRONMENTAL SCIENCE & MANAGEMENT

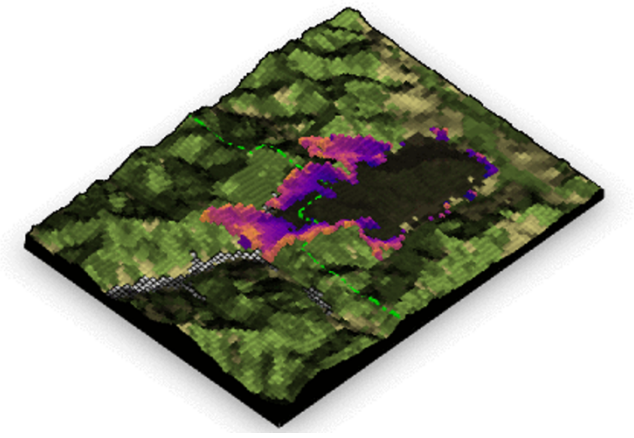
Discovery Starts Here

Learning to live with increased wildfire in the Western US

December 2021

Wildfires are increasing in size, intensity, and impact across the western US -- a fact that Portland residents experienced firsthand in September 2020, when five megafires burned one million acres of forest and pushed dense smoke into Willamette Valley. The forests of western Oregon belie the dynamic process of wildfire that has long shaped the region we love. Learning to live with wildfire requires acknowledging the presence of wildfire within a natural landscape and identifying steps that individuals, communities, and governments can take to mitigate risk from those fires.

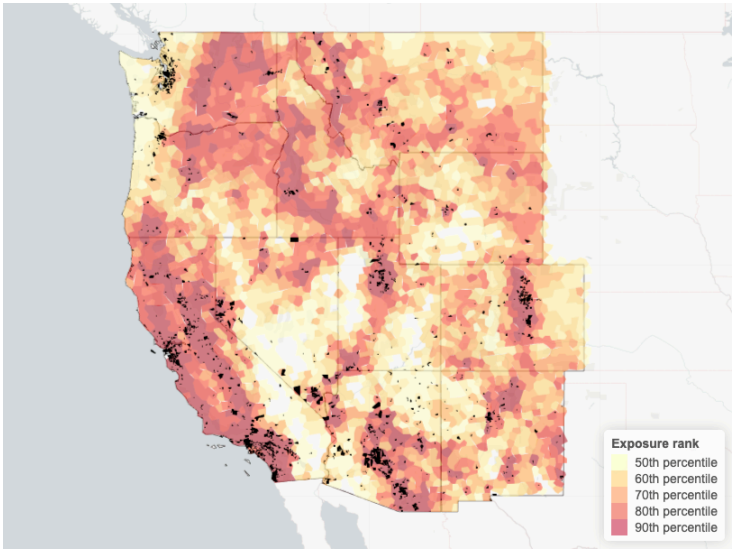
Cody Evers, a Faculty Research Associate in Portland State University's Department of Environmental Science and Management, investigates how society is affected by and adapting to intensifying wildfire in the western US. Along with collaborators at PSU, the US Forest Service, and several other universities, Dr. Evers' research centers on wildfire risk and its transmission across boundaries in the western US. He and his collaborators map the transmission of wildfire risk from areas surrounding at-risk communities, identify how biophysical and social conditions influence exposure to risk, and communicate information about fire risk management with decision-makers, managers, and stakeholders in fire-prone landscapes.



LARGE WILDFIRE SIMULATIONS: Wildfire simulations show landscapes shape wildfires and provide space for society to anticipate and mitigate the impact of wildfire.

His recent research focuses on identifying and mapping community firesheds: large fire-prone landscapes that can place homes, communities, and infrastructure at risk. Just as watersheds connect communities to upstream areas that provide their water, firesheds connect communities to the larger landscape of fire that surround them. Using simulations of large fires ranging in size from 100s to over 1 million acres, he and colleagues at the USFS Rocky Mountain Research Station have divided the western US into areas of shared fire risk. These firesheds provide a framework for assessing changes in community risk over time, and a tool for focusing investments on high-risk areas. Using decision support tools to help identify tradeoffs

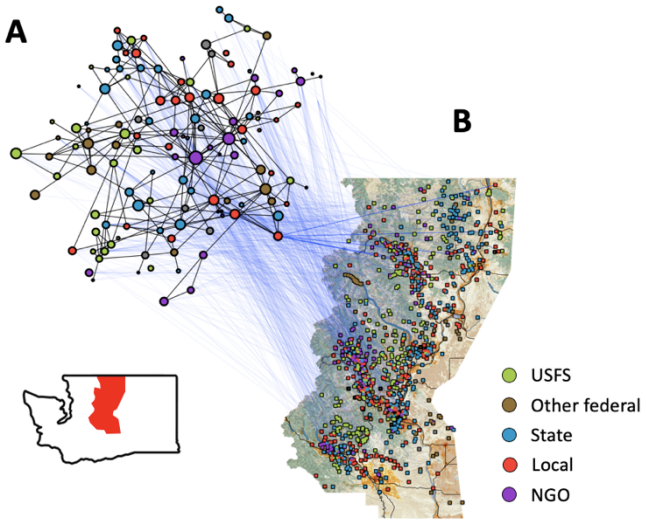
among multiple management objectives, firesheds are actively contributing to federal strategies targeting investments into forest resilience and fire adapted communities.



FIRESDHED MAP OF WILDFIRE EXPOSURE WESTERN US: Firesheds represent large landscapes of shared fire wildrisk that can be used to coordinated mitigation investments.

The scale of this work depends on the participation and knowledge of both federal agencies and local communities. Towards this end, Dr. Evers has been examining the social landscape of wildfire risk management within several wildfire risk hotspots in the western US. In collaboration with ESM faculty member Max Nielsen-Pincus, Dr. Evers has developed survey instruments to identify who is involved in wildfire risk management and how working partnerships constrain or enhance local capacity to address wildfire risk. They have revealed both similarities and differences among several fire-prone regions, including how a small number of key individuals in each region play an outsized role bridging across organizational and institutional boundaries in efforts to adapt to wildfire.

Dr. Evers' work is currently supported by the National Science Foundation and the US Forest Service's Rocky Mountain Research Station. He works collaboratively with interdisciplinary teams at the forefront of science on wildfire risk modeling and social adaptation. His support from the US Forest Service offers opportunities to engage with federal agency researchers, managers, and leadership, which makes Dr. Evers' work rewarding and dynamic. He says, "More than providing exact answers, my work is often as much about building consensus and facilitating dialogue around complex and pressing societal issues such as wildfire." Dr. Evers is also mentoring PSU students interested in wildfire; he has served on graduate committees and mentored undergraduate research assistants. "One of the most rewarding parts of my work at Portland State University is working with undergraduate and graduate students to combine creative and technical thinking using data analysis and visualization."



WILDFIRE RISK MANAGEMENT NETWORKS: Wildfire risk management involves a spectrum of individuals, organizations, and agencies working together to address wildfire risk within regional risk hotspots.

His future work seeks to further develop the fireshed planning framework to support national investments in forest restoration and hazard mitigation; connect wildfire management with other important societal values including ecosystem services, recreation, and environmental justice, and; investigate how capacity to adapt to wildfire risks is linked to how individuals within regional wildfire hotspots work together towards a collective goal.

A Note from the Chair

Dr. Max Nielsen-Pincus

We returned to campus this fall with a mix of trepidation and excitement. Since March of 2020 most of us have been connecting with each other virtually and no one knew what it would mean to reconnect in person. Many of ESMs faculty and students felt a sense of anticipation around returning to campus, our dusty offices, classrooms, and hallways. Many wondered aloud whether PSU's community would be vaccinated, would wear masks, or would reproduce the types of divisions we've seen in the national spotlight. Many also expressed excitement to be able to come together again, to build community with each other, work together, and participate face to face in the development of future careers and leaders, as well as continue the leading edge of our sciences. Thankfully, I can report that returning to campus has been a positive experience. I've heard from faculty that students are more engaged, and from students who are excited to make inroads towards their futures. While the pandemic forced us all to adjust our teaching and learning practices on a moment's notice, returning to campus has offered faculty and students the opportunity to evaluate which practices actually improve access, equity, and outcomes in the classroom while abandoning those that only served due to necessity. Using Zoom to record in-person class sessions so students can review lectures afterwards is but one example of an adaptation that I think is likely to stay for the foreseeable future. Being back to campus offers many opportunities to move forward in new directions, and in this note, I aim to share with you some of the events and initiatives that ESM is undertaking in the 2021-2022 school year.

First, let me share some exciting announcements. ESM's incoming cohort of new majors this fall is our biggest yet, with over 85 new freshman and transfer students who have declared Environmental Science or Environmental Studies as their major. I welcome our new students, and look forward to seeing you develop your career aspirations and succeed at your education. Second, our student group, the Association of Environmental Science Students (AESS), has two returning officers and five new officers, including two new undergraduate officers. So far this fall, AESS has used their Friday seminar slot to hold faculty research lighting talks, a practitioner talk on restoration of the Sandy River Delta, an academic movie screening, a networking event, and an internship panel. And, despite pandemic restrictions that don't allow us to bring coffee or snacks, attendance at Friday seminars is up with faculty, graduate and undergraduate students attending! We also have two new alumni association officers: Betty Lee and

Undergrad in Focus: Jasmine Beach

Jasmine is an Environmental Science and Management undergrad with a Law and Legal minor in the PSU Honors College. As a part of being a recipient of the 2021 Rosenbaum Service Leaders Scholarship, she interns at Business for a Better Portland. In this position, understanding governance by observing the inner workings of a nonprofit board focused on equitable housing and transportation policies allows Jasmine to explore the role of business and civic engagement in our city. Ultimately her goals are to study environmental law to develop a comprehensive approach to meaningfully affecting policy that serves those living in apocalyptic conditions as the global climate crisis persists.

In Winter 2021, Jasmine was awarded the Presidents Diversity Award Distinguished Team Award for a body of work produced by six ESM students in a diversity equity and inclusion seminar led by Melisa Haeffner. This group of ESM students convened to build a manifesto and action plan that implored faculty members to incorporate BIPOC narratives into our curriculum and decolonize the syllabi, so to speak. Jasmine is also the recipient of the ESM department 2021 Leadership in Environmental Sustainability Undergraduate Award and 2021 Outstanding Departmental Service Undergraduate Award.

Clare McClellan. Betty and Clare hosted the ESM Alumni Association Fall Mixer in October at Heathen Brewing in Vancouver where faculty and alumni enjoyed a beverage and a beautiful sunny day on the patio. I am truly grateful for the leadership provided by our students and alumni to make ESM feel like a community.

Next, I am excited to announce two new developments for ESM this fall. By partnering with PSU's Institute for Natural Resources (INR), we hired a new director for the Rae Selling Berry Seed Bank and Plant Conservation Program. I welcome Gabriel Campbell to our team! In addition to running the seed bank and plant conservation program, Gabriel will also serve as INR's botany program manager. Gabriel has worked with plants across the southeast, great plains, and the pacific northwest. He has interests in seeds, native plant restoration, and horticulture. As a graduate student, he developed cultivation and restoration planting protocols for dozens of Florida native plant species, and has worked as a field botanist, grower, and native plant landscaper. Gabriel's position will help bring INR and ESM closer together, set future direction for the seed bank, and expand opportunities for students interested in plant conservation.

The second is a generous gift from PSU alumni Stephen Wille to support student engagement with leading professionals and scientific experts. Steve's experience at PSU dates back to the beginning of the Environmental Science and Resources (ESR) program in the 1970s. Before there was an ESR or ESM department, Steve connected with faculty doing aquatic research in the ESR program and began his training as an aquatic biologist. Steve spent the last 21 years of his career as an aquatic biologist for the US Fish and Wildlife Service. Since retiring in 2011, he has served as the president of the Oregon Lakes Association where he worked with now-emeritus Professor Mark Sytsma and Rich Miller, research staff for PSU's Center for Lakes and Reservoirs. Steve's generous gift will help support ESM's winter seminar series and other events that bring leading scholars and managers to PSU to share their experiences and expertise with ESM students and the public. The winter quarter seminar series exposes over 100 ESM students to leaders in our field each year; and, while this year's seminar will be largely remote, we look forward to

a future of in-person engagements that offer students opportunities to connect with leaders in their field. We also hope Steve's generosity can serve as leverage for others who want to give back and support the future of Environmental Science and Management at PSU.

Finally, you may have heard rumors about the planned renovations to the Science Building One. Starting in 2024, Science Building One will have a new name: the Venier Science Center (VSC) will be a state of the art science teaching and research facility for PSU. ESM looks forward to closely partnering with Biology, Chemistry, Geography, Geology, Indigenous Nations Studies, INR, and Physics, as we plan, share space, and grow into VSC. To make way for VSC, we will be renovating the Science Research and Teaching Center (SRTC) and moving out of Science Building One between now and the summer of 2022. ESM looks forward to several new lab spaces, a new stockroom, and a variety of other upgrades. You can read more about the plans at: https://www.pdx.edu/liberal-arts-sciences/transforming-stem-psu.

At the end of this newsletter you'll find a graphic that summarizes ESM by its numbers. It's an overly simplified way of communicating who we are and what we're up to. To bring those numbers to life, the newsletter showcases specific examples that bring the numbers to life. The cover article highlights work by faculty research associate Dr. Cody Evers to map wildfire risk and the networks of professionals that manage it across the western US. The US Forest Service uses Dr. Evers research to help prioritize investments in wildfire risk reduction. Other highlights include Jasmine Beach (Environmental Science BS student), Summer Traylor (MEM Candidate), and Kelly Gleason (ESM Assistant Professor, snow hydrologist, and graduate committee chair). Their stories and accomplishments are a few highlights from our numbers. They reinforce for me the importance of training a new generation of environmental scientists and managers who understand natural and human systems, and recognize the social and ecological implications of our interventions in those systems.

Graduate in Focus: Summer Traylor

Summer is entering the second year of the master's in environmental management Program. She'll be graduating in the Spring of 2022. She is co-advised by Dr. Sarah Carvill and Dr. Elise Granek.

Summer is from the small town of Perris, California, but has lived and worked all over the West. She graduated from University of California, Santa Cruz in 2018 with a B.A in Environmental Studies focusing in Earth Science. She is proud to represent first generation students, women, and People of Color in S.T.E.M. Summer has worked on several natural resource field crews including: an Aquatic Invasive Species crew at Lake Mead NRA, Habitat Restoration & Wildlife Monitoring crew in the Northwestern Hawaiian Islands, and Native Seed Collection crew for wildland fire restoration in Northern Nevada. Her MEM project focuses on identifying and quantifying microplastics in the muscle tissue of six species of finfish and shellfish. All species originate from Oregon. She is also an intern at Landesa, an international land rights organization, where she studies coastal mangrove ecology in Cambodia and ecosystem-based approaches to land tenure security for coastal Cambodians.

Summer's research interests include MPA management, wildlife conservation, and the effects of microplastics on wildlife health and habitat. Her passion for conservation and interest in microplastics was fostered on Kure Atoll, where marine debris like microplastics negatively impact native seabird and mammal species.

Faculty in Focus: Kelly Gleason

Fire and Snow across the West – Coming Home to Oregon – Dr. Kelly E. Gleason

Most annual precipitation falls as snow in the American West, with mountain snowpacks serving as water reservoirs that recharge aquifers and sustain streamflow into drier summer months. Snow is a particularly important water resource in the Columbia River Basin where 50-70% of precipitation is seasonally stored as snowpack. Rising air temperatures have reduced recent snowpack volume and associated seasonal snow-water storage, resulting in accelerated snowmelt and earlier springtime meltwater release, which ultimately threatens the timing and volume of downstream water resource availability. Climate warming and earlier snowmelt drives increased forest fire intensity, duration, extent, and frequency, with total area burned likely to continue increasing across the West. The vast majority of western forest fires occur in the seasonal snow zone, and over half of these fires are located in the Columbia River Basin. Forest fires in the seasonal snow zone result in spatial and temporal changes in snow accumulation, ablation, and melt. Forest fires lead to mid-winter loss of snowpack volume, accelerated snowmelt, and earlier snowpack disappearance. Recent work by ESM Assistant Professor Dr. Kelly E. Gleason quantified the magnitude and persistence of forest fire effects on snow albedo, as well as their

Faculty Update

Dan Bedell – Instructor

Dan has been teaching courses through the Center for Science Education since 2015, including Natural Science Inquiry and Water in the Environment. This year, he will be teaching full-time with the addition of UNST 224 and ESM 340 to his schedule. Dan is also continuing his research on community-based macroinvertebrate biomonitoring in the Puget Sound / Willamette Valley ecoregion.

Sarah Carvill – Senior Instructor, MEM/PSM Coordinator

Sarah is excited to be teaching her favorite subject, U.S. environmental policy, in ESM 222 this fall. She also teaches a series of professional courses for graduate students focused on project management, proposal development, and writing productivity, and manages the MEM and PSM programs. Some of her new projects include growing the ESM internship program, and research with Dr. Elise Granek on microplastics policy development on the West Coast.

Catherine de Rivera – Professor

Dr. Cat de Rivera is on sabbatical this year, allowing her to conduct more research on the coast, including one with Dr. Amy Larson examining predation in Oregon's estuaries. One of her projects is measuring social values and perceptions of salt marsh restoration (that part led by Dr. Melissa Haeffner) and examining how those intersect with ecological metrics of the restoration projects. The project is collaborative with the South Slough Reserve, alumni Vanessa Robertson-Rojas and Sabra Comet, alumni parent Paul Engelmeyer, and others. Another project, with ODFW, Samara Group (including alumni Leslie Bliss-Ketchum and Marie Hepner) the Lafrenz and the Taylor Rodriguez labs, is determining wildlife connectivity for Oregon. Other projects, with Center for Lakes and Reservoirs, focus on freshwater invasions.

associated radiative impacts on snow-water resources over broad scales across the western US.

In ongoing work in the Triple Divide Region of western Wyoming, the headwaters of the Columbia, Colorado, and Missouri River Basins, Dr. Gleason is the lead PI of a NASA supported research project evaluating forest fire effects on snow albedo across a chronosequence of eight burned forests. Across scales of observation, Dr. Gleason and graduate students are using coupled field measurements, remote sensing, snow hydrology modeling, and geostatistics, to understand postfire snow albedo recovery and postfire snow albedo decay to improve future NASA snow-focused missions.

In collaboration with the USGS at the OWRSC, Dr. Kelly E. Gleason and colleagues have been investigating the postfire hydrologic responses relative to burn severity and rain-on-snow events in three paired watersheds burned in the Eagle Creek Fire of 2017. This collaborative investment in partnership facilitated a much bigger research and resource management opportunity, when in September 2020 approximately 800,000 acres of the western Oregon burned. In the critical headwater regions of the western Cascades, where much of our drinking water originates in Oregon, and where extensive high severity stand replacing forest fires occurred, there is much concern by natural resource managers about postfire hydrologic responses. As lead PI of a NSF RAPID grant, and in collaboration with the USGS and USACE, Dr. Gleason and students have launched new research sites in the Santiam and McKenzie River Basins. Using backcountry in-situ snow measurements, micro-meteorology, geochemical analysis, remote sensing, and integrated physically-based spatially-distributed snow mass and energy balance modeling, Dr. Gleason and the Portland State University Snow Hydrology Laboratory, are evaluating the postfire effects on headwater snow hydrology, to better predict postfire flood risk, debris flows, and the postfire volume, timing, and quality of downstream water resources in western Oregon.

Patrick Edwards – Senior Instructor, EPP Program Director

Pat is continuing his work with community groups to biomonitor stream health and evaluate the impacts of river restoration in the Clackamas and Tualatin Basins. Pat has also been busy working with the team that is currently restoring Whychus Creek in Sisters, OR. This year, he is teaching Introduction to Environmental Systems, Natural Science Inquiry and Water in the Environment.

William Fish – Associate Professor

Bill's research has centered on chemical processes in water and has included the chemistry of aquatic humic materials, contaminated groundwater at Department of Energy sites, fertilizer-derived cadmium in Oregon agricultural soils, management of urban runoff in Portland, and currently, advanced biological N and P removal in waste-water. He has an appointment in both ESM and Civil and Environmental Engineering (CEE), and is currently teaching ESM 320, Environmental Systems I, and Water and Wastewater Treatment for CEE.

Linda George – Professor University Studies Director

Linda continues to lead the Sustainable Atmospheres Research (STAR) Lab, which identifies, measures and models sources and impacts of urban air pollution in collaboration with community groups, urban planners, epidemiologists and transportation engineers. Linda is also continuing to direct the University Studies program, but looks forward to returning to teaching at some point in the future.

Jeff Gerwing – Associate Professor

In collaboration with regional partners like Portland Parks and Portland Metro, Dr. Gerwing is developing projects that might help us better understand the resilience of our urban forests. He also enjoys the intellectual challenges of teaching ESM 330 "Environmental Literacy" where students grapple with the big question of "what does it mean to be environmentally literate in the 21st Century?"

Kelly Gleason – Assistant Professor

Dr. Kelly Gleason's research focuses on the interactions and feedbacks of water, climate, and ecosystems. Kelly's research uses creative experimentation, micro-meteorology, geochemical analysis, remote sensing, and integrated modeling of eco-hydro-climate systems to evaluate how acute disturbances such as forest fire, and prolonged disturbances such as drought and climate change, alter local physical mechanisms in snow hydrology, and influence regional-scale water resource availability. We continue to ask meaningful questions about post-fire snow-water storage and persistence, with support and in collaboration with NASA, NSF, USGS, and USACE in western Oregon and across the forested snow-dominated headwaters of the western US.

Elise Granek – Professor

Elise and the ACE Lab continue to collaborate with agency/ academic partners to study the presence + effects of emerging contaminants (pesticides, pharmaceuticals, and microplastics) on coastal organisms and ecosystems. Based on this work, she presented testimony to the US House of Representatives Subcommittee on Water Resources & Environment during the informational hearing on *Emerging Contaminants and Forever Chemicals* (Oct 2021). As co-PI of the NSF-funded EAGLES S-STEM program on *Environmental Pollution*, which will fund ~100 low income undergrad students at PSU over 5 years, she has been busy assisting with the launch and the first student cohort.

Melissa Haeffner – Assistant Professor

Dr. Haeffner has a background in hydrosocial systems, water justice, and transdisciplinary research. She is currently the PI for the NOAA AdSci Trust in Institutions During Emergency Situations (TIDES) and the Oregon Water Stories project, and the Technical Lead for Social Science on the NERRS Catalyst Science: Determining salt marsh restoration success using focus groups of managers and the public, and past data. She is currently serving as Lead Guest Editor of the research topic: *Innovating a new knowledge base for water justice studies: hydrosocial, sociohydrology and beyond* in *Frontiers in Water: Water and Human Systems*. Dr. Haeffner is a Lead Editor of the book P*anta Rhei: Everything Flows*, to be released May 2023. In Fall 2021, she is teaching ESM 487/587 Environmental Justice.

Amy Larson – Senior Instructor II

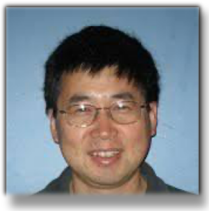
Amy is enjoying her sabbatical this year. In addition to making updates and revisions to her courses, developing a new course-based undergraduate research experience lab, and spending time with her family, she has been spending time at the coast working with Dr. Cat de Rivera on estuarine research.

Jennifer Morse – Associate Professor

Dr. Jen Morse and her students in the Environmental Biogeochemistry lab have recently completed projects in plant ecology and forest restoration in the Portland Metro region. New and ongoing projects include carbon biogeochemistry in urban streams (NSF), hazardous algal blooms and water quality in the Willamette River (PSU/USGS), soil phosphorus cycling in residential lawns (NSF), and recycled wastewater in wetland restoration. She is enjoying teaching her current Fall course ESM 416/516 Ecosystem Restoration, with renewed focus on human dimensions and climate adaptation.

Max Nielsen-Pincus – Associate Professor, Department Chair

Max gave virtual presentations this year on his research on wildfire risk management at the American Association of Geographers, the International Fire Ecology and Management Congress, and a number of webinars coordinated by the US Forest Service, the Oregon Department of Fish and Wildlife Human Dimensions program, and others. He continues research funded by the US Forest Service and the National Science Foundation, and teaches ESM 335 - Introduction to Environmental Management. Max reportedly enjoys his role as department chair, despite occasionally grumbling about his email inbox.



Yangdong Pan - Professor

Pan continues his research on assessing environmental conditions in freshwater ecosystems using biological assemblages in collaboration with watershed councils, and state and federal governments, while also keeping an active research program in China. Pan also teaches stream ecology, environmental risk assessment, and two environmental data analysis courses.

Arick "Kit" Rouhe – Senior Instructor

Arick "Kit" Rouhe is an instructional professor in ESM, focusing on online courses for non-majors and in person courses for majors and graduate students. For teaching, Kit focuses on local environmental issues in Portland and PNW. For research, Kit focuses on lakes in Oregon and Washington as part of the Center for Lakes and Reservoirs. The lakes of focus for his research are Waldo lake, Diamond Lake, and Lemolo reservoir in central Oregon.

Brian Turner – Instructor

Brian "BTO" Turner has an adverse reaction to saying no, and thus has taught a wide variety of courses with the department, including research and field methods, data analysis and management, wetland ecology, science communication, and sustainability. As an ESM instructor, Brian's teaching is informed by his research on the assessment and control of aquatic invasive species. He is also involved in a range of science communication and outreach activities.

Kris Freitag – Acting Director of the Rae Selling Berry Seed Bank & Plant Conservation Program

Kris has been participating with the Center for Plant Conservation in a study using RNA integrity to assess viability of stored seeds. She has been busy fulfilling seed banking contracts in support of rare plant populations in the Northwest. Citizen's Rare Plant Watch,

the Seed Bank's volunteer-based monitoring program has collected data on 13 populations of rare species in this past field season. The Seed Bank is anticipating the imminent hiring of a new director.

Ed Guerrant

Ed continues to stay actively involved in plant conservation programs with the seed bank, including conducting field surveys for the endangered Western Lily (which he found). This fall Ed served on a search committee to interview and hire a new director for the Seed Bank and Plant Conservation Program. The new position will be a joint appointment between ESM and the botany program manager for PSU's Institute for Natural Resources.

Mark Sytsma - Emeritus Professor

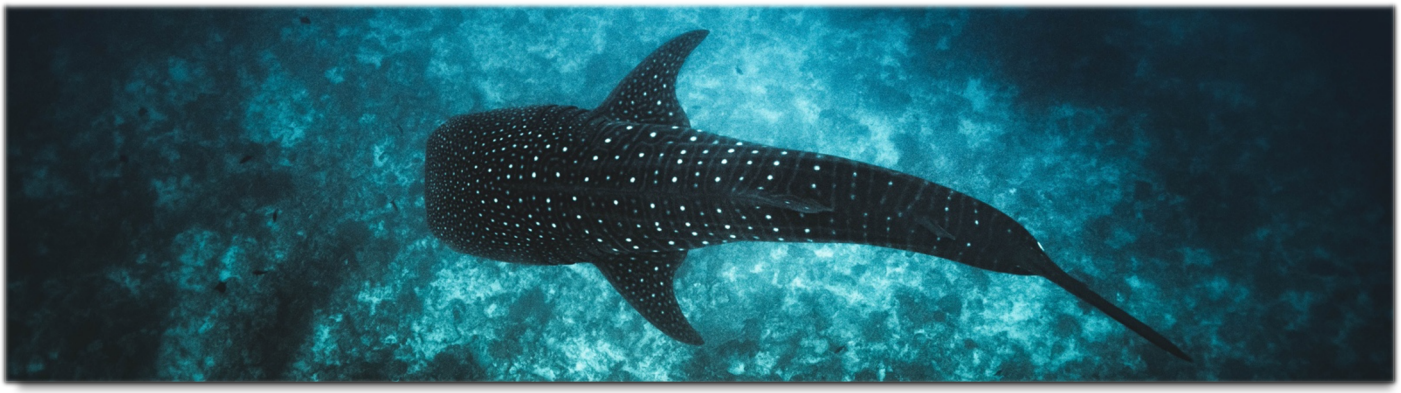
Mark maintains an active project portfolio dealing with lakes and aquatic invasive species. Projects include providing technical assistance to the Oregon Department of Agriculture for invasive plant management, and conducting invasive plant and animal early detection surveys with funding from the Corps of Engineers, Seattle City Light, and BPA. He serves on the boards of the Whidbey Island Conservation District and the Washington Lake Protection Association and continues to participate in several coordinating organizations focused on aquatic invasive species management in the Columbia Basin.

David Ervin - Emeritus Professor

David is Professor Emeritus of Environmental Management and Economics at Portland State. He maintains an active research and education program with federal funding on the sustainability aspects of genetically engineered crops and turfgrass systems, with emphasis on pest resistance management. He continues to serve on a U.S. EPA advisory committee on these topics, and in February, was awarded the Weed Science Society of America's Public Service Award. He also works on the valuation of ecosystem services generated by natural capital stocks, and the motivations for businesses to pursue sustainability programs.

Marion Dresner - Emeritus Professor

Marion's book on environmental history, tentatively titled "That Which Entangles Us", is in the last stages of review with the University of Nevada Press. The book interweaves stories of people, place, and wildlife bouncing across familiar and far away geographies to explore contrasts in exploitation, conservation, and restoration. While waiting for the review process to come to a close, Marion started a novel that uses real events and fictional characters centered on environmental histories and possible futures.



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Honor Role of Donations

Donations to the ESM by alumni and friends are a crucial way to support students and faculty members in the teaching, research, and community service activities. We are honored and humbled by the generous contributions received by our programs, including the Environmental Science and Management Fund, the Berry Botanic Garden Plant Conservation Endowment, the Center for Lakes and Reservoirs, among others.

This year, we are also excited to announce the creation of the **Stephen A. Wille Fund for the ESM Annual Speakers Seminar Series**. The seminar is designed to expose students to the array of perspectives, practices, and knowledge in environmental science and management by engaging them with visiting outside professionals, scholars, managers, and experts. "I think it's incredibly valuable for students to have the opportunity to meet and interact with folks actively working in the field they aspire," remarked Steve on his excitement to be a part of bringing those professionals to PSU. Thank you for your generosity!

Providing a gift to the Department of Environmental Science and Management is a powerful way to support the future of our department. The PSU Foundation is an excellent resource if you are considering providing support to ESM in your will or any other form of planned giving. Visit psuf.org or call 503-725-4478 for more information. The following is a list of contributors to ESM programs from September 1, 2020 - November 30, 2021. We apologize for any unintended errors or omissions, and are also grateful to our anonymous donors.

$10,000 or greater
Stephen A. Wille

$500 to $9,999
Linda George
Ed Kropp
Cheryl McCaffrey
Laurie Meigs
Peter Paquet
Ralph Quinsey
Rachel Witmer

$250 to $499
Gay Greger
Jane Hartline
Jennie Morgan
Lorali Reynolds
Dean Runyan
Raj Sarda
Patti Schleuning
Patricia Stenaros

$100 to $249
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Caroline Skinner
Paul Slichter
Gerald Van Deene

Organizational Contributors
Center for Plant Conservation
Clackamas River Water Providers
The Portland Garden Club

ESM Awards

Barry Commoner Award - Billy Clay Southworth (2021)
Named for the internationally known environmental scientist and founder of the Center for the Biology of Natural Systems at Queen's College, the Barry Commoner Environmental Scholarship supports undergraduate students with academic and career interests in environmental science.

David Dunnette Award - Christopher Desiderati (2021)

Professor David Dunnette was one of the founding members of the department. An endowment was established in his memory to support ESM graduate student travel to present their research at meetings.

Paul Croy Award - Julia Seydel (2020)

Named for a western educator and poet, the Paul Croy Environmental Scholarship supports outstanding undergraduate students with career interests in the social and policy aspects of environmental protection and management.

Edward and Olive Bushby Awards

2021: Olamide Alo, Rebecca Sinichko, Alexandra Tissot.

2020: Elissa Connolly-Randazzo, James Mitchell, Rosemary Wood, Erin McElroy, Megan Colley, Kimberly Brown, Summer Traylor, Paul Hurst, Sadie Boyers, Wesley Noone, Geoff Szafranski, Julia Seydel.

The Bushby family established an endowment for the support of outstanding graduate and undergraduate students in the Department of Environmental Science and Management that have financial needs for their research or education.

Selected PSU and External Awards

David Ervin, (Emeritus Professor) - Weed Science Society of America Public Service Award for outstanding scientific outreach activities (2021)

Natasja Swartz (Adjunct Instructor) and Yangdong Pan (Professor) - College of Liberal Arts and Sciences, John Eliot Allen Teaching Excellence Award (2021 and 2020, respectively)

Melissa Haeffner, Aneesha Gharpurey, Hal Shervey, Jasmine Beach, Jess Wesley, Kylee Church, and Lily Weil - PSU Presidential Diversity Awards for Distinguished Diversity, Equity, and Inclusion Team (2021)

Kelly Gleason (Assistant Professor) - Sigma Xi of the Columbia-Willamette Outstand Faculty Researcher Award (2020)

Taylor Dodrill (PhD Student) - NOAA Margaret A Davidson Fellowship (2020)

Internships and CO-OP Employment Info for Students

To learn more visit PSU CO-OP website

For Potential Internship Hosts and CO-OP Employers

ESM students can receive credit towards their degree or a break from their education to serve as interns or CO-OP employees. Internships are mentored positions that provide students a way to gain practical skills and hands-on experience in the field, learn the work environment of your organization, and cultivate professional contacts. A 4-credit internship is approximately 120 hours of work and can allow students to earn credit towards their degree. CO-OP employment provides full or part time employment to qualified undergraduate ESM students for a period totalling between 1000 and 2000 hrs (6 to 12 months full time equivalent). CO-OP employers set appropriate wages, and are not committed to on-going employment after the CO-OP position is over. During CO-OP employment students remain matriculated at PSU, but take a reduced course load (or no courses in the case of full-time CO-OP employment) allowing them to immerse themselves in their employment. Our goal is to select a pool of top ESM students who meet criteria so that employers can select and place students in positions with appropriate academic training and career interests. Selected CO-OP students prepare for their CO-OP experience through a university sponsored CO-OP training program. CO-OP positions allow employers a low risk opportunity to fill needed positions and offer an integrated learning experience that enhances both the academic experience and career development for students.

If you believe that offering an internship or CO-OP position might make sense for your organization, please reach out to the ESM Department Chair at maxnp@pdx.edu.

For Students

Internships and CO-OP positions may offer you a great opportunity to gain work experience and network in your chosen field. You can earn up to a year of work experience from ESM's CO-OP program prior to gaining your Environmental Science or Environmental Studies degree. The ESM CO-OP program is new, so a limited number of positions will be available. To find out if you are qualified and indicate your interest, please visit the PSU CO-OP website.

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