

Michele S. Buonanduci

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Research interests

Spatial analysis, landscape ecology, forest ecology, forest disturbances

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

- 2023 – Present **Postdoctoral Researcher**
The Nature Conservancy in Washington & University of Washington
- 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

- 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 experience

Winter 2023	Teaching Assistant ESRM 101: Forests, Fire & Society (University of Washington)
Winter 2021	Teaching Assistant QSCI 381: Introduction to Probability and Statistics (University of Washington)
Spring 2020	Teaching Assistant ESRM 315: Old-Growth Forest Ecology & Management (University of Washington)
Spring 2019	Teaching Assistant QSCI 381: Introduction to Probability and Statistics (University of Washington)
Winter 2019	Teaching Assistant QSCI 381: Introduction to Probability and Statistics (University of Washington)

Professional experience

2017 – 2020	Staff Scientist, <i>Part Time as Needed</i> – 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

2023	Consistent spatial scaling of high-severity wildfire can inform expected future patterns of burn severity. Buonanduci, M.S. , D.C. Donato, J.S. Halofsky, M.C. Kennedy, and B.J. Harvey. <i>Ecology Letters</i> 26:1687-1699. 10.1111/ele.14282
2023	Emergent hotspots of biotic disturbances and their consequences for forest resilience. 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. <i>Frontiers in Ecology and the Environment</i> 21(8):388-396. 10.1002/fee.2659
2023	Fuel profiles and biomass carbon following bark beetle outbreaks: Insights for disturbance interactions from a historical thinning experiment. Morris, J.E., M.S. Buonanduci , M.C. Agne, M.A. Battaglia, and B.J. Harvey. <i>Ecosystems</i> 26:1290–1308. 10.1007/s10021-023-00833-5
2023	Spatial interactions among short-interval fires reshape forest landscapes. Harvey, B.J., M.S. Buonanduci , and M.G. Turner. <i>Global Ecology and Biogeography</i> 32:586–602. 10.1111/geb.13634
2023	Fine-scale spatial heterogeneity shapes compensatory responses of a subalpine forest to severe bark beetle outbreak. Buonanduci M.S. , J.E. Morris, M.C. Agne, M.A. Battaglia, and B.J. Harvey. <i>Landscape Ecology</i> 38:253-270. 10.1007/s10980-022-01553-2

- 2022 Does the legacy of historical thinning treatments foster resilience to bark beetle outbreaks in subalpine forests?
Morris, J.E., **M.S. Buonanduci**, M.C. Agne, M.A. Battaglia, and B.J. Harvey.
Ecological Applications 32(1):e02474. [10.1002/eap.2474](https://doi.org/10.1002/eap.2474)
- 2020 Neighborhood context mediates probability of host tree mortality in a severe bark beetle outbreak.
Buonanduci, M.S., J.E. Morris, M.C. Agne, and B.J. Harvey.
Ecosphere 11(8):e03236. [10.1002/ecs2.3236](https://doi.org/10.1002/ecs2.3236)
- 2015 Fish consumption as a driver of risk-management decisions and human health-based water quality criteria.
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.
Environmental Toxicology and Chemistry 34(11):2427-2436. [10.1002/etc.3155](https://doi.org/10.1002/etc.3155)
- 2012 Seasonal patterns of foliar reflectance in relation to photosynthetic capacity and color index in two co-occurring tree species, *Quercus rubra* and *Betula papyrifera*.
Dillen, S.Y., M. Op de Beeck, K. Hufkens, **M. Buonanduci**, and N.G. Phillips.
Agricultural and Forest Meteorology 160:60-68. [10.1016/j.agrformet.2012.03.001](https://doi.org/10.1016/j.agrformet.2012.03.001)

In prep, review, or revision

- In review* Scaling severe fire patterns across fire sizes yields insights for data-sparse and infrequent-fire regimes.
Buonanduci, M.S., D.C. Donato, J.S. Halofsky, M.C. Kennedy, and B.J. Harvey.
Submitted to *Ecosphere*.
- In prep* Spatio-temporal patterns and drivers of biotic disturbance hotspots in western United States coniferous forests.
Buonanduci, M.S., S.J. Hart, P.C. Tobin, and B.J. Harvey.

Presentations (†invited, *poster)

- Dec. 2023† Harnessing spatial scaling relationships to inform expected future spatial patterns of burn severity across fire size distributions.
Buonanduci, M.S., D.C. Donato, J.S. Halofsky, M.C. Kennedy, and B.J. Harvey.
International Fire Ecology and Management Congress, Monterey, CA
- Aug. 2023† Scaling burn severity patterns across regions and fire regimes yields insights into historically climate-limited fire regimes.
Buonanduci, M.S., D.C. Donato, J.S. Halofsky, M.C. Kennedy, and B.J. Harvey.
Ecological Society of America Annual Meeting, Portland, OR

- Feb. 2023 Examining wildfires from other regions and fire regimes yields insights into future patterns of burn severity in western Cascadia.
Buonanduci, M.S., D.C. Donato, J.S. Halofsky, M.C. Kennedy, and B.J. Harvey.
Post-Fire Research and Monitoring Symposium, Corvallis, OR
- May 2022† Western Cascadia wildfire: spatial patterns of burn severity and implications for future ecological impacts.
Buonanduci, M.S., D.C. Donato, J.S. Halofsky, M.C. Kennedy, and B.J. Harvey.
University of Washington School of Aquatic and Fishery Sciences Quantitative Seminar
- Nov. 2021 Potential impacts of future fires in western Cascadia: scaling spatial patterns of burn severity.
Buonanduci, M.S., D.C. Donato, J.S. Halofsky, and B.J. Harvey.
International Fire Ecology and Management Congress
- Aug. 2020 Tree neighborhood characteristics affect growth responses of host and non-host trees following a severe mountain pine beetle outbreak.
Buonanduci, M.S., J.E. Morris, M.C. Agne, and B.J. Harvey.
Ecological Society of America Annual Meeting
- Apr. 2019 Individual tree and local tree neighborhood factors affecting mountain pine beetle-induced lodgepole pine mortality.
Buonanduci, M.S., J.E. Morris, M.C. Agne, and B.J. Harvey.
Annual Meeting of the US Regional Association of the International Association for Landscape Ecology, Fort Collins, CO
- Mar. 2019 Within-stand factors affecting survival of lodgepole pine following a severe mountain pine beetle outbreak.
Buonanduci, M.S., J.E. Morris, M.C. Agne, and B.J. Harvey.
University of Washington School of Environmental and Forest Sciences Graduate Student Symposium
- Nov. 2016* Probabilistic human health water quality criteria calculator.
Buonanduci, M., P. Anderson, and V. Houck.
Annual Meeting of the Society of Environmental Toxicology and Chemistry, Orlando, FL
- Nov. 2015* Moving beyond risk quotients: Comparing dose-response effects to reproductive natural variability.
Francisco, A., **M. Buonanduci**, J. Gravenmier, J. Iannuzzi, T. Negley and S. Selden.
Annual Meeting of the Society of Environmental Toxicology and Chemistry, Salt Lake City, UT
- Dec. 2014* Effect of probabilistic methods on human health ambient water quality criteria.
Buonanduci, M. and P.D. Anderson.
Annual Meeting of the Society for Risk Analysis, Denver, CO

Oct. 2010* The effect of urbanization on vegetation function.
Buonanduci, M. and N. Phillips.
Annual Boston University Undergraduate Research Symposium, Boston, MA

Invited guest lectures

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*

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 of Arts and Sciences College Scholar, Boston University