Anne Y. Polyakov

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EDUCATION

University of Washington

PhD Candidate, Quantitative Ecology and Resource Management Program 2020-present
Program description: Training in the application of statistical, mathematical, and decision sciences to ecological and resource management data
Thesis: Modeling fungal processes within forest biogeochemical cycling

Master of Science, Quantitative Ecology and Resource Management Program 2017-2020
Thesis: Modeling collective behavior of Pacific salmon at sea

San Francisco Conservatory of Music 2012-2014

Master of Music, Composition
Thesis: *Home*, a nature-inspired multi-media work for orchestra

Harvard University 2008-2012

Bachelor of Arts, Biophysics
Thesis: Informational processing in chemosensory networks of *C. elegans* and *Drosophila melanogaster* larva

RESEARCH WORK EXPERIENCE

University of Washington, Seattle, WA 2017-present
Quantitative Ecology and Resource Management Program
Master's and PhD Graduate Research Assistant

- Research project lead: employed advanced statistical and machine learning models to quantify fungal processes within ecological systems for doctoral work, with five publications in preparation and one published. Performed statistical analysis and modeling of a large multi-decadal, interagency data set examining fitness traits of Pacific salmon for master's research, leading to a publication in *Science Advances*.

University of California at Berkeley, Berkeley, CA 2015-present
Department of Environmental Science, Policy, and Management
Research Analyst

- Research project co-lead: I conducted data processing, data design and management, statistical analysis, and ecological modeling of large, complex, multi-decadal ecological datasets examining environmental drivers of small mammal population dynamics and biodiversity conservation, resulting in eight publications and two publications in review.

Center for Biological Diversity, Portland, OR Sep-Dec 2014

- Conservation biology internship: conducted research on sea star wasting syndrome and produced an in-depth 74-page government publication.

Harvard University, Cambridge, MA 2009-2012
Department of Physics

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- Undergraduate research assistant: statistical modeling of *C.elegans* and *Drosophila melanogaster* larvae neuronal system using Matlab, R, and other in-depth image processing and data analysis software.

Stony Brook University, Stony Brook, NY 2007
Department of Physics

- Research internship: developed novel Superconducting Quantum Interference Filter (SQIF) setup for measuring low absolute magnetic field in superconductor circuits.

RESEARCH PUBLICATIONS

Polyakov, A. Y., E. Lilleskov, E. Hobbie, K. Vogt, D. Vogt, A. Larocque, and A. Berdahl. "Salmon increase abundance and diversity of long-distance type ectomycorrhizal fungi." In preparation.

Polyakov, A. Y., E. Hobbie, G. Holtgrieve, K. Vogt, D. Vogt, E. Lilleskov, A. Larocque, and A. Berdahl. "Fungi uptake, store, and transfer salmon nitrogen to plant hosts in riparian forests." In preparation.

Polyakov, A. Y., K. Vogt, D. Vogt, A. Klock, K. Mafune, and A. Berdahl. "Forest belowground productivity and allocation driven by soil properties rather than climate." *Proceedings of the National Academy of Sciences*. Submitted.

Mafune, K., **A. Polyakov**, Z. Leika, K. Vogt, D. Vogt. "Available nutrients in canopy soils of old-growth *Acer macrophyllum* provide a nutrient reserve for adventitious roots and contribute to forest floor nutrient dynamics." In preparation.

Stone, L., K. Mafune, **A. Polyakov**, H. Diefenderfer, D. Vogt. "Greenhouse gas emissions from canopy and forest floor soils: A case study in a temperate old-growth forest." In preparation.

Klock, A. M., K. A. Vogt, D. J. Vogt, J. G. Gordon, J. J. Scullion, A. S. Suntana, K. K. Mafune, **A. Y. Polyakov**, S. J. Gmur, and C. Gómez de la Rosa. "See the forest not the trees! Ecosystem-based assessment of response, resilience, and scope for growth of global forests." *Ecological Indicators* 140 (2022): 108973.

Ghimirey, Y. P., W. D. Tietje, **A. Y. Polyakov**, J. E. Hines, M. K. Oli. "Decline in small mammal species richness in coastal-central California, 1997–2013." *Ecology and Evolution* 13, no. 12 (2023): e10611.

Tietje, W. D., **A. Y. Polyakov**, and K. L. Purcell. "Richness and abundance of wintering, breeding, and migrant birds in a California oak woodland." Proceedings of the Eighth California Oak Symposium: sustaining oak woodlands under current and future conditions. Berkeley, CA. Submitted.

Polyakov, A. Y., W. D. Tietje, and L. K. Vredevoe. "Effect of ectoparasites on woodrat survival and recruitment in a California oak woodland." *Plos One*. Submitted.

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Polyakov, A. Y., T. P. Quinn, K. W. Myers, and A. M. Berdahl. "Group size affects predation risk and foraging success in Pacific salmon at sea." *Science Advances* 8, no. 26 (2022): eabm7548.

Polyakov, A. Y., W. D. Tietje, A. Srivathsa, V. Rolland, J. E. Hines, and M. K. Oli. "Multiple coping strategies maintain stability of a small mammal population in a resource-restricted environment." *Ecology and Evolution* 11, no. 18 (2021): 12529-12541.

Polyakov, A. Y. "Group size affects predation risk and foraging success in pacific salmon at sea" (Order No. 28322115). Available from Dissertations & Theses @ University of Washington WCLP; ProQuest Dissertations & Theses Global (2021). (2526808041). Retrieved from https://www.proquest.com/dissertations-theses/group-size-affects-predation-risk-foraging/docview/2526808041/se-2?accountid=14784.

Rolland, V., W. D. Tietje, **A. Y. Polyakov**, V. Chaudhary, and M. K. Oli. "Climatic factors and population demography in big-eared woodrat, Neotoma macrotis." *Journal of Mammalogy* 102, no. 3 (2021): 731-742.

Chaudhary, V., W. D. Tietje, **A. Y. Polyakov**, V. Rolland, and M. K. Oli. "Factors driving California pocket mice (*Chaetodipus californicus*) population dynamics." *Journal of Mammalogy* 102, no. 5 (2021): 1353-1364.

Polyakov, A.Y., T. J. Weller, and W.D. Tietje. "Remnant trees increase bat activity and facilitate the use of vineyards by edge-space bats." *Agriculture, Ecosystems and Environment* 281 (2019): 56-63.

Srivathsa, A. K., M. K. Oli, W. Tietje, **A. Polyakov**, and V. Rolland. "Climatic drivers of Pinyon mouse *Peromyscus truei* population dynamics in a resource-restricted environment." *Population Ecology* 61, no. 1 (2019): 122-31.

Tietje, W. D., **A. Y. Polyakov**, V. Rolland, J. E. Hines, and M. K. Oli. "Climatic influences on demography of the California Mouse (*Peromyscus Californicus*) in semiarid oak woodland." *Journal of Mammalogy* 99, no. 5 (2018): 1149-158.

Tietje W. D., W. L. Preston, and **A. Y, Polyakov**. "Natural History of the Central Coast Bioregion. UC ANR" *University of California Agriculture & Natural Resources Publications* (2019). https://anrcatalog.ucanr.edu/pdf/8597.pdf.

Polyakov, A. "SQIF setup for measurements of extremely low absolute magnetic fields." *The Harvard Undergraduate Research Journal* 3, no. 1 (2011).

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TALKS, CONFERENCES, AND WORKSHOPS

Polyakov, A., A. Berdahl, K. Mafune, E. Lilleskov, E. Hobbie, D. Vogt, K. Vogt. "Fungal communities in salmon forests." *Northwest Mushroomers Association Meeting* (November 2022). Bellingham, WA.

Polyakov, A., W. Tietje. "Abundance & Diversity of Resident & Migratory Birds in a California Oak Woodland" and "Ectoparasites Influenced Woodrat Survival & Recruitment in a California Oak Woodland." *8th California Oak Symposium: Sustaining Oak Woodlands Under Current and Future Conditions* (October 2022). San Luis Obispo, CA.

Polyakov, A., A. Berdahl, K. Mafune, E. Lilleskov, E. Hobbie, D. Vogt, K. Vogt. "Fish, forests, and fungi: Fungal communities and functional traits along a nitrogen gradient and in response to a unique salmon carcass fertilization experiment in Alaska." *Mycological Society of America Annual Meeting* (July 2022). Gainesville, FL.

Polyakov, A., A. Berdahl, K. Mafune, E. Lilleskov, E. Hobbie, D. Vogt, K. Vogt. "Fungi in salmon forests." *Oregon Mycological Society Meeting* (May 2022). Virtual.

Polyakov, A. "Mycorrhizal fungal networks: exploring mechanisms and modeling." *Banff International Research Station Conference on Emergent Collective Behaviors: Integrating Simulation and Experiment* (May 2022). Virtual.

Polyakov. A. "Mechanisms underlying nutrient transfer and defense signaling between plants through belowground mycorrhizal fungal networks." *Aspen Center for Physics Winter Conference: Dynamics of Social Interactions* (March 2022). Aspen, CO.

Polyakov, A. 2020. "UW Engage Science: Seabirds, Fungus, and Extreme Water," *Seattle Town Hall* (2020). Virtual. https://townhallseattle.org/event/uw-engage-science-5-1-20/.

Coastal Rainforest Margins Research Network Workshop #4. Ecosystem Disturbance and Response. "Temperate rainforests as carbon sinks and sources: the role of disturbance and land change". January 13-16, 2020 at Olympic Natural Resources Center, Forks, WA.

Polyakov, A., T. Weller, and W. Tietje. "Bat activity at remnant oak trees in central California coast vineyards." *Ecological Society of America Annual Meeting* (2016). Fort Lauderdale, FL.

Polyakov, A., T. Weller, R. Long, and W. Tietje. "Bats as vineyard allies." *UC ANR Joint Strategic Initiatives Conference* (2015). Sacramento, CA. Poster presentation.

Luo, L., M. Hendricks, M. Gershow, **A. Polyakov**, Y. Zhang, and A. Samuel. The ASE neurons mediate bidirectional and experience-dependent NaCl chemotaxis. *Harvard Life Sciences Undergraduate Research Conference* (2011). Cambridge, MA. Poster presentation.

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RESEARCH GRANTS

Sonoma Mycological Society Tom Volk Award ($2,500)	October 2023
Mycological Society of America Forest Fungal Ecology Research Award ($1,500)	May 2021
Stuntz Mycology Fund Award ($3,876)	April 2021
UW Hall Conservation Genetics Research Fund Award ($4,299)	March 2021
Oregon Mycological Society Judy Roger Memorial Scholarship ($1,500)	July 2020
Puget Sound Mycological Society Ben Woo Scholarship ($2,000)	May 2020
UBC-UW Collaborative Research Mobility Award ($14,495)	March 2020
University of California's Renewable Resources Extension Grant ($10,795)	2015-2016
Northwest Mushroomers Association Travel Fund ($200)	November 2022
UW College of the Environment Travel and Meeting Fund ($750)	July 2022
National Science Foundation Aspen Center for Physics Travel Award ($500)	January 2022
UW School of Aquatic and Fishery Sciences Travel Award ($1,644)	July 2022
UW School of Aquatic and Fishery Sciences Travel Award ($300)	January 2022

FELLOWSHIPS

UW School of Aquatic and Fisheries Sciences Finishing Fellowship ($9,024)	September 2023
Harvard College Research Program Fellowship ($1,000)	Summer 2012
Harvard College Research Program Fellowship ($2,000)	Summer 2011
David McCord Prize	2012
San Francisco Conservatory of Music Graduate Scholarship ($44,000)	2012-2014
Harvard Undergraduate Scholarship ($168,000)	2008-2012
Alex G. Booth Fellowship for independent study ($5,000)	2012
Intel Science Talent Search Semifinalist	2008
Fourth Place at the International Science and Engineering Fair	2008
Siemens Competition Semifinalist	2007

MEDIA PUBLICATIONS

"Fish, Forests, and Fungi podcast with Anne Polyakov", *University of Washington College of the Environment FieldSound Podcast Series,* Episode 6, June 8 2023. https://environment.uw.edu/news/2023/06/fish-forests-and-fungi-podcast-with-anne-polyakov/

"Fish, Forests, and Fungi," *University of Washington College of the Environment News,* 9 November 2022. https://environment.uw.edu/news/2022/11/fish-forests-and-fungi/

"Pacific salmon find safety in numbers, UW researchers show," *Seattle Times,* 13 July 2022. https://www.seattletimes.com/seattle-news/environment/pacific-salmon-find-safety-in-numbers-uw-researchers-show/

"Salmon find safety in numbers," *Discover Magazine*, 29 June 2022. https://www.discovermagazine.com/planet-earth/salmon-find-safety-in-numbers

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"Safety in numbers' tactic keeps Pacific salmon safe from predators**,"** *University of Washington News*, 29 June 2022. https://www.washington.edu/news/2022/06/29/safety-in-numbers-tactic-keeps-pacific-salmon-safe-from-predators/

"Group size affects predation risk and foraging success in Pacific salmon at sea," *The Salmon Cycle*, 31 July 2022. https://www.annepolyakov.com/uploads/TheSalmonCycle_Polyakov.pdf

"Oaks in vineyards a 'win-win' for bats and growers," *Green News from the UC Division of Agriculture and Natural Resources*, 26 August 2019. https://ucanr.edu/blogs/blogcore/postdetail.cfm?postnum=31166

Tietje, W., A. Polyakov, and T. Weller. 2015. "Oak trees, bats, and central coast vineyards." *Livestock, Range, and Watershed San Luis Obispo and Monterey Counties* (Summer 2015): 4-5. San Luis Obispo County Cooperative Extension. University of California Agriculture and Natural Resources, 1 June 2015.

TEACHING AND MENTORSHIP

University of Washington

University Instructor of Record

Quantitative Science 291: Analysis for Biologists I (5 credits) Summer 2020
Quantitative Science 291 and 292: Analysis for Biologists II (5 credits) Summer 2020
Environmental Science and Resource Management 101: Forests & Society (5 credits) Spring 2023

Teaching Assistant

Environmental Science and Resource Management 101: Forests & Society Autumn 2022
Quantitative Science 292: Analysis for Biologists II Spring 2019/20/21/22
Quantitative Science 381: Introduction to Probability and Statistics Autumn 2018/19/20/21
School of Environmental and Forest Sciences 507: Soils and Land Use Spring 2022

Mentoring Senior in Environmental Science and Resource Management Program Winter 2023
Research in ecology and stable isotope biogeochemistry (2 research credits)

Harvard University Autumn 2011
Teaching Assistant for Science of the Physical Universe 26: Primitive Navigation

Varsity Tutors Autumn 2014-2018
Private tutor in mathematics and physics

WORK IN ENVIRONMENTAL PUBLIC POLICY

Center for Biological Diversity, San Francisco, CA 2013-2014
Research Assistant at Climate Law Institute

- Assisted in scientific work, fundraising, outreach, and publications, specifically California endangered species assessments. Assistant manager to No Keystone XL Campaign,

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conducting research and outreach on endangered species, habitats and communities affected by pipeline construction through presentations, workshops and rallies.

Pacific Environment, San Francisco, CA Feb-June 2015
Multicultural liaison assistant

- Organized and translated for the Russian American Coal Exchange, which brought together Russian national and grassroots environmental NGOs with grassroots anti-coal advocacy groups, lawyers, and clean energy specialists in San Francisco and Portland. The exchange focused on the public health and safety impacts of coal mining and use, building diverse stakeholder coalitions, successful strategies for blocking state and bank support for coal projects, community monitoring, and clean energy solutions that protect the environment and public health using media outreach and policy advocacy.

The Siuslaw Institute, Deadwood, OR Autumn 2015
Assistant and translator in international cultural exchange

- Translator and assistant in international cultural exchange between Itelmen Tribe of Kamchatka, Russia and Confederated Tribe of Siletz in Oregon.

Restore Hetch Hetchy, San Francisco, CA Autumn 2012-June 2013
Grassroots campaign assistant on watershed education.

- Worked directly with grassroots campaign directors on watershed education and outreach in San Francisco.

LEADERSHIP, SERVICE, AND OTHER EMPLOYMENT

University of Washington Winter 2021-2023
Graduate Assistant Reader, Office of Admissions

- Assessed freshman applications using a combination of personal and academic factors. Final admission decisions made by Admissions administrators based on Reader assessments.

Puget Sound Mycological Society 2022-present
Board Member

Opera Theater Oregon 2018-present
Board Member, Piano Accompanist

Seattle Trees for Neighborhoods and UW Botanic Gardens Autumn 2018
Crew Member

- Assisted with public outreach, public engagement programs, and distribution of trees to Seattle residents, led workshops on tree planting and care, and environmental awareness

San Francisco Conservatory of Music 2012-2014
Graduate Assistant, Office of Admissions

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- Worked in public relations (meeting prospective students, faculty and administrators, trustees, guest artists). Position included maintaining professional relationships, organizing workshops for visiting prospective students.

Harvard Summer School Proctor Summer 2013

MIHNUET 2008-2009
Music in Hospitals and Nursing Homes Using Entertainment as Therapy

WISE 2008-2009
Women in Science and Engineering

Harvard Composer's Association 2009-2011
President, Member

- Organizing and leading weekly meetings as well as professional concerts, provided a close-knit community among student composers on campus, managing the organization.

Supervisor at the PBHA Harvard Square Homeless Shelter Summer 2011