

Tucker J. Furniss, PhD

Assistant Professor

Dept. of Ecosystem Science and Management, University of Wyoming

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EDUCATION

PhD	Utah State University. <i>Ecology.</i>	2021
MS	Utah State University. <i>Ecology.</i>	2016
BS	University of Washington. <i>Environmental Science and Resource Mgmt.</i>	2011

PROFESSIONAL APPOINTMENTS

Assistant Professor	2023-present
Department of Ecosystem Science and Management <i>University of Wyoming</i>	
Postdoctoral Researcher	2020-2023
Mentor: Dr. Paul Hessburg <i>USDA-Forest Service Pacific Northwest Research Station</i>	
Graduate Research Assistant	2014-2020
Advisor: Dr. James Lutz <i>Department of Wildland Resources, Utah State University</i>	

GRANTS AND AWARDS

Total awarded funding: \$570,774; As lead PI: \$499,500

• Building next generation post-fire tree mortality models and examining interactions between drought, density, and fire severity on post-fire recovery trajectories. <i>CA Department of Forestry and Fire Protection.</i> Lead PI. 2023-2028.	\$499,500
• Longitudinal monitoring of forest health and resilience. <i>McIntire-Stennis Capacity Grant.</i> Co-PI. 2023-2028.	\$45,000
• The Landscape Restoration Simulator. <i>Washington State Department of Natural Resources.</i> Co-PI. 2022-2023.	\$67,800
• The Landscape Restoration Simulator: Nason Creek Pilot Project. <i>Washington State Department of Natural Resources.</i> Co-PI. 2022.	\$28,200
• Interactive effects of drought, fire, and bark beetles on tree mortality in the Sierra Nevada, California. <i>Joint Fire Science Graduate Research Innovation</i> (award #19-1-01-10). Student Investigator. 2019-2021.	\$24,774
• Spatial Dynamics of Surface Fuels Following Reintroduced Fire. <i>USU Ecology Center Graduate Research Award.</i> Student Investigator. 2018-2019.	\$4,928
• Edaphic effects on plant communities: do small scale variability in soil resources influence forest composition, structure, and spatial patterns? <i>USU Ecology Center Graduate Research Award.</i> Student Investigator. 2016-2017.	\$1,942

PEER-REVIEWED PUBLICATIONS (†co-lead author)

Google scholar stats (as of 1/01/23): **Citations = 1,202; H-index = 15**

- (23) **Furniss, T. J.**, N. A. Povak, P. F. Hessburg, R. B. Salter, Z. Duan, and M. Wigmosta. 2023. Informing climate adaptation strategies using ecological simulation models and spatial decision support tools. *Frontiers in Forests and Global Change*, 6, p.1269081. <https://doi.org/10.3389/ffgc.2023.1269081>
- (22) **Furniss, T. J.**, P. F. Hessburg, N. Povak, R. B. Salter, and M. Wigmosta. 2022. Predicting future patterns, processes, and their interactions: Benchmark calibration and validation procedures for forest landscape models. *Ecological Modelling* 473:110099. <https://doi.org/10.1016/j.ecolmodel.2022.110099>
- (21) Povak, N., **T. J. Furniss**, P. F. Hessburg, R. B. Salter, M. Wigmosta, Z. Duan, M. LeFevre. 2022. Evaluating basin-scale forest adaptation scenarios: Wildfire, streamflow, biomass, and economic recovery synergies and trade-offs. *Frontiers in Forests and Global Change* 5:805179. <https://doi.org/10.3389/ffgc.2022.805179>
- (20) **Furniss, T. J.**, A. J. Das, P. J. van Mantgem, N. L. Stephenson, and J. A. Lutz. 2022. Crowding, climate, and the case for social distancing among trees. *Ecological Applications* 32(2):e2507. **Cover issue.** <https://doi.org/10.1002/eap.2507>
- (19) Lutz, J. A., S. Struckman, S. J. Germain, and **T. J. Furniss**. 2021. The importance of large-diameter trees to the creation of snag and deadwood biomass. *Ecological Processes* 10:28. <https://doi.org/10.1186/s13717-021-00299-0>
- (18) Lutz, J. A., S. Struckman, **T. J. Furniss**, J. Birch, L. Yocom, D. McAvoy. Large-diameter trees dominate snag and surface biomass following beetle outbreak. *Ecological Processes* 10:9. <https://doi.org/10.1186/s13717-020-00275-0>
- (17) **Furniss, T. J.**, A. J. Larson, V. R. Kane, and J. A. Lutz. 2020. Wildfire and drought moderate the spatial elements of tree mortality. *Ecosphere* 11(8):e03214. <http://dx.doi.org/10.1002/ecs2.3214>
- (16) Lutz, J. A., S. Struckman, **T. J. Furniss**, C. A. Cansler, S. J. Germain, L. L. Yocom, D. J. McAvoy, C. A. Kolden, A. M. S. Smith, M. E. Swanson, and A. J. Larson. 2020. Large-diameter trees dominate snag and surface biomass following reintroduced fire. *Ecological Processes* 9:41 <https://doi.org/10.1186/s13717-020-00243-8>
- (15) **Furniss, T. J.**, V. R. Kane, A. J. Larson, and J. A. Lutz. 2020. Detecting tree mortality with Landsat-derived spectral indices: improving ecological accuracy by examining uncertainty. *Remote Sensing of Environment* 237:111497. <https://doi.org/10.1016/j.rse.2019.111497>
- (14) Cansler, C. A., M. E. Swanson, **T. J. Furniss**, A. J. Larson, and J. A. Lutz. 2019. The effects of reintroduced fire on surface fuel characteristics in an old-growth, mixed-conifer forests of Yosemite National Park, California, USA. *Fire Ecology* 15:16. <https://doi.org/10.1186/s42408-019-0035-y>
- (13) Bishop, M., **T. J. Furniss**, K. E. Mock, and J. A. Lutz. 2019. Genetic and spatial structuring of *Populus tremuloides* in a mixed-species forest of southwest Utah, USA. *Western North American Naturalist* 79(1): 63-71. <https://doi.org/10.3398/064.079.0107>
- (12) **Furniss, T. J.**, A. J. Larson, V. R. Kane, and J. A. Lutz. 2019. Multi-scale assessment of post-fire tree mortality models. *International Journal of Wildland Fire* 28(1): 46-61. **Editors'**

Choice Gold Open Access article. Cover issue. <https://doi.org/10.1071/WF18031>

- (11) Lutz[†], J. A. and **T. J. Furniss[†]** (co-lead), D. J. Johnson, S. J. Davies, D. Allen, A. Alonso, K. Anderson-Teixeira, A. Andrade, J. Baltzer, K. M. L. Becker, E. M. Blomdahl, N. Bourg, S. Bunyavejchewin, D. Burslem, C. A. Cansler, K. Cao, M. Cao, D. Cárdenas, L-W. Chang, K-J Chao, W-C. Chao, J-M. Chiang, C. Chu, G. B. Chuyong, K. Clay, R. Condit, S. Cordell, H. S. Dattaraja, A. Duque, D. Escobar, C. E. Ewango, G. Fisher, C. Fletcher, J. Fruend, C. Giardina, S. J. Germain, G. Gilbert, Z. Hao, T. Hart, B. C. H. Hau, F. He, A. Hector, R. W. Howe, C-F. Hsieh, Y-H. Hu, S. P. Hubbell, F. Inman-Narahari, A. Itoh, D. Janik, A. Kassim, D. Kenfack, L. Korte, K. Král, A. J. Larson, Y-D. Li, Y. Lin, S. Liu, S. Lum, K. Ma, J-R. Makana, Y. Malhi, S. M. McMahon, W. J. McShea, H. R. Memiaghe, X. Mi, M. Morecroft, P. M. Musili, J. A. Myers, V. Novotny, A. de Oliveira, P. Ong, D. A. Orwig, R. Ostertag, G. G. Parker, R. Patankar, R. P. Phillips, G. Reynolds, L. Sack, G-Z. M. Song, S-H. Su, R. Sukumar, I-F. Sun, H. S. Suresh, M. E. Swanson, S. Tan, D. W. Thomas, J. Thompson, M. Uriarte, R. Valencia, A. Vicentine, T. Vrška, X. Wang, G. D. Weiblen, A. Wolf, S-H. Wu, H. Xu, T. Yamakura, S. Yap, and J. K. Zimmerman. 2018. Global importance of large-diameter trees. *Global Ecology and Biogeography* 27(7): 849-864. **Cover issue.** <http://dx.doi.org/10.1111/geb.12747>
- (10) Adler, P. B., D. Smull, K. H. Beard, R. T. Choi, **T. J. Furniss**, A. Kulmatiski, J. M. Meinders, A. T. Tredennick, and K. E. Veblen. 2018. Competition and coexistence in plant communities: intraspecific competition is stronger than interspecific competition. *Ecology Letters* 21(9): 1319-1329. <http://dx.doi.org/10.1111/ele.13098>
- (9) LaManna, J. A., S. A. Mangan, A. Alonso, N. A. Bourg, W. Y. Brockelman, S. Bunyavejchewin, L. W. Chang, J. M. Chiang, G. B. Chuyong, K. Clay, R. Condit, S. Cordell, S. J. Davies, **T. J. Furniss**, C. P. Giardina, I. A. U. Nimal Gunatilleke, C. V. S. Gunatilleke, F. He, R. W. Howe, S. P. Hubbell, C. F. Hsieh, F. M. Inman-Narahari, D. Janík, D. J. Johnson, D. Kenfack, L. Korte, A. J. Larson, J. A. Lutz, S. M. McMahon, W. J. McShea, H. R. Memiaghe, A. Nathalang, V. Novotny, P. S. Ong, D. A. Orwig, R. Ostertag, G. G. Parker, R. P. Phillips, L. Sack, I. F. Sun, J. S. Tello, D. W. Thomas, B. L. Turner, D. M. Vela Díaz, T. Vrška, G. Weiblen, A. Wolf, S. Yap, and J. A. Myers. 2018b. Response to comment by Chisholm and Fung on "Plant diversity increases with the strength of negative density dependence at the global scale" *Science* 360:eaar5245. <http://science.sciencemag.org/content/360/6391/eaar5245>
- (8) LaManna, J. A., S. A. Mangan, A. Alonso, N. A. Bourg, W. Y. Brockelman, S. Bunyavejchewin, L. W. Chang, J. M. Chiang, G. B. Chuyong, K. Clay, R. Condit, S. Cordell, S. J. Davies, **T. J. Furniss**, C. P. Giardina, I. A. U. Nimal Gunatilleke, C. V. S. Gunatilleke, F. He, R. W. Howe, S. P. Hubbell, C. F. Hsieh, F. M. Inman-Narahari, D. Janík, D. J. Johnson, D. Kenfack, L. Korte, A. J. Larson, J. A. Lutz, S. M. McMahon, W. J. McShea, H. R. Memiaghe, A. Nathalang, V. Novotny, P. S. Ong, D. A. Orwig, R. Ostertag, G. G. Parker, R. P. Phillips, L. Sack, I. F. Sun, J. S. Tello, D. W. Thomas, B. L. Turner, D. M. Vela Díaz, T. Vrška, G. Weiblen, A. Wolf, S. Yap, and J. A. Myers. 2018a. Response to comment by Hülsmann and Hartig on "Plant diversity increases with the strength of negative density dependence at the global scale" *Science* 360:eaar3824. <http://science.sciencemag.org/content/360/6391/eaar3824>
- (7) LaManna, J. A., S. A. Mangan, A. Alonso, N. A. Bourg, W. Y. Brockelman, S. Bunyavejchewin, L. W. Chang, J. M. Chiang, G. B. Chuyong, K. Clay, R. Condit, S. Cordell, S. J. Davies, **T. J. Furniss**, C. P. Giardina, I. A. U. Nimal Gunatilleke, C. V. S. Gunatilleke, F. He, R. W. Howe, S. P. Hubbell, C. F. Hsieh, F. M. Inman-Narahari, D. Janík, D. J.

- Johnson, D. Kenfack, L. Korte, A. J. Larson, J. A. Lutz, S. M. McMahon, W. J. McShea, H. R. Memiaghe, A. Nathalang, V. Novotny, P. S. Ong, D. A. Orwig, R. Ostertag, G. G. Parker, R. P. Phillips, L. Sack, I. F. Sun, J. S. Tello, D. W. Thomas, B. L. Turner, D. M. Vela Díaz, T. Vrška, G. Weiblen, A. Wolf, S. Yap, and J. A. Myers. 2017. Negative density dependence contributes to global patterns of plant biodiversity. *Science* 356:1389-1392. <http://dx.doi.org/10.1126/science.aam5678>
- (6) **Furniss, T. J.**, A. J. Larson, and J. A. Lutz. 2017. Reconciling niches and neutrality in a subalpine temperate forest. *Ecosphere* 8(6): Article01847. <http://dx.doi.org/10.1002/ecs2.1847>
 - (5) Lutz, J. A., **T. J. Furniss**, S. J. Germain, K. M. L. Becker, E. Blomdahl, S. A. Jeronimo, C. A. Cansler, J. A. Freund, M. E. Swanson, and A. J. Larson. 2017. Shrub consumption and immediate community change by reintroduced fire in Yosemite National Park, California, USA. *Fire Ecology* 13(1): 104-126. **Cover issue.** <http://dx.doi.org/10.4996/fireecology.1301104>
 - (4) Lutz, J. A., J. R. Matchett, L. W. Tarnay, D. F. Smith, K. M. L. Becker, **T. J. Furniss**, and M. L. Brooks. 2017. The distribution and uncertainty of carbon sequestered as aboveground tree biomass in Yosemite and Sequoia & Kings Canyon National Parks. *Land*. 6(10): 1-24. **Cover issue.** <http://dx.doi.org/10.3390/land6010010>
 - (3) Larson, A. J., C. A. Cansler, S. G. Cowdery, S. Hiebert, **T. J. Furniss**, M. E. Swanson, and J. A. Lutz. 2016. Post-fire morel (*Morchella*) mushroom production, spatial structure, and harvest sustainability. *Forest Ecology and Management* 377: 16-25. <http://dx.doi.org/10.1016/j.foreco.2016.06.038>
 - (2) Lutz, J. A., A. J. Larson, **T. J. Furniss**, J. A. Freund, M. E. Swanson, D. C. Donato, K. J. Bible, J. Chen, and J. F. Franklin. 2014. Spatially non-random tree mortality and ingrowth maintain equilibrium pattern in an old-growth *Pseudotsuga-Tsuga* forest. *Ecology* 95(8): 2047-2054. <http://dx.doi.org/10.1890/14-0157.1>
 - (1) Lutz, J. A., K. A. Schwindt, **T. J. Furniss**, J. A. Freund, M. E. Swanson, K. I. Hogan, G. E. Kenagy, and A. J. Larson. 2014. Community composition and allometry of *Leucothoe davisiae*, *Cornus sericea*, and *Chrysolepis sempervirens*. *Canadian Journal of Forest Research* 44(6): 677-683. <http://dx.doi.org/10.1139/cjfr-2013-0524>

Manuscripts in review/revision/prep:

- Furniss, T. J.**, N. Povak, P. F. Hessburg, R. B. Salter, Z. Duan, and M. Wigmosta. Wildland fire use builds resilient landscapes amid climate change. In Review. *Frontiers in Forests and Global Change*.
- Furniss, T. J.**, and J. A. Lutz. Old methods in a new era: the enduring value of longitudinal forest monitoring. In Prep. Target journal *BioScience*.
- Hessburg, P. F., N. Povak, R. B. Salter, S. J. Prichard, **T. J. Furniss**, R. K. Hagmann, M. E. Lefevre, D. J. Churchill, G. W. Miegs, and M. E. Swanson. In Prep. Nonforest patchworks: Core elements of resilient forest landscapes. Target journal *Environmental Research Letters*.
- Harvey, B. J., C. A. Cansler, B. M. Collins, D. C. Donato, **T. J. Furniss**, W. D. Hansen, S. M. A. Jeronimo, M. C. Kennedy, M. A. Krawchuk, J. A. Lutz, G. W. Meigs, C. E. Naficy, M. A. Parisien, S. A. Parks, S. J. Prichard, N. Povak, J. T. Stevens, and E. Whitman. In prep. Bridging the fields of landscape ecology and fire ecology: insights, challenges, and opportunities. In Prep. Target journal *BioScience*.

OUTREACH AND MANAGEMENT PUBLICATIONS

- Furniss, T. J.**, and J. A. Lutz. 2021. Interactive effects of drought, fire, and bark beetles on tree mortality in the Sierra Nevada, California. *Final Report to the Joint Fire Science Program*.
- Kittle, C. M., **Furniss, T. J.**, and Lutz, J. A. 2020. Supporting resource management with permanent research plots: Lessons from the Rim Fire. Research summary for Yosemite National Park managers. Deliverable for JFSP grant #16-1-04.
- Lutz, J. A., A. J. Larson, K. M. L. Becker, **T. J. Furniss**, E. Blomdahl, S. J. Germain, and M. E. Swanson. 2016. Post Rim Fire assessment of fuel consumption and mortality in the Yosemite Forest Dynamics Plot. *Final Report to the National Park Service*.
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ACCESSIONED DATASETS

- Macriss, N., **T. J. Furniss**, S. M. A. Jeronimo, E. L. Crowley, O. W. Germain, S. J. Germain, V. R. Kane, A. J. Larson, and J. A. Lutz. 2019. Data for tree mortality calibration of satellite- and LiDAR-derived fire severity estimates. Utah State University. http://digitalcommons.usu.edu/all_datasets/63/
- Cansler, C. A., M. E. Swanson, **T. J. Furniss**, A. J. Larson, and J. A. Lutz. 2018. Data for effects of reintroduced fire on surface fuels in a Sierra Nevada mixed-conifer forest. Utah State University. http://digitalcommons.usu.edu/all_datasets/51/
- Lutz, J. A., J. A. Freund, A. J. Larson, M. E. Swanson, **T. J. Furniss**, K. M. L. Becker, E. M. Blomdahl, C. A. Cansler, S. J. Germain, and S. M. A. Jeronimo. 2017. Data for allometric equations of *Chrysolepis sempervirens*, *Cornus sericea*, *Corylus cornuta* ssp. *californica*, and *Leucothoe davisiae*. Utah State University. http://digitalcommons.usu.edu/all_datasets/22/
- Lutz, J. A., **T. J. Furniss**, S. J. Germain, K. M. L. Becker, E. M. Blomdahl, S. M. A. Jeronimo, C. A. Cansler, J. A. Freund, M. E. Swanson, and A. J. Larson. 2017. Shrub consumption and immediate community change by reintroduced fire in Yosemite National Park, California, USA; Supplemental Information. Utah State University. http://digitalcommons.usu.edu/all_datasets/21/
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THESES AND DISSERTATIONS

- Furniss, T. J.** 2021. Big fires, big trees, and big plots: Enhancing our ecological understanding of fire with unprecedented field data. Doctoral dissertation. Utah State University, Quinney College of Natural Resources, Logan, UT, USA. 288 p. ([.pdf](#))
- Furniss, T. J.** 2016. The Utah Forest Dynamics Plot: Long-Term Ecological Monitoring and Theoretical Ecology in a High-Elevation Subalpine Environment. Master's Thesis. Utah State University, Quinney College of Natural Resources, Logan, UT, USA. 92 p. ([.pdf](#))
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INVITED PRESENTATIONS (presenter = first author)

- Furniss, T. J.**, P. F. Hessburg, N. Povak, R. B. Salter, and M. Wigmosta. 2023. Wildfire activity mediates climate effects on future stream flows. *WA State Department of Natural Resources "Lunch and Learn" Seminar Series*. Virtual. Nov. 16, 2023.
- Furniss, T. J.** 2022. Integrating field studies, remote sensing, and process-based models to study forested landscapes at multiple scales. University of Wyoming research seminar. Laramie, WY. Sep. 9, 2022. [Video link](#).

- Furniss, T. J.,** A. J. Larson, V. R. Kane, and J. A. Lutz. 2019. Advancing fire science with unprecedented forest demography data. Rocky Mountain Research Station Fire Lab Seminar Series 2018-2019. Missoula, MT. April 4. [Video link](#).

CONTRIBUTED PRESENTATIONS (presenter = first author)

- Furniss, T. J.,** P. F. Hessburg, N. Povak, R. B. Salter, and M. Wigmosta. 2023. Using spatial decision support tools to study tradeoffs and synergies of social-ecological resilience. *Association for Fire Ecology 10th International Fire Ecology and Management Congress*. Monterey, CA. Dec. 4-8, 2023.
- Furniss, T. J.** and P. F. Hessburg. 2023. Forecasting forest dynamics and future wildfire. *NSF Northeast Washington Innovation Engine Planning Workshop*. Colville, WA. March, 2023.
- Furniss, T. J.** and P. F. Hessburg. 2022. Forecasting the effects of climate change, wildfire, and restoration on forest health. *Chelan County Climate Resilience Round Table*. Wenatchee, WA. Nov. 17, 2022.
- Furniss, T. J.** and J. A. Lutz. 2021. Translating error into ecology: What uncertainty in fire severity maps and mortality models can tell us about fire effects. Organized oral session at the *Association for Fire Ecology 9th International Fire Ecology and Management Congress*. Virtual. Nov. 29-Dec. 2, 2021. [Video link](#).
- Furniss, T. J.,** N. Povak, P. F. Hessburg, and R. B. Salter. 2021. Forecasting future fire with a process-based landscape disturbance model. Organized oral session at the *Association for Fire Ecology 9th International Fire Ecology and Management Congress*. Virtual. Nov. 29-Dec. 2, 2021.
- Furniss, T. J.,** N. Povak, P. F. Hessburg, and R. B. Salter. 2021. Snow2Flow vegetation layers and treatment design summary. *North Central Washington Forest Health Collaborative Quarterly Meeting*. Virtual. May 5.
- Furniss, T. J.** 2021. Big plots, big trees, and big fires: Enhancing our ecological understanding of fire effects with unprecedented field data. *Dissertation Defense Seminar*. Utah State University, Logan, UT. April 23. [Video link](#).
- Furniss, T. J.** and J. A. Lutz. 2020. Big plots, big trees, and big fires: Enhancing our ecological understanding of fire effects with unprecedented field data. Organized oral session at the *Ecological Society of America Annual Meeting*. Salt Lake City, UT. August 5. [Video link](#).
- Furniss, T. J.** and J. A. Lutz. 2019. Interactive effects of drought, fire, and bark beetles on tree mortality in the Sierra Nevada, California. *Wildland Resources Dept. Graduate Research Seminar*. Logan, UT. April 12.
- Furniss, T. J.,** S. M. A. Jeronimo, V. R. Kane, A. J. Larson, and J. A. Lutz. 2019. Quantifying uncertainty in satellite-derived fire severity using actual tree mortality. *International Association for Landscape Ecology 2019 Annual Meeting*. Fort Collins, CO. April 8.
- Furniss, T. J.,** A. J. Larson, V. R. Kane, and J. A. Lutz. 2019. Spatial elements of fire-related mortality. *Intermountain Society of American Foresters Annual Meeting*. Logan, UT. March 29.
- Furniss, T. J.** and J. A. Lutz. 2018. Photography in science: expanding perception in space and time. Utah State University Ecology Center Ecolunch. Logan, Utah. October 12.
- Furniss, T. J.** and J. A. Lutz. 2018. The Utah Forest Dynamics Plot: Long-term forest monitoring in Cedar Breaks National Monument. Presentation to managers at the annual Cedar Breaks National Monument staff meeting. Cedar Breaks National Monument, UT. July 19.

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- Jeronimo, S. M. A., **T. J. Furniss**, V. R. Kane, A. J. Larson, and J. A. Lutz. 2018. *Fire Continuum conference*. Missoula, MT. May 2018.
- Furniss, T. J.** and J. A. Lutz. 2017. Habitat heterogeneity and species coexistence in subalpine forests of the Colorado Plateau. *Intermountain Society of American Foresters Annual Meeting*. Logan, UT. March 31.
- Furniss, T. J.** and J. A. Lutz. 2017. Improving fire mortality models for Sierra Nevada mixed-coniferous forests. *Wildland Resources Dept. Graduate Research Seminar*. Logan, UT. April 14.
- Furniss, T. J.** and J. A. Lutz. 2015. Establishing the Utah Forest Dynamics Plot. *Intermountain Society of American Foresters Annual Meeting*. Logan, UT. April 3.
- Furniss, T. J.** and J. A. Lutz. 2015. Establishing the Utah Forest Dynamics Plot. *Wildland Resources Dept. Graduate Research Seminar*. Logan, UT. April 16.
- Furniss, T. J.** 2011. Gardeners' perceived benefits of community gardens in Seattle. *Senior Project Presentation, University of Washington*. June, 2011.
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SERVICE

Department

College

University

Professional

Society Affiliations: Ecological Society of America, Xi Sigma Pi, Society of American Foresters, International Association for Landscape Ecology, Association for Fire Ecology

Journal reviewer: Ecological Monographs, Ecological Processes, Ecology and Evolution, Fire, Fire Ecology, Forest Ecology and Management, International Journal of Wildland Fire, Journal of Vegetation Science, Nature Plants, Remote Sensing, Remote Sensing of Environment, Scandinavian Journal of Forest Research, Science of the Total Environment

Grant review panels:

2023: Co-chair for the Joint Fire Science Program Graduate Research Innovation Grant (GRIN) Review Process

2022: Joint Fire Science Program Graduate Research Innovation Grant (GRIN) Review Panel Lead

Other:

2022-present: Associate Editor: *Fire*

2020: Oral Session Organizer: *Enhancing Our Ecological Understanding of the New Fire Normal With Large Datasets, Novel Methods, and New Perspectives*. Ecological Society of America Annual Meeting.

2018-2019: Science fair judge – Hillcrest Elementary Annual Science Fair

2019: Review panel for Disturbance Ecology (WILD 5710) Research Proposals

2018-2019: USU Ecology Center Seminar Selection Committee

2018: Restoring the West Conference Speaker Selection Committee

TEACHING EXPERIENCE

Instructor:

REWM/ECOL 4440/5440 – Applied Fire Ecology. University of Wyoming. *Fall, 2024-ongoing*

REWM/ENR 2100 – Ecological Forest Management. University of Wyoming. *Spring, 2024-ongoing*

WILD 6900 – Spatial analysis of sessile organisms. Utah State University. *Fall 2019.*

Guest lecture/teaching assistant:

ECOL 5900 - Experimental Design. Guest lecture: “Observational research and natural experiments”. University of Wyoming. October 2023.

ECOL 5100 - Ecology as a Discipline. Guest lecture: “Scaling forest dynamics in space and time”. University of Wyoming. September 2023.

REWM 2400 – Rangeland Ecosystems and Plants. Guest lecture: “Spatial Ecology of Disturbance Processes”. University of Wyoming. October 2022.

EarthWatch “The fall of giants: Old-growth trees in the American West”. Field Team Leader (*Summer 2018*)

WILD 6730 – Forest Community Ecology (graduate level). Guest lecture: “Introduction to point pattern analysis”. Utah State University. November 2017.

WILD 5710 – Forest Vegetation Disturbance Ecology and Management (graduate level). Guest lecture: “Conducting pathology exams and identifying agents of tree mortality”. Utah State University. Spring 2017.

WILD 5710 – Forest Vegetation Disturbance Ecology and Management (graduate level). Guest lecture: “Field methods and long-term forest dynamics plots”. Utah State University. Fall 2014.

WILD 4570 – Forest Ecology of the Sierra Nevada and White Mountains. Utah State University. Graduate teaching assistant during Yosemite Forest Dynamics Plot research pulses in the summers of 2014-2018.

ESRM 442 – Forest Ecology of the Sierra Nevada and White Mountains. University of Washington. Guest lecture and field team leader. Taught field methods during Yosemite Forest Dynamics Plot research pulses in the summers of 2011-2013.

FORS 391 – Forest Ecology of the Sierra Nevada. University of Montana. Guest lecture and field team leader. Taught field methods during the Yosemite Forest Dynamics Plot research pulses in the summers of 2014 and 2019.

NATRS 420 – Long-term Research in Forest Ecosystems: Old-growth Forests of Yosemite National Park. Washington State University. Guest lecture and field team leader. Taught field methods during Yosemite Forest Dynamics Plot research pulses in the summers of 2011-2018.

Student evaluations:

“Tucker did a fantastic job... He was always available to meet after class and discuss how the courses content related to my data.”

“very approachable and very helpful.”

“Explained difficult material in a clear way. Worked with each student until we all understood the material. Provided us with code to apply material, and provided lab activities for us to learn how to creatively manipulate the code.”

RESEARCH EXPERIENCE

Postdoctoral Research Fellow. <i>USFS PNWRS.</i> Supervisor: Dr. Paul Hessburg. -Oak Ridge Institute for Science and Education (ORISE) Fellow -Developed a process-based landscape disturbance, succession, and management model (LANDIS-II) for north-central WA state to examine how fire, climate, and management will interactively determine ecosystem stability and landscape resilience over the coming century.	2020-present
Graduate Research Assistant. <i>Utah State University.</i> Advisor: Dr. James Lutz. -Dissertation title: <i>Big fires, big trees, and big plots: Enhancing our ecological understanding of fire with unprecedented field data.</i> -Funded by Joint Fire Science Program awards #16-1-04-02: <i>Using multi-scale spatial data to improve predictions of immediate and delayed post-fire mortality</i> , and #19-1-01-10: <i>Interactive effects of drought, fire, and bark beetles on tree mortality in the Sierra Nevada, California</i>	2017–2020
Field technician. <i>University of Montana.</i> Supervisor: Dr. Andrew Larson. -Post-fire fuel and vegetation sampling in the Bob Marshall Wilderness, MT. Two weeks each summer.	2016–2017
Graduate Research Assistant. <i>Utah State University.</i> Advisor: Dr. James Lutz. -Thesis title: <i>The Utah Forest Dynamics Plot: long-term ecological monitoring and theoretical ecology in a high-elevation subalpine environment</i>	2014–2016
Crew Lead and Research Assistant, <i>Utah State University.</i> Supervisor: Dr. Jim Lutz	2013–2014
Crew Lead and Research Assistant, <i>University of Washington.</i> Supervisor: Dr. Jim Lutz	2011–2013
Undergraduate Research Project, <i>University of Washington.</i> Advisor: Dr. Stanley Asah -Title: Gardeners' Perceived Benefits of Community Gardens in Seattle.	2010–2011

SKILLS, CERTIFICATIONS

Statistical expertise (from research published as lead author):

- Generalized linear mixed models (GLMMs)
- Ordination (NMDS and PCA)
- Point pattern analysis (e.g., pair-correlation function, Ripley's K, random labelling analysis)
- Random forest
- Cluster analysis
- Decision support modeling
- Process-based model validation and calibration
- Distributed hydrology modeling

Skills:

- Software expertise: R; LANDIS-II; Google Earth Engine; ArcGIS; MySQL; Adobe CC.
- Land survey: designing surveys, establishing control loops, and installing permanent survey markers using Total Stations and survey-grade GNSS receivers
- Arc, MIG, and TIG welding
- Twenty+ years of backcountry experience (backpacking, pack rafting, backcountry skiing, climbing, canyoneering, and Leave No Trace ethics and practices)
- Fifteen years of experience coordinating camp logistics for 25-35 people during research pulses

Certifications: Wilderness First Responder (2012 – 2020), CPR (2010 – 2020), Wilderness Anaphylaxis Training (2017 – 2020)