Michele S. Buonanduci

Postdoctoral Researcher • mbuonanduci.github.io • mbuon@uw.edu

Research interests

Spatial & statistical analysis, landscape ecology, forest disturbance ecology

Education

2020 – 2023 **Ph.D.** Quantitative Ecology and Resource Management
University of Washington, Seattle, WA
Spatio-temporal patterns of forest disturbance in western North America: implications for forest resilience

2017 – 2019 **M.S.** Quantitative Ecology and Resource Management
University of Washington, Seattle, WA
Modeling individual lodgepole pine mortality from mountain pine beetle outbreak in a spatially explicit framework

2008 – 2012 **B.A.** Environmental Science
Boston University, Boston, MA

Research experience

2024 – Present **Postdoctoral Researcher**
The Nature Conservancy & University of Washington

2023 – 2024 **Postdoctoral Researcher**
The Nature Conservancy

2017 – 2023 **Graduate Research Assistant**
Quantitative Ecology and Resource Management & School of Environmental and Forest Sciences, University of Washington

2010 **Undergraduate Research Assistant**
Department of Geography and Environment, College of Arts and Sciences, Boston University

Research grants & fellowships

2024 – Present Science for Nature and People Partnership Working Group & Research Fellowship
Integrating salmon and forest resilience to wildfire in the western United States
($221K - Fellow)

2021 – 2022 Northwest Climate Adaptation Science Center Research Fellowship
Potential impacts of future fires in the western Cascades: insights from spatial metrics of burn severity ($46K - Fellow)

2021 – 2022 Joint Fire Science Program Graduate Research Innovation Award
Does high-severity patch structure scale consistently with fire size across the Northwest US? ($25K – PI)

2017 – 2018 UW Quantitative Ecology & Resource Management First Year Fellowship
(3 quarters graduate tuition + stipend)

Teaching assistantships

Winter 2023 ESRM 101: Forests, Fire & Society (University of Washington)

Winter 2021 QSCI 381: Introduction to Probability and Statistics (University of Washington)

Spring 2020 ESRM 315: Old-Growth Forest Ecology & Management (University of Washington)

Spring 2019 QSCI 381: Introduction to Probability and Statistics (University of Washington)

Winter 2019 QSCI 381: Introduction to Probability and Statistics (University of Washington)

Professional experience

2017 – 2020 **Staff Scientist, *Part Time as Needed*** – Arcadis, Seattle, WA

2015 – 2017 **Staff Scientist** – Arcadis, Denver, CO

2013 – 2015 **Scientist II** – Arcadis, Chelmsford, MA

2012 – 2013 **Scientist I** – Arcadis, Chelmsford, MA

Publications

2025 Collins, L., K. Morrison, **M.S. Buonanduci**, L. Guindon, B.J. Harvey, M.-A. Parisien, S. Taylor, and E. Whitman. Extremely large fires shape fire severity patterns across the diverse forests of British Columbia, Canada. *Ecosphere* 16(8):e70364. 10.1002/ecs2.70364

2025 **Buonanduci, M.S.**, S.J. Hart, P.C. Tobin, and B.J. Harvey. Patterns and drivers of biotic disturbance hotspots in western United States coniferous forests. *Ecography* e07680. 10.1002/ecog.07680

2025 **Buonanduci, M.S.**, E.R. Buhle, M.J. Case, E.R. Howe, J.C. Robertson, N. VanBuskirk, and A.K. Ettinger. Forest restoration can bolster salmon population persistence under climate change. *Biological Conservation* 305:111099. 10.1016/j.biocon.2025.111099

2024 **Buonanduci, M.S.**, D.C. Donato, J.S. Halofsky, M.C. Kennedy, and B.J. Harvey. Few large or many small fires: Using spatial scaling of severe fire to quantify effects of fire-size distribution shifts. *Ecosphere* 15(6):e4875. 10.1002/ecs2.4875

2024 Dobrowski, S., M.M. Aghai, A. Chichilnisky du Lac, R. Downer, J. Fargione, D.L. Haase, T. Hoecker, O.A. Kildisheva, A. Murdoch, S. Newman, M. North, P. Saksa, M. Sjoholm, T. Baribault, **M.S. Buonanduci**, M.E. Chambers, L. Gonzales-Kramer, B.J. Harvey, M.D. Hurteau, J. Loevner, H.D. Safford, and J. Sloan. 'Mind the Gap'—Reforestation needs vs. reforestation capacity in the western United States. *Frontiers in Forests and Global Change* 7:1402124. 10.3389/ffgc.2024.1402124

2023 **Buonanduci, M.S.**, D.C. Donato, J.S. Halofsky, M.C. Kennedy, and B.J. Harvey. Consistent spatial scaling of high-severity wildfire can inform expected future patterns of burn severity. *Ecology Letters* 26:1687-1699. 10.1111/ele.14282

2023 Harvey, B.J., S.J. Hart, P.C. Tobin, T.T. Veblen, D.C. Donato, **M.S. Buonanduci**, A.M. Pane, H.D. Stanke, and K. Rodman. Emergent hotspots of biotic disturbances and their consequences for forest resilience. *Frontiers in Ecology and the Environment* 21(8):388-396. 10.1002/fee.2659

2023 Morris, J.E., **M.S. Buonanduci**, M.C. Agne, M.A. Battaglia, and B.J. Harvey. Fuel profiles and biomass carbon following bark beetle outbreaks: Insights for disturbance interactions from a historical thinning experiment. *Ecosystems* 26:1290–1308. 10.1007/s10021-023-00833-5

2023 Harvey, B.J., **M.S. Buonanduci**, and M.G. Turner. Spatial interactions among short-interval fires reshape forest landscapes. *Global Ecology and Biogeography* 32:586–602. 10.1111/geb.13634

2023 **Buonanduci M.S.**, J.E. Morris, M.C. Agne, M.A. Battaglia, and B.J. Harvey. Fine-scale spatial heterogeneity shapes compensatory responses of a subalpine forest to severe bark beetle outbreak. *Landscape Ecology* 38:253-270. 10.1007/s10980-022-01553-2

2022 Morris, J.E., **M.S. Buonanduci**, M.C. Agne, M.A. Battaglia, and B.J. Harvey. Does the legacy of historical thinning treatments foster resilience to bark beetle outbreaks in subalpine forests? *Ecological Applications* 32(1):e02474. 10.1002/eap.2474

2020 **Buonanduci, M.S.**, J.E. Morris, M.C. Agne, and B.J. Harvey. Neighborhood context mediates probability of host tree mortality in a severe bark beetle outbreak. *Ecosphere* 11(8):e03236. 10.1002/ecs2.3236

2015 Judd, N., Y. Lowney, P. Anderson, S. Baird, S.M. Bay, J. Breidt, **M. Buonanduci**, Z. Dong, D. Essig, M.R. Garry, R.C. Jim, G. Kirkwood, S. Moore, C. Niemi, R. O'Rourke, B. Ruffle, L.A. Schaider, D.E. Vidal-Dorsch. Fish consumption as a driver of risk-management decisions and human health-based water quality criteria. *Environmental Toxicology and Chemistry* 34(11):2427-2436. 10.1002/etc.3155

2012 Dillen, S.Y., M. Op de Beeck, K. Hufkens, **M. Buonanduci**, and N.G. Phillips. Seasonal patterns of foliar reflectance in relation to photosynthetic capacity and color index in two co-occurring tree species, *Quercus rubra* and *Betula papyrifera*. *Agricultural and Forest Meteorology* 160:60-68. 10.1016/j.agrformet.2012.03.001

Selected presentations (†invited)

June 2025† **Buonanduci, M.S.**, E.R. Buhle, M.J. Case, E.R. Howe, J.C. Robertson, N. VanBuskirk, and A.K. Ettinger. Chum salmon responses to forest management in the context of climate change: an integrated population modeling approach. *University of Washington School of Aquatic and Fishery Sciences Quantitative Seminar*

Mar. 2025 Ettinger, A.K., E. Harvey, and **M.S. Buonanduci**. Integrating salmon restoration and forest resilience to fire in the West. *WA-BC Chapter of the American Fisheries Society Conference, Vancouver, BC, Canada.*

Nov. 2024 **Buonanduci, M.S.**, E.R. Buhle, M.J. Case, E.R. Howe, J.C. Robertson, N. VanBuskirk, and A.K. Ettinger. Land management practices can increase the resilience of salmon populations to climate change. *The Nature Conservancy One Conservancy Science Gathering, Mexico City, Mexico.*

Oct. 2024† **Buonanduci, M.S.**, E.R. Buhle, M.J. Case, E.R. Howe, J.C. Robertson, N. VanBuskirk, and A.K. Ettinger. Willapa Bay salmon responses to forest management in the context of climate change. *Forest Management as a Tool for Salmon Resilience: Workshop hosted by Coast Salmon Partnership, Olympia, WA*

Dec. 2023† **Buonanduci, M.S.**, D.C. Donato, J.S. Halofsky, M.C. Kennedy, and B.J. Harvey. Harnessing spatial scaling relationships to inform expected future spatial patterns of burn severity across fire size distributions. *International Fire Ecology and Management Congress, Monterey, CA*

Aug. 2023† **Buonanduci, M.S.**, D.C. Donato, J.S. Halofsky, M.C. Kennedy, and B.J. Harvey. Scaling burn severity patterns across regions and fire regimes yields insights into historically climate-limited fire regimes. *Ecological Society of America Annual Meeting, Portland, OR*

Feb. 2023 **Buonanduci, M.S.**, D.C. Donato, J.S. Halofsky, M.C. Kennedy, and B.J. Harvey. Examining wildfires from other regions and fire regimes yields insights into future patterns of burn severity in western Cascadia. *Post-Fire Research and Monitoring Symposium, Corvallis, OR*

May 2022† **Buonanduci, M.S.**, D.C. Donato, J.S. Halofsky, M.C. Kennedy, and B.J. Harvey. Western Cascadia wildfire: spatial patterns of burn severity and implications for future ecological impacts. *University of Washington School of Aquatic and Fishery Sciences Quantitative Seminar*

Nov. 2021 **Buonanduci, M.S.**, D.C. Donato, J.S. Halofsky, and B.J. Harvey. Potential impacts of future fires in western Cascadia: scaling spatial patterns of burn severity. *International Fire Ecology and Management Congress*

Aug. 2020 **Buonanduci, M.S.**, J.E. Morris, M.C. Agne, and B.J. Harvey. Tree neighborhood characteristics affect growth responses of host and non-host trees following a severe mountain pine beetle outbreak. *Ecological Society of America Annual Meeting*

Apr. 2019 **Buonanduci, M.S.**, J.E. Morris, M.C. Agne, and B.J. Harvey. Individual tree and local tree neighborhood factors affecting mountain pine beetle-induced lodgepole pine mortality. *Annual Meeting of the US Regional Association of the International Association for Landscape Ecology, Fort Collins, CO*

Mar. 2019 **Buonanduci, M.S.**, J.E. Morris, M.C. Agne, and B.J. Harvey. Within-stand factors affecting survival of lodgepole pine following a severe mountain pine beetle outbreak. *University of Washington School of Environmental and Forest Sciences Graduate Student Symposium*

Invited guest lectures

Winter 2024 ESRM 101: Forests, Fires, and Society (University of Washington)

Autumn 2021 ESRM 490/SEFS 501: Forest Community Ecology (University of Washington)

Spring 2021 ESRM 490/SEFS 501: Forest Community Ecology (University of Washington)

Spring 2020 ESRM 315: Old Growth Forest Ecology and Management (University of Washington)

Volunteer & service

2022 – Present **Manuscript reviewer**
Journals: *Fire Ecology, Ecology, Ecosphere, PNAS, Global Change Biology, Landscape Ecology, Biological Conservation, Regional Environmental Change*

2020 – 2021 **Graduate student representative**
Diversity, Equity, and Inclusion Committee, Center for Quantitative Sciences, University of Washington

2020 – 2021 **Peer mentor**
Quantitative Ecology and Resource Management Program, University of Washington

2020 **Graduate student representative**
Grants Specialist Hiring Committee, School of Environmental and Forest Sciences, University of Washington

2018 – 2020 **Organizer**
Graduate Student Symposium, School of Environmental and Forest Sciences, University of Washington

2018 – 2020 **Graduate student representative**
Research Committee, School of Environmental and Forest Sciences, University of Washington

Honors & awards

2019, 2021, & 2023 Quantitative Ecology and Resource Management Student Travel Award, University of Washington

2019 Honorable Mention for Best Student Presentation, Annual Meeting of the U.S. Regional Association of the International Association for Landscape Ecology

2019 Honorable Mention, National Science Foundation Graduate Fellowship

2019 College of the Environment Student Travel Award, University of Washington

2012 – Present Phi Beta Kappa

2012 College Prize for Excellence in Geography & Environment, Boston University

2008 – 2009 College Scholar, College of Arts and Sciences, Boston University

Updated August 2025