Michele S. Buonanduci

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Research interests

Spatial analysis, landscape ecology, forest ecology, forest disturbances

Education

2020 – 2023	**University of Washington** – Seattle, WA PhD in Quantitative Ecology and Resource Management Dissertation title: *Spatio-temporal patterns of forest disturbance in western North America: implications for forest resilience*
2017 – 2019	**University of Washington** – Seattle, WA MS in Quantitative Ecology and Resource Management Thesis title: *Modeling individual lodgepole pine mortality from mountain pine beetle outbreak in a spatially explicit framework*
2008 – 2012	**Boston University** – Boston, MA BA in Environmental Science

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 **Arcadis US, Inc. (Staff Scientist, *Part Time as Needed*)** – Seattle, WA

2015 – 2017 **Arcadis US, Inc. (Staff Scientist)** – Denver, CO

2013 – 2015 **Arcadis US, Inc. (Scientist II)** – Chelmsford, MA

2012 – 2013 **Arcadis US, Inc. (Scientist I)** – 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.
Ecology Letters. 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.
Frontiers in Ecology and the Environment. 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.
Ecosystems. 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.
Global Ecology and Biogeography 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.
Landscape Ecology 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
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
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
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

In prep, review, or revision

In prep	Scaling of severe fire patterns across a range of fire sizes and forest ecosystems 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.
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)

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
2009	Prize Essay Winner, Journal of the College of Arts and Sciences Writing Program, Boston University
2008 – 2009	College of Arts and Sciences College Scholar, Boston University