Maureen C. Kennedy
Associate Professor, Sciences and Mathematics in the School of Interdisciplinary Arts and Sciences; University of Washington, Tacoma (SIAS/UWT)

Education

Ph.D University of Washington, Seattle
Quantitative Ecology and Resource Management March 2008
Multi-objective Optimization for Ecological Model Assessment and Theory Development
E. David Ford (chair), Tom Hinckley, Mark Kot, Charles Laird

M.S. University of Washington, Seattle
Quantitative Ecology and Resource Management August 2002
A geometric simulation model of foliage regeneration in *Abies grandis* and *Pseudotsuga menziesii.*
E. David Ford (chair)

B.S. University of San Francisco
Biology. Summa Cum Laude May 1999

Professional History

Chair Sciences and Mathematics. (SIAS/UWT)	2023-present
Vice Chair Sciences and Mathematics. (SIAS/UWT)	2022-23
Assistant, then Associate Professor, Sciences and Mathematics. (SIAS/UWT)	2015-present
Research Scientist/Engineer 4. University of Washington, Seattle	2008-15
Course Instructor, University of Washington, Seattle	2002-05, 2011, 2014-15

Grants Awarded

National Science Foundation. Hazards SEES: Land Management Strategies for Confronting Risks and Consequences of Wildfire. Award Number:1520847; Principal Investigator: Christina Tague; Co-Principal Investigator: Sarah Anderson, Andrew Plantinga, **Maureen C. Kennedy***; Start Date:09/01/2015; Total Award Amount:$1,724,821.00
*I was involved as co-PI throughout proposal development and the status became official upon my appointment at UW Tacoma.

Joint Fire Science Program. Mapping Fuels for Regional Smoke Management and Emissions Inventories. Project ID: 15-1-01-1; Principal Investigator: Nancy H. French; Co-Principal Investigator: Michael G. Billmire, **Maureen C. Kennedy**, Narasimhan K. Larkin, Donald McKenzie, Susan J. Prichard. Start Date:10/01/2015; Total Award Amount $435,480

US Forest Service (USDA) Joint Venture Agreement (PNW Station). Quantitative methods for spatially explicit analysis of fuel treatment efficacy and for model uncertainty analysis. Start Date: July 16, 2016 Total Amount: $137,005. Disburses JFSP funds to UWT, with additional funds for ongoing research collaborations with the USFS Fire and Environmental Research Applications Team (Seattle, WA).

School of Interdisciplinary Arts & Sciences Research & Teaching Fund, UW Tacoma. Organizing and documenting data sets for statistics instruction, joint with Julie Eaton and Haley Skipper. Awarded March 2016. Amount: $1425.60.

US Forest Service (USDA) Joint Venture Agreement (PNW Station). Quantitative methods for fuel characterization and management. Start Date: June 16, 2020 Total Amount: $48,759

plus $39000 supplement and extension. Funds ongoing research collaborations with the USFS Fire and Environmental Research Applications Team (Seattle, WA).

UW Tacoma Internal Royalty Research Fund. Discovering thresholds for landscape fire: understanding wildfire dynamics at the scales that matter most. Start Date: September 16, 2021. End Date: September 15, 2022. Total Amount: $8,500.

Joint Fire Science Program. Collaborative development of ecosystem mapping products for fire and fuels management: Mapping and quantifying post-wildfire forest conditions. Start Date: July 31, 2022. End Date: July 31, 2025. $461,605. Morris C. Johnson (PI), **Maureen C. Kennedy** (co-PI)

Environmental Security Technology Certification Program. FuelsCraft: An innovative wildland fuel mapping tool for prescribed fire decision support on Department of Defense military installations (RC23-B6-7779). 2023-2025

Ongoing research activities

My primary research interest is to advance ecological theory and environmental decision-making through the development of innovative statistical tools and computer models. My current focus is fire ecology and forest management. My advancements include multi-criteria uncertainty and sensitivity analyses, spatially explicit analysis of wildfire severity, and simulation of integrated watershed-level hydrological processes and wildfire. I collaborate with working scientists to improve their research with statistically sound and creative experimental design and analyses that explicitly incorporate spatial or temporal dependencies.

Ongoing research since joining UW Tacoma Faculty

Performing model analysis of postwildfire woody fuel dynamics and potential reburn intensity in previous high severity burn patches.

Using empirical fuel loading distributions to perform sensitivity and uncertainty analysis for wildfire emissions estimates.

Evaluating impact of spatial autocorrelation structure on estimation and inference of spatially explicit regression models and investigating landscape-scale patterns of spatial structure.

Integrating a new fire spread model with hydrological and social science models developed at the University of California, Santa Barbara as part of the Western Mountain Initiative. Use to project watershed processes under a changing climate, with fire as a dynamic disturbance also affected by climate.

Designing spatially explicit statistical analyses to compare the efficacy of various fuel reduction treatments in reducing fire severity during wildfires, including non-linear models of fire severity, continuation ratio model for tree mortality, and simultaneous auto-regression on field and remotely sensed data for fuel treatment efficacy.

Conducting sensitivity and multi-criteria analysis uncertainty analysis on studies using the vegetation model FFE-FVS. Results illuminated a potential deficiency in the way in which FFE-FVS handles fuels, which can be used to guide future use of the model for management and decision-making.

Undergraduate research and capstones supervised at UW Tacoma

Marion LaRoque (Tibyan). (Spring 2016-Summer 2017). Maximum likelihood fitting of empirical fuels distributions for emissions uncertainty estimation.

Duncan McPherson (Summer 2017) Maximum likelihood fitting of empirical fuels distributions for emissions uncertainty estimation.

Carina Tapia. (Spring 2017) GIS analysis of landscape-level burn severity and fuel treatment efficacy.

Sathoun Sok. (Summer 2017) Evaluation of fuel treatment efficacy during the Bald Fire.

Zhihao (Richard) Yang. (Spring-Summer 2017) Evaluating alternative forest reconstruction techniques

Qi Xue. (Winter 2018) Coupled population modeling of endangered panda and human population in China.

Yang Tang. (Winter, Autumn 2018), Regression, time series, and spurious relationship

Arashk Ashfar. (Spring, Autumn 2018) Quest for economic roots of income inequality. **UW Tacoma Mathematics Interdisciplinary Award (2019)**

Genmu Miller (Summer 2018) Evaluation of sabermetrics for prediction of post-season MLB baseball performance

Katalina Biondi (Summer 2018). Sensitivity analysis of fuel loading data inputs and empirical wildfire emissions models

Heather St. John (Summer and Autumn 2018). Health effects of wildland fire smoke exposure and impacts on health care demand

Yahye Mohamed (Winter 2019, Autumn 2019). Analysis of spatial data.

Kathryn Davidson, Spencer Little (Summer and Autumn 2019). Reconstruction and modeling of 3-dimensional neuron structure. **Best Presentation Award at NUMS/PiMUC 2020 Conference, UW Tacoma best capstone presentation award.**

Javier Colunga, Kevin Pranato, Abigail Timoteo. (Summer and Autumn 2019). Simulation of watershed dynamics and wildfire under climate change scenarios.

Tyler Lorella, Nicole Guobadia (Autumn 2019). Evaluation of fuel succession following post-fire fuels management.

Hayden Leckman. (Winter 2020). Model projections of salvage logging scenarios

Juan Vazquez. (Autumn 2020). COVID-19 death rate comparison with different health and economic factors in the US

James Northup and Chris Karnes. (Autumn 2020 and Winter 2021). Comparison of model predictions of wildfire intensity following post-wildfire fuels management.

Kendrick Allan. (Winter 2021). Structural equation modeling of wildfire-climate relationships

Joseph Wickenhauser (Summer 2021). Decomposing climate-wildfire trends

Warsame Mead (Autumn/Winter 2021-22). Postwildfire fuel succession and management

Hillari Snelson (Summer 2022): Simulation study of wildfire spatial pattern

Scott Singer, Warsame Mead (Spring-Autumn 2022). Simulated wildfire spread on artificial landscapes that represent scenarios of fuel spatial structure. **UW Tacoma Mathematics Best Capstone Paper Award**

Raine Chrysostom, Mahtoska Weathers (Spring-Autumn 2022). Simulated wildfire spread on artificial landscapes that represent scenarios of fuel spatial structure

Kim Lewis, Chloe Ibarra (Winter 2023-Autumn 2023). Evaluating whether spatial patterns of fuel loading affect wildfire size.

David Balint (Spring-Autumn 2023). Matrix approach to regression modeling

Devin Rodriguez (Spring 2023-current). Effects of high severity fire on post-fire species composition and regeneration

Graduate student committees

Alina Cansler. UW School of Environmental and Forest Sciences. PhD Completed Dec 2015

Sarah C Harrison. UW School of Environmental and Forest Sciences. MS Completed June 2022

Pratima K C. UW School of Environmental and Forest Sciences. PhD

Michele S Buonanduci. UW Quantitative Ecology and Resource Management. PhD Completed June 2023

Ashley Cale. University of Nevada Reno. PhD

Turtle May. UW School of Environmental and Forest Sciences. PhD

Hannah Redford. UW School of Environmental and Forest Sciences. PhD

Stacey Dixon. UW School of Environmental and Forest Sciences. PhD

Publications in preparation

Caden P. Chamberlain, Garrett W. Meigs, Derek J. Churchill, Jonathan T. Kane, Astrid Sanna, James Begley, Susan Prichard, **Kennedy MC**, Craig Bienz, Ryan Haugo, Annie Smith, Van R. Kane, C. Alina Cansler. A scalable framework for evaluating treatment effectiveness at moderating burn severity: Lessons from recent large wildfires in Oregon and Washington.

Publications in review or in revision

Buonanduci MS, Donato DC, Halofsky JS, **Kennedy MC,** Harvey BJ. (in review June 2023) Scaling of severe fire patterns across forest ecosystems yields insights into future burn severity patches in data-sparse and infrequent-fire regimes. Submitted to Ecological Applications.

Peer-reviewed publications (including book chapters)

49. **Kennedy MC**, Johnson MC, Harrison SC. Model analysis of postwildfire management and high severity reburn potential. (2024). Journal of Environmental Management. 351. 119664. doi: 10.1016/j.jenvman.2023.119664
48. Cova GR, Prichard SJ, Rowell E, Drye B, Eagle P, **Kennedy MC**, Nemens D. (2023). Evaluating close-range photogrammetry for 3D understory fuel characterization and biomass prediction in pine forests. Remote Sensing. 15(19), 4837; doi: 10.3390/rs15194837
47. Buonanduci MS, Donato DC, Halofsky JS, **Kennedy MC,** Harvey BJ. (2023). Consistent spatial scaling of high-severity wildfire can inform expected future patterns of burn severity. Ecology Letters. doi: 10.1111/ele.14282.
46. Batchelor JL, Rowell E, Prichard SJ, Nemens D, Cronan C, **Kennedy MC**, Moskal LM. (2023). Quantifying Forest Litter Fuel Moisture Content with Terrestrial Laser Scanning. Submitted to Remote Sensing of Environment. 15(6):1482. https://doi.org/10.3390/rs15061482

45. Ren J, Hanan EJ, Hicke J, Kolden CA, Abatzoglou JT, Tague CL, Bart R, **Kennedy MC**, Liu M, Adam JC (2023). Bark beetle effects on fire regimes depend on underlying fuel modifications in semiarid systems. Journal of Advances in Modeling Earth Systems. 15, e2022MS003073. doi: 10.1029/2022MS003073
44. Johnson MC, **Kennedy MC**, Harrison SC, Alvarado E, Desautel C, Holford J, Logue S. (2023). Post-wildfire salvage logging effects on snag structure and dead woody fuel loadings. **Canadian Journal of Forest Research**. doi: 10.1139/cjfr-2021-0089
43. Ren J, Hanan EJ, Abatzoglou JT, Kolden CA, Tague CL, **Kennedy MC**, Liu M, Adam JC. (2022). Projecting future fire regimes in semiarid systems of inland northwestern U.S.: interactions among climate change, vegetation productivity, and fuel dynamics. **Earth's Future**. 10(3): e2021EF002518
42. Hanan EJ, **Kennedy MC**, Ren J, Johnson MC, Smith AMS (2022). Missing climate feedbacks in fire models: limitations and uncertainties in fuel loadings and the role of decomposition in fine fuel succession. **Journal of Advances in Modeling Earth Systems**. 14(3): e2021MS002818
41. Johnson MC, **Kennedy MC**, Harrison SC. (2022). Understanding post-wildfire woody fuel dynamics following stand replacing wildfires. Invited Book Chapter for: **Forest as Complex Social and Ecological Systems: A Festschrift for Chadwick D. Oliver**
40. **Kennedy MC**, Bart R, Tague CL, Chaote J**.** (2021). Does hot and dry equal more wildfire? Contrasting short and long-term climate effects on fire in the Sierra Nevada, CA. **Ecosphere**. 12(7): e03657. doi:10.1002/ecs2.3657
39. Hanan E, Ren J, Tague C, Kolden C, Abatzoglou J, Bart R, **Kennedy MC**, Liu M, Adam J. (2021). How climate change and fire exclusion drive wildfire regimes at actionable scales. **Environmental Research Letters**. 16: 024051. doi: 10.1088/1748-9326/abd78e
38. Burke W, Tague C, **Kennedy MC**, Moritz M. (2021). Understanding fuel treatments: how treatments interact with climate and biophysical setting to affect fire, water, and forest health. **Frontiers in Forests and Global Change.** Doi: 10.3389/ffgc.2020.591162
37. **Kennedy MC**, Johnson MC, Harrison SC. (2021). Forest Vegetation Simulator (FFE-FVS) predictions of woody fuel succession and fire behavior are sensitive to fuel dynamics parameters. **Forest Science**. 67(1): 30-42. doi: 10.1093/forsci/fxaa036
36. Shugar DH, Burr A, Haritashya UK, Kargel JS, Watson CS, **Kennedy MC**, Bevington AR, Betts RA, Harrison S, Strattman K. (2020). Rapid worldwide growth of glacial lakes since 1990. **Nature Climate Change**. doi: 10.1038/s41558-020-0855-4
35. **Kennedy MC**, Prichard SJ, McKenzie D, French NHF. (2020). Quantifying how sources of uncertainty in combustible biomass propagate to prediction of wildland fire emissions. **International Journal of Wildland Fire**. 29(9): 793-806 doi: 10.1071/WF19160
34. Johnson MC, **Kennedy MC**, Harrison SC, Churchill D, Pass J, Fischer PW. (2020). Effects of post-fire management on dead woody fuel dynamics and stand structure in a severely burned mixed-conifer forest, in northeastern Washington State, USA. **Forest Ecology and Management**. 470-471: 118190. doi: 10.1016/j.foreco.2020.118190
33. Prichard SJ, Povak NA, **Kennedy MC**, Peterson DW. (2020). Fuel treatment effectiveness in the context of landform, vegetation and large, wind-driven wildfires. **Ecological Applications**. doi: 10.1002/eap.2104

32. Bart R, **Kennedy MC**, Tague CL, McKenzie D. (2020). Integrating fire effects on vegetation carbon cycling within an ecohydrologic model**. Ecological Modeling**. 416:108880.
31. Prichard SJ, **Kennedy MC**, Andreu AG, Eagle PC, French NH, Billmire, M. (2019). Next-generation biomass mapping for regional emissions and carbon inventories: incorporating uncertainty in wildland fuel characterization. **Journal of Geophysical Research: Biogeosciences**. 124: 3699-3716. doi: 10.1029/2019JG005083
30. Newman EA, **Kennedy MC**, Falk DA, McKenzie D. (2019). Scaling and complexity in landscape ecology. **Frontiers Ecology and Evolution**. doi: 10.3389/fevo.2019.00293
29. Johnson MC, **Kennedy MC**, Harrison S. (2019). Fuel treatments change forest structure and spatial patterns of fire severity, Arizona, U.S.A. **Canadian Journal of Forest Research.** 49(11): 1357-1370
28. **Kennedy MC,** Johnson MC, Fallon K, Mayer D. (2019). How big is enough? Vegetation structure impacts effective fuel treatment width and forest resiliency. **Ecosphere**. 10(2). doi: 10.1002/ecs2.2573
27. **Kennedy MC.** (2019). Experimental design principles to choose the number of Monte Carlo replicates for stochastic ecological models. **Ecological Modeling.** 394: 11-17
26. Johnson MC, **Kennedy MC**. (2019). Altered vegetation structure from mechanical thinning treatments changed wildfire behaviour in the wildland-urban interface on the 2011 Wallow Fire, Arizona, USA. **International Journal of Wildland Fire**. 28: 216-229
25. Anderson SE, Bart RR, **Kennedy MC**, MacDonald AJ, Moritz MA, Plantinga AJ, Tague CL, Wibbenmeyer M. (2018). The dangers of disaster-driven responses to climate change. **Nature Climate Change.** doi: 10.1038/s41558-018-0208-8
24. Prichard SJ, **Kennedy MC**, Wright CS, Cronan JB, and Ottmar RD. (2017). Predicting forest floor and woody fuel consumption from prescribed burns in southern and western pine ecosystems of the United States. **Forest Ecology and Management**. 405: 328-338
23. **Kennedy MC,** McKenzie D, Tague C, Dugger AL. (2017). Balancing uncertainty and complexity to incorporate fire in an eco-hydrological model. **International Journal of Wildland Fire**. 26: 706-718
22. **Kennedy MC,** Prichard SJ. (2017). Choose your neighborhood wisely: implications of subsampling and autocorrelation structure in simultaneous autoregression models for landscape ecology. **Landscape Ecology.** 32(5): 945-952
21. **Kennedy MC**, McKenzie D. (2017). Uncertainties and complexity tradeoffs when integrating fire spread with hydroecological projections. **Natural Hazard Uncertainty Assessment: Modeling and Decision Support, Geophysical Monograph 223**. AGU Monograph Series: 231-244
20. Ottmar RD, Hudak AT, Prichard SJ, Wright CS, Restaino JC, **Kennedy MC**, Vihnanek RE. (2016). Pre-fire and post-fire surface fuel and cover measurements collected in the southeastern United States for model evaluation and development—RxCADRE 2008, 2011 and 2012. **International Journal of Wildland Fire**. 25: 10-24.
19. **Kennedy MC**, Johnson MC. (2014). Fuel treatment prescriptions alter spatial patterns of fire severity around the wildland–urban interface during the Wallow Fire, Arizona, USA. **Forest Ecology and Management**. 318: 122-132.

18. Prichard SJ, Karau EC, Ottmar RD, **Kennedy MC**, Cronan JB, Wright CS, Keane RE. (2014). Evaluation of the CONSUME and FOFEM fuel consumption models in pine and mixed hardwood forests of the eastern United States. **Canadian Journal of Forest Research**. 44: 784-795
17. Prichard SJ, **Kennedy MC**. (2014). Fuel treatments and landform modify landscape patterns of burn severity in an extreme fire event. **Ecological Applications**. 24(3): 571-590
16. Steel EA, **Kennedy MC**, Cunningham PG, Stanovick JS. (2013). Applied statistics in ecology: common pitfalls and simple solutions. **Ecosphere**. 4(9):115.
15. Hummel S, **Kennedy M**, Steel EA. (2013). Assessing forest vegetation and fire simulation model performance after the Cold Springs wildfire, Washington USA. **Forest Ecology and Management**. 287: 40-52
14. Prichard SJ, **Kennedy MC** (2012). Fuel treatment effects on tree mortality following wildfire in dry mixed conifer forests, Washington State, USA. **International Journal of Wildland Fire**. 21: 1004-1013
13. McKenzie D, **Kennedy MC** (2012). Power laws reveal phase transitions in landscape controls of fire regimes. **Nature Communications**. doi: 10.1038/ncomms1731
12. **Kennedy MC**, Ford ED. (2011). Using multicriteria analysis of simulation models to understand complex biological systems. **BioScience**. 61(12): 994-1004.
11. Ford ED, **Kennedy MC**. (2011). Assessment of uncertainty in functional-structural plant models. **Annals of Botany**. 108(6): 1043-1053.
10. Johnson MC, **Kennedy MC**, Peterson DL. (2011). Simulating fuel treatment effects in dry forests of the western United States: testing the principles of a fire-safe forest. **Canadian Journal of Forest Research**. 41: 1018-1030.
9. **Kennedy MC**, McKenzie D. (2010). Using a stochastic model and cross-scale analysis to evaluate controls on historical low-severity fire regimes. **Landscape Ecology**. 25:1561-1573
8. McKenzie D, **Kennedy MC**. (2010) Scaling laws and complexity in fire regimes. Chapter 2 in McKenzie D, Miller C, Falk DA eds. **The Landscape Ecology of Fire**. Dordrecht, The Netherlands, Springer.
7. **Kennedy MC**. (2010). Functional-structural models optimize the placement of foliage units for multiple whole-canopy functions. **Ecological Research**. 25(4):723-732
6. **Kennedy MC**, Ford ED, Hinckley TM. (2010) Defining how aging *Pseudotsuga* and *Abies* compensate for multiple stresses through multi-criteria assessment of a functional-structural model. **Tree Physiology**. 30: 3-22.
5. **Kennedy MC**, Ford ED. (2009). Two-criteria model assessment shows that foliage maintenance in old-growth *Pseudotsuga menziesii* requires both delayed and sequential reiteration. **Trees**. 23(6): 1173-1187
4. **Kennedy MC**, Ford ED, Singleton P, Finney M, Agee JK. (2008) Informed multi-objective decision-making in environmental management using Pareto optimality. **Journal of Applied Ecology**. 45(1):181.
3. Lehmkuhl JF, **Kennedy M**, Ford ED, Singleton PH, Gaines WL, Lind RL. (2007). Seeing the forest for the fuel: Integrating ecological values and fuels management. **Forest Ecology and Management**. 246: 73-80

2. Ishii HT, Ford ED, **Kennedy MC**. (2007). Physiological and ecological implications of adaptive reiteration as a mechanism for crown maintenance and longevity. **Tree Physiology**. 27:455–462

1. **Kennedy MC**, Ford ED, Ishii H. (2004). Model analysis of the importance of reiteration for branch longevity in *Pseudotsuga menziesii* compared with *Abies grandis*. **Canadian Journal of Botany**. 82: 892-909

Academic Conference Presentations (first author only; posters and oral)

Kennedy MC, Johnson MC, Harrison SC. (2022) A model analysis of postwildfire management and the reburn hypothesis. Association for Fire Ecology, Fire Ecology Across Boundaries: Connecting Science and Management.

Kennedy MC, Prichard SJ, French NH. (2019). Influence of wildland fuel biomass on uncertainty in wildfire emissions prediction. 8th International Fire Ecology and Management Congress: Cultivating Pyrodiversity

Kennedy MC, Bart R., Tague CL, McKenzie D. (2019). Projecting future fire regimes and watershed dynamics requires coupling fire spread with ecohydrology. 8th International Fire Ecology and Management Congress: Cultivating Pyrodiversity

Kennedy MC, Bart R., Tague CL, McKenzie D. (2019). Coupling fire spread with ecohydrology to integrate fire-regime and watershed dynamics under a changing climate. Ecological Society of America Annual Meeting. Louisville, KY

Kennedy MC, Prichard SJ, Povak NA. (2019). Incorporating Spatial Autocorrelation into Burn Severity Modeling: Implications for Wildland Fire Management. US International Association of Landscape Ecology Annual Meeting. Ft. Collins, CO.

Kennedy MC, Johnson MJ. (2017). Methods to expand understanding of fuel treatment effectiveness and inform treatment design. Association for Fire Ecology 7th International Fire Ecology and Management Congress. Orlando, FL

Kennedy MC, Newman EA, McKenzie D. (2017). Why is predicting the future so hard? Limitations of projections from complex models, with a focus on fire and climate change. Association for Fire Ecology 7th International Fire Ecology and Management Congress. Orlando, FL

Kennedy MC, McKenzie D, Tague CL, Bart R. (2016). Ecohydrological projections of fire regimes: Balancing uncertainty and complexity to integrate cross-disciplinary simulation systems. American Geophysical Union Annual Fall Meeting. San Francisco, CA.

Kennedy MC, Turnblom E, Cross J. (2016). $(SMC)^2$: Silviculture manipulation consequences in stand management cooperative installations. Presented at the Stand Management Cooperative Spring Meeting, Portland, OR

Kennedy MC. (2015). Salience and Wildfire: a coupled human-natural system perspective, Fire-spread model. SESYNC (National Socio-Environmental Synthesis Center) sponsored project titled Salience and Wildfire, Annapolis Maryland

Kennedy MC, Turnblom E. (2015). $(SMC)^2$: Silvicultural Manipulation consequences in stand management cooperative installations. Presented at the Stand Management Cooperative Spring Meeting, Seattle, WA

Kennedy MC, McKenzie D**.** (2014). RHESSys-WMFire: coupling wildfire to hydrology and vegetation to project the effects of climate change on mountain watersheds. American Geophysical Union Annual Fall Meeting. San Francisco, CA.

Kennedy MC. (2014). Using uncertainty assessment to improve empirical models of growth, fire effects and fuel consumption. Presented at the Stand Management Cooperative Fall Meeting, Corvallis, OR. Sept. 10, 2014

Kennedy MC, Johnson MC. (2014). Spatial patterns of fire severity and vegetation structure in multiple wildland fuel treatments surrounding the WUI in the 2011 Wallow Fire. Ecological Society of America Fall Meeting. Sacramento, CA.

Kennedy MC, McKenzie D. (2013). Integrating fire with hydrological projections Model evaluation to identify uncertainties and tradeoffs in model complexity. American Geophysical Union Fall Meeting. San Francisco, CA

Kennedy MC, McKenzie D. (2012). Integrating a stochastic fire spread model with the Regional Hydro-Ecological Simulation System. American Geophysical Union Fall Meeting. San Francisco, CA

Kennedy MC, McKenzie D. (2012). Exogenously constrained dynamic percolation shows a phase transition in landscape controls of low-severity fire regimes. Ecological Society of America Annual Meeting. Portland, OR

Kennedy MC, Prichard SJ. (2012). Simultaneous autoregressive (SAR) models for remotely sensed data. ForestSAT 2012. Corvallis, OR

Kennedy MC, McKenzie DM. (2011). Landscape fire models: how complex is enough? International Association of Landscape Ecologists Annual Symposium. Portland, OR

Kennedy MC, McKenzie D. (2010). Scaling laws and dominant controls of low-severity fire regimes. American Geophysical Union Fall Meeting. San Francisco, CA

Kennedy MC, McKenzie D. (2010). Using a simple model to replicate spatial patterns in low-severity fire regimes. Annual Meeting of the Pacific Northwest Section of the Mathematical Association of America. Seattle, WA

Kennedy MC, Ford ED. (2009). Pareto optimality is a novel tool for understanding the role of morphology in the persistence of old trees. Ecological Society of America Annual Meeting. Albuquerque, NM

Kennedy MC, McKenzie D. (2009). A neutral model replicates correlated spatial patterns in fire history records. International Association of Landscape Ecologists Annual Symposium. Snowbird, UT

Kennedy MC. (2001). An architectural model of SCU development in Douglas-fir. Wind River Canopy Crane Research Facility 7th Annual Science Conference. Carson, WA

Public and Invited Presentations

Kennedy MC. (2022). Understanding when hotter and drier means more or less wildfire. Modeling processes governing feedbacks among vegetation, fuels, climate, and wildfire. USFS Rocky Mountain Research Station Missoula Fire Lab Seminar Series

Kennedy MC. (2021). Forests and fire management in the Western US. Guest lecture for UW Tacoma: TEST 337: Natural Resources Policy: America's Public Forests and Parks

Kennedy MC. (2020). Using data to understand climate-wildfire relationships. UW Tacoma Mathematics Enthusiast series

Kennedy MC. (2020). Modeling Wildfire and its Effects on Forests. UW Tacoma Mathematics Enthusiast series (remote talk during Covid-19 stay-at-home order)

Kennedy MC. (2020). Smokey Bear: friend or foe of our forests? Grit City Think and Drink. Tacoma, WA

Kennedy MC. (2019). Understanding forest management decision-making. Where do we implement fuel reduction treatments, and do those treatments work to reduce wildfire severity? UW Tacoma School of Interdisciplinary Arts and Sciences Seminar on Applied Socioeconomic Sciences.

Kennedy MC. (2019). Forests and fire in the Western US: A brief social and scientific history. Natural Resources Policy class at UW Tacoma (TEST 337)

Kennedy MC. (2018) Statistical methods to expand understanding of the effectiveness of fuel reduction treatments at modifying wildfire severity. Invited: Seattle University Mathematics Colloquium.

Kennedy MC. (2018) Wildfires and humans in the Western United States: A brief history leading to our current (mal)adaptive state. Washington State History Museum Scholarly Selections.

Kennedy MC. (2017). Independence is not the end of data analysis. Methods to harness rather than control for correlation in data, with some pictures of fire! UW Tacoma Mathematics Enthusiast Series

Kennedy MC. (2017). Taking fuels from the fire: Understanding whether fuels management can restore forests, protect homes, and conserve wildlife. UW Tacoma SIAS Brown Bag Series

Kennedy MC. (2016). A "good enough" approach to forest management. UW Tacoma Office of Research Lightning Talk.

Kennedy MC. (2016). Understanding past wildfire using a dynamic form of percolation. UW Tacoma Mathematics Enthusiast Series

Kennedy MC. (2015). RHESSys-WMFire: Integrating eco-hydrological projections with fire. University of Washington Water Seminar.

Teaching (University of Washington, Tacoma Campus)

My primary teaching interest is to improve the quality of scientific research and education and quantitative literacy across majors and to improve equity and inclusion for underrepresented groups in STEM education.

TCORE 102/112: Introduction to Science: Forest Science and Management in the Pacific Northwest. (2 sections) Designed to prepare first-year students for success at the upper division level and to provide general education for the Natural World subject area. Designed lectures, field trips, laboratory experiments, Excel projects, and a final group presentation in order to provide an introduction to the practice and application of science.

TMATH 110: Introductory Statistics with Applications. (8 sections) Provide lectures, class activities and worksheets to give the student an understanding of statistical concepts and analysis in society. Implemented quarter-long project. Serves a variety of majors and diverse student body on the UW Tacoma campus.

TMATH 350/351: Foundations of Mathematical Research/Mathematics Seminar (1 section). Prepares Junior-level students for their capstone project including topic selection, literature review, critical reading of relevant mathematic literature, and career readiness activities. Organized seminar series with diverse topics and speakers.

TMATH 390: Probability and Statistics in Engineering and Science. (10 sections) Give lectures and design class activities, worksheets, and R computer labs for a calculus-based statistics class. Serves a variety of majors on the UW Tacoma campus. Recently adapted to online remote format during Covid-19 pandemic.

TMATH 410: Regression Modeling with Applications. (4 sections) Developed new course for UW Tacoma (Autumn 2017). Lectures and computer labs introduce linear regression techniques including simple linear regression, multiple linear regression, diagnostics, interpretation, and prediction. Utilizes the R statistical software environment. Students complete a quarter-long project on their own chosen data set and problem.

TESC 410: Environmental Science Senior Seminar. (2 sections) Give activities to synthesize environmental research methodologies, and to develop oral, and written skills. Includes workshops and activities for career preparation.

TESC 430: Environmental Modelling. (3 sections) Give lectures and design computer labs to instruct multi-disciplinary students in the basics of environmental modeling. Emphasizes model development and uncertainty analysis over mathematical theory. Utilizes the R statistical software environment. Students complete quarter-long project on a topic and model of their own choice.

TMATH 495: Collaborative Mathematics Research Experience (2 sections). Quarter-long authentic quantitative research experience for mathematics majors. Provides projects to satisfy senior capstone requirement. Topics include time series analysis of climate-fire relationships and simulation studies of spatial patterns in wildfire propagation.

TIAS 499/TESC499/TMATH498: Undergraduate Research or Directed Reading (14 sections). Supervise independent undergraduate research for capstone project or directed reading. Topics include statistical estimation of empirical fuel loading, statistical analysis of fuel treatment effectiveness, dynamic population modeling, time series analysis, spatial data analysis, model analysis of fuels succession following post-wildfire management, simulation of watershed-level fire regimes, computational geometry for reconstruction of 3-dimensional neuron structure.

Past Teaching (University of Washington, Seattle Campus)

QSCI 110: Introduction to Environmental Modeling. Over three quarters developed course curriculum that introduces basic principles and practices of environmental modeling to undergraduate students. Three lectures weekly, to present the underlying concepts, and two computer lab sessions, to apply concepts to actual modeling problems.

QSCI 381: Introduction to Probability and Statistics. Over one quarters developed course curriculum that introduces basic principles of probability and statistics to undergraduate students. Three lectures weekly, to present the underlying concepts, and supervised TA's to facilitate two computer lab sessions, to apply concepts and use computers to perform data analysis.

QSCI 482: Statistical Inference in Applied Research, a course recommended for first-year graduate students in Fisheries and Forestry and advanced undergraduate students. Prepared

three lectures and one problem session per week introducing data analysis techniques. Problem sessions allowed for the application of the concepts to empirical data.

QERM 598 offered jointly with SFR 521C: Graduate Seminar in Optimization and Ecological Model Evaluation. Model assessment seminar included discussion of techniques for model assessment and the philosophy of science with respect to model assessment. Several computer labs gave students an opportunity to apply the techniques with real modeling data.

Served as graduate teaching assistant for Statistical Inference in Applied Research (**QSCI 482**), Analysis of Ecological Data (**QERM 514**), Ecological Modeling and Spatial Analysis (**QERM 550**), and Introduction to Probability and Statistics (**QSCI 381**). All of these courses involve the application of quantitative methodologies to answer scientific research questions. Conducted problem sessions, computer labs, and office hours for one-on-one interactions with undergraduate and graduate students.

Served as Senior TA Facilitator for the **TA Conference on Teaching and Learning** for Teaching One-to-one in Office Hours and Study Centers Senior, Teaching Math, Science and Engineering Sections, and Using Student Feedback to Improve Your Teaching.

Media and Public Appearances

Interview with John Ryan KUOW Seattle Public radio. August 23, 2023. Fuel, heat, drought, wind: Recipe for big Spokane wildfires https://kuow.org/stories/fuel-heat-drought-wind-a-recipe-for-big-spokane-wildfires

Interview Libby Denkmann, KUOW Seattle Public radio Soundside. August 21, 2023. Wildfire season in Washington state: How prescribed burns could reduce danger https://www.kuow.org/stories/with-wildfires-burning-across-the-state-how-can-prescribed-burns-help-mitigate-the-danger

Interview with Kaleb Roedel KUNR public radio. Aug 2, 2023. Wildfires more likely in August in several parts of Mountain West. https://www.kunr.org/energy-and-environment/2023-08-03/mountain-west-wildfires-more-likely-august-2023

Interview with Jeremy Harris KOMO Seattle local news. October 19, 2022. Rain will soon douse unusually late fire season in the Pacific Northwest. https://komonews.com/news/local/rain-will-soon-douse-unusually-late-fire-season-in-the-pacific-northwest

Interview with Marcus Harrison Green, **KUOW Seattle Public Radio**. August 1. 2022. Preparing for wildfires in your backyard. https://www.kuow.org/stories/preparing-for-wildfires-in-your-backyard

Interview with Michael O'Sullivan, **Voice of America**. August 1. 2022. Scientists say wildfires in the American West are bigger, hotter and more destructive than in the past. https://www.voanews.com/a/scientists-fires-in-american-west-bigger-hotter-more-destructive-/6679765.html

Interview with Niala Boodhoo, **Axios-Today**. July 12, 2022. The race to save Yosemite's giant sequoia trees. https://www.axios.com/2022/07/12/axios-today-podcast-yosemite-washburn-fire-sequoias.

Interview with Drew Tuma, **KGO San Francisco ABC7 News**. January 28, 2022. Why are we seeing California wildfires in January? Expert explains https://abc7news.com/colorado-fire-big-sur-california-wildfires-ca-drought-climate-change/11517556/

Interview with Brian Melley, **Associated Press**. September 16, 2021. Fighting fire with fire to protect ancient sequoia trees. https://apnews.com/article/fires-environment-and-nature-forests-trees-wildfires-e9842340f2d6b0a3d6b8989fd8c6ec27

Webinar panelist with **EarthUp**, September 8, 2021. Wildfire Preparedness with EarthUP

https://www.youtube.com/watch?v=wZDPRVnA9E8
Interview with Amanda Eggert, **Montana Free Press**, Aug 19, 2021, published August 30, 2021. Can 'Active Forest Management' Really Reduce Wildfire Risk?
https://www.mtpr.org/2021-08-30/can-active-forest-management-really-reduce-wildfire-risk
Interview with Nathanael Johnson for **Grist** (August 20, 2021, published August 25, 2021). Is there calm after the firestorm?
https://grist.org/burning-issue/is-there-calm-after-the-firestorm/
Interview with Mark Brodie for **KJZZ, Phoenix Public Radio**. (August 2, 2021, published August 10, 2021). Research Predicts Decade-Long Increase In Wildfires.
https://kjzz.org/content/1707229/research-predicts-decade-long-increase-wildfires
Interview with Paige Browning for **KUOW, Seattle Public Radio**. (August 3, 2021). New research models possibly devastating consequences of climate change and wildfires for western forests.
https://kuow.org/stories/new-research-models-possibly-devastating-consequences-of-climate-change-and-wildfires-for-western-forests
Interview for **The Hill** (July 28, 2021, published August 1, 2021). Researchers paint bleak picture of forest fires beyond 2030 (posted Aug 1).
https://thehill.com/policy/equilibrium-sustainability/565773-researchers-paint-bleak-picture-of-forest-fires-beyond-2030
Interview for **local radio, 100.7 The Wolf**. (July 22, 2021, aired July 25, 2021). Conversations Public Affairs program
Interview with Nathanael Johnson for **Grist** (July 22. 2021, published July 26, 2021). Good wildfire news? Evidence from the Bootleg Fire supports thinning forests.
https://grist.org/extreme-weather/wildfire-bootleg-fire-news-forests/
Interview for **Washington Post** (July 19, 2021): Only nature, through significant rain or snow, can extinguish huge Oregon fire, official says
https://www.washingtonpost.com/nation/2021/07/19/bootleg-fire-weather-event/
Interview for the **Kitsap Sun**: (September 18, 2020): Northwest's new wildfire danger: 'It could happen anywhere in Kitsap'
https://www.kitsapsun.com/story/news/2020/09/19/northwests-new-wildfire-danger-it-could-happen-anywhere-kitsap/5806685002/
Interview for **The Daily Beast**: Like 'a Bomb Went Off': An Oregon City Destroyed as Wildfires Devastate West Coast (September 14, 2020)
https://www.thedailybeast.com/oregon-city-destroyed-like-a-bomb-went-off-as-wildfires-devastate-west-coast
Interview for **San Luis Obispo Tribune**: A 'large, damaging fire' is possible at any time in SLO County. Here's why (August 2020)
https://www.sanluisobispo.com/article244413777.html
Interview with **Jefferson Exchange, NPR in Jefferson County**: New Wildfire Database Shows Where Fuels Are High (December 13, 2019)
https://www.ijpr.org/post/new-wildfire-database-shows-where-fuels-are-high
Interview with **KOMO-4 local news**: New UW research tackles fire forecasting to better manage future wildfires (Aired December 9, 2019)
https://komonews.com/news/local/new-uw-research-tackles-fire-forecasting-to-better-manage-future-wildfires
Expert on the **Environmental Law Institute** panel event: Handling the Heat: The Evolving Nature of Washington's Wildfires (October 2019)
https://www.eli.org/events/handling-heat-evolving-nature-washingtons-wildfires

Interview with **KIRO-7 local news**: Experts say decades of fighting wildfires has actually made them worse (Aired June 7, 2019)
https://www.kiro7.com/news/local/experts-say-decades-of-fighting-wildfires-has-actually-made-them-worse/955456857
UW Tacoma Podcast: The Fifth Season (Posted June 3, 2019)
https://www.buzzsprout.com/265902/1232648-the-fifth-season
Interview for factcheck.org: Trump Repeatedly Errs on California Wildfires.
https://www.factcheck.org/2018/11/trump-repeatedly-errs-on-california-wildfires/
Expert on panel during **Water's Vulnerability to Fire Workshop** at the Cedar River Watershed (November 2018)
Interview with **KOMO-4 local news**: Diseased, dying forests pose huge wildfire risk in Washington (Aired November 14, 2018)
https://komonews.com/news/local/diseased-dying-forests-pose-huge-wildfire-risk-in-washington
Interview with Sky news discussing CA wildfires (Nov 14, 2018)
Interview on **KNKX (National Public Radio Tacoma, WA)**. Competing Interests Complicate Forest Management In Washington State (Aired Sep 4, 2018)
http://www.knkx.org/post/competing-interests-complicate-forest-management-washington-state
Interview for **sciencealert.com**: We Asked an Expert About Trump's Baffling Wildfire Tweets. Here's What They Had to Say.
https://www.sciencealert.com/science-expert-trump-california-wildfire-tweets
Interview with **Oregon Public Broadcasting**. Study: Wildfires Burn More Severely On Private Timber Plantations Than Public Forests. (Aired May 5, 2018)
https://www.opb.org/news/article/wildfire-severity-private-public-forests/

Academic Service

UW Tacoma Sciences and Mathematics Vice Chair. (2022-2023)
UW Tacoma Faculty Assembly Executive Council representing SIAS (2020-2021)
UW Faculty Senate elected Senator representing Tacoma campus (2019-present)
UW Tacoma School of Interdisciplinary Arts and Sciences Committees
- Assessment committee (2017)
- MA Interdisciplinary Studies Admissions Committee (Spring 2016)

UW Tacoma Interview Committees
- Geometer/Mathematical Historian (Feb 2016)
- Neurobiology (March 2016)

UW Tacoma Search Committees
- Applied Ecology (2016-2017)
- Statistics (**Chair**: 2018-2019)
- Economics (2020-2021)

UW Tacoma Promotion Committees
- Associate Teaching Professor (2022: **Chair**)
- Senior Lecturer (2017)

UW Tacoma Lecturer Reappointment Committees
- Math lecturers (2017)
- Math lecturers (2019)

UW Tacoma Science and Mathematics Majors Groups:
- Environmental Science (2015-present)
- MS in Environmental Science (2015-present)
- Mathematics (2015-present)

UW Tacoma Science and Mathematics Statistics Coordinator (2016-2018)
UW Tacoma Sciences and Mathematics TMATH 390 Coordinator (2019-2021)
UW Tacoma Science and Mathematics Workgroups
- Quantitative Literacy Workgroup (2015-2016)
- Environmental Science Quantitative Assessment Workgroup (**Chair**: 2016-2020)
- Sciences and Mathematics Scholarship Committee (**Chair**: 2017-2018)
- Mathematics Pre-calculus success workgroup (2017-2018)
- TMATH 390 curriculum review and revision workgroup (**Chair**: 2019-2021)
- Mathematics Major Award Committee (**Chair**: 2021)
- Environmental Science capstone review (**Chair**: 2020-2021)
- Environmental Science equity and scholarships review (**Chair**: 2020-2021)

Judge for the UW Tacoma Sciences and Mathematics Undergraduate Research Symposium
Judge for the SIAS Haley Awards (Spring 2020, 2022)

Professional Service

Active as a peer-reviewer past and present for the following journals:
Algorithms; Annals of Botany; Annals of Operations Research; Applied Soft Computing; Atmospheric Science Letters; Canadian Journal of Forest Research; Conservation Biology; Conservation Letters; Diversity and Distributions; Ecological Applications; Ecological Modeling; Ecosphere; Environmental Modelling and Software; Fire Ecology; Forest Ecology and Management; Forests; Forest Science; Frontiers in Ecology and the Environment; Geomatica; Global Environmental Research; International Journal of Forestry Research; International Journal of Geo-information; International Journal of Wildland Fire; Journal of Applied Ecology; Journal of Environmental Management; Journal of Geophysical Research—Biogeosciences; Land Degradation and Development; Landscape Ecology; One Earth; PLOS One; Science of the Total Environment; Scientific Reports; Science Advances; Tree Physiology; Trees-Structure and Function; USDA Forest Service General Technical Report

Served as session moderator for conferences for the International Association for Landscape Ecology and for the Ecological Society of America

Served as judge of student presentations during conferences for the International Association for Landscape Ecology, the American Geophysical Union, and for the Ecological Society of America

Proposal reviewer for UW Royalty Research Fund

Proposal panel reviewer for Joint Fire Sciences Program

Reverse site visit and site visit panel reviewer for the National Science Foundation

Academic Membership

American Geophysical Union (lifetime); Association for Fire Ecology (lifetime); Ecological Society of America; International Association For Landscape Ecology

Professional Development

The Chronicle's Strategic Leadership Program for Department Chairs (January 2023)

Data Management Workshop, UW Tacoma (online) (May 2020)

iTech Fellows (online teaching), UW Tacoma (certification completed June 2020)

Digital Diner for Open Educational Resources, UW Tacoma (May 2019)

Strengthening Educational Excellence Through Diversity (SEED) Teaching Institute, UW Tacoma (June 12-16 2017, Sep 13, 2017)

Safer Zone Training, UW Tacoma (Feb 2017)

Quantitative Reasoning Supporting STEM success workshop (Nov 2015). American Association of Colleges and Universities: Crossing Boundaries: Transforming STEM Education,

UW faculty fellows workshops before the Fall Quarter 2015.

Awards

Outstanding Paper in Landscape Ecology. US Regional Association of the International Association for Landscape Ecology. 2013. For: McKenzie D, Kennedy MC. (2012). Power-law behavior reveals phase transitions in landscape controls of fire regimes. Nature Communications. Authors contributed equally to the research and writing.

Outstanding Research Assistant. University of Washington College of Forest Resources Recognition Event. 2006. For research published as: Kennedy MC, Ford ED, Singleton P, Finney M, Agee JK. (2008). Informed mulit-objective decision-making in environmental management using Pareto optimality. Journal of Applied Ecology. 45(1): 181.

NCAA Outstanding Sportsperson of the Year National Nominee. 1999

Charles Harney Award. University of San Francisco. 1999. Awarded to the graduating female athlete with the highest cumulative GPA.

Achievement Rewards for College Scientists Recipient. University of San Francisco. 1998.

Public Service

Participate in ecological restoration, trail maintenance and planting events with the Mountains to Sound Greenway and Seattle Parks in Washington State.