Confluence Symposium

Research Advances in Fisheries, Wildlife, and Ecology &

Western Forestry Graduate Research Symposium

2026 Joint Meeting

April 10, 2026 Program

Oregon State University

WELCOME TO THE 2026 CONFLUENCE SYMPOSIUM

Celebrating a legacy of Graduate Student Research

For over two decades, student researchers have come together to share their work and foster academic discussion through two long-standing traditions at Oregon State University. The Department of Fisheries, Wildlife, and Conservation Sciences (FWCS) has celebrated 23 years of the **Research Advancements in Fisheries, Wildlife, and Ecology** conference (RAFWE), while the College of Forestry has hosted the **Western Forestry Graduate Research Symposium** (WFGRS) for the past 13 years.

Four years ago, recognizing the power of interdisciplinary collaboration, we merged these two events into the **Confluence Symposium**. This partnership reflects our shared commitment to bringing together diverse scientific disciplines and perspectives. Confluence now provides a space for students to present their work, exchange ideas, and strengthen connections across fields ranging from forest management and products to wildlife, ecology, and human dimensions—at scales from genes to landscapes.

We are honored to present this year's plenary speakers, Lynda Mapes and Dr. L. Monika Moskal. We also look forward to engaging oral and poster presentations by undergraduate and graduate students, representing departments across the College of Forestry—Forest Ecosystems and Society, Forest Engineering, Resources, and Management, and Wood Science and Engineering; the College of Agricultural Sciences—Fisheries, Wildlife, and Conservation Sciences, Animal and Rangeland Sciences, and Crop and Soil Science; the College of Science's Integrative Biology Department; the Water Resources Graduate Program; and the Environmental Sciences Graduate Program.

In the spirit of collaboration and shared discovery, **we welcome you to the symposium and invite you to celebrate the incredible work of our student researchers.**

Table of Contents

ACKNOWLEDGEMENTS

Thank you to all the committee leaders, day-of volunteers, and all other volunteers that helped make this symposium a success!

Confluence is a student-organized event, and it would not be possible without generous support from FWCS and the College of Forestry, both through financial awards and extensive volunteer service from the Fisheries and Wildlife Graduate Student Association, the College of Forestry Graduate Student Council, and Confluence Planning Committee. The students listed below make up an incredible committee of individuals who dedicated their time over the last four months to make this event possible. We extend our gratitude to the many students, staff, faculty, and research associates who have contributed their time and effort.

The organizing committees would like to thank Dr. Selina Heppell, the department head for FWCS, and the CoF Research Office, including Katy Kavanagh and Adrienne Wonhof, for their roles in ensuring the graduate students have funding for this event. We would also like to thank Juliet Sutton, Madison Dudley, and Allison Culver from the College of Forestry for all their help with logistics and advertising. A special thank you to Amanda Polley for her invaluable support in media and communications—and for keeping the FWCS department running smoothly while keeping us all sane. The biggest thank you goes to Rona Bryan, who devoted her time and effort into everything from acquiring space, planning the day, providing materials, broadcasting communications, and answering thousands of questions from our team. Confluence would not be possible without their overwhelming support.

Steering Committee	**Facilities and Volunteer Coordinators**	**Workshops**
Kyra Bankhead	Morgan Johnston	Anna Haigh
Emmy Braun	Aidan Place	Summer Harper
Lara Mengak	Jasmine Williamson	Chaney Hart
		Katie Joles
Communications		Ankit Koriala
Lily Bright	**Catering**	Samara Rosen
Roman Ferraro	Tessa Chesonis	
Lauren Gramberg	Austin Nash	**Poster Session**
		Emilia Astorga
Registration	**Plenary Speaker**	Emma Bell
Noelle Foster	Suchana Aryal	Avishek Hamal
Ashley Mertens	Kristine Alford	Samuel Olajide
Aatreyee Nath	Daniel Truog	
Sydney Turner	Michael Winfield	**Budgeting**
		Brent Cardenas
Auction	**Judges**	Natia Javakhishvili
Violet Harris	Samuel Ayeni	Andres Pinos
Zach Muniz	Natia Javakhishvili	
Alex Pavlik	Ankit Koriala	
Hannah Sachs	Mimi Obley	
Bain Zhang	Lily Olmo	

OUR SPONSORS

PLENARY SPEAKERS

Opening Plenary Address ..... **9:00 a.m.**

RICH 107

How to talk to the media about your science...and be glad you did

Lynda Mapes specializes in coverage of the environment and Indigenous cultures and governments. Join Lynda Mapes for practical tips useful for graduate students and scientists at any stage of their career on how to get your science out there for greater impact. Radio, newspaper and magazine reporters are eager to get out in the field with you, learn your questions and how you seek to answer them, through scientific inquiry. These can be compelling stories for mainstream audiences that get your work before the public, and help educate people about science, how it works, and why it matters. This is more important than ever in an age of skepticism and even outright ignorance about science and why it matters. We will talk about how to handle press inquiries, do interviews, and follow up to keep the conversation going.

Closing Plenary Address ..... **3:30 p.m.**

RICH 107

Clouds of Points, Mountains of Data: Turning LiDAR into Ecology

Dr. L. Monika Moskal is a Professor of Remote Sensing and Earth Observation in the School of Environmental & Forest Sciences at the University of Washington, Seattle, and serves as Director of the Program on the Environment. She leads the Remote Sensing & Geospatial Analysis Lab, using hyper-resolution remote sensing to study ecological landscape structure, function and change. Her talk will present research on transforming high-resolution airborne and terrestrial LiDAR point clouds into ecological insights—mapping landscape structure from forests to wetlands, biomass and habitat complexity. It'll cover workflows for processing massive point datasets, extracting ecologically meaningful metrics, scaling from plot to region, and quantifying uncertainty using a variety of examples from her labs research projects across western North American ecosystems.

SCHEDULE OF EVENTS

	Registration, Evaluation Forms, and Silent Auction | First Floor Knuckle, All Day		
8:30	Coffee, Tea, and Breakfast provided by New Morning Bakery*		
	Opening Remarks and Plenary Speaker | Richardson Hall 107		
	Richardson Hall 107		
9:00	**Lynda Mapes | How to talk to the media about your science...and be glad you did**		
9:50	Break – Coffee, Tea, and Snacks in the 1st Floor Knuckle		
	Concurrent Session 1: Where There is Water, There is Life	**Concurrent Session 2: For What It's Earth**	**Concurrent Session 3: Playing with Fire (Responsibly)**
	Richardson Hall 107	Richardson Hall 115	Peavy Forest Science Center 315
10:00	Angelica Vityukov | *Prevalence and Host Associations of Anchorworms (Lernaea spp.) in Fishes of the Willamette River Basin, Oregon*	Christoph Anderson | *Analyzing Sensory Differences in hazelnuts damaged by brown marmorated stink bug*	Sydney Turner | *Identifying critical live woody fuel moisture thresholds for extreme fire behavior in sagebrush ecosystems*
10:15	John Lyssenko | *Examining the Effects of Nocturnal Hatchery Releases on the Survival and Migratory Behavior of Juvenile Spring Chinook salmon*	Austin Nash | *Solving landscape level wildlife management challenges in a changing world: A case study of the gray-tailed vole*	Meagan White | *Evaluating patterns of spatiotemporal microbial decomposition before and after a wildfire*
10:30	Deven Guerrero | *A Baseline Assessment of Social Behavior in Shark Species, With Lessons for the Future*	Violet Harris | *Soil Fungi Community Composition Five Years Post-Fire in the Western Cascades, Oregon*	Shannon Duffy | *How does subsurface storage mediate summer streamflow processes following wildfire?*
10:45	Morgan Johnston | *Use of Underwater Video Data to Model Yelloweye Rockfish (Sebastes ruberrimus) Distribution in Untrawlable Habitat - and what is next!*	Wes Binder | *Multi-Carnivore Interactions in Yellowstone National Park*	Zachary Perry | *Storage Regulates Stream Temperature Response to a Mixed Severity Fire in Mountainous Headwaters*
11:00	Jessica Schulte | *We're Gonna Need a Bigger Boat -- and a Better Understanding: Looking into the Movement and Foraging Ecology of a Large Shark in the PNW*	Jessica Blunn | *Effects of historic fire and vegetation on soil carbon in the McDonald-Dunn Research forest*	Ashley Weissenfels | *Post-fire effects on summer thermal regimes in Lookout Creek, H.J. Andrews Experimental Forest Oregon*
11:15	Emma Svatos | *What influences fish survival and recovery after fire? A meta-analysis across Western North America*	Jessica A. Pletcher | *Home, home on the range: Drivers of songbird breeding habitat selection at the sagebrush/woodland ecotone*	Noelle Foster | *Examining Avian Community Response to Megafires in Oregon*
11:30	Emelia Ferguson | *Adult Aquatic Insect Subsidies to Riparian Food Webs After a Major Wildfire*		Stalin Guaman | *Wildfire across headwater catchments: What happens to streamflow-water age after a wildfire?*

11:45	Taylor Azizeh | *Photogrammetry over four decades reveals environmental and life-stage drivers of gray whale body condition*		Sophia M Lopez | *Documenting the presence of Plecoptera in fire-affected mountain streams of the H.J. Andrews Experimental Forest*
	Poster Session 1 | PFSC Atrium | Lunch: RICH Second Floor Knuckle		
12:00	Lunch from Baguette (Vietnamese Sandwiches) will be provided at 12pm.*		
	Poster Session 1 runs from 12:00 – 12:45 pm and **odd numbered** poster presenters will be available to discuss their work throughout the first 45min. Please see page 9 for a list of presenters and poster titles.		
	Poster Session 2 | PFSC Atrium		
12:45	Poster Session 2 runs from 12:45 – 1:30 pm and **even numbered** poster presenters will be available to discuss their work throughout the next 45min. Please see page 10 for a list of presenters and posters.		
	Concurrent Session 4: Science is in the Air	**Concurrent Session 5: From Data to Decisions**	**Concurrent Session 6: Critters, Code, and Cutting-Edge Tech**
	Richardson Hall 107	Richardson Hall 115	Peavy Forest Science Center 315
1:30		Kristine Alford | *An Evaluation of the Mechanisms Driving Dissolved Oxygen Downstream of the Klamath Dam Removal*	Natalie Rugg | *Patterns of landscape use and detection rates: a baseline for long-term monitoring of western screech-owls*
1:45	Nina Ferrari | *An experimental test of vertical partitioning in temperate forest songbirds*	Kathryn Raeder | *Pyrogeography in Oregon's Blue Mountains: Context & Conditions for Burning on Private Land*	Ezekiel Peterson | *Testing an AI-Assisted Approach to Freshwater Macroinvertebrate Biomass Estimation*
2:00	Tessa Chesonis | *A Revolution in Wildlife Sampling or a Load of Hot Air? Assessing Airborne Environmental DNA (Airborne eDNA) as a Tool for Surveying Terrestrial Wildlife Communities*	Jonathan Stuart | *Mapping Risk with Risky Maps: Institutional Origins of the Oregon Hazard Map Messaging Failure*	Natia Javakhishvili | *Animal Movement in Three Dimensions: Introducing ssf3d R Package for 3-D SSF/iSSA*
2:15	Anna Haigh | *Hotter than hot: Using passive heating in a Douglas-fir canopy to assess the effect of extreme heat on photosynthesis*	Carina Kusaka | *Using Habitat to Guide Restoration: Drivers of Seabird Nesting*	Auguste Tveit | *Who Let the Dogs Out? Tracking Pacific Spiny Dogfish Movements Using Acoustic Telemetry*
2:30	Fang-Yu (Betty) Shen | *Beyond the half-normal: Hazard rate detection function improves density estimates for low-perceptibility bird species*	Julia Wine | *Effectiveness of Current Fuel Management in an Industrial Redwood Forest in Northern California*	Kayla Fratt | *Detection Dogs and Next-Generation Sequencing Reveal Widespread Sea Otter Consumption in Alaska's Coastal Wolves*
2:45	Deny Nopri | *Climate Drivers of Frost Hardiness Variation in Coastal Douglas-Fir Families*	Ankit Koirala | *Forest Fire Policy Efforts in Nepal: Present Trends and Future Vision*	Sara Rose | *The Audible Bats Project: Integrating Aural Surveys for Enhanced Spotted & Pallid Bat Monitoring*
3:00	Aidan Place | *The Impact of Intensive Forest Management on Early Seral Bird Communities*	Keeryun Cho | *Modeling the long-term impacts of riparian*	William Hirsch | *Mobile Terrestrial Lidar Forest Inventory: Application in Even-Aged Coniferous Stands*

		protection policies in Lane County, Oregon	
3:15	Mark E. Kerstens | *A keystone species' association with lodgepole pine highlights a departure from historic forest conditions on the Pumice Plateau of south-central Oregon*	Roberto Toto | *Forest Restoration from Spatial Monitoring*	
	Closing Remarks and Plenary Speaker		
	Richardson Hall 107		
3:30	**Dr. L. Monika Moskal| Clouds of Points, Mountains of Data: Turning LiDAR into Ecology**		
	Live and Silent Auction, Awards Ceremony, and Evening Mixer		
	Peavy Forest Science Center Atrium		
4:30	Our evening mixer will include Student Presentation Awards and the live auction hosted by our legendary MC Dr. Tiffany Garcia. Snacks and beverages provided by OSU catering.* Silent auction closes 15 min after end of live auction.		
6:00	End of events		

*Please note that food is only available for those who have pre-registered. A free drink ticket comes with pre-registration, but alcohol is available for purchase for all.

POSTER SESSION

	Poster Sessions | PFSC Atrium
Poster #	**Session 1 | 12:00 p.m. - 12:45 p.m.**
1	Faith Provost | *Tracking Movement of Northwestern Pond Turtle (Actinemys Marmorata) with Apple Air Tags*
3	Devan Driscoll-Roach | *Balancing Fish Habitat and Biodiversity: How Stream Restoration Influences Stonefly Communities in Eastern Oregon*
5	Bayly Kahle | *Characterizing Spatial Heterogeneity of Dissolved Oxygen Within and Among Beaver Ponds*
7	David L. Pearce | *Genetic Structure of Columbian Black-tailed Deer and Evidence of Hybridization with Whitetails in Western Oregon*
9	A. Brent Cardenas | *UPRfish Cloud: A crew support platform for standardized surveys of upper fish distribution limits*
11	Kaya Gabriel | *Assessing the Impact of Predator Cues from the Invasive European Green Crab (Carcinus maenas) on the Behavior of Nucella ostrina from the Oregon Coast*
13	Amy Kramer | *National Treasure – Can Occupancy Modeling Predict Habitat Use of a Rapidly Recovering Raptor?*
15	Aaron Cranford | *Improving AI-Based Sea Urchin Counting in Aquaculture Through Image Standardization and Iterative Model Training*
17	Cassidy Ruge | *The Role of Forest Edge Type in Shaping Marbled Murrelet Nesting Habitat Condition*
19	Melia Rasmussen | *What habitat characteristics facilitate terrestrial wildlife to use large down wood as habitat corridors?*
21	Aubree Cobos | *Impact of Wildfire on Stream Temperature and Dissolved Oxygen Across Ecoregions in the Pacific Northwest, USA*
23	Kiara Maciel | *Uncovering the Relationship between Functional Traits in Fish and Pond Characteristics*
25	Marc Castellón Durán | *Governing Landscapes in the Anthropocene: A Grounded Revision of the Social-Ecological Systems Framework Governance Component*
27	Mena M. Moran | *Squirrels of Corvallis: Distribution and detection of native and non-native species*
29	Henry Dryden | *A Temporal Analysis of Informal Bouldering Trails at Chaos Canyon and Emerald Lake in Rocky Mountain National Park (2008-2018)*
31	Tatiana Latorre | *Adult emergence in aquatic insects: contrasting intermittent and perennial mountain streams*
33	Lynette Mason | *Urban stream decomposition along Pringle Creek and potential implications for downstream ecosystem processes*
35	Bennett Fate | *Disentangling abiotic and biotic soil drivers of douglas-fir seedling success following short-interval reburn in the western cascades*
37	Scott Quigley | *Modeling Golden Eagle Production and Occupancy in Eastern Oregon*

Poster #	Session 2 | 12:45 p.m. - 1:30 p.m.
2	Melissa Mauk | *Evaluating the Influence of Stand Structure and Thinning on Fire Effects in Moist Douglas-fir/Western Hemlock Forests*
4	Ricardo Javier Hurtado Alvarez | *How do changing forest conditions affect the work experiences, safety concerns, and adaptive practices of labor-intensive restoration crews in Southern Oregon?*
6	Laken Alles | *Light Detection and Ranging (LiDAR)-based Fuels Monitoring for Fire Behavior Assessment*
8	David Leibowitz | *Creating Playgrounds of Non-Corrective Humor for Climate Change Communication*
10	Emilia Astorga | *Understanding Governance: exploring the psychosocial factors affecting Coastal Resource management in Patagonia*
12	
14	Naia Marten | *Tanoak Ecosystem Rhizosphere Microbial Community Resilience in the Face of Disease and Fire*
16	Esther Andrade Meirelles | *Effects of Genetics and Environment on Douglas-fir Seedling Responses to Drought*
18	Stephen Bunnell | *Post-Wildfire Restoration in the Sagebrush Steppe: Effects on Fire Behavior and Future Fire Risk*
20	Justin Gardner | *Timing the transition: combining life history theory and otolith growth increments to infer age-at-maturity for harvested stocks*
22	Maeve Bittle | *Wildfire and Stream Nutrients: Local vs. Cumulative Effects*
24	Maia-Roberta McGaw | *Nitric Acid from ecosystem N enrichment as a driver of soil chemical weathering*
26	Michael Bartczyszyn | *Impact of Tree Thinning on Direct Sun Illumination and Temperature of the Forest Floor*
28	Alexander Senauke | *Protected Fuels? Balancing Tree Preservation and Fire Mitigation in California's Wildland-Urban Interface*
30	Angela Zhu & Brayden Edwards | *Exploring MCMC Samplers for N-Mixture Models*
32	Tessa Jarden | *The Lookout Mountain Thinning and Fuels Reduction Study: Regeneration and Shrub Dynamics 10 Years Post-Treatment*

AUCTION ITEM SNEAK PEAK

The funds raised by the silent and live auction directly support the Fisheries and Wildlife Graduate Student Association (FWGSA) and the Forestry Graduate Student Association (FGSA). The funds will be used for the 2027 Confluence Symposium and other student association activities for the Corvallis community. **We have some wonderful items and experiences that will be available for bidding at the live auction during the evening mixer, please see a preview below.**

Zumba Class

Jenny Urbina

50-minute Zumba class for a group or lab! Zumba is a Latin-inspired dance workout that looks and sounds more like a dance party. It will provide the opportunity for participants to integrate and do cardiovascular and aerobic activity. No experience needed, participants just need to move and have fun!

Oregon coast fishing trip

The Heppells

Includes use of boat, all equipment, and guides. Guests are required to obtain a valid ODFW fishing license for the day.

Three course meal & wine pairing for two @ Castor Corvallis

Castor Kitchen & Bar

Take yourself and a special someone out to dinner at Castor with an all-expenses paid three course meal with wine!

Nature Artwork & Prints

Various donors

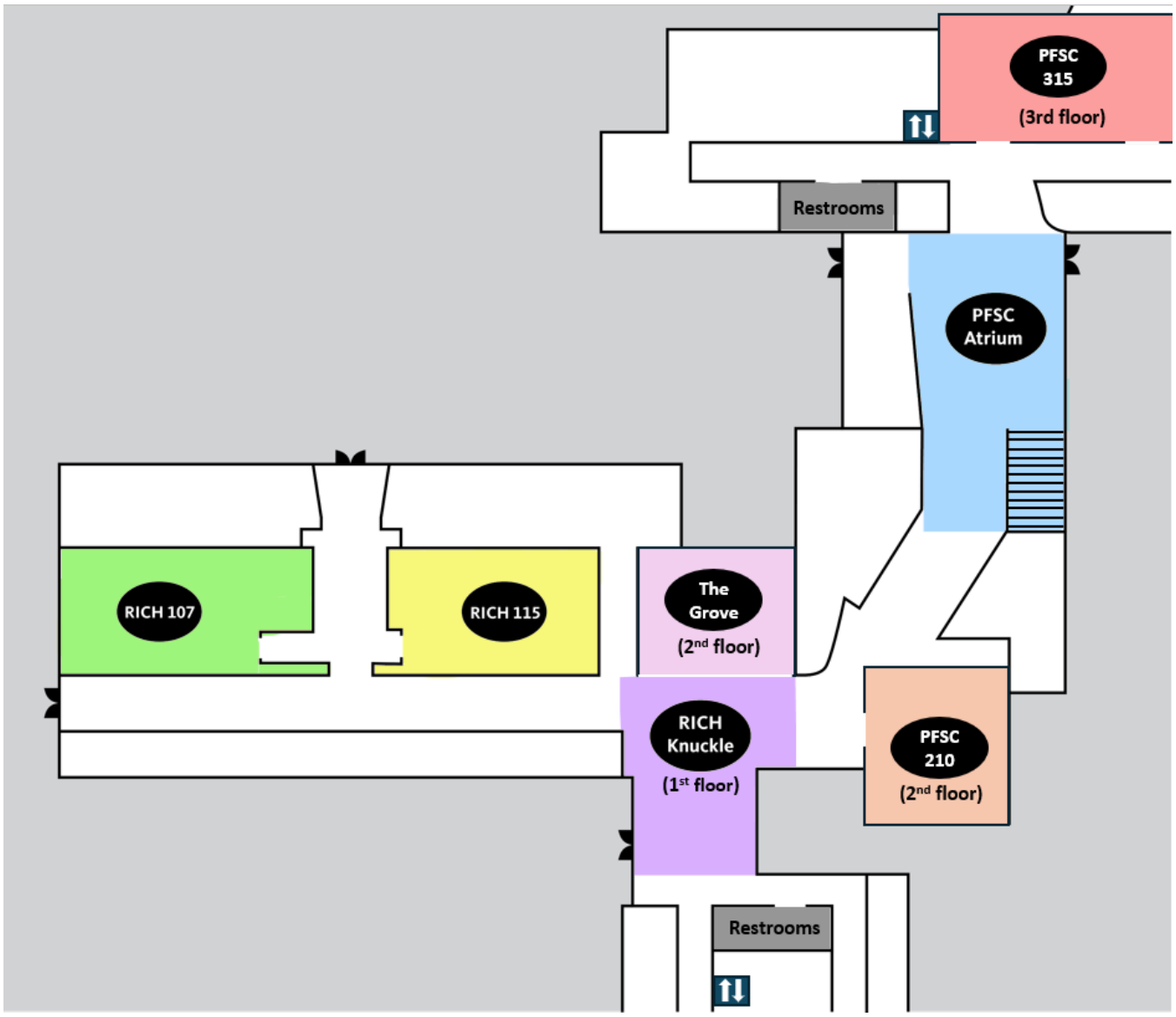
We have a wide range of wildlife and nature-themed artwork and prints that can spruce up your office or living space!

Two-night cabin stay at Sunriver, Oregon

The Grambergs

Enjoy a two-night stay at a cabin in the scenic Sunriver, Oregon! You and a partner can unwind by going on a hike or just enjoying the scenery!

EVENT MAP


PFSC
315
(3rd floor)
Restrooms
PFSC
Atrium
RICH 107
RICH 115
The
Grove
(2nd floor)
RICH
Knuckle
(1st floor)
PFSC
210
(2nd floor)
Restrooms

ORAL PRESENTATION ABSTRACTS

Aidan Place, *The Impact of Intensive Forest Management on Early Seral Bird Communities*; Aidan Place, OSU, Forest Ecosystems and Society; Matt Betts, OSU, Dept. Forest Ecosystems and Society; Jake Verschuyl, National Council for Air and Stream Improvement, Inc.

Understanding the extent and in which contexts that intensively managed timber stands support biodiversity is vital as private forest lands in the Pacific Northwest come under increasingly intensive management. This project seeks to assess whether the amount of habitat at landscape scales moderates the impact of a stand-level herbicide intensification on early seral avian communities. It is hypothesized that increasing habitat amount on a landscape may produce an increase in stand-level occupancy, and that the strength of this effect will decrease with intensification as individuals select for higher quality habitat. Alternatively, occupancy in stands with low management intensity may be consistent across landscape contexts, and the effect of habitat amount may only be evident at high intensity. This research will be carried out using a long term point count dataset from a set of experimental stands in the Oregon Coast Range treated with a gradient of herbicide applications. As early seral forests are inherently dynamic ecosystems, the long term nature of this unique dataset will allow for temporal shifts in landscape dynamics to be assessed. It is hoped that the results of this project will not only contribute an empirical test of ecological theory, but provide valuable information for the management of declining early seral associated bird species.

Angelica Vityukov, *Prevalence and Host Associations of Anchorworms (Lernaea spp.) in Fishes of the Willamette River Basin, Oregon*; Angelica Vityukov, OSU, Fisheries, Wildlife, and Conservation Sciences; William J. Gerth, OSU, Dept. Fisheries, Wildlife, and Conservation Sciences; Alvaro Cortes, OSU, Dept. Fisheries, Wildlife, and Conservation Sciences; Christina Murphy, USGS, University of Maine; Ivan Arismendi, OSU, Dept. Fisheries, Wildlife, and Conservation Sciences.

The parasite spillover hypothesis predicts that introduced parasites or hosts can facilitate infection of native species, altering host–parasite dynamics in invaded ecosystems. Fish parasite spillover is often overlooked despite its potential to reduce host fitness and increase mortality. Anchorworms (*Lernaea spp*.) are parasitic copepods that infect diverse freshwater fishes. They proliferate in warm, low-flow habitats and at high host densities, such as hatcheries. Adult females remain embedded in host tissue, creating conspicuous external infections. Native to Asia, anchorworms are now globally distributed. In the Willamette River Basin, prior research found the highest anchorworm prevalence in common carp and goldfish, species sympatric with Lernaea in Asia. We quantified adult female anchorworm prevalence in native, non-salmonid fishes across the basin. Using more than 7,000 specimens representing 45 species (12 families) from the Oregon State University Ichthyology Collection, we evaluated evidence for spillover and examined ecological and physiological correlates of host susceptibility. Prevalence varied among host species and was greater in fishes occupying warm-water, structurally complex habitats, and in species tolerant of environmental disturbance. Parasitism rates were highest in species native to Asia relative to species native to the basin or introduced from other regions. These findings establish a regional baseline for anchorworm prevalence, clarify invasion-mediated host–parasite dynamics, and provide empirical support for evaluating the parasite spillover hypothesis.

Ankit Koirala, *Forest Fire Policy Efforts in Nepal: Present Trends and Future Vision*; Ankit Koirala, OSU, Forest Engineering, Resources and Management; Kanchan Ojha, OSU, Environmental Sciences Graduate Program.

Forest fire, an increasing environmental disaster, is exacerbating the environmental and socio-economic crisis in Nepal. Fueled by the changing climate, rampant land use pattern and complex socio-ecological dynamics, forest fire in Nepal poses a huge threat to biodiversity, public health and safety, livelihood, and watershed, thus demanding robust and coordinated policy responses. This paper provides a comprehensive review of Nepal's contemporary forest fire governance landscape. It systematically examines the scope and efficacy of existing legislative measures, national policies, and institutional frameworks designed to mitigate forest fire risk. This review reveals a significant gap, including absence of clear fire specific policies, fragmented legislation, inadequate funding, limited technical capacity, and persistent challenges in translating national policy into effective local action. It identifies key implementation challenges, such as weak inter-agency coordination, insufficient early warning systems, and a focus on reactive suppression over proactive prevention and preparedness. By synthesizing the present trends of fire incidence, governance hiccups and institutional capacity, this study contributes to inform future policy reforms in Nepal. It provides a forward-looking vision, proposing strategic recommendations for enhancing Nepal's forest fire governance through improved policy coherence, strengthened institutional capacity, advanced technological integration, and deeper community engagement to build a more resilient future.

Anna Haigh, *Hotter than hot: Using passive heating in a Douglas-fir canopy to assess the effect of extreme heat on photosynthesis;* Anna Haigh, OSU, Forest Ecosystems and Society; Mark Schulze, OSU, Dept. Forest Ecosystems and Society; German Vargas G., OSU; Dept. of Botany and Plant Pathology, Dept. of Forest Ecosystems and Society; Chris Still, OSU, Dept. Forest Ecosystems and Society.
Extreme hot temperatures can lead to reductions in gross primary productivity, alterations to metabolic processes, and increased mortality risk. Heat exposure in plants depends on leaf energy balance and species' thermotolerance. Soil water availability can impact transpiration-driven cooling, yet little is known on how it could affect leaf thermotolerance. Understanding how environmental conditions mediate the upper limits of leaf thermotolerance therefore is critical to predicting forest carbon uptake patterns under heat and drought. In this study, in situ passive heaters were employed to increase branch temperatures in the upper canopy of second-growth Douglas-fir trees in the HJ Andrews Experimental Forest in western Oregon, U.S.A.. Study trees were subject to irrigation treatments in which half of the sampled trees received 5mm of water depth equivalent each day throughout the growing season. Using dark-adapted fluorescence, gas exchange, and non-structural carbohydrates as proxies for photosynthesis and metabolism, we found a negative relationship between heat intensity and carbon fixation, particularly in developing foliage. Further, we found faster recovery following heat events in the late-season compared to early-season. These findings highlight the importance of understanding how heat wave timing impacts leaf development and seasonal phenology.

Ashley Weissenfels, *Post-fire effects on summer thermal regimes in Lookout Creek, H.J. Andrews Experimental Forest Oregon*; Ashley Weissenfels, OSU, Fisheries, Wildlife, and Conservation Sciences; Ivan Arismendi, OSU, Dept. Fisheries Wildlife and Conservation Sciences; Emilee Mowlds, OSU, Dept. Fisheries Wildlife and Conservation Sciences.
Wildfires are increasing in severity and frequency across Western North America, raising new concerns on how post-fire landscapes are influencing stream ecosystems. Stream temperature plays a crucial role in regulating aquatic habitats, particularly for coldwater species that are sensitive to thermal stress. Despite the importance of understanding post-fire thermal responses, most fire studies lack pre-disturbance data, which limits our ability to directly quantify change. Our study addresses that gap by the leverage of having rare pre-fire temperature data and post-fire temperature data from the H.J. Andrews Experimental Forest in the Oregon Cascades, where the Lookout Fire burned from August 2023 to October 2023. We deployed 43 temperature sensors throughout Lookout Creek during the summers of 2017 (pre-fire), 2024 (one year post-fire), and 2025 (two years post-fire). This multi-year dataset allows us to evaluate how stream temperatures respond to mixed-severity fires over time. We predict that areas affected by high burn severity will exhibit elevated summer stream temperatures due to increased solar radiation and reduced canopy cover. A loss of riparian shading could increase thermal exposure, reduce protection for coldwater biota, and alter habitat conditions. In this presentation, I will share preliminary findings examining spatial and temporal patterns in post-fire stream warming. By comparing pre- and post-fire conditions, this work will help to contribute to a better understanding of how stream networks will respond to wildfire disturbances, and help to inform restoration strategies aimed at strengthening ecosystem resilience in fire-prone landscapes.

Auguste Tveit, *Who Let the Dogs Out? Tracking Pacific Spiny Dogfish Movements Using Acoustic Telemetry;* Auguste Tveit, OSU, Dept. Earth, Ocean, and Atmospheric Sciences; Ethan Personius, OSU, Dept. Fisheries and Wildlife Conservation Sciences; Cheryl Barnes, OSU, Coastal Oregon Marine Experiment Station; Maddie English, OSU, Dept. Fisheries and Wildlife Conservation Sciences; Lisa Hillier, Washington Department of Fisheries and Wildlife; James Losee; Davy Lowry; Leif K. Rasmuson, OSU, Dept. Fisheries and Wildlife Conservation Sciences; Jessica Schulte, OSU, Dept Fisheries and Wildlife Conservation Sciences; James A. Sulikowski, OSU, Coastal Oregon Marine Experiment Station; Ian Taylor; Cindy Tribuzio; Taylor Chapple, OSU, Coastal Oregon Marine Experiment Station; Alexandra McInturf, OSU, Coastal Oregon Marine Experiment Station.
Understanding habitat use by mobile predators is critical for conservation and fisheries management. Specifically identifying patterns of occurrence across space, time, and environmental gradients can help inform our understanding of core habitat use, spatial connectivity, and susceptibility to anthropogenic threats and environmental change. In this study, we used acoustic telemetry to analyze the year-round movement and space use of Pacific spiny dogfish (*Squalus suckleyi*), a long-lived and heavily bycaught species in the Northeast Pacific Ocean. Acoustic transmitters were deployed on ten sharks between July 2024 and November 2025. Tagged individuals were detected by an array of acoustic receivers deployed throughout southern Puget Sound, the Strait of Juan de Fuca, and Willapa Bay, Washington. Here, we present preliminary results that examine spatial and temporal patterns in the detections of tagged fish and explore potential environmental drivers of their movements. Together, these analyses provide a better understanding of dogfish movement and habitat use to inform future stock assessment and fisheries management efforts.

Austin Nash, *Solving landscape level wildlife management challenges in a changing world: A case study of the gray-tailed vole*; Austin Nash, OSU, Dept. of Fisheries, Wildlife, and Conservation Sciences; Joshua Twining, OSU, Dept. of Fisheries, Wildlife, and Conservation Sciences.
Population dynamics have been a central theme in wildlife biology for over a century, yet generalizable drivers of cyclical dynamics remain elusive as predation, disease, competition, and environmental conditions interact to drive dynamics. Gray-Tailed Voles (*Microtus canicaudus*) are an endemic rodent in the Willamette Valley and south-western Washington, that display uncharacterized, irregular cyclical population dynamics. During population peaks, extremely high abundances of voles can cause agricultural damage that exceeds $50 million USD in a single year and are a public health risk due to the high prevalence of zoonotic pathogens they host (e.g., leptospirosis). While this species is of substantial importance to economic and physical human wellbeing, its basic ecology has not been described. To address these knowledge gaps and societal needs, we have established paired long-term monitoring of wild populations of Gray-Tailed Voles at two sites with the construction of large (0.4 ha) experimental enclosures, to jointly 1) characterize demographic patterns of this species and 2) experimentally test mechanisms that underpin observed patterns. We intensively sampled our wild population sites monthly with arrays of 100 traps. We used spatial-capture-recapture methods to estimate density at each site and multi-plex PCR to quantify pathogen prevalence between the populations with the aim of understanding how density and disease prevalence interact to influence survival and recruitment in Gray-Tailed Voles. This work will help determine which vital rates are most influential to observed cyclical population dynamics and enable targeted management actions to reduce agricultural damage and disease transmission risk from Gray-Tailed Voles.

Carina Kusaka, *Managing invasive plants in seabird island habitats: integrating local knowledge through structured decision-making*; Carina Kusaka, OSU, Dept. of Fisheries, Wildlife, and Conservation Sciences; Melanie Davis, OSU, Dept. of Fisheries, Wildlife, and Conservation Sciences, Jim Peterson, OSU, Dept. of Fisheries, Wildlife, and Conservation Sciences.
Managers of island ecosystems face difficult conservation decisions, particularly when addressing invasive plants that threaten native biodiversity. Invasive vegetation can alter soil structure, suppress native plant communities, and degrade critical seabird habitat. These challenges are compounded by limited funding, logistical accessibility, and uncertainty about the effectiveness of alternative management actions. We developed a collaborative, decision-support framework that integrates remote sensing, ecological modeling, and local expert knowledge to support invasive plant management and native habitat restoration on seabird islands along the Pacific Coast of North America. First, we classified invasive vegetation from aerial imagery with >90% accuracy, enabling remotely sensed monitoring of vegetation dynamics. We then co-developed a structured decision-making (SDM) framework with refuge managers, biologists, and practitioners to evaluate tradeoffs among management actions, including herbicide application, hand-weeding, native grass planting, and combined treatments. The SDM model predicts spatial shifts in vegetation composition across island landscapes under different vegetation states and management actions over 20, 40, and 60-year horizons, providing actionable guidance for adaptive management. Key outputs include projections of future vegetation states, treatment effectiveness, and management efficacy. Our approach demonstrates how integrating local knowledge with decision science and emerging technologies can improve transparency, collaboration, and evidence-based conservation in logistically challenging systems. While grounded in an Oregon case study, the framework and tools we present are directly applicable across the Pacific, where invasive plant management and seabird conservation remain urgent priorities. This work highlights a transferable pathway for supporting native ecosystem restoration, cross-sector collaboration, and long-term stewardship of Pacific Islands.

Christoph Anderson, *Analyzing sensory differences in hazelnuts damaged by brown marmorated stink bug*; Christoph Anderson, OSU, Dept. of Horticulture; Edwin Harris, OSU, Dept. of Horticulture; Camilla Sartori, OSU, Dept. of Food Science and Sustainable Technology; Vaughn Walton, OSU, Dept. of Horticulture; Elizabeth Tomasino, OSU, Dept. of Food Science and Sustainable Technology.
The invasive brown marmorated stinkbug (*Halyomorpha halys*, BMSB) feeds on developing hazelnuts close to the harvest period, causing necrotic tissue in the nut known as “corking.” Corking is associated with increased phenolic activity, which may negatively impact flavor characteristics. Corked nuts may receive lower grades during processing, resulting in losses to the producer, but the impacts of corking on human taste perception have not been well-characterized. Roasted nuts were tested for flavor characters in a triangle preference test by a sensory tasting panel. Human sensory analyses were performed, following triangle, preference, and Check All That Apply (CATA) tests, with the aim of finding, if there are, differences between the corked and uncorked nuts. Participants were asked to identify which nuts were corked based on taste alone and indicate which of the samples they preferred. Participants were also asked to identify any flavors they noticed from a provided list.

Preliminary analysis suggests that there are limited sensory differences between roasted, corked, and healthy nuts, as participants were unable to distinguish the samples and discern differing flavor characteristics. These results show the potential to include roasted corked nuts in consumer applications, reducing the effort needed to sort for damaged nuts. Further analysis is needed to understand if these results carry over to raw nuts.

Deny Nopri, *Climate drivers of frost hardiness variation in coastal Douglas-fir families*; Deny Nopri, OSU, Dept. of Forest Engineering, Resources and Management; Carlos Gonzalez-Benecke, OSU, Dept. of Forest Engineering, Resources and Management.

Frost hardiness is a critical adaptive trait that influences survival and distribution of forest tree populations under changing climatic conditions. This study examined how parental climate conditions are associated with variation in frost tolerance among coastal Douglas-fir families using LT50 as a measure of freezing resistance. Climate variables describing temperature, humidity, and moisture availability were evaluated for their relationships with LT traits. Correlation analysis identified several climate variables strongly associated with LT50, with the strongest relationships involving winter temperature and humidity conditions. Maximum temperature in December (Tmax12) showed a positive association with LT50, indicating that warmer early-winter temperatures correspond to higher LT50 values, while relative humidity variables across winter months showed negative relationships with LT50, suggesting that higher humidity is associated with greater frost tolerance. Multiple regression using stepwise AIC initially identified Tmax12, RH11, RH12, Tmax01, Eref12, and Eref01 as predictors of LT50, explaining 73.8% of the observed variation. Examination of variance inflation factors revealed multicollinearity among several predictors, leading to a reduced model including Tmax12, RH12, Eref12, and Eref01 that explained 53.1% of the variation in LT50. Independent variable selection using LASSO regression produced consistent results and again identified Tmax12 and RH12 as key predictors. The agreement between these modeling approaches highlights the importance of early winter climate conditions, particularly December temperature and humidity, in explaining variation in frost hardiness among Douglas-fir families. These findings provide new insight into the climatic factors associated with cold tolerance and contribute to understanding how forest tree populations may respond to ongoing climate variability and future environmental change.

Deven Guerrero, *A baseline assessment of social behavior in shark species, with lessons for the future*; Deven Guerrero, OSU, Dept. of Fisheries, Wildlife, and Conservation Sciences; Sophia Pelletier, UC Davis, Dept. of Wildlife, Fish, and Conservation Biology; Meredith Honig, University of Washington, Center for Ecosystem Sentinels; Nicole Cox, UC Davis, Dept. of Veterinary Medicine; Olivia Lester, UC Davis, Dept. of Wildlife, Fish, and Conservation Biology; Damien Caillaud, UC Davis, Dept. of Anthropology; Taylor K. Chapple, OSU, Coastal Oregon Marine Experiment Station, Dept. of Fisheries, Wildlife, and Conservation Sciences; Alexandra G. McInturf, OSU, Coastal Oregon Marine Experiment Station, Dept. of Fisheries, Wildlife, and Conservation Sciences.

Animal co-occurrences are documented across a wide range of taxa and ecosystems. However, assessment of the drivers of co-occurrences are biased towards easily observed species. Worldwide, shark species are vulnerable, range in ecological function from planktivores to macropredators, and can contribute significantly to community structures. Despite a growing interest in investigating shark socioecology, these behaviors remain understudied. The goal of this study was therefore to provide a baseline synthesis of shark socioecology to inform future research and conservation strategies. To do this, we methodically searched for relevant literature up until 2025 of all shark species to assess patterns in behavior and potential drivers. Our goals are to compile all relevant literature, determine predictive factors for the evolution of social behavior, and to assess the relevance of shark social behavior in conservation and management of species and their ecosystems. Preliminary results from literature prior to 2021 shows over 500 articles on shark socioecology with the vast majority focusing on Carcharhiniformes and Squaliformes. While many species remain unstudied, of those that have, the highest proportion of studies (0.3) pertain to reef-associated species, with all but bathyopelagic habitats associated with social aggregations. We aim to propose future directions and considerations in the field of shark behavior. This includes future proposed research into the impacts of human altered habitats on shark social structures.

Emelia Ferguson, *Adult Aquatic Insect Subsidies to Riparian Food Webs After a Major Wildfire*; Emelia Ferguson, OSU, Dept. of Integrative Biology; Ivan Arismendi, OSU, Dept. of Fisheries, Wildlife, & Conservation Sciences; Tatiana Latorre, OSU, Dept. of Fisheries, Wildlife, & Conservation Sciences.

The emergence and dispersal of adult aquatic insects are vital components in connecting the riparian zone's aquatic and terrestrial food webs. After emergence, aquatic insects represent a disproportionately large amount of energy needed by higher trophic consumers, especially during summer when emergence is at its highest. Their emergence extends the ecological

reach of streams, and they are important bioindicators that can reflect the recovery status of an ecosystem following a disturbance. Although adult aquatic insects are important bioindicators, it is unknown how wildfire impacts their dispersal patterns and energetic contributions to riparian food webs. The HJ Andrews (HJA) Experimental Forest is in the Oregon Cascades region and recently experienced varying severities of damage from the Lookout Fire (Aug-Oct 2023). This study aims to characterize the impacts of burn severity on the lateral dispersal and biomass of aquatic insects compared to terrestrial insects. By including terrestrial insect data, we are better able to analyze the importance of aquatic insects in terrestrial diets. Data were collected in the HJA during the summer of 2024, at the time of year when aquatic insect emergence is at its highest. There were seven study sites, including two high severity burns, three low severity burns, and two reference sites. Specimens were collected once a week for three weeks. Preliminary results show that aquatic and terrestrial insect biomass both increase with increasing burn severity, and that aquatic insects generally follow a negative exponential pattern of dispersal. The higher biomass at burned sites could indicate a disturbed aquatic habitat causing more insects to emerge. This may also indicate an unsuitable habitat for riparian predators, allowing tolerant primary consumer populations to boom.

Emma Svatos, *What influences fish survival and recovery after fire? A meta-analysis across Western North America*; Emma Svatos, ORISE, supported by USDA Forest Service and OSU, Dept. of Forest Ecosystems and Society.
Wildfires are increasing in frequency and intensity globally, with particularly strong effects across western North America. Fire impacts propagate through stream networks, altering hydrology, nutrient and sediment loading, habitat structure, and aquatic communities. Although fire is a natural disturbance in many western ecosystems, shifting fire regimes may pose growing risks to fish populations. Despite decades of research, fish responses to fire remain highly variable, and the roles of disturbance intensity, time since fire, landscape context, and regional climate are not well understood. We conducted a meta-analysis of abiotic and fish responses to wildfire and prescribed fire across western North America. We synthesized fish response data from 50+ peer-reviewed studies and analyzed responses using ordinal regression models, classifying effects as positive, negative, or no discernible change following fire. Across taxa, fish populations generally declined following fire. However, salmonids showed evidence of recovery over time, particularly for abundance and presence metrics. Fish responses were moderated by disturbance intensity, land cover, hydrologic context, and regional climate. Reduced likelihood of population declines and more favorable recovery trajectories were observed in Mediterranean climates (e.g., western Oregon and coastal California) and following prescribed fire. Salmonids exhibited similar patterns, with post-fire drought associated with improved recovery trajectories, likely due to reduced flooding and channel scouring. Together, these results help clarify how fish respond to fire across western landscapes and identify conditions under which fire is most likely to disrupt fish populations and the pathways through which recovery occurs.

Ezekiel Peterson, *Testing an AI-Assisted Approach to Freshwater Macroinvertebrate Biomass Estimation*; Ezekiel Peterson, OSU, Dept. of Fisheries, Wildlife, and Conservation Sciences; Courtney Hendrickson, OSU, Dept. of Fisheries, Wildlife, and Conservation Sciences; Dr. Tiffany Garcia, OSU, Dept. of Fisheries, Wildlife, and Conservation Sciences.
Macroinvertebrate biomass estimation is essential for answering ecological questions in aquatic ecosystems. Length-mass regression—which affords using the relationship between length and mass to predict individual mass from known body length—is the most common method used, as it is precise and fast compared to other methods (e.g., destructively drying specimens and measuring mass). However, these regressions are data depauperate because regression production is challenged by several factors. Additionally, the specific coefficients of regressions vary widely across taxon, and having regression data derived from specific taxa is crucial for getting accurate measurements. As such, the use of semi-automatic image analysis techniques is a promising avenue for increasing the efficiency and accuracy of aquatic macroinvertebrate biomass data. One such technique is the ZooScan measurement tool, which uses an industrial waterproof scanner to image organisms and artificial intelligence software to separate and measure individuals semi-automatically. This project aimed to test the ZooScan tool as a novel image analysis technique against traditional hand measurement techniques by producing length-mass regressions for three underrepresented aquatic invertebrate families. To do so, we collected specimens in the families Lestidae, Notonectidae, and Physidae from lentic systems in the Willamette Valley region in Oregon. Body length, body area, head width and shell width (in the case of physid specimens) were measured using manual and semi-automatic methods, and dry mass was gathered after drying specimens for 24 hours at 60° C. Regressions were created using both methods and compared, to determine the efficacy of semi-automatic measurement methods for regression production.

Fang-Yu (Betty) Shen, *Beyond the half-normal: Hazard rate detection function improves density estimates for low-perceptibility bird species*; Fang-Yu (Betty) Shen, OSU, Dept. of Fisheries, Wildlife, and Conservation Sciences; Kenneth F. Kellner, Michigan State University, Dept. of Fisheries and Wildlife; Tyler A. Hallman, Bangor University, School of Environmental and Natural Sciences; Fiona Victoria Stanley Jothiraj, OSU, School of Electrical Engineering and Computer Science; Jenna R. Curtis, Cornell University, Cornell Lab of Ornithology; Rebecca A. Hutchinson, OSU, School of Electrical Engineering and Computer Science; W. Douglas Robinson, OSU, Dept. of Fisheries, Wildlife, and Conservation Sciences.
Accurate density estimates are fundamental to conservation planning and biodiversity monitoring. In distance sampling, the half-normal detection function is commonly used to model the relationship between perceptibility and distance; however, its fixed geometric form may not adequately represent species-specific detection processes. We evaluated how detection function choice influences density estimates using both simulated and empirical data. In simulations, we applied an agent-based model to generate point count data under varying perceptibility scenarios and compared density estimates derived from half-normal, hazard rate, and negative exponential detection functions against known true values. For each scenario, we alternately specified each detection function as the true data-generating process and fit both correctly specified and misspecified models. Estimated densities were then compared to the known true density. Empirically, we implemented these detection functions within an integrated distance sampling (IDS) framework that combines professional survey data with eBird observations to estimate density for 66 bird species. Simulation results showed that hazard rate models produced the least biased density estimates under low-perceptibility scenarios, whereas half-normal models performed best when perceptibility was relatively high. Negative exponential models showed the greatest negative bias across scenarios. In the empirical analysis, 42 (64%) species were better supported by detection functions other than half-normal, and 18 species exhibited significantly higher median density estimates under these alternatives. These findings indicate that reliance on a default half-normal function can bias density estimates for low-perceptibility species and highlight the importance of incorporating species-specific detection processes to improve large-scale avian monitoring.

Jessica A. Pletcher, *Home, home on the range: Drivers of songbird breeding habitat selection at the sagebrush/woodland ecotone*; Jessica A. Pletcher, OSU, Dept. of Fisheries, Wildlife, and Conservation Sciences; Steve E. Hanser, U.S. Geological Survey, Fort Collins Science Center; Lisa M. Ellsworth, OSU, Dept. of Fisheries, Wildlife, and Conservation Sciences; Jonathan B. Dinkins, OSU, Dept. of Animal and Rangeland Sciences; Vanessa Schroeder, OSU Extension Service, Eastern Oregon Agricultural Research Center; Beth A. Newingham, USDA ARS Great Basin Rangelands Research Unit.
Intermountain West sagebrush (*Artemisia tridentata spp.*) ecosystems and their associated biota are increasingly impacted by vegetation community changes such as cheatgrass invasion and the expansion of woodland species such as pinyon pine (*Pinus ssp.*) and juniper (*Juniperus spp.*). As part of the Sagebrush Steppe Treatment Evaluation Project, songbird nest data were collected from 2006–2013 at five sites across the sagebrush-woodland ecotone in Idaho, Nevada, Oregon, and Utah to examine songbird nest-site selection. The majority of nests discovered belonged to three species from different guilds and included a sagebrush obligate, Brewer's sparrow (*Spizella breweri*); a woodland associate commonly found in the sagebrush-pinyon-juniper ecotone, gray flycatcher (*Empidonax wrightii*); and an open-habitat grassland associate, vesper sparrow (*Pooecetes gramineus*). The relationship between field observations of nest sites, abiotic variables, and remotely-sensed vegetation cover data were analyzed at multiple scales using resource selection function (RSF) models. We provide insight into factors that may influence breeding habitat selection at the sagebrush-woodland ecotone, including site fidelity and minimum habitat suitability requirements for each focal species.

Jessica Blunn, *Effects of historic fire and vegetation on soil carbon in the McDonald-Dunn Research forest*; Jessica Blunn, OSU, Dept. of Forest Ecosystems and Society; Tom DeLuca, OSU, Dept. of Forest Ecosystems and Society; Jeff Hatten, OSU, Dept. of Forest Engineering and Resource Management.
Soil carbon (C) represents a major terrestrial C sink and is central to soil biogeochemical processes; yet the interactions among historic fire regimes, historic vegetation, and soil C remain underexplored. This study investigates the influence of pre-Euro-American settlement vegetation and historic fire regimes on soil total carbon (STC) and soil organic carbon (SOC) pools, with emphasis on pyrogenic carbon (PyC; fire-derived organic matter), within the McDonald-Dunn Research Forest in the Willamette Valley of Oregon, a landscape shaped over millennia by Indigenous Kalapuyan cultural burning and stewardship practices. Through geospatial analysis pairing historic vegetation maps from the OR-GAP analysis, soil distribution from Web Soil Survey (WSS), and ongoing dendrochronological fire reconstruction, we identified plot locations across the forest. Soil cores (0–30 cm) and soil pits (0–100 cm) were collected and analyzed for STC and PyC fractions. Linear discriminant analysis (LDA) was utilized to evaluate the combinations of soil properties, fire regimes, and historic vegetation that are most predictive

of higher STC and PyC stocks. Results provide new insights into the role of historic landscape ecology driven by Indigenous fire stewardship in shaping long-term soil C dynamics in Pacific Northwest ecosystems.

Jessica Schulte, *We're Gonna Need a Bigger Boat -- and a Better Understanding: Looking into the Movement and Foraging Ecology of a Large Shark in the PNW*; Jessica Schulte, OSU, Coastal Oregon Marine Experiment Station, Dept. of Fisheries, Wildlife, and Conservation Sciences.
The Broadnose sevengill shark (*Notorynchus cepedianus*) is a large and abundant predator in the coastal ecosystems of Oregon and Washington, USA, but little is known about their ecological and trophic role north of central California. Despite significant efforts to model and maintain the high productivity of Northeast Pacific coastal ecosystems, the role of Broadnose sevengill sharks (and other shark predators) has largely been overlooked—especially in relation to economically and ecologically important fisheries (e.g., salmon, halibut, and crab) and imperiled species (e.g., federally-listed green sturgeon). To address this knowledge gap, we have been conducting annual field seasons since 2021 to look into the movement and foraging ecology of Broadnose sevengills sharks caught in Willapa Bay, WA and Puget Sound, WA, two seasonal aggregation sites. To do this, we have used acoustic tagging along with stable isotopes and stomach content analysis. We will present an update on this research, including some initial findings regarding movement, stable isotopes, and stomach contents from individuals tagged and sampled in the region.

John Lyssenko, *Examining the Effects of Nocturnal Hatchery Releases on the Survival and Migratory Behavior of Juvenile Spring Chinook salmon*; John Lyssenko, OSU, Dept. of Fisheries, Wildlife, and Conservation Sciences; Guillermo Giannico, OSU, Dept. of Fisheries, Wildlife, and Conservation Sciences.
We used acoustic telemetry to describe the differences in movement patterns and survival of nocturnally and diurnally released juvenile hatchery spring Chinook salmon (*Oncorhynchus tshawytscha*) in the Hood River, Oregon. In total, 261 age-1 Chinook salmon were implanted with acoustic tags and released into the West Fork of the Hood River at the Moving Falls fish facility at river kilometer 24.5. Concerns related to entrainment and survival for Chinook salmon that may enter the Nichols Boat Basin upon exiting the Hood River mouth were also evaluated in this study. Approximately 94 percent (246/261) of the tagged Chinook salmon were detected at the Hood River mouth within 24 hours of release. Downstream migration of nocturnally released smolts was significantly faster than that of day-released smolts. Nocturnally released smolts median travel time to the Hood River mouth was 6.9 hours, while the diurnally released smolts median arrival time was 16.2 hours. There was no evidence of fish using the Nichols Boat Basin during our study, probably due to low water in the Columbia River limiting access during the outmigration window. Cumulative apparent survival was estimated to be high for both study groups, with approximately 94% (C.I. 0.778 – 0.975) and 97% (C.I. 0.821 – 1) survival rates for the day and night release groups, respectively. Overall, these results may be useful in other basins where concerns about entrainment and the effects of nocturnal hatchery releases on in-river outmigration survival are unknown.

Jonathan Stuart, *Mapping Risk with Risky Maps: Institutional Origins of the Oregon Hazard Map Messaging Failure*; Jonathan Stuart, OSU, Dept. of Forest Ecosystems and Society.
When Oregon released its 2022 wildfire risk legislation, officials expected public debate. They did not expect revolt. Within months, the state withdrew the Oregon Wildfire Risk Map, one of the most ambitious wildfire policy efforts in the country. This podcast tells the story of how it happened. Blending investigative reporting with narrative storytelling in the tradition of documentary audio series, the project traces the collision between wildfire science, risk perception, and Oregon's land war legacy. Through interviews with scientists, policymakers, and residents, the series follows the path of a scientific model as it moves from laboratory and agency offices into rural communities where it was perceived as a threat rather than a tool for safety. The project asks a broader question facing wildfire-prone regions across the American West: how do governments communicate escalating environmental risk to communities already wary of regulation? By bringing together storytelling and wildfire science, the podcast explores the social life of risk maps and the fragile relationship between expertise, governance, and public legitimacy.

Julia Wine, *Effectiveness of Current Fuel Management in an Industrial Redwood Forest in Northern California*; Julia Wine, OSU, Dept. of Forest Engineering, Resources and Management.
Redwood forests have adapted to fire over millennia, but wildfires have recently become larger and more severe. Managing industrial redwood forests for wildfire hazard is increasingly important as past clearcutting, reduced fire frequency, and climate change have produced young stands with elevated fuel loads and greater vulnerability to high-severity wildfire. Forest

managers currently implement treatments to reduce activity fuels and restore fire-resilient stand structure, however, the effectiveness of these treatments under operational conditions remains largely unquantified. This study evaluates changes in fuel loads and fuel bed characteristics across multiple harvest units in Northern California. Pre- and post-harvest measurements were collected across a range of silvicultural prescriptions, harvesting systems, and site preparation treatments. Treatment performance was assessed by quantifying changes in fine and coarse woody fuels, litter and duff levels, and forest structure. Post-harvest fuel levels differed by treatment type, harvesting system, and silvicultural system, indicating operational influences on fuel load. Additionally, change in fuel load differed by fuel class. Fuel bed composition shifted across years, with the percent of total fuel load made up of large rotten logs and duff decreasing the most. Units with higher pre-harvest fuel loads experienced greater decreases in fuels, suggesting that initial conditions affected final fuel load. These results provide insight into how fuel treatments influence fuel dynamics and early regeneration in industrial redwood forests. Findings will support adaptive management within the California Board of Forestry's Effectiveness Monitoring Committee and inform policy aimed at reducing wildfire hazard while sustaining long-term wood production.

Kathryn Raeder, *Pyrogeography in Oregon's Blue Mountains: Context & Conditions for Burning on Private Land*; Kathryn Raeder, OSU, Dept. of Forest Ecosystems and Society; Dr. Emily Jane Davis, OSU, Dept. of Forest Ecosystems and Society & Extension Fire Program; Dr. Mindy Crandall, OSU, Dept. of Forest Engineering, Resources, and Management; Micah Schmidt, OSU, Extension Fire Program.
Across fire-prone landscapes in the western United States, landowners and practitioners are forming prescribed fire "communities of practice" to leverage resources and expertise. These localized models are often organized as Prescribed Burn Associations (PBAs); various versions of the PBA model are emerging throughout the United States, particularly in Oregon, to support fire restoration on privately held land. This capstone project explores perspectives of landowners involved with two new PBAs in the Blue Mountains ecoregion of northeastern Oregon. To contextualize how socio-ecological landscapes are interpreted and how objectives for community-based fire management are determined, semi-structured interviews were conducted with private landowners and PBA volunteers in the region. This project bridges applied research and practice through an exploratory, descriptive case study.

Kayla Fratt, *Detection Dogs and Next-Generation Sequencing Reveal Widespread Sea Otter Consumption in Alaska's Coastal Wolves*; Kayla Fratt, OSU, Dept. of Fisheries, Wildlife, and Conservation Sciences.
The Alexander Archipelago Wolf inhabits many islands across southeast Alaska, swimming between islands and subsisting off of both marine and terrestrial prey. We used conservation detection dogs to locate wolf scats, Next-Generation Sequencing to metabarcode and genotype scats, and remote sensing approaches to investigate how island land cover and characteristics impact what's found in wolf scats.

Kristine Alford, *An Evaluation of the Mechanisms Driving Dissolved Oxygen Downstream of the Klamath Dam Removal*; Kristine Alford, OSU, Dept. of Fisheries, Wildlife, and Conservation Sciences & Dept. of Biological and Ecological Engineering; Desiree Tullos, OSU, Dept. of Biological and Ecological Engineering.
As the world's largest dam removal began in the Klamath River in January 2024, fisheries managers were concerned that dissolved oxygen would fall below lethal levels during and after the drawdown of the associated reservoirs. The initiation of drawdown at the two farthest dams downstream, Copco II and Iron Gate Dams, resulted in a substantial amount of suspended sediment, rich with organic carbon from a century of cyanobacteria blooms, released downstream into the mainstem Klamath River. Multiple sediment pulses were accompanied by sags in dissolved oxygen to levels considered fatal to at-risk fish, such as Pacific salmon (*Oncorhynchus spp*.) and Green sturgeon (*Acipenser medirostris*), that are native to the Klamath River. The primary objectives of this study were to measure the magnitude and duration of dissolved oxygen sags during the dam removal, identify the mechanisms that contributed most to these sags, and assess whether these dynamics changed with distance downstream. Dissolved oxygen, streamflow, turbidity, water temperature, organic matter concentration, and biochemical oxygen demand were monitored for four months after initiation of drawdown at three sites downstream of the lowest dam. The study documented four dissolved oxygen sags during the drawdown process - two of which were to lethal levels. The temporal duration of dissolved oxygen impacts varied locally with reach scale geomorphology. Additionally, data from closed incubations suggest at least two distinct processes consuming dissolved oxygen at different time scales during the sediment pulses. These data provide important insights into mechanisms driving dissolved oxygen dynamics that can inform future river restoration efforts.

Mark E. Kerstens, *A keystone species' association with lodgepole pine highlights a departure from historic forest conditions on the Pumice Plateau of south-central Oregon*; Mark E. Kerstens, OSU, Dept. of Forest Engineering, Resources, and Management; Andrew G. Merschel, ORISE Postdoctoral Scholar, PNW Research Station, Forest Science Lab; James W. Rivers, OSU, Dept. of Forest Engineering, Resources, and Management.

Nesting birds face decisions and tradeoffs when selecting breeding sites. This includes mate selection, finding a territory with sufficient resources, avoiding predators, finding a suitable nest location, and balancing energetic expenditures. The Black-backed Woodpecker (*Picoides arcticus*) has been considered a post-fire specialist, however recent studies have found this species nesting successfully in old green lodgepole pine (*Pinus contorta*) forests. While recently burned forests represent ephemeral resource pulses that can cease to be available for nesting within 5-10 years, green forests may provide more temporally stable habitat. We hypothesize that lodgepole pine's morphological characteristics make this species adaptive for Black-backed Woodpeckers—a strong excavator—nesting in green forests, where competition for cavity trees is high. In green forests on the Pumice Plateau in south-central Oregon, we found Black-backed Woodpeckers nesting in live lodgepole pine trees that were 98-175 years old. Lodgepole pine has thinner bark and sapwood relative to other conifers in the area, which may facilitate excavation. Although these trees often lacked external evidence of decay, we found white-rot inside each tree examined. Further, we noted a tendency for Black-backed Woodpeckers in green forest to create resin flows around their cavity by peeling bark from these live trees, which may serve as a depredation defense mechanism. Nesting in old living lodgepole pine may provide underappreciated benefits to Black-backed Woodpeckers and the secondary cavity nesting species they support. However, mismatched silviculture and contemporary fire regimes may cause these landscapes to approach a bottleneck in the availability of old lodgepole pine forests.

Meagan White, *Evaluating patterns of spatiotemporal microbial decomposition before and after a wildfire*; Meagan White, OSU, Dept. of Fisheries, Wildlife, and Conservation Sciences; Ivan Arismendi, OSU, Dept. of Fisheries, Wildlife, and Conservation Sciences.

Wildfire is a defining disturbance in Pacific Northwest river systems, reshaping organic matter dynamics and the microbial processes that underpin ecosystem function. However, interpretations of post-fire recovery remain uncertain because responses vary across habitats and spatial and temporal scales, and studies rarely include true pre-fire comparisons. As a result, it is often difficult to separate fire-driven change from background environmental variability. This study examines how microbial decomposition changed following the 2023 Lookout Fire in the Lookout Creek watershed of the H.J. Andrews Experimental Forest. Using standardized cotton strip assays, I measured decomposition rates at aquatic and riparian sites across elevation gradients, burn severities, seasons, and years, and compared post-fire responses to pre-fire measurements. Field observations were paired with laboratory incubations simulating winter temperature conditions to better understand how environmental change influences microbial activity. Preliminary results show that decomposition responses differed between aquatic and riparian habitats and varied across spatial and environmental gradients. In some locations, post-fire decomposition rates approached or exceeded pre-fire levels, suggesting ecosystem transformation rather than a simple return to prior conditions. By focusing on microbial processes at the base of stream food webs, this work provides insight into how freshwater ecosystems respond to wildfire across space and time.

Morgan Johnston, *Use of Underwater Video Data to Model Yelloweye Rockfish (Sebastes ruberrimus) Distribution in Untrawlable Habitat - and what is next!*; Morgan Johnston, OSU, Dept. of Fisheries, Wildlife, and Conservation Sciences; Susie Piacenza, OSU, Dept. of Fisheries, Wildlife, and Conservation Sciences; Scott Heppell, OSU, Dept. of Fisheries, Wildlife, and Conservation Sciences; Leif Rasmuson, ODW; Aaron Berger, NOAA.

Accurate fisheries stock assessments allow for informed decisions that further the goals of fisheries management. However, sampling biases during data collection can lead to inaccuracies that subsequently mis-inform stock assessments. Gear selectivity of research trawls may bias sampling of populations in untrawlable habitats, and fisheries closed due to overharvest have limited capacity to collect fishery-dependent data. Combining new survey tools with spatial modeling techniques should allow for better population estimates in these circumstances. We tested this approach at the Stonewall Bank Yelloweye Rockfish Conservation Area, an untrawlable rocky reef off the coast of Newport OR, where harvest of Yelloweye Rockfish (*Sebastes ruberrimus*), bottom fishing, and traditional groundfish surveys are strictly prohibited. Yelloweye Rockfish were declared overfished in 2002, and these fish are most commonly found in high-relief rocky habitat inaccessible to trawl surveys. To address these data stream limitations, we combined underwater video lander observations with environmental data in a species distribution modeling framework to map Yelloweye Rockfish abundance on Stonewall Bank. We included habitat substrate, terrain ruggedness index, chlorophyll-a concentrations, and ocean frontal gradients as predictive variables, using

top-down model selection based on log-likelihood and AIC. Top models indicated that Yelloweye Rockfish abundance is significantly positively associated with rocky habitat but may be negatively influenced by ocean frontal gradients and surface chlorophyll-a. We found a strong positive population trend over three years and seasonal variation in abundance. The combination of camera surveys and spatial modeling represents an important step forward in understanding spatial ecology and resource abundance for marine species, with applications for managing fish in untrawlable habitats, fisheries rebuilding, quota optimization, and directing future monitoring efforts.

Natalie Rugg, *Patterns of landscape use and detection rates: a baseline for long-term monitoring of western screech-owls*; Natalie Rugg, OSU, Dept. of Fisheries, Wildlife, and Conservation Sciences; Rebecca Hutchinson, OSU, School of Electrical Engineering and Computer Science, Dept. of Fisheries, Wildlife, and Conservation Sciences; Julianna Jenkins, USDA Forest Service; Damon Lesmeister, USDA Forest Service, OSU, Dept. of Fisheries, Wildlife, and Conservation Sciences.
Western screech-owls (*Megascops kennicottii*) are small non-migratory owls common in forests of western North America. Long-term community-science monitoring programs indicate a consistent decline in detections in the US Pacific Northwest. Evidence suggests that invasive barred owls (*Strix varia*) may be a driver of population declines due to direct predation and significant competitive pressure. In 2023, we conducted passive acoustic monitoring within 1,027 hexagonal 5-km2 sites across federally managed forests in northwestern California, western Oregon, and western Washington. We used a convolutional neural network, PNW-Cnet, to process 2.2 million hours of recordings and confirmed western screech-owl detections in 497 hexagons (48.4%). We used occupancy models to explicitly estimate detection probabilities, landscape use, and associations with barred owls. Landscape use was negatively associated with older forests and high elevation sites and positively associated with rugged terrain and warmer and drier climates. Detection probability was positively associated with increased recording time, lower background noise, less rugged terrain, mid-slopes, mid-elevation, and earlier seasonal sampling. Detection probability was negatively associated with barred owl presence. We predicted the probability of landscape use across all forest capable lands in the region and found an average 0.47 (SE=0.26) occupancy rate across sampled sites and 0.44 (SE=0.22) across federally managed forest capable lands. Across all forest capable lands, we found the lowest occupancy rate in the Oregon Eastern Cascades (0.17, SE=0.21) and the highest in the California Coast (0.98, SE=0.05). Our aim is to establish a baseline from which to monitor trends in western screech-owl occupancy.

Natia Javakhishvili, *Animal Movement in Three Dimensions: Introducing ssf3d R Package for 3-D SSF/iSSA*; Natia Javakhishvili, OSU, Dept. of Fisheries, Wildlife and Conservation Sciences; Robert Diehl, US Geological Survey; Todd Katzner, US Geological Survey; J. Michael Lockhart, Wildlands Photography and Bio-consulting; Tricia A. Miller, Conservation Science Global; Christian Hagen, OSU, Dept. of Fisheries, Wildlife and Conservation Sciences.
Step-selection functions estimate habitat selection relative to movements an animal could have made. However, nearly all existing implementations operate in two dimensions. For species that fly or swim, this ignores vertical position, which shapes both reachability and environmental exposure. We developed ssf3d, an R package that extends step-selection functions and integrated step-selection analysis to three dimensions (3D). The package constructs and regularizes 3D steps, fits spherical directional kernels to model persistence and anisotropy in turning, generates available steps in volumetric space, and fits models through conditional logistic regression. To evaluate the framework, we extended the iSSA redistribution kernel to 3D and ran parameter-recovery simulations on a simulated 3D landscape. The simulations recovered movement and selection parameters and confirmed that the standard iSSA bias correction works in 3D. We then applied the workflow to fine-scale (~66 s) Global Positioning Satellite (GPS) data from a golden eagle (*Aquila chrysaetos*) at a wind-energy facility in Wyoming. Because the spherical movement kernel captures persistence, anisotropy, and vertical turning, these quantities can also be used as covariates that can interact with environmental variables in 3D space. In the case study, we quantified how these movement covariates change in relation to 3D obstructions, such as how turbine proximity interacts with flight altitude and levelness, and how tailwind support varies with directional persistence. By extending step-selection and integrated step-selection analyses into 3D, ssf3d enables researchers to model movement, reachability, and habitat selection in volumetric space, revealing behavioral and environmental interactions that cannot be captured in 2D frameworks.

Nina Ferrari, *An experimental test of vertical partitioning in temperate forest songbirds*; Nina C. Ferrari, OSU, Dept. of Forest Ecosystems and Society; Matthew G. Betts, OSU, Dept. of Forest Ecosystems and Society; Erica Fleishman, OSU, College of Earth Ocean and Atmospheric Science.
Understanding how species with similar resource requirements coexist has been a central challenge in ecology for nearly a century. Niche partitioning by birds is well documented. Nevertheless, few studies have examined vertical niche partitioning in

temperate forests. We directly measured within-tree vertical territories of songbirds in the H.J. Andrews Experimental Forest, Oregon, to test whether vertical partitioning occurs and whether it shifts across forest structural conditions. We hypothesized that if vertical niche partitioning facilitates species coexistence, species will occupy distinct vertical strata. We also hypothesized that if partitioning is flexible, vertical territories will differ between relatively short, structurally simple second-growth trees and taller old-growth trees with more complex structure. We conducted conspecific playback surveys across the vertical extent of seven old-growth and seven second-growth Douglas-fir trees to map vertical territories of eight focal species: Pacific Wren, Hermit Thrush, Swainson's Thrush, Western Flycatcher, Hammond's Flycatcher, Chestnut-backed Chickadee, Golden-crowned Kinglet, and Hermit Warbler. We used kernel density estimates to characterize each species' vertical territory and interspecific overlap. We found vertical partitioning of the understory and midstory, consistent with published descriptions of several species. In contrast, and contrary to the literature, a subset of species' vertical territories spanned much of the trees' height. Vertical territories of the latter species and of midstory species expanded in taller, more structurally complex old-growth trees, whereas the vertical extent of understory species' territories was similar between forest types. In addition to advancing understanding of species coexistence, this research informs forest management by highlighting how maintenance of vertical forest structure supports a diverse assemblage of birds.

Noelle Foster, *Examining Avian Community Response to Megafires in Oregon*; Noelle Foster, OSU, Dept. of Fisheries, Wildlife, and Conservation Sciences; Melanie Davis, USGS, Oregon Cooperative Fish and Wildlife Research Unit; Keifer Titus, ODFW; Joshua Twining, OSU, Dept. of Fisheries, Wildlife, and Conservation Sciences.
Larger, hotter wildfires are reshaping forest structure in the Pacific Northwest, raising urgent questions about wildlife recovery. Fire suppression, climate change, and drought fuel these 'megafires', fragmenting landscapes and reducing biodiversity, even in historically fire-prone regions. Native species historically show mixed responses to wildfire, and understanding how changing wildfire regimes influence avian community assembly requires urgent evaluation. Following the 2020 Archie Creek Fire (~130,000 acres), we used Autonomous Recording Units (ARUs) to monitor bird communities at ~60 sites across a gradient of burn severities over three years post-fire. We used detection/non-detection data from 26 target species to examine shifts in avian community composition in response to burn severity, burn complexity, and topography. Multivariate analysis revealed that avian community structure was driven by a tradeoff between fire intensity and habitat complexity, with birds grouping into four distinct response types: fire beneficiaries, landscape specialists, forest residents, and forest obligates. These findings demonstrate community-level responses to increasing wildfire severity and landscape change, with management implications for forests prone to high-severity wildfires.

Roberto Toto, *Forest Restoration from Spatial Monitoring*; Roberto Toto, OSU, Dept. of Applied Economics.
This paper offers rare causal evidence of private forest restoration in the heavily-farmed tropics, highlighting a scalable strategy for sustainable land development. I estimate the impact of spatial monitoring on private land use in protected riparian zones (Areas of Permanent Preservation, or APPs) across 103,341 properties in the Brazilian Atlantic Forest from 2014 to 2021. Mechanisms of restoration—enforcement risk, credit, and opportunity costs—are predicted through a land allocation model and tested empirically. Findings show restoration was widely-induced in degraded regions despite high opportunity costs. Landowners converted 4,200 hectares of farm to forest in high-farming APPs (or 0.5 to 4.0%) where riparian recovery was needed most. The policy also induced unexpected clusters of deforestation in several remote, high-vegetation areas (5,055 hectares or -0.6 to -3.0%). Mechanistically, landowners restored because monitoring raised the marginal risk of enforcement above the opportunity cost of land. Complementarily, credit appeared to amplify restoration and support income through adaptive yield expansion. Overall, this paper shows that a simple observer effect can induce private forest restoration in degraded agricultural landscapes, as long as the threat of enforcement is credible. Other tropical countries may utilize spatial monitoring as a low-marginal-cost strategy to recover ecosystem services at large scales in balance with agricultural development. However, targeted enforcement is needed in less-farmed areas to deter pockets of deforestation.

Sara Rose, *The Audible Bats Project: Integrating Aural Surveys for Enhanced Spotted & Pallid Bat Monitoring*; Sara Rose, OSU, Dept. of Fisheries, Wildlife, and Conservation Sciences & Northwest Bat Hub.
Passive acoustic monitoring has been the backbone of microbat research across North America for decades, offering an efficient, standardized way to track broad-scale patterns in most high-frequency echolocating bats. However, this method falls short for species with atypical echolocation calls or life-history strategies. The spotted bat (*Euderma maculatum*), which produces low frequency, audible calls, is notoriously under-detected by ultrasonic detectors. As a result, passive acoustics alone provide little information about their habitat use or potential changes in occupancy over time. Even species that are

generally detectable, such as the pallid bat (*Antrozous pallidus*), still present monitoring challenges that extend beyond simple occupancy metrics. Understanding habitat and resource needs of lactating females and colony site selection requires a more flexible suite of monitoring tools. The Audible Bats Project began as a small citizen science effort aimed at improving our understanding of spotted bat habitat associations in central Oregon. It has since expanded into a three state effort to address persistent monitoring gaps for two of our desert adapted bats. By combining standardized passive-acoustic monitoring with adaptable active-acoustic (aural) surveys, this project seeks to improve occupancy predictions for spotted bats and enhance our ability to infer habitat use across the high desert and beyond. In parallel, I aim to identify ecological patterns that may help explain pallid bat maternity colony selection and potentially predict locations of undocumented colonies. Together, these approaches highlight the value of integrating multiple acoustic methods to better guide conservation for species that fall outside the reach of traditional passive monitoring.

Shannon Duffy, *How does subsurface storage mediate summer streamflow processes following wildfire?;* Shannon Duffy, OSU, Water Resources Science; Catalina Segura, OSU, Dept. of Forest Engineering, Resources, and Management; Pamela L. Sullivan, OSU, College of Earth, Ocean, and Atmospheric Science.
In the Pacific Northwest United States, summer streamflow is a key concern for agriculture, fisheries, municipal water supplies, recreation, and other important uses. Much of the water reaching the Willamette Valley is sourced from forested headwater watersheds in the Western Cascade Mountains which are under threat from wildfires. The HJ Andrews Experimental Forest (HJA) experienced wildfires in 2020 and 2023. This site provides a rare long-term record of pre-fire streamflow in both burned and unburned watersheds to investigate the impact of fire on streamflow. Subsurface storage also varies across the burned watersheds providing an opportunity to investigate the potential mediating role of subsurface storage on the impact of wildfire. Using a Before-After-Control-Impact (BACI) approach, we found that the 5th percentile of mean daily discharge (Q5) was significantly elevated after fire in all but one burned watershed relative to the unburned watershed with increases ranging from 25% to 179%. Similarly, significantly slower rates of summer baseflow recession were observed for all but one burned watershed with rates 6% to 21% slower despite no change or faster recession rates in unburned watersheds. Both Q5 and summer baseflow recession rates changed the most in watersheds with low subsurface storage. Conversely, subsurface storage appears to have muted the post-fire hydrologic response in the watershed that burned most severely. These findings support the strong influence of subsurface storage on summer streamflow and highlight the resilience of watersheds with strong groundwater inputs to disturbance.

Sophia M Lopez, *Documenting the presence of Plecoptera in fire-affected mountain streams of the H.J. Andrews Experimental Forest*; Sophia M Lopez, OSU, Dept. of Fisheries, Wildlife, and Conservation Sciences; Tatiana Latorre-Beltran, OSU, Dept. of Fisheries, Wildlife, and Conservation Sciences; Ivan Arismendi, OSU, Dept. of Fisheries, Wildlife, and Conservation Sciences.
Wildfires have played an increasingly significant role in shaping community composition of ecosystems within the Pacific Northwest. To better understand how these disturbances affect freshwater ecosystems, we documented the presence of emerging adult Plecoptera (stoneflies) across sampling sites with varying burn severities in the H.J. Andrews Experimental Forest between June & July of 2024. Stoneflies can be especially helpful in understanding the impacts of disturbances, as many have notable preferences for cool, high-velocity and low-turbidity waters. Specimens were identified to species in a laboratory setting & confirmed with a specialist, and a literature review was conducted to i) assess the current understanding of the ecology of individual species and ii) understand mechanisms that influence adult emergence. We examine how stonefly richness and abundance may correlate to burn severity, and relate these differences to possible limiting environmental conditions of species. Considering the most recent taxonomic inventory for invertebrates in the H.J. Andrews is from 1991, we hope this study can provide new insights for understanding how freshwater communities in the H.J.A. have evolved over the years and in post-fire conditions especially.

Stalin Guaman, *Wildfire across headwater catchments: What happens to streamflow-water age after a wildfire?*; Stalin Guaman, OSU, Dept. of Forest Engineering, Resources and Management; Catalina Segura, OSU, Dept. of Forest Engineering, Resources and Management; Julian Klaus, University of Bonn, Dept. of Geography, Bonn, Germany.
Wildfires are expected to increase in frequency and spatial extent worldwide, expanding even into regions that historically experienced limited fire activity. These disturbances can substantially alter vegetation structure, soil properties, geomorphology, and water resources. Hydrologic responses to wildfire have traditionally been associated with short-term increases in streamflow and higher peak flows during storm events. However, recent studies suggest that wildfire impacts may extend beyond these immediate responses, potentially altering subsurface processes and groundwater recharge, and

consequently streamflow water age. Despite advances, little is known about how wildfire disturbances influence watershed transit times and how these responses may vary among watersheds with different physical characteristics and burn severities. In this study, we investigated how wildfires impact transit times across multiple watersheds in the H.J. Andrews Experimental Forest in Oregon, USA. We analyzed changes in the fraction of young water (Fyw) and event-based transit times derived from stable water isotope and electrical conductivity observations. These tracer-based metrics allowed us to quantify changes in streamflow-water age before and after wildfire disturbance. We further evaluated how these responses relate to watershed characteristics such as storage capacity, slope, and burn severity. Preliminary results indicate that wildfire effects on transit times are not uniform across watersheds but appear to be mediated by watershed storage. Fyw changed little in watersheds with larger storage capacity following wildfire, whereas Fyw in watersheds with lower storage capacity exhibited more pronounced changes. These findings suggest that subsurface storage may buffer hydrologic responses to wildfire disturbances.

Sydney Turner, *Identifying critical live woody fuel moisture thresholds for extreme fire behavior in sagebrush ecosystems*; Sydney Turner, OSU, Dept. of Fisheries, Wildlife, and Conservation Sciences; Lisa Ellsworth, OSU, Dept. of Fisheries, Wildlife, and Conservation Sciences; Karen Short, USDA Forest Service.
The alteration of fire regimes by invasive grasses, human ignitions, and climate change has contributed to the widespread degradation of sagebrush (*Artemisia spp*.) ecosystems. Non-native annual grasses alter fuel characteristics to increase flammability, promoting more frequent fires that catalyze the transition from sagebrush-dominated shrubland to annual grassland. Increasing fire activity threatens not only rangeland conservation, but also the safety and efficacy of wildland firefighting operations. Of particular concern is coupled fire spread through sagebrush canopy and herbaceous understory fuels, behavior that is both difficult and dangerous to suppress. Yet the live sagebrush fuel moisture content (FMC; ratio of free water to dry mass) under which this extreme fire behavior occurs remains largely unknown. To address this gap, we are conducting combustion experiments across moderate to extreme live FMC conditions to quantify sagebrush canopy flammability and coupled fire spread. Further, we assess how annual grass invasion, and abiotic conditions affect coupled fire spread dynamics. Our results highlight the importance of abiotic conditions and plant architecture (arrangement of foliar and woody material) in live fuel flammability. By identifying the drivers of fire behavior and critical fuel moisture thresholds in live sagebrush, our work will improve predictions of extreme fire behavior and support firefighter safety.

Taylor Azizeh, *Photogrammetry over four decades reveals environmental and life-stage drivers of gray whale body condition*; Taylor Azizeh, Ocean Ecology Lab, OSU; Julia Hinrichs, Ocean Ecology Lab, OSU; Tomo Eguchi, Marine Mammal and Turtle Division, NOAA; Trevor Joyce, Marine Mammal and Turtle Division, NOAA; David Weller, Marine Mammal and Turtle Division, NOAA; Wayne Perryman, Marine Mammal and Turtle Division, NOAA; Morgan Lynn, Marine Mammal and Turtle Division, NOAA; Holly Fearnbach, SR3 Sealife Response, Rehabilitation, and Research; John Durban, Anderson Cabot Center for Ocean Life at the New England Aquarium; Joshua Stewart, Ocean Ecology Lab, OSU.
Energetic balance governs individual fitness and population dynamics in migratory marine predators, yet long-term, life-stage-dependent links between environmental change and body condition (BC) remain poorly quantified. We integrated nearly four decades (1987 – 2025) of photogrammetry data from eastern North Pacific gray whales (*Eschrichtius robustus*; 2,067 individuals across 199 days) with time series of Arctic benthic prey biomass and sea-ice conditions to evaluate how intrinsic (life stage, migration phase) and extrinsic (prey, ice) drivers shape body condition. Using a hierarchical Bayesian framework, we combined photogrammetry data from multiple platforms and measurement types, estimated annual population mean BC and proportional change during the fasting period between southbound and northbound migrations, and quantified environmental effects on condition. Annual mean BC showed moderate interannual variability, ranging from 0.123 (95% CI: 0.117–0.128) to 0.165 (95% CI: 0.160–0.171), representing an approximately 34% difference between the lowest and highest condition years. Fasting-period changes in condition differed significantly among life stages. Calves gained the most (mean 10.9%, 95% CI: 4.4–18.4), cows experienced the greatest declines (–21.6%, 95% CI: –26.6 to –16.7), and “other” whales showed smaller and more variable losses (–8.2%, 95% CI: –16.4 to 1.9). Longer ice-free periods during the Arctic spring and summer were positively associated with mean condition (median effect 0.043, 95% CI: 0.007–0.078, 99.0% probability that the effect is >0: (Pr(>0)), while prey biomass effects were also positive but weaker (median 0.023, 95% CI: –0.01–0.05, 91.9% Pr(>0)). A model allowing annual variability in fasting-period condition change slightly improved predictive performance, but posterior estimates did not differ significantly from zero, indicating little evidence for supplemental feeding in breeding areas. Together, these results indicate that gray whale energetics are strongly structured by life stage and dominated by Arctic feeding-ground conditions.

Tessa Chesonis, *A Revolution in Wildlife Sampling or a Load of Hot Air? Assessing Airborne Environmental DNA (Airborne eDNA) as a Tool for Surveying Terrestrial Wildlife Communities*; Tessa Chesonis, OSU, Dept. of Forest Ecosystems and Society; Thomas DeLuca, OSU, Dept. of Forest Ecosystems and Society; Joshua Twining, OSU, Dept. of Fisheries and Wildlife.
Airborne environmental DNA (airborne eDNA) has recently emerged as a promising potential tool for terrestrial biodiversity monitoring, yet formal evaluations of the method in a variety of field settings, including consideration of factors that may influence detection probabilities and comparisons to contemporary methods remain limited. Here, we assessed 1) how sampling design influences detections of terrestrial vertebrates using airborne eDNA sampling, 2) whether airborne eDNA detection frequency varies with species traits, and 3) how species detections from airborne eDNA compare with those from camera trapping. We deployed 72 sampling fans and camera traps in a nested design at 12 forested sites across a gradient of management practices. Data from each method was used to produce estimates of species richness, species-specific detection frequencies, and these were used to examine differences between the communities sampled by either approach. Across all airborne eDNA samples, we detected 30 vertebrate species, with variation in sampling effort, fan height, and fan orientation resulting in heterogeneity in species detected. At the same sites, camera traps detected 21 vertebrate species, with a 38% overlap in species detections between methods. Airborne eDNA detected more birds, whereas camera traps detected more medium- and large-bodied mammals, highlighting how each method may fill complementary detection gaps. Together, these results demonstrate how future multi-method sampling efforts combining airborne eDNA and camera trapping may provide a more complete picture of terrestrial wildlife communities.

Violet Harris, *Soil Fungi Community Composition Five Years Post-Fire in the Western Cascades, Oregon*; Violet Harris, OSU, Dept. of Forest Engineering, Resources and Management.
This project examines soil fungi community composition across a range of soil burn severities 5 years post-fire. The study site is the 2020 Lionshead fire, which burned the town of Detroit, OR, and 192,900 acres of adjacent forest land. Soil fungi species can be classified into functional guilds based on their primary ecological role, such as saprotrophic (decomposing) versus mycorrhizal (plant-associated) species. Some species are also known for specific functions such as nitrogen fixation. In this study, we analyze how severity of soil fire effect impacts the balance of these species and guilds in this ecosystem and contextualize our analysis in the above-ground vegetative characteristics of the sampling sites.

Wes Binder, *Multi-Carnivore Interactions in Yellowstone National Park*; Wes Binder, OSU, Dept. of Fisheries, Wildlife, and Conservation Sciences; Joel Ruprecht, OSU, Dept. of Fisheries, Wildlife, and Conservation Sciences; Jack Rabe, Yellowstone Center for Resources; Matt Metz, Yellowstone Center for Resources; Srotka Chakrabarti, Macalester College; Rebecca Hutchinson, OSU, Dept. of Fisheries, Wildlife, and Conservation Sciences; Daniel Stahler, Yellowstone Center for Resources; Taal Levi, OSU, Dept. of Fisheries, Wildlife, and Conservation Sciences.
The restoration of large carnivores in North America has generated substantial interest in the restructuring of carnivore communities. Mesocarnivores often balance scavenging opportunities from apex carnivore kills with the risks of mortality, yet these “enemies with benefits” dynamics likely vary across specific apex–mesocarnivore pairs. In contrast, many apex carnivores can efficiently hunt their own prey, removing the need to scavenge, fundamentally altering the nature of their interactions. Using camera traps and apex carnivore kill site investigations, we examined how coyote and red fox (mesocarnivores) space use, diel activity, and scavenging behavior varied with wolves and cougars (apex carnivores) in northern Yellowstone National Park. We further used contemporaneous GPS data and predicted kill sites to examine wolf–cougar interactions. Coyotes were more frequent scavengers of apex carnivore kills but exhibited stronger associations with wolves compared to cougars, while foxes instead had greater spatiotemporal associations with cougars. Wolf and cougar interactions exhibited a highly asymmetric “enemies without benefits” dynamic, as wolves strongly selected for kleptoparasitic opportunities of cougar kills, occasionally leading to cougar mortality, and cougars did not reciprocate these behaviors. Together, our results illustrate how species-specific foraging strategies and competitive asymmetries shape the tradeoffs and structure of restored carnivore guilds.

William Hirsch, *Mobile Terrestrial Lidar Forest Inventory: Application in Even-Aged Coniferous Stands*; William Hirsch, OSU, Dept. of Forest Engineering, Resources and Management; Burnett Jonathan, USFS; Wing Michael, OSU, Dept. of Forest Engineering, Resources and Management.
Tree-level observations form the basis of forest inventory, which informs inference on forest characteristics at the stand, regional, and national level. Forest inventory requires specialized instrumentation and training to protocol. Variance in technician tree mensuration accuracy challenges implementation of protocol. Moreover, in national forest inventory, such as

the USFS's Forest Inventory and Analysis (FIA) program, considerable resources are dedicated to support field campaigns. Historic stem map and data may be recorded with spatial accuracy incongruent with modern inventory methods. Light detection and ranging (LiDAR), most commonly deployed on airborne platforms, has widespread use in forest inventory, but is challenged to resolve sub-canopy information, especially in dense coniferous forest. The recent development of handheld, terrestrial LiDAR platforms presents opportunity for their application in field-based forest inventory. In this study, I explore the utility of mobile terrestrial LiDAR (MLS - mobile laser scanning) in tagged stem map reconstruction between two even-aged Douglas-fir stands stocked at different densities. I compare the accuracy of common tree-level forest metrics collected by MLS and traditional forestry methods. I also develop a field method for joining tag IDs to digitized stem maps and assess their spatial accuracy between MLS and traditional approaches.

Zachary Perry, *Storage Regulates Stream Temperature Response to a Mixed Severity Fire in Mountainous Headwaters*; Zachary Perry, OSU, Dept. of Forest Engineering, Resources and Management; Catalina Segura, OSU, Dept. of Forest Engineering, Resources and Management.

Wildfires significantly alter the hydrology of mountainous catchments, with important implications for stream temperature (Ts). In the Western U.S., wildfires are becoming more frequent and severe, threatening small streams that provide critical habitat. Understanding how streams respond to fire is essential for predicting long-term ecological impacts. This study examines how catchment storage influences Ts response to wildfire in the H.J. Andrews Experimental Forest, a predominantly old-growth conifer forest in Oregon's Western Cascades. We monitored Ts in six headwater streams during summer 2023, before the onset of the Lookout Fire on August 8. Monitoring continued through the fire, which burned ~70% of the forest at varying severities, and resumed in summer 2024, one-year post-fire. Three streams experienced low to high burn severity, while the other three remained unburned. We analyzed shifts in daily minimum, maximum, and mean Ts. Pre-fire Ts ranged from 7–14°C, primarily influenced by solar radiation and subsurface storage. Following the fire, Ts increased by 0.5–3°C in burned streams, with the largest changes observed in catchments with lower storage. Using spatial modeling, we linked variations in burn severity and catchment storage to spatial patterns of temperature change. These models provide predictive insight into how future wildfires may affect stream thermal regimes. Our findings highlight the critical role of subsurface storage in buffering post-fire Ts increases and demonstrate that the interplay between fire severity and storage capacity strongly influences stream resilience. This research offers key guidance for managing fire-affected headwater ecosystems in a warming, more fire-prone climate.

POSTER PRESENTATION ABSTRACTS

A. Brent Cardenas, *UPRfish Cloud: A crew support platform for standardized surveys of upper fish distribution limits*; A. Brent Cardenas, OSU, Dept. of Forest Engineering, Resources and Management; J. Andres Olivos, Dept. of Forest Engineering, Resources + Management; Brooke Penaluna, USDA Forest Service; Michael Wing, Dept. of Forest Engineering, Resources + Management.

Accurately delineating the upstream extent of fish distribution is fundamental to species conservation, riparian protection, and forest management in the Pacific Northwest. The UPstream Regional LiDAR Model for Extent of Trout (UPRLIMET) predicts fish-bearing streams using LiDAR-derived terrain metrics, including elevation, channel gradient, drainage area, and upstream network length. UPRLIMET+ expands this framework through broader geographic coverage, higher-resolution (1 m) terrain data, and additional environmental predictors. Continued advancement requires standardized field data for model calibration and validation. UPRfish Surveys provide the empirical foundation for identifying fish presence. Protocols employ systematic electrofishing that extends 400 m beyond the last detected fish to establish defensible upper distribution limits. Observations are georeferenced and structured for integration with hydrography and LiDAR-derived variables, generating model-ready datasets. This poster presents UPRfish Cloud, an ArcGIS Online survey support platform that organizes survey data, standardized protocols, and project resources within a structured framework. The platform includes web maps displaying near real-time data submission, supporting field coordination and quality control. The system supports collaborative data collection across public and private partners and prepares inputs for UPRLIMET+ applications.

During the 2026 field season, this framework will be applied to streams supporting Westslope Cutthroat Trout (*Oncorhynchus clarkii lewisi*) in northeastern Oregon. Resulting datasets will inform future adaptation of UPRLIMET+ to evaluate species-specific upper distribution thresholds and regional transferability. By linking standardized surveys with high-resolution geomatics and predictive modeling, this framework improves the accuracy and consistency of fish-distribution mapping.

Aaron Cranford, *Improving AI-Based Sea Urchin Counting in Aquaculture Through Image Standardization and Iterative Model Training*; Aaron Cranford, OSU, Dept. of Fisheries, Wildlife, and Conservation Sciences; Susan Piacenza, OSU, Dept. of Fisheries, Wildlife, and Conservation Sciences.

Accurate sea urchin counts are important for aquaculture operations, but manual counting is time-intensive and can vary among observers. This project evaluates and improves an artificial intelligence workflow designed to estimate purple sea urchin abundance from overhead video imagery collected in an aquaculture setting. Still frames were extracted from video, annotated in CVAT, and used to train and iteratively refine a CSRNet-adapted density-map model. Project development focused on three connected areas: improving image collection conditions, standardizing annotation procedures, and expanding dataset diversity. Image optimization included adjustments to lighting, exposure, focal length, contrast, and camera placement to improve visibility and reduce noise. Dataset development included crowded, sparse, and zero-urchin frames to strengthen model performance across a range of real-world conditions. Preliminary results suggest that model performance depends not only on the number of training images, but also on image quality, annotation consistency, and the inclusion of empty frames to reduce false-positive detections. This project demonstrates that relatively small improvements in imaging and labeling workflows can substantially improve the reliability of AI-assisted counting systems in aquaculture. More broadly, the work provides a practical framework for developing scalable, noninvasive computer vision tools for aquatic animal monitoring and production decision-making.

Alexander Senauke, *Protected Fuels? Balancing Tree Preservation and Fire Mitigation in California's Wildland-Urban Interface;* Alexander Senauke, OSU, Dept. of Forest Ecosystems and Society.

Tree Protection Ordinances are essential tools for sustaining urban tree canopy, particularly when applied to private property. In California, where catastrophic fires threaten homes in the Wildland-Urban Interface, the application of tree protection laws coincides with defensible space standards. Resolving incipient conflict between these two approaches to managing trees in cities requires the assessment and comparison of local policies. In this study, we perform content analysis on over 200 municipal Tree Protection Ordinances for references to fire. We use a case study approach to explore ordinances in their native context, including their influences and effects. We seek to position these ordinances in an expanded urban forest governance framework, accounting for fire policy and management.

Amy Kramer, *National Treasure – Can Occupancy Modeling Predict Habitat Use of a Rapidly Recovering Raptor?*; Amy Kramer, OSU, Environmental Sciences Graduate Program; J David Wiens, USGS, Forest and Rangeland Ecosystem Science Center.
Bald eagles are a Federally protected raptor species and a conservation success story. Their numbers have been growing each year, and it's increasingly important for land managers and stakeholders that we understand their habitat requirements. In Central California, former bald eagle habitat has been highly modified since the species was last common a century ago, and they're coming home just as climate change, wildfire, and drought affect the landscape in new ways. Little is known about how eagles may respond to these threats. Agriculture, urban growth, energy production, and eagles are side-by-side in this region, which is rugged and difficult to access, making traditional survey methods inappropriate, prone to inefficiency and undercoverage. This research for my thesis attempts to answer the question: to what extent can we utilize a multi-season occupancy modeling framework originally designed for golden eagles to ascertain the relationship between bald eagle detection in the Diablo Range and specific landscape attributes, and what patterns exist there? To estimate eagles' presence or absence in the study area, surveys were conducted from 2014 to 2024 over a series of cells up to 4 times per breeding season. Occupancy modeling is used to give a better spatial estimation of how landscape attributes may be affecting not only animal presence, but detection rates. This dataset was originally collected with golden eagles in mind but may also help us understand bald eagle behavior. The scope of inference is restricted to central California, but may suggest adaptive capabilities of this species previously unexplored.

Angela Zhu, *Exploring MCMC Samplers for N-Mixture Models*; Angela Zhu, OSU, Electrical Engineering and Computer Sciences; Brayden Edwards, OSU, Electrical Engineering and Computer Sciences; Rebecca Hutchinson, OSU, Electrical Engineering and Computer Science and Fisheries, Wildlife, and Conservation Sciences.
The goal of this work is to understand the mechanistic behavior of Markov Chain Monte Carlo (MCMC) sampling algorithms used to estimate species abundance from repeated surveys with imperfect detection. In this exercise we implemented five methods of MCMC sampling. We evaluate our approaches against a out of box implementation, NIMBLE, across a range of data conditions.

Aubree Cobos, *Impact of Wildfire on Stream Temperature and Dissolved Oxygen Across Ecoregions in the Pacific Northwest, USA;* Aubree Cobos, OSU, BioResource Research; Katie Wampler, OSU, Dept. of Forest Ecosystems and Society; Riley Barton, OSU, Dept. of Forest Ecosystems and Society; Tyler Kappen, OSU, Dept. of Forest Ecosystems and Society; Kate McCredie, OSU, Dept. of Forest Ecosystems and Society; Ryan Cole, OSU, Dept. of Forest Ecosystems and Society; Kevin D. Bladon, OSU, Dept. of Forest Ecosystems and Society, Dept. of Forest Engineering, Resources, and Management.
Large, high severity wildfires have the potential to alter aquatic ecosystems through vegetation loss, changes to riparian shade, and organic matter transport from burned hillslopes to streams. These changes can shift key water quality parameters, including stream temperature and dissolved oxygen (DO). In recent decades, both the frequency and spatial extent of large, high severity wildfires in western North America have risen, transforming watershed processes and increasing stressors on freshwater systems. Cold-water aquatic species, such as salmonids, prefer habitat with low stream temperatures and adequate DO concentrations for survival, growth, and reproduction. Despite numerous studies examining the effects of wildfires on stream temperature and DO, watershed responses to fire are often variable across space and time, making it challenging to predict post-fire impacts. Watershed characteristics such as elevation, canopy cover, topography, or other ecoregion-specific variables may influence the vulnerability or resilience of different areas of the Western United States to wildfire impacts. The objective of our study was to quantify and compare water quality responses across five ecoregions in the Pacific Northwest (Klamath Mountains, Blue Mountains, N. Cascades, W. Cascades, & E. Cascades) to identify the drivers of variability. We used continuous (15-minute) multi-parameter sonde measurements at paired unburned/burned sites. We hypothesized that fire would increase stream temperature and decrease DO, and impacts would be greater in streams at lower elevations with less canopy cover due to their greater susceptibility to post-fire warming. Understanding the post-fire effects on stream temperature and DO by ecoregion is a critical first step for informing land and water management decisions to mitigate effects and protect sensitive fish populations in the Pacific Northwest.

Bayly Kahle, *Characterizing Spatial Heterogeneity of Dissolved Oxygen Within and Among Beaver Ponds*; Bayly Kahle, OSU, Dept. of Fisheries, Wildlife, and Conservation Sciences; Jonathan Armstrong, OSU, Dept. of Fisheries, Wildlife, and Conservation Sciences.
Beavers (*Castor canadensis*) are ecosystem engineers that can transform stream ecosystems by constructing pond complexes that alter stream hydrology, trap sediment, and increase the range of conditions available to aquatic organisms. As beavers are

increasingly incorporated into restoration, it is important to quantify how they alter the range and spatial distribution of water quality parameters. Although beaver effects on dissolved oxygen have been studied, the variation of dissolved oxygen within and among beaver ponds remains poorly understood. The goal of this study was to characterize this spatial heterogeneity in a complex of beaver ponds in Mulkey Creek, a third order tributary of the Mary's River in Corvallis, OR. During summer and fall, we placed dissolved oxygen loggers in nine ponds to characterize both within- and among pond variation. To quantify finer scale patterns of spatial heterogeneity in DO within a subset of ponds (and reveal the extent of hypoxia), we mapped dissolved oxygen at dawn using Global Navigation Satellite System (GNSS) positioning and handheld DO probes. We recorded extreme spatial and temporal variation in DO, with values ranging from anoxia (~0 mg/L) to supersaturation (>20 mg/L). Heterogeneity within ponds was associated with primary and secondary channel features that likely have different water residence times. Our work shows that beaver effects on dissolved oxygen are more complex than previously recognized and require intensive monitoring to accurately quantify.

Bennett Fate, *Disentangling abiotic and biotic soil drivers of douglas-fir seedling success following short-interval reburn in the western cascades*; Bennett Fate, OSU, Dept. of Forest Engineering, Resources and Management; Katherine McCool, OSU, Dept. of Forest Engineering, Resources and Management; Steven Perakis, USGS; Georgia Seyfried, OSU, Dept. of Forest Engineering, Resources and Management.

Over a century of fire suppression, combined with lengthened wildfire seasons, has altered fire regimes across the Pacific Northwest. One striking consequence is the rise of short-interval (SI) reburns: wildfires occurring at frequencies shorter than the historical fire return interval. These events are increasingly common in forests that historically experienced long-interval (LI) fires and represent a profound shift in disturbance regimes of native soil biota and vegetation. Studies in conifer forests have found that short-interval reburns can limit conifer regeneration by limiting seed dispersal. However, there is a limited understanding of how soil changes from short-interval reburns may impact conifer seedling success. To test this, we sampled soils from the burn scars in the Willamette National Forest and designed two greenhouse studies. The first study analyzed Douglas-fir seedling growth in field soils from unburned, long-interval reburn, and short-interval reburn. We found that seedlings grown in unburned soils had higher shoot biomass (t-ratio = 2.55, p-value = 0.047) compared to SI-reburn soils. To further separate the relative impact of abiotic and biotic changes we sterilized field soils (unburned, LI-reburn, SI-reburn) and re-inoculated them factorially with live soil (unburned, LI-reburn, SI-reburn). However, in this study we saw no impact of inoculum on seedling aboveground biomass (t-stat = 1.75, p-value = 0.18). These findings suggest that soil conditions in SI-reburns could negatively impact Douglas-fir seedling success, however the mechanisms that mediate this interaction are complex and not isolated to soil substrate or microbial communities alone.

Cassidy Ruge, *The Role of Forest Edge Type in Shaping Marbled Murrelet Nesting Habitat Condition*; Cassidy Ruge, OSU, Dept. of Forest Ecosystems and Society; Jennifer Bailey Guerrero, OSU, Dept. of Forest Ecosystems and Society; Andrew Merschel, OSU, Dept. of Forest Ecosystems and Society; Matthew G. Betts, OSU, Dept. of Forest Ecosystems and Society; S. Kim Nelson, OSU, Dept. of Fisheries, Wildlife, and Conservation Sciences; Lindsay Adrean, American Bird Conservancy; J. Brett Lovelace, J.B. Lovelace & Associates; Adam Duarte, USDA Forest Service; Meg Krawchuk, OSU, Dept. of Forest Ecosystems and Society.

The threatened Marbled Murrelet (*Brachyramphus marmoratus*) relies on mature and old-growth coniferous forests for nesting habitat in the Pacific Northwest and faces critical challenges from habitat fragmentation – including edge effects. Hard edges created by forestry operations are known to decrease the quality of murrelet nesting habitat by (1) increasing the abundance of marbled murrelet nest predators, and (2) altering canopy microclimate, which can expose murrelets to more extreme conditions. They can also influence the abundance of epiphytic communities and accumulations of decomposing organic matter, both of which are relied on for nesting. Critically, only three studies (two in British Columbia and one in Washington) have investigated canopy microclimate, nest predator abundance, and edge effects on nesting habitat quality in murrelet nest stands, with limited examination of broader edge types and geographies. We are initiating a study to experimentally investigate how different types of forest edge (hard, soft, and natural edge) and distance from edge affect canopy microclimate, potential nest predator abundance, and epiphyte availability (e.g. species diversity, depth) in murrelet nesting habitat in the Elliott State Research Forest in the Coast Range of Oregon. In this two-year effort (April-September 2026-27) we will instrument approximately 12 field sites with microclimate sensors and autonomous recording units to quantify edge conditions and nest predator abundance. Our preliminary hypotheses are that hard edges will have the largest gradients in microclimate between edge and interior and that nest predator abundance will follow a similar pattern.

Clare Socal, *Thermal Insulators from Lignin: a 3D Printing Study;* Clare Socal, OSU, Dept. of Wood Science and Engineering; Ashley McCann, OSU, Dept. of Wood Science and Engineering; Vahid Nasir, OSU, Dept. of Wood Science and Engineering.
Lignin is a low-value byproduct of the forest products industry, with most of the underutilized waste stream coming from pulp and paper. However, lignin, with its high thermal resistance and molecular bond strength, shows promise for use in thermally-resistant materials such as aerogels. Few practical lignocellulosic-based thermally-resistant products are discussed in the literature, indicating that this is a relatively unexplored field. This research aims to utilize lignin and cellulosic material to create a thermally-resistive bio-based aerogel via direct ink writing (DIW). In producing this aerogel, this study focuses on the specific interactions of ink composition –such as total solid content, cellulose nanofiber (CNF) content – with printing process parameters like nozzle diameter. With an ultra porous structure, low density, and high carbon content, lignin-based aerogels are a prime material for thermal insulation, and DIW procedure allows this material to be made with specific geometries in mind for many future applications in electronics and energy solutions.

David L. Pearce, *Genetic Structure of Columbian Black-tailed Deer and Evidence of Hybridization with Whitetails in Western Oregon*; David L. Pearce, OSU, Dept. of Fisheries, Wildlife, and Conservation Sciences; Paige Blount, OSU, Dept. of Fisheries, Wildlife, and Conservation Sciences; Rachel Crowhurst, OSU, Dept. of Fisheries, Wildlife, and Conservation Sciences; Keifer L. Titus, Oregon Department of Fish and Wildlife; DeWaine Jackson, Oregon Department of Fish and Wildlife (Retired); Ben Padilla, University of Texas at El Paso, Dept. of Biological Sciences; Clinton W. Epps, OSU, Dept. of Fisheries, Wildlife, and Conservation Sciences.
Understanding genetic structure and connectivity is integral to science-based management, as they inform harvest unit boundaries, population resilience, effects of habitat fragmentation, and disease spread. Despite the economic and cultural importance of Columbian black-tailed deer (*Odocoileus hemionus columbianus*) in western Oregon, their genetic structure is not well understood. To address this, we analyzed genetic data collected for population estimation from 12 wildlife management units (WMU) from 2013–2024, yielding 14,674 samples genotyped at seven microsatellite loci. Isolation by distance analysis revealed weak genetic structure overall, but structure was stronger in females, consistent with female philopatry and male dispersal. Spatially explicit ancestry analysis identified three genetic clusters, following a north-to-south gradient. Northwestern WMUs showed evidence of greater isolation or anthropogenic barriers to connectivity. Discriminant analysis of principal components (DAPC) identified individuals divergent from typical black-tailed deer genetic signatures, suggesting gene flow has occurred among subspecies or species. Because hybridization has been documented between black-tailed deer and white-tailed deer along the Columbia river and mule deer in the Cascade Mountains; we included 35 Columbian white-tailed deer (*Odocoileus virginianus leucurus)* samples from Douglas County into an additional DAPC. Several individuals showed mixed ancestry, providing the first evidence of black-tailed and white-tailed deer hybridization in Douglas County. These findings indicate that male dispersal is the primary driver of genetic connectivity, identifies regions where restricted gene flow may warrant further investigation, and demonstrates the need to monitor hybridization for the conservation of white-tailed deer in Douglas County and black-tailed deer throughout western Oregon.

David Leibowitz, *Creating Playgrounds of Non-Corrective Humor for Climate Change Communication*; David Leibowitz, OSU, Dept. of Forest Ecosystems and Society; Sharon Shen, OSU, Dept. of Forest Ecosystems and Society.
Although prior research demonstrates that humor has the potential to successfully communicate scientific topics to a varied audience over a broad political spectrum, caveats must be made regarding the form and nature of these humorous messages. To explore this, I propose a distinction between corrective and non-corrective humor, as regards the presumed deficit of knowledge in the listener. The aim is to see if those who are resistant to other means of climate change messaging will more likely be persuaded by humorous narratives that include a non-corrective and moreover humble approach. Ideally, the scope of inference would extend to all of the United States. The hope would be that this form of messaging, which has not been thoroughly explored in science communication research, will prove fruitful in communicating to those who are not initially amicable, or even actively resistant, to didactic, corrective forms of messaging on climate change.

Devan Driscoll-Roach, *Balancing Fish Habitat and Biodiversity: How Stream Restoration Influences Stonefly Communities in Eastern Oregon*; Devan Driscoll-Roach, OSU, Dept. of Fisheries, Wildlife, and Conservation Sciences; Dr. David Wooster; Dr. Sandra DeBano, OSU, Dept. of Fisheries, Wildlife, and Conservation Sciences.
Stream restoration in the Pacific Northwest increasingly emphasizes improving habitat for salmonids through the addition of large wood, channel reconfiguration, and floodplain reconnection. Although these approaches can enhance structural complexity and fish habitat, their effects on benthic macroinvertebrates, particularly riffle-dependent taxa, are less well

understood. This study evaluates how restoration influences stonefly (Plecoptera) communities and associated habitat characteristics in eastern Oregon streams. During the 2025 field season, we conducted standardized surveys in restored and control reaches across tributaries to the Umatilla and Grande Ronde Rivers. Sampling focused on riffle habitats and included presence-absence observations, genus-level identification of stoneflies, along with measurements of substrate composition, stream temperature, velocity, and riparian cover. Contemporary data will be compared with historical datasets to assess long-term ecological responses to restoration within Meacham Creek of the Umatilla River Basin. Early observations suggest that restoration changes stream structure in ways that may alter riffle habitat and influence the distribution of sensitive insect groups. This raises important questions about balancing fish-focused restoration goals with the protection of broader stream biodiversity. By improving our understanding of how restoration affects both fish and the invertebrates that support them, this work aims to help guide more holistic and resilient stream restoration strategies across the region.

Emilia Astorga, *Understanding Governance: exploring the psychosocial factors affecting Coastal Resource management in Patagonia*; Emilia Astorga, OSU, Dept. of Fisheries, Wildlife, and Conservation Sciences.
Understanding governance systems, the different levels, institutions, and actors involved, provides a lens for examining how individual and collective perspectives interact within Natural Resource Management. This research investigates mental models, institutions, and social networks shaping coastal resource management, aiming to advance knowledge on social-ecological systems. This study will apply a mixed methods approach—combining conceptual cognitive mapping (3CM), semi-structured interviews, focus groups, and social network analysis—to analyze the psychosocial factors that influence governance processes and trust in coastal biodiversity conservation in the Aysén region of Chilean Patagonia. Chile is implementing a new Service for Biodiversity and Protected Areas at a time when the fjords of Aysén are experiencing increasing pressure from human activities. These coasts are home to protected areas and small communities whose livelihoods depend on fishing, seaweed collection, and shellfish harvesting. They are also home to a growing tourism sector and the salmon industry, which together create a complex social landscape of competing interests. Exploring governance dynamics in the fjords of Patagonia will generate insights that can inform ongoing policy processes in Chile and contribute to broader international discussions on coastal resource management.

Esther Andrade Meirelles, *Effects of Genetics and Environment on Douglas-fir Seedling Responses to Drought*; Esther Andrade Meirelles, OSU, Dept. of Forest Engineering, Resources and Management; Emily C. Von Blon, OSU, Dept. of Forest Engineering, Resources and Management; Carlos A. Gonzalez-Benecke, OSU, Dept. of Forest Engineering, Resources and Management.
Understanding genetic differences in tree responses to drought is important for managing Douglas-fir, a major species in the Pacific Northwest (PNW), where warmer temperatures and drier summers are expected. Identifying genotypes that tolerate future conditions is critical. Fifty-five Douglas-fir families (50 Coastal, one Interior, and four Coastal × Interior hybrids) were grown under uniform greenhouse conditions. Ten seedlings per family were exposed to four vapor pressure deficit (VPD) levels (0.7–5.9 kPa) in controlled growth chambers. Stomatal conductance was measured with a porometer, and exponential models were used to estimate maximum conductance (gsmax) and sensitivity to VPD. Xylem vulnerability to cavitation was assessed for eight seedlings per family to determine hydraulic traits, including Ψ50 and PLC2.5. Family effects were tested using mixed models and Tukey comparisons. Results showed significant genetic variation among families. Maximum stomatal conductance (gsmax) differed twofold (0.10–0.21 mmol m^{-2} s^{-1}; $P < 0.0001$), and sensitivity to VPD varied more than fourfold. Families with high gsmax maintained higher conductance at low to moderate VPD but closed stomata rapidly under high VPD, indicating a flexible water-use strategy, whereas low-gsmax families showed conservative behavior. Hybrid families exhibited strong stomatal closure. Hydraulic traits also varied widely: Ψ50 ranged from −1.5 to −5.3 MPa ($P < 0.0001$), and PLC2.5 ranged from 5 to 90%. PLC2.5 was strongly related to Ψ50 ($R^2 = 0.80$), but stomatal traits were not related to hydraulic resistance. These results demonstrate genetic control of drought-response traits and support selecting genotypes for climate-resilient forest management in the PNW.

Faith Provost, *Tracking Movement of Northwestern Pond Turtle (Actinemys Marmorata) with Apple Air Tags*; Faith Provost, OSU, Dept. of Fisheries, Wildlife, and Conservation Sciences; Jeffrey Jones, Bureau of Land Management.
Western Pond Turtles (*Actinemys marmorata*) are a proposed threatened species by the U.S. Fish and Wildlife Service and species of special concern in California. Movement and habitat use of *A. marmorata* is generally studied using radio telemetry, but we were interested if Apple Inc. AirTagTM technology could be used to gather individual movement data. AirTagTM devices are more cost efficient and lighter than radio telemetry collars. To better understand movement of *A. marmorata* between aquatic and terrestrial environments, we applied 5 AirTagTM devices to 5 *A. marmorata* adult individuals in Spivey

Pond Area of Critical Environmental Concern in El Dorado County, California. We connected each AirTagTM to an iPhone, then shared each AirTagTM location with 5 other team member's iPhones. Then we placed each AirTagTM into a waterproof case and used epoxy to attach the case to the turtle's shell. When there were several iPhones around the site to triangulate the AirTagsTM, the exact individual's location was easy to determine from the iPhone's Find My application. But, without iPhones present at the site, there were no location updates from the AirTagsTM. After no location updates for an extended period of time, there was no location found for the AirTagsTM. Due to the rural nature of the location, monitoring of the turtle locations without being physically present at the site was not possible. AirTagTM devices may be useful for wildlife tracking in urban areas, but is not effective in rural settings.

Henry Dryden, *A Temporal Analysis of Informal Bouldering Trails at Chaos Canyon and Emerald Lake in Rocky Mountain National Park (2008–2018)*; Henry Dryden, OSU, Dept. of Forest Ecosystems and Society; Ashley D'Antonio, OSU, Dept. of Forest Ecosystems and Society; Christopher A. Monz, Utah State University, Dept. of Environment and Society; Scott Esser, National Park Service.

Outdoor bouldering is a form of rock climbing that has been rapidly increasing in popularity over the past few decades. Chaos Canyon and Emerald Lake are part of Rocky Mountain National Park's Bear Lake Corridor, and have become hot spots for boulderers. One of the major ecosystem impacts caused by boulderers is the creation of informal trails. These trails branch out from existing official trails and may result in trampled vegetation, human-wildlife encounters, and erosion. This study seeks to better understand the relationship between boulders and impacts by focusing on changes in the number, length, and condition of these informal trails from 2008 to 2018. The primary objective of this study is to examine spatial patterns of informal trails in the Bear Lake Corridor at these two popular bouldering destinations. Additionally, researchers are interested in observing how these informal trails have changed over a ten-year period during which time a bouldering guide to the area was published (2011) and managers implemented a climbing stewards program (2016). Resource impacts were surveyed during three site visits in 2008/2009, 2015, and 2018. Impacts were located via foot searches in the Bear Lake Corridor and were mapped using high accuracy GPS units and tagged according to their condition classification. All spatial data was then uploaded to ArcGIS, where they were organized by date gathered and condition class. Frequency of informal trails by condition class as well as overall trail length and location were compared across the three data collection periods. Results from this study will inform park managers and planners on the need or lack thereof of action to limit the creation of informal trails or provide alternatives. This additionally can assist managers in understanding the effectiveness of their climbing stewards program to reduce ecological disturbance from bouldering.

Justin Gardner, *Timing the transition: combining life history theory and otolith growth increments to infer age-at-maturity for harvested stocks*; Justin Gardner, OSU, Dept. of Fisheries, Wildlife, and Conservation Sciences; Cheryl Barnes, OSU, College of Agricultural Sciences; Peri Gerson, OSU, Dept. of Fisheries, Wildlife, and Conservation Sciences.

Estimates of age-at-maturity are vital information for the population dynamic models that are used to inform fisheries management. Histological examination of gonad tissue is typically used to identify maturity stages in marine fishes. Examining fish by histological analysis is expensive, resource intensive, and a time-consuming process which requires specialized knowledge for interpretation. Regular sampling of otoliths for age composition is already performed and the shift in energy allocation from somatic to reproduction will be identifiable by a decrease in otolith growth increments at the age of maturation. We will take images of California Halibut (*Paralichthys californicus*) otoliths that have been prepared in thin sections for age estimation and measure the distance between annuli using ImageJ (Schneider et al. 2012). Data will be constructed by measuring the greatest distance between each annulus and analyzed to identify the age at which growth increments decrease. A comparison of maturity curves from otoliths and those based on histological analyses (Lesyna and Barnes 2014) will be conducted to establish whether otolith growth increments can be used in place of histological evaluation. If maturity curves are similar between the two methods, otolith growth increments could generate greater sample sizes with lower costs and less effort, thereby increasing confidence in estimates of age-at-maturity used to inform stock assessment models. This simpler approach could also increase the spatial and temporal resolution of maturity estimates (and important consideration for species that are broadly distributed, susceptible to fisheries-induced evolution, or likely to be impacted by climate change).

Kaya Gabriel, *Assessing the Impact of Predator Cues from the Invasive European Green Crab (Carcinus maenas) on the Behavior of Nucella ostrina from the Oregon Coast*; Kaya Gabriel, OSU, Dept. of Integrative Biology; Brooklee Baybeck, OSU, Dept. of Integrative Biology; Elitca Ganeva, OSU, Dept. of Earth, Ocean, and Atmospheric Sciences.
Invasive species can alter ecosystem dynamics through both direct predation and trait-mediated indirect interactions. The European green crab (*Carcinus maenas*) is a dominating invasive predator known to affect native mollusk populations in intertidal environments on the East Coast. However, after its spread to the West Coast, the effects on rocky intertidal species on the Oregon Coast remain unexplored. This study investigates whether the native carnivorous gastropod *Nucella ostrina* alters its foraging behavior in response to chemical cues from *C. maenas*, and whether this response depends on the diet of the crab. We compared the behavior of *N. ostrina* exposed to chemical cues from native red rock crab, *Cancer productus*, and invasive *C. maenas*, with and without recent feeding on conspecific whelks. We quantified movement (repositions), refuge use, and mussel (*Mytilus trossulus*) consumption over four days across six treatments. Our findings were opposite to our original hypothesis and *N. ostrina* did not reduce foraging or movement in response to *C. maenas*, even when the crabs had recently consumed conspecifics. Instead, *N. ostrina* showed higher consumption of mussel biomass in the presence of predators with conspecifics, regardless of the predator species. These results suggest that *N. ostrina* does not recognize *C. maenas* as a threat, potentially due to a lack of shared evolutionary history. Our findings highlight that trait-mediated effects from novel predators may be limited when prey lack recognition of predator cues, potentially affecting the ecological impact of *C. maenas* in rocky intertidal systems.

Kiara Maciel, *Uncovering the relationship between functional traits in fish and pond characteristics*; Kiara Maciel, OSU, Dept. of Fisheries, Wildlife, and Conservation Sciences; Courtney Hendrickson, OSU, Dept. of Fisheries and Wildlife Conservation Sciences; Tiffany Garcia, OSU, Dept. of Fisheries and Wildlife Conservation Sciences.
Characteristic traits of a pond provide environmental filters that influence the survival of fish and the functional traits present. Understanding the relationships between pond characteristics and the functional traits present within a fish community is a vital step in predicting the survival of stocked fish and the resulting community assemblage. Diagnostic traits such as pond depth, temperature, and vegetation density impact the range of niches available. Functional traits displayed in a fish community are indicative of the pond habitat characteristics that manipulate the phenotypic attributes of an aquatic community. Natural selective forces filter the gene pool to promote functional groups that fulfill the niches present.
A field survey was conducted at six sites across a gradient from Spokane, WA, to the lower Willamette Valley, observing stocked permanent ponds over three years. Field surveys have been conducted, and data analysis is ongoing. This study examines feeding morphology, abundance, and body size within fish communities and compares the biological traits observed to the pond characteristics present to identify patterns in survival and functional roles.

Laken Alles, *Light detection and ranging (LiDAR)-based fuels monitoring for fire behavior assessment*; Laken Alles, OSU, Dept. of Fisheries, Wildlife, and Conservation Sciences; Lisa Ellsworth, OSU, Dept. of Fisheries, Wildlife, and Conservation Sciences.
Changing fire regimes in the Great Basin, driven by annual grass invasion and increasingly severe fire weather, are elevating wildfire risk across sagebrush steppe and pinyon–juniper ecosystems. Effective fuels management in these systems requires scalable, repeatable methods for detecting fine-scale changes in vegetation structure that influence fire behavior. Traditional field-based monitoring provides valuable long-term data but is time-intensive, subject to observer variability, and rarely conducted at sub-annual intervals. Terrestrial LiDAR Scanning (TLS) offers a rapid, high-resolution alternative for measuring vegetation structure. When validated against long-term SageSTEP subplot data, TLS has the potential to enable accurate, efficient, sub-annual assessment of structural change relevant to modeling plot-level fire behavior and subsequent management decisions.

Lynette Mason, *Urban stream decomposition along Pringle Creek and potential implications for downstream ecosystem processes*; Lynette Mason, OSU, Dept. of Fisheries, Wildlife, and Conservation Sciences; Meagan White, OSU, Dept. of Fisheries, Wildlife, and Conservation Sciences; Ivan Arismendi, OSU, Dept. of Fisheries, Wildlife, and Conservation Sciences.
Urbanization alters stream ecosystems by increasing nutrient inputs, modifying hydrology, and degrading water quality, thereby influencing fundamental ecosystem processes. Organic matter decomposition, largely driven by microbial activity, provides an integrative measure of ecosystem function because it links physical conditions, water chemistry, and biological communities. In urban streams, elevated nutrient and organic matter inputs associated with stormwater runoff and wastewater may accelerate microbial decomposition even as overall ecological condition declines. This study evaluated how cumulative urban exposure influences decomposition dynamics in Pringle Creek, a highly urbanized stream flowing through

Salem, Oregon before entering the Willamette River. We deployed cotton strip assays to compare decomposition rates at upstream and downstream sites in both aquatic and adjacent terrestrial environments. By measuring tensile strength loss as a proxy for microbial activity, we assessed spatial differences in ecosystem processing along the urban gradient. Understanding these process-level changes can improve our ability to anticipate downstream impacts because decomposition integrates microbial activity and water quality conditions, observed differences provide insight into how urbanization alters ecosystem functioning prior to water entering larger river systems such as the Willamette River.

Maeve Bittle, *Wildfire and stream nutrients: Local vs. cumulative effects*; Maeve Bittle, OSU, Water Resources Graduate Program; Catalina Segura, OSU, Dept. of Forest Engineering, Resources and Management; Dana Warren, OSU, Dept. of Forest Ecosystems and Society; Julian Klaus, University of Bonn, Dept. of Geography.
Mountainous headwater streams play an important role in downstream water quality. In light of increasing wildfire disturbances, higher nutrient and sediment exports are expected from burned watersheds across the Western US, degrading water quality and impacting downstream users. This project will investigate local versus watershed scale fire impacts on spatial stream nutrient variability. To achieve this goal, unique spatially explicit pre- and post-fire stream chemistry data will be used along with long-term temporal data from catchments in the H.J. Andrews Experimental Research Forest in the Oregon Cascades. We will compare spatial distribution of nutrients pre- and post-fire, assessing if larger catchment scale fire impacts or local canopy losses explain longitudinal changes. Watershed scale impacts will be informed by soil burn severity and tree mortality measurements. Longitudinal trends and spatial heterogeneity in nutrient concentrations will be quantified using semi-variograms. We hypothesized that nutrient uptake by stream primary producers will increase proportionally with local riparian burn severity due to greater light availability from reduced canopy cover after fire, leading to greater spatial variation of nutrient concentrations. Alternatively, changes in nutrient imports driven by fire effects at the watershed scale overwhelm local instream processes, leading to increasingly homogeneous spatial nutrient concentrations that are largely unaffected by stream processes. To evaluate these hypotheses, we will compare synoptic stream chemistry and stream canopy cover data collected in summer 2016 with data collected in the summers of 2025 and 2026.

Maia-Roberta McGaw, *Nitric acid from ecosystem N enrichment as a driver of soil chemical weathering*; Maia-Roberta McGaw, OSU, Dept. of Crop and Soil Science; Julie Pett-Ridge, OSU, Dept. of Crop and Soil Science; Steve Perakis, USGS; Amelia Fitch, OSU, Dept. of Forest Ecosystems and Society; Scott Kiel, USGS.
The Oregon Coast Range Nitric Weathering project is a nitrogen addition experiment which seeks to expand understanding of the chemistry and mechanisms of nitric acid mediated weathering of soils. Around the world, many ecosystems have experienced nitrogen enrichment from atmospheric nitrogen deposition, agricultural nitrogen fertilization, and/or biological nitrogen fixation. In the Coast Range of Oregon, legacies of nitrogen fixation have created the widest natural soil nitrogen gradient known worldwide, which has influenced theories of nitrogen limitation and saturation. This project seeks to learn how nitric acid from ecosystem nitrogen enrichment enhances chemical weathering, such as creating thresholds in soil properties leading to distinct soil functioning. The question at the heart of this project is: What are the short-term and long-term effects of acidification from nitrogen enrichment on soil properties and soil weathering fluxes? The main hypothesis derived from this question is that short-term nitrogen enrichment and nitrate leaching primarily displace cations from the soil exchange complex, while long-term nitrogen enrichment accelerates weathering and alters soil mineralogy.

Marc Castellón Durán, *Governing landscapes in the Anthropocene: A grounded revision of the social-ecological systems framework governance component*; Marc Castellón Durán, OSU, Dept. of Forest Engineering, Resources and Management; Mindy Crandall, OSU, Dept. of Forest Engineering and Resource Management; Erika Wolters, OSU, School of Public Policy.
In the 1990s, leading social science researchers Elinor Ostrom and Carl Folke developed the concept of social-ecological systems (SES) to define complex landscapes in which resource use is inseparable from long-term environmental and human development. Thirty years later, interdisciplinary efforts are still struggling to operationalize the components of the Social-Ecological Systems Framework (SESF). This is, partially, the result of a shortage of empirical research over the last decade, which has led to a lack of primary data for comparative analyses. A transdisciplinary exploration of SES as complex adaptive systems could allow for testing the second-tier variables in Ostrom's SESF. This poster will describe a research plan to specify the framework's governance component through a grounded approach. Our project will employ applied anthropology methods (i.e. in-depth semi-structured/unstructured interviewing and participatory focus groups) to gather data on forest governance in two Global North settings, Northeastern Spain and Western Oregon. We will translate key concepts of adaptive governance into lay terms to provide topics of discussion. Conversations will be run with attention to ensuring the participants'

full freedom to answer in meaningful ways. Analysis will then be applied to determine whether the concepts derived from the SESF are deemed relevant, and to propose potential changes to the framework's governance component. This grounded approach will maximize the quality and quantity of our inputs, resulting in rich data for primary and secondary uses. Broadly, our project explores how we can rejuvenate the debate on making natural resource governance sustainable, effective, and acceptable to rural communities.

Melia Rasmussen, *What habitat characteristics facilitate terrestrial wildlife to use large down wood as habitat corridors?*; Melia Rasmussen, OSU, Dept. of Fisheries, Wildlife, and Conservation Sciences; Emilee Mowlds, OSU, Dept. of Agricultural Sciences; Ivan Arismendi, OSU, Dept. of Agricultural Sciences.
Large down wood in forest ecosystems have been known to provide multiple ecological functions including structural habitats, nutrient recycling, and connectivity between freshwater and riparian ecosystems. To determine if there is an association between specific habitat characteristics and functionality as a corridor, we document how terrestrial wildlife interact with large wood crossings both spatially and temporally. We placed 29 motion-sensor camera traps overlooking large wood that bridges stream channels at different elevations within the H.J. Andrews Experimental Forest near Blue River, OR. The wildlife biodiversity and number of detections per log is quantified and paired with the structure of large wood complexes (large wood width, length, distance from other trees, and height above water). We expect a higher frequency of animal detections on downed wood with greater distance from other trees and species-specific selection of log width, height above channel, and stream size that may indicate habitat preferences over time and space. Our findings can provide insights for restoration efforts in disturbed habitats to facilitate the movement of wildlife across riparian ecosystems. Future management using these characteristics on a single stretch of one site may be influential to understand the behavior of species and implement effective habitat conservation.

Melissa Mauk, *Evaluating the influence of stand structure and thinning on fire effects in moist Douglas-fir/western hemlock forests*; Melissa Mauk, OSU, Dept. of Forest Engineering, Resources and Management; Matthew Powers, OSU, Dept. of Forest Engineering, Resources and Management.
Climate change is driving an increase in the frequency and severity of wildfires in Pacific Northwest forests. Changes in fire regimes threaten critical ecosystem services and may lead to ecosystem transition. Research on the relationship between forest stand structure and fire effects is currently focused mainly on dry forest types. As a result, less is known about what management activities may improve resistance of moist forests to fire effects. Our project will focus on investigating fire effects and mortality in moist, Douglas-fir/western hemlock forests. We will investigate how forest stand structure and previous thinning treatments influenced fire effects and tree mortality caused by the 2023 Lookout fire within the H.J. Andrews Experimental Forest. Existing pre-burn data from the Uneven-Aged Management Project will be used to establish a baseline of stand structure and composition across various thinning treatment intensities. These plots will be resampled this summer so as to capture post-burn stand characteristics. Primary characteristics will be tree density, species composition, tree size classes, tree mortality/snag data, bole char, crown scorch, and shrub cover. Using statistical analysis relating pre-fire stand structural characteristics and day of burn fire weather conditions to fire effects metrics, we will determine which stand characteristics best mitigated fire effects and reduced tree mortality in order to make management suggestions that can be used to reduce the vulnerability of Oregon's moist forests to future wildfires.

Mena M. Moran, *Squirrels of Corvallis: Distribution and detection of native and non-native species*; Mena M. Moran, OSU, Dept. of Fisheries, Wildlife, and Conservation Sciences; Lindsay Millward, OSU, Dept. of Fisheries, Wildlife, and Conservation Sciences; David L. Pearce, OSU, Dept. of Fisheries, Wildlife, and Conservation Sciences; Clinton W. Epps, OSU, Dept. of Fisheries, Wildlife, and Conservation Sciences.
Introduced squirrel species from eastern North America (e.g. *Sciurus carolinensis*, *Sciurus niger*) have been observed to compete for resources with native species (e.g. *Sciurus griseus*, *Tamiasciurus douglasii*) on the west coast, raising concerns about competitive exclusion. Anecdotal observations suggest rapid expansion of *S. carolinensis* has occurred in Corvallis, Oregon in recent years. Additionally, unusual morphological variation in gray squirrels has elicited questions of potential hybridization in the mid-Willamette Valley. Our research examines spatial overlap of native and non-native species in Corvallis and documents morphology to inform future genetic investigations. We are conducting surveys using grid-point sampling at 90 centroids located 850 meters apart across Corvallis. Information regarding species, physical characteristics, abundance, behavior, and habitat is recorded during twenty-minute intervals while walking routes ~1400 meters extending from each centroid. We mapped species observations from 35 surveys, including unidentifiable individuals, and compared spatial

distributions to those reported in iNaturalist over the last 18 years. *S. griseus* and *S. carolinensis* were most frequently identified. We observed substantial overlap between the two species in urban areas, and our data showed that *S. carolinensis* was less detected in rural locations. Historical data have shown increased detections of *S. carolinensis* in the past decade. Data collection will continue through May, and sites will be randomly resampled for occupancy modeling. This research contributes to our understanding of the distribution and competitive exclusion of native and non-native squirrel species in Corvallis, establishes a baseline for future monitoring, and provides a foundation for subsequent genetic analysis.

Michael Bartczyszyn, *Impact of tree thinning on direct sun illumination and temperature of the forest floor*; Michael Bartczyszyn, OSU, Dept. of Forest Engineering, Resources and Management.
Solar illumination influences a wide array of ecological functions in forested riparian ecosystems, including stream temperature, microclimate, understory species composition, and snow dynamics. Understanding how forest management activates impact illumination is therefore critical to designing and evaluating silvicultural treatment effect forested systems. Remote sensing data can be used to evaluate past or proposed treatment effects on solar illumination at scale, but many existing modeling approaches are limited by the quality, resolution, or type of data used or by coarse modeling methods designed to reduce computational requirements. Here, we use high density LiDAR point clouds collected with a drone, and a ray tracing-based illumination model to evaluate simulated silvicultural effects on light regimes in forested riparian stands in OR, ID, and CO. Our simulations included multiple prescriptions, which will include a mechanical NS and EW, as well as a thin from below, the other prescriptions are still yet to be finalized. To ensure similarity of point cloud density, the non-ground points were decimated using random selection. Thinning from below produced the greatest increase in illumination levels, up to 22.7%, compared to controls. Directionality of the row thinning prescriptions was also important, resulting in an 8.5% increase for EW and 6.7% increase for NS, relative to NT. Together, these results demonstrate that LiDAR based virtual thinning simulations can quantify effects of variable intensity, fine-scale treatment effects on understory light regimes. This approach provides managers with a reproducible tool that can predict the levels of illumination change that result from thinning prescriptions.

Naia Marten, *Tanoak ecosystem rhizosphere microbial community resilience in the face of disease and fire*; Naia Marten, OSU, Dept. of Forest Engineering, Resources and Management; John Bailey, OSU, Dept. of Forest Engineering, Resources and Management; Jared LeBoldus, OSU, Dept. of Forest Engineering, Resources and Management and Dept. of Botany and Plant Pathology.
Ecosystem resilience in the face of biotic and abiotic disturbance is essential for a healthy natural environment. Tanoak trees (*Notholithocarpus densiflorus*) have been ravaged by the invasive pathogen, *Phytophthora ramorum*, the causal agent of Sudden Oak Death (SOD). With the death of tanoak trees comes a shift in plant communities and therefore the microbial communities that are associated with them. Tanoak ecosystems are also subject to fire disturbance, both wildfire and historically prescribed fire. Previous studies have shown that fire has impacts on the diversity of the soil microbiome. These overlapping parameters present a unique opportunity to study the nested effects of stochastic biotic (pathogen), abiotic (fire) disturbance, and prescribed disturbance (fire) on soil microbial community composition. Here we show the difference in microbiome diversity between uninfected, SOD infected, and previously treated for SOD tanoak stands within the three fire treatments classified as: unburned, low severity burned to mimic prescribed fire, and high severity burned to mimic wildfire. Soil was sampled in triplicate from 87 sites near Brookings, OR in steel tubes with the top 6-8cm strata conserved. The samples were burned to simulate a high and low severity fire, with one triplicate sample being left unburned. Soil samples taken from pre and post burn conditions were sequenced using 16s (bacteria), ITS2 (fungi), and RPS10 (oomycota) barcode regions to assess microbiome diversity. Overall, this study aims to advance the knowledge of ecosystem resilience under climate change through the interaction of abiotic and biotic stress.

Ricardo Javier Hurtado Alvarez, *How do changing forest conditions affect the work experiences, safety concerns, and adaptive practices of labor-intensive restoration crews in Southern Oregon?*; Ricardo Javier Hurtado Alvarez, OSU, Dept. of Forest Ecosystems and Society.
An increase in Douglas-fir mortality in Southern Oregon has altered forest conditions and increased the need for fuels reduction and thinning treatments. In the Rogue Basin, where restoration efforts such as the Rogue Basin Cohesive Forest Restoration Strategy conduct large-scale management, labor-intensive forestry workers perform most thinning operations. These crews carry out physically demanding tasks such as hand thinning, piling, and slash removal, yet their insights are rarely documented in forest management research. While ecological responses to Douglas-fir decline are well documented, much

less is known about how mortality-driven changes in thinning prescriptions affect the workers implementing them. As managers increasingly remove dead or declining Douglas-fir and prioritize more drought-resilient species, crews must adapt to new safety risks, technical demands, and training needs. Understanding these on-the-ground experiences is essential for developing effective and equitable restoration strategies. This study examines how labor-intensive forestry crews in Jackson and Josephine counties have perceived and adapted to operational changes in thinning since 2015. By conducting in-person interviews with the crews performing thinning operations in the field, this research aims to explore shifts in work practices, safety conditions, and training adequacy. Findings will inform adaptive management, strengthen workforce protections, and integrate human dimensions into forest restoration planning.

Scott Quigley, *Modeling golden eagle production and occupancy in eastern Oregon*; Scott Quigley, OSU, Dept. of Fisheries, Wildlife, and Conservation Sciences; Christian A. Hagen, OSU, Dept. of Fisheries, Wildlife, and Conservation Sciences; Casey L. Brown, Oregon Department of Fish and Wildlife.
The golden eagle (*Aquila chrysaetos*) is an important conservation species throughout the western United States including Oregon, protected by both the Bald and Golden Eagle Act and the Migratory Bird Treaty Act. Over the last several decades, direct and indirect influences, including persecution, wind energy development, and changes to habitat and climate have threatened to impact this vital predator. Golden eagles are a long-lived species that inhabit large territories over many successive years, making their occupancy and reproductive success important to track over long time periods to monitor trends in population demographics and status. We use a 10-year data set of golden eagle nesting areas throughout eastern Oregon (2011–2020) to build predictive occupancy and productivity models in response to varying environmental, climatic, and human disturbance covariates. The models use data from five ecoregions east of the Cascade Range to capture variation in weather patterns and landscape characteristics. Concurrently, we will collect nest occupancy and production metrics from nest areas in Northeast Oregon to test the predictive accuracy of models for the Blue Mountain ecoregion. We plan to attach GPS transmitters to 25 golden eagles in winter 2025–26 and 2026–27 to conduct a home range analysis by ecoregion to better understand habitat use and inform future management decisions.

Stephen Bunnell, *Post-wildfire restoration in the sagebrush steppe: Effects on fire behavior and future fire risk*; Stephen Bunnell, OSU, Dept. of Fisheries, Wildlife, and Conservation Sciences; Lisa Ellsworth, OSU, Dept. of Fisheries, Wildlife, and Conservation Sciences.
The sagebrush steppe of the intermountain west is historically characterized by long fire return intervals but changing climate, invasive species, and land-use changes have threatened the ecological integrity and future of these systems. Annual grasses infill between perennial vegetation, increasing fire risk, and have the potential to further perpetuate invasion. Land managers use seeding and herbicide treatments to promote perennial vegetation and inhibit annual grass germination. However, behavior and risk of post-restoration fires have not been examined. We are using land treatment data from the Utah Division of Wildlife Resources Range Trend and Watershed Restoration Initiative on herbicide treatments alone and combined seeding + herbicide treatments. Seeding treatments will be differentiated by the inclusion of non-native species in the seed mix and by seeding method (sub-soil versus soil surface). We are focusing on treatments using the pre-emergent herbicide imazapic. We will use the Fire Characteristics Classification System in the Fire and Fuels Tool to estimate the impact of post-wildfire restoration treatments on wildfire behavior. Custom fuel beds will be developed using post-treatment vegetation data 1–3 YAT and 5+ YAT. We will use linear mixed models to evaluate differences in response of the fire behavior metrics reaction intensity (RI), rate of spread (ROS), and flame length (FL). Our results will inform future fire and fuels management in post-wildfire restoration treatments and provide land managers with context on the severity and risk of fire under different treatment scenarios.

Tatiana Latorre, *Adult emergence in aquatic insects: Contrasting intermittent and perennial mountain streams*; Tatiana Latorre, OSU, Dept. of Fisheries, Wildlife, and Conservation Sciences; Ivan Arismendi, OSU, Dept. of Fisheries, Wildlife, and Conservation Sciences; Sherri Johnson, OSU, Dept. of Fisheries, Wildlife, and Conservation Sciences.
The emergence of aquatic insects influences the diversity and ecology of aquatic and terrestrial systems. With an increasingly variable climate worldwide, streams may be shifting between perennial and intermittent states. How the community composition will respond to or be impacted by these shifts is uncertain. In this study, we studied the environmental variables influencing the composition and structure of adult aquatic insect communities among adjacent streams with different flow conditions. For this purpose, during the summer of 2022 at the HJ Andrews Experimental Forest, we collected aquatic insects using emergence traps every three days for two months, then identified them in the laboratory to the lowest taxonomic level

and analyzed the structure and composition of these groups. At the time of collection, we also measured environmental variables, including water temperature, channel width and depth, canopy cover, and substrate. Across 9 intermittent and eight perennial streams, Ephemeroptera and Plecoptera showed higher abundances in intermittent sites, while Trichoptera maintained consistent abundances under differing conditions of water flow effect. Our preliminary results showed that the wetted width, temperature, and altitudinal range are good predictors of insect community composition for these intermittent and perennial tributaries of Lookout Creek (OR). Also, some genera, such as *Yoraperla* and *Wormaldia*, may be desiccation-tolerant. Regarding the flow of aquatic-derived biomass into adjacent terrestrial ecosystems, peaks in emergence during the first sampling dates (late June–late July) correspond to periods of elevated cross-ecosystem energy transfer, providing key subsidies that support riparian predators such as spiders, beetles, and birds, as well as other terrestrial consumers.

Tessa Jarden, *The Lookout Mountain thinning and fuels reduction study: Regeneration and shrub dynamics 10 years post-treatment*; Tessa Jarden, OSU, Dept. of Forest Ecosystems and Society; Meg Krawchuk, OSU, Dept. of Forest Ecosystems and Society; Harold Zald, USDA Forest Service, Pacific Northwest Research Station.
Across the western United States, fire exclusion has contributed to the densification of stands, shifts in species composition, and the buildup of hazardous fuels in dry, historically frequent-fire forests. A combination of thinning and prescribed burning is widely applied to reduce fuel loads and restore ecosystem patterns and processes. To better inform management strategies, however, a more thorough understanding of the long-term treatment responses of shrubs and tree regeneration is needed. The accumulation of these woody understory fuels following treatment can contribute to future fire behavior and pose challenges for ongoing prescribed fire implementation. The Lookout Mountain Thinning and Fuel Reduction Study (LMS) is an operational-scale, long-term experiment located on the Pringle Falls Experimental Forest in central Oregon. Across 1000 hectares of ponderosa pine (*Pinus ponderosa*) and mixed conifer forest, four levels of commercial thinning treatments were implemented between 2011 and 2013 in a randomized block design and followed by mastication and broadcast burning. Measurements of trees, understory vegetation, shrubs, and tree regeneration were collected from 475 field plots prior to and 1, 5, and 10 years after treatment. Here, we summarize shrub and regeneration responses to understand how thinning and fuel reduction treatments impact long-term fuel and vegetation management.