MELISSA R.A. PINGREE, PhD

EDUCATION

Ph.D., Environmental & Forest Sciences, March 2017
School of Environmental and Forest Sciences, University of Washington, Seattle, WA
Committee Chair: Thomas H. DeLuca
Dissertation: *Fire, charcoal, and the biogeochemistry of carbon and nitrogen in Pacific Northwest forest soils.*

M.Sc., Environmental Sciences, June 2011
Huxley College of the Environment, Western Washington University, Bellingham, WA
Committee Chair: Peter S. Homann
Thesis: *The first pre- and post-wildfire charcoal quantification using peroxide-acid digestion.*

B.Sc., Resource Conservation, Terrestrial Science emphasis, December 2006
College of Forestry, University of Montana, Missoula, MT
Major Advisor: Thomas H. DeLuca

Semester Study Abroad, Autumn 2004, University of Helsinki, Finland

PROFESSIONAL EXPERIENCE

Research Applications Scientist, Cary Institute of Ecosystem Studies, June 2026-Present
I currently work with Cary Institute's Western Fire and Forest Resilience Collaborative (WFFRC) to help create and implement a research program that will ensure the science of fire ecology and forest resilience can support effective solutions for the fire crisis in the western US. WFFRC is led by the Forest Futures Lab at Cary Institute of Ecosystem studies and I am supervised by WFFRC's Deputy Director for Policy and Management, Dr. Crystal Raymond. In this position, I support the design and execution of short-term, targeted research projects and deliverables with land managers that address immediate management needs related to fire and forest management. I work with WFFRC scientists to customize west-wide research to specific geographies and communicate WFFRC research with land management audiences.

Forest Soil Scientist, USFS Bitterroot National Forest, Hamilton, Montana, August 2023-May 2026
My role with the USFS entailed development and oversight of a Forest-wide soils program, participation in NEPA planning, and development of collaborative projects involving soil resources. I provided input as a member of Interdisciplinary Teams on forest management activities such as timber harvest, recreation, fuel treatments, silviculture prescriptions, road building, and other activities that interacted with soil stability and function. Where soils are of concern, I provided analyses and management recommendations that incorporate the ecological role of disturbances and landscape-level considerations in order to meet Forest Plan, NEPA,

NFMA, and FLPMA requirements. During the field season, I provided oversight and training for up to three technicians. I conducted monitoring of proposed and completed timber sales and fuels projects to evaluate project design features and report monitoring data with online and desktop GIS tools. I managed the post-fire and disaster programs that include Burned Area Emergency Response (BAER) and Burned Area Rehabilitation (BAR). I also helped develop a Forest-wide Fire Resource Advisor training, associated AGOL map, and red-card committee standards.

Soil Scientist, Bureau of Land Management, Medford District, Grants Pass Field Office, April 2020-August 2023

In addition to the activities I currently fulfill on the Bitterroot National Forest, my position at the BLM also incorporated leadership of the Field Office Emergency Stabilization and Rehabilitation (ESR) program for post-wildland fire projects. During my tenure at the BLM, I helped assemble and coordinate a $4M ESR project on a 30k acre fire in the Rogue River Wild and Scenic corridor. I also served as the Ecologist for the Pre-Planning Rogue River Comprehensive River Management Plan and developed a model for mature and old-growth forests on the Rogue River tributaries, which met compliance with the Dingell Act and Wild and Scenic Rivers Act. I regularly helped as a Resource Advisor on large and small incidents that often overlapped with private and state property.

Assistant Field Manager Detail, Bureau of Land Management, Medford District, Ashland Field Office, August 2021-October 2021

In this position, I supervised multiple resource professionals and technicians involved in managing Bureau programs including botany, wildlife, GIS, and fisheries. I served as consultant, coach, and supporter of employees in collectively solving problems and carrying out program goals. I evaluated work performance, developed performance standards, and advised subordinates on work in administrative matters. I was also involved with hiring and off-boarding of term, seasonal and permanent positions.

Postdoctoral Researcher, Swedish University of Agricultural Sciences (SLU), November 2018-April 2020. November 2018 – April 2020

Working in collaboration with Dr. Michael Gundale, my research investigated the potential for biochar as a tool to sequester carbon in boreal forest soils and reduce greenhouse gas emissions. This work utilized an existing field experiment consisting of replicated biochar amendment treatments. I provided technical implementation of research activities, supervision of technical staff, ensured quality control measures, conducted statistical analyses, completed internal and external reporting, and prepared manuscripts for peer-reviewed journal articles. This research helps inform forest management decision making and planning for carbon storage and greenhouse gas emissions. In addition, I regularly participated in Vegetation Ecology Lab meetings and was an active board member of the SLU Postdoc Association.

Postdoctoral Researcher, University of Idaho, February 2017-October 2018

My research activities focused on developing methods to quantify and characterize microbial

transport by wildland fire smoke with culture-dependent methods let by Dr .Leda Kobziar. I also participated in a collaborative project to evaluate soil heating with prescribed fire in northern Florida. In this position I designed new experiments and worked with existing experiments to conduct field and lab research activities, ensured quality control, managed data sets, prepared data for analyses, identified appropriate statistical analyses, and performed statistical analyses. I regularly provided project management decision support, prepared written reports, and produced manuscripts for peer-reviewed journals. I contributed to the data collection and statistical analyses for the Joint Fire Science Program final report (project ID 15-1-05-5). Concurrently, I solicited external funding, provided oversight and training for graduate students, undergraduate students, and interns, and developed a website for the lab group.

Graduate Research Assistant, University of Washington, January 2013-March 2017
During my PhD program, I designed and installed a chronosequence study to evaluate the influence of wildfire and charcoal on biogeochemistry of forest soils of the eastern Olympic Peninsula of Washington State. I utilized GIS to locate site locations and create publishable maps. I employed elemental analysis, spectrophotometry, spectroscopy, and common lab methods to derive measurements of soil chemical and physical characteristics (e.g.: particle size, organic matter content, pH). I conducted soil extractions and assays to measure C and N pools, N transformations, and soil respiration. I applied thermogravimetric analysis and adsorption laboratory studies to measure chemophysical properties of natural and reference charcoal particles. I conducted parametric, non-parametric, and multivariate data analysis in the R environment. I also provided oversight and training for undergraduate students, hourly employees, and interns conducting independent studies. In addition, I regularly participated in student groups and department functions. This research combines fire history, fire ecology, and soil science to help inform both forest and fire management in the eastern Olympic Peninsula through both presentations and peer-reviewed, published papers.

NSF Fellow, National Science Foundation (NSF) East Asia and Pacific Summer Institutes Program and University of Hokkaido, Japan, Summer 2016, with Dr. Makoto Kobayashi
I completed a ten-week co-sponsored fellowship funded by the NSF and Japan Society for the Promotion of Science to assess the interactive effects of soil fauna and charcoal on bioavailable phosphorus in forest soils of northern Japan. In preparation for my fellowship, I participated in a pre-departure orientation in Washington D.C. and an in-country orientation to Japanese culture, customs, and language. I shared rich cultural experiences with my host family, colleagues, and peers while conducting primary research in a remote field location in central Hokkaido.

Graduate Research Assistant, University of Washington and USDA Forest Service Pacific Northwest Research Station, Summer 2015, with Dr. Morris Johnson & Dr. Ernesto Alvarado
In the summer of 2015, I collaborated with the USFS to complete post-wildfire, pre-salvage soil sampling to assess the response of biotic processes to salvage logging after the King Fire (2014) in the Sierra Nevada Mountains, California. With the help of a field assistant, we successfully and safely completed a two-week front-country field campaign with long-distance transportation, limited resources, and challenging terrain. I managed complex scheduling and logistics of time

and temperature-sensitive soil samples. In the lab, I quantified surface soil available nitrogen (N), potentially mineralizable N, microbial biomass N, total soil carbon C, and total soil charcoal C. I also provided oversight and training for hourly employees and interns both in the field and laboratory.

Forestry Technician (Wildland Fire), North Cascades National Park (NOCA) May 2011-December 2011 and May 2012-December 2012

Over the fire seasons of 2011 and 2012, I worked as a member of a 10-person fuels module for theNorth Cascades National Park Complex, which includes Lake Chelan and Lake Roosevelt National Recreation Areas in Washington State. As a member of the NOCA fuels module, I attended training classes for engines, water pumps, chainsaws, and helicopter crew members at the station base in Marblemount. I traveled often to work locations in Stehekin and Kettle Falls to conduct fuel management operations and prescribed burning. As a small engine crew, we responded to wildfires in the Lake Roosevelt area in coordination with other agencies. Occasionally, I accompanied the fire ecology crew to collect fuel inventory data using Brown's method for dead and down fuels. I worked with staff from the Olympic and Mt. Rainier National Parks to respond to large wildfires as a 20-person crew. I also traveled to Mesa Verde and Great Basin National Parks as a single resource to provide chainsaw training and expertise for small-scale thinning and fuel management projects.

Forestry Technician (Wildland Fire), USFS Wenatchee-Okanogan National Forest Summer 2009 and Mt. Baker-Snoqualmie National Forest Summer 2008

As a wildland fire fighter with the USFS, I worked as a handcrew member to fulfill strategic wildland and prescribed fire operations. I assisted in fuels reduction projects consisting of thinning small-diameter, insect infested, diseased, or hazard trees. I also utilized situational awareness, physical conditioning, and clear and concise communications to aid in daily operations on small and large complex wildland fires.

Field Assistant, McNeil River Game Sanctuary, Alaska Fish and Game Dept. & Western Washington University, July-August 2010

Over a 5-week period, I assisted in the collection of observational data on bear density and behavior in a remote location in northeast Alaska under adverse weather conditions. The research was featured in National Geographic online:
www.nationalgeographic.com/animals/article/alaska-brown-bears

Forestry Technician (Forestry), Ft. Lewis-McCord Air Force Base, WA. April-Oct 2007

At Ft. Lewis, I helped mark timber sales and participated in wildland fire response to firing ranges and prescribed burning with a Type 6 engine in coordination with on-base resources.

SYNERGISTIC ACTIVITIES

2024-2025: Subject Matter Expert for Resource Advisor (READ/REAF) Incident Performance and Training Modernization (IPTM), National Wildfire Coordination Group,
2020-Present: Ongoing support for wildland fire incidents through various qualifications,
2022-2024: Chief Union Steward, AFGE Local 2023,
2025-2026: Chief Union Steward and Conductor Sentinel, NFFE-FSC Local 60,
2025: Three-week Fire Lookout Assignment in Bob Marshall Wilderness Complex,
2026: RX310 Introduction to Fire Effects cadre contributor and class mentor.

PUBLICATIONS

Kobziar, L. N., Hiers, J. K., Belcher, C. M., Bond, W. J., Enquist, C. A., Loudermilk, E. L., ... **Pingree, M.R.A**. & Watts, A. C. (2024). Principles of fire ecology. *Fire Ecology*, 20(1), 39.

Pingree, M. R., Kardol, P ., Nilsson, M. C., Wardle, D. A., Maaroufi, N. I., & Gundale, M. J. (2022). No evidence that conifer biochar impacts soil functioning by serving as microbial refugia in boreal soils. *GCB Bioenergy*, 14(8), 972-988.

Grau-Andrés, R., **Pingree, M. R. A.,** Öquist, M. G., Wardle, D. A., Nilsson, M.-C., & Gundale, M. J. (2021). Biochar increases tree biomass in a managed boreal forest, but does not alter N2O, CH4, and CO2 emissions. *GCB Bioenergy*. 2021; 13: 1329– 1342. https://doi.org/10.1111/gcbb.12864

Kobziar, L.N., **M.R.A. Pingree**, A.C. Watts, K.N. Nelson, T.J. Dreaden, M. Rideout. (2019). Accessing the Life in Smoke: A New Application of Unmanned Aircraft Systems (UAS) to Sample Wildland Fire Bioaerosol Emissions and Their Environment. *Fire*, 2(4), 56.

DeLuca, Thomas H., **Melissa R.A. Pingree**, Si Gao. (2019). Chapter 13: Assessing Soil Biological Health. In Busse, M., Page-Dumroese, D, Giardina, C., Morris, D. (Eds.), *Global Change and* Forest Soils: Cultivating Stewardship of a Finite Natural Resource. Elsevier Science. ISSN: 0166-2481.

Pingree, Melissa R. A., and L.N. Kobziar. (2019). The myth of the biological threshold: A review of biological responses to soil heating associated with wildland fire. *Forest Ecology and Management* 432:1022–1029.

Kobziar, L. N., **M. R. A. Pingree**, H. Larson, T. J. Dreaden, S. Green, and J. A. Smith. (2018). Pyroaerobiology: the aerosolization and transport of viable microbial life by wildland fire. Ecosphere 9:e02507.

Pingree, Melissa R.A. and T.H. DeLuca. (2018). The influence of fire history on soil nutrients and vegetation cover in mixed-severity fire regime forests of the eastern Olympic Peninsula, Washington, USA. Forest Ecology and Management 422:95–107.

Pingree, Melissa R.A. and T.H. DeLuca. (2017). Function of Wildfire-Deposited Pyrogenic Carbon in Terrestrial Ecosystems. Frontiers in Environmental Science 5:53.

Pingree, Melissa R.A., M. Kobayashi, and T.H. DeLuca. 2017. Interactive effects of charcoal and earthworm activity increase bioavailable phosphorus in sub-boreal forest soils of northern Japan. Biology and Fertility of Soils 53:873-884.

Pingree, Melissa R.A., E.E. DeLuca, D.T. Schwartz, and T.H. DeLuca. (2016). Adsorption capacity of wildfire-produced charcoal from Pacific Northwest forests. *Geoderma* 283: 68-77.

DeLuca, T.H., H.C. Glanville, M. Harris, B.A. Emmett, **M.R.A. Pingree**, L.L. de Sosa, C. Morená, and D.L. Jones. (2015). A novel biologically based approach to evaluating soil phosphorus availability across complex landscapes. *Soil Biology & Biochemistry*, 88:110-119.

Pingree, Melissa R.A., P .S. Homann, B. Morrissette, and R. Darbyshire. (2012) Long and short-term effects of fire on soil charcoal of a conifer forest in southwest Oregon. *Forests,* 3:353-369.

SELECTED PRESENTATIONS

Invited Lecture, Soil Science Class, Southern Oregon University 10 March 2021
"Fire Effects on Forest Soils."

3-Minute-Thesis Presentation, The Marcus Wallenberg Foundation Young Researchers' Program, 23-26 September 2018, Stockholm, Sweden. **Pingree, M.R.A.** and M.J. Gundale.
"Biochar as a tool to mitigate the effects of climate change: The role of soil microorganisms."

Presentation, North American Forest Soils Conference, 10-16 June 2018, Québec City Canada
Pingree, M.R.A and L.N. Kobziar. "Review of soil heating and biological thresholds"

Presentation, Association for Fire Ecology Meeting, 30 Nov 2017, Orlando, FL
Pingree, M.R.A. and L.N. Kobziar. "Pyroaerobiology: The transport and characterization of viable microorganisms by wildland fire smoke."

PROFESSIONAL TRAINING AND CERTIFICATES

The Marcus Wallenberg Foundation Young Researchers' Program, September 2018;
Graduate Student Science Communications Workshop, University of Washington, Feb 2017;
Wildland Fire Qualifications FFT2, READ, REAF, FAL2, BAES, Arduous fitness to 04/2026;
Air Resource Advisor Training, Interagency Wildland Fire Air Quality Response Program, 2023;
Rescue 3 International Swift Water and Flood Rescue Technician training, June 2023;
Burned Area Emergency Response Team Leadership Training, USFS, Albuquerque, April 2024;
First Aid and Blood Borne Pathogens training, May 2024;
Basic Union Steward Training, NFFE-FSC, Winpisinger Center, Maryland, January 2025;
Geospatial Information Systems Specialist (GISS) training and trainee task book 2025;
Advanced Federal Employees Program - IAM, Winpisinger Center, Maryland, April 2026.

HONORS, SOCIETIES, AWARDS

Primary Organizer, Spring 2019 Postdoctoral Retreat, Forest Ecology and Management Department, SLU, 14 May 2019;
Invited Graduate Student Speaker, Graduation Ceremony, School of Environmental and Forest Sciences, University of Washington, 09 June 2017;
Graduate Student Member, Student Advisory Committee, College of the Environment, University of Washington, 2015-2016;
Student Member, External Relations and Communications Committee, School of Environmental and Forest Sciences, University of Washington, 2015-2016;
Forester (President), Alpha Chapter, Xi Sigma Pi Honor Society, 2014-2015;
President, Dead Elk, Graduate Student Society, School of Environmental and Forest Sciences, 2013-2015;
Co-Coordinator, Annual Graduate Student Symposium, School of Environmental and Forest Sciences, March 2015;

Molecular Genetics Equipment, Student Technology Fee, University of Washington 2016, **$138,347;**
NSF's East Asia and Pacific Summer Program, 2016, **$5,000**;
Robert J. Luxmoore Graduate Student Travel Award, Forest, Range, and Wildland Soils division of the Soil Science Society of America, 2016, **$1,000**;
P .E.O. Scholar Award, Philanthropic Educational Organization, 2015-2016, **$15,000**;
Director's Fund Travel Grant, SEFS, UW, 2014 & 2015, **$600**;
Graduate Student Fund for Excellence and Innovation, 2014, UW, **$300**;
Huxley College, WWU, 2010, **$200**; 2009, **$1,000.**

VOLUNTEER, TEACHING, AND CONTINUED EDUCATION

Member, City of Hamilton (Montana) Zoning Board of Adjustments, December 2025-Present
Volunteers as a member of the board that determines conditional uses of properties, assess the public interest of proposed conditional uses, listens to testimony, decides on merits of individual cases, and hears and resolves appeals of actions in enforcing the Zoning Ordinance.

Advanced Federal Employees Program, William W. Winpisinger Eduction & Technology Center, April 2026
Participated in a week-long Union training related to representation and process of negotiations, FLRA, arbitration, and appeals at the national W3 Center in Maryland.

Civic Leadership Training, Wild Montana, Billings, Montana, 18-20 June 2025
Participated in voluntary training from a local conservation non-profit regarding civic roles for public land engagement and cross-boundary collaboration.

Basic Steward Training, National Federation of Federal Employees Forest Service Council, January 2025
Participated in a week-long union steward training at the national William W. Winpisinger Education & Technology Center in Maryland.

Chair, Grants Pass Bikeways and Walkways Committee, City of Grants Pass, August 2020-2022
Provided input and leadership to implement a non-motorized chapter of the Master Transportation Plan, sought input from the community, and served as a resource and advisor regarding bike and pedestrian trails for the City of Grants Pass and Josephine County.

World Ride Ambassador, Mountain Bike Non-Profit Organization, 2021
Volunteer, coordinate, and motivate the mountain biking community in support of women-led and operated mountain bike guiding tours in Nepal, Guatemala, and Peru.

Board Member, Swedish University of Agricultural Sciences (SLU) Postdoc Association: 2018-2020

Board Member, Association for Fire Ecology Diversity and Inclusivity Committee: 2018-2019

Postdoc Representative, Samverkansgrupp (joint action & coordinating group), SLU: 2019-2020

Group Leader, Forest Ecosystem Ecology Graduate Class, SLU, October 2019-January 2020
Guided student groups through a primary research project involving biochar treatments on seedlings over a 12-week period. Provided students with relevant literature, organized materials for a greenhouse experiment, trained students to take accurate measurements, answered questions regarding statistical analyses and presentations, and evaluated final projects.

Circle Leader, Folkuniversitet, Umeå, Sweden, October-November 2019
Provided guidance, learning materials, and practice in conversational English with non-native speakers.

Vindelälven-Juhtatdahkaj Biosphere Reserve UNESCO Candidate Opening Ceremony, August 17th 2019
Provided outreach support for ongoing biochar research activity in the Vindeln area of northern Sweden (https://vindelalvenjuhtatdahka.se/en/)

Expanding Your Horizons Network, Edmonds Community College, March 22nd 2016
One-day teaching workshop introducing high school girls to STEM careers. Prepared an activity related to soil science entitled,
“The Dirt on Soil: Using your senses to measure soil texture.