

## Philip E. Higuera

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### PROFESSIONAL PREPARATION

- Ph.D. 2006      University of Washington, Seattle, Division of Ecosystem Science, College of Forest Resources. Advisor: Dr. Linda Brubaker. Committee members: Drs. James Agee, Patricia Anderson, Daniel Gavin, Douglas Sprugel
- M.S. 2002      University of Washington, Seattle, Division of Ecosystem Science, College of Forest Resources. Advisors: Dr. Linda Brubaker and Dr. Douglas Sprugel
- B.A. 1998      Middlebury College, Middlebury, VT: *magna cum laude*; High Honors, Biology, High Honors, Environmental Studies-Geology. Thesis advisors: Drs. Andrea Lloyd and Grant Meyer

### PROFESSIONAL EXPERIENCE

- 2015 –      *Associate Professor, Department of Ecosystem and Conservation Sciences, W. A. Franke College of Forestry and Conservation, University of Montana*
- 2009-2015      *Assistant Professor, Department of Forest, Rangeland, and Fire Sciences, College of Natural Resources, University of Idaho (tenure & promotion awarded April 2015)*
- 2008-2009      *Adjunct Instructor, Department of Earth Science, Montana State University*
- 2006-2009      *National Park Ecological Research Fellow, Whitlock Paleoecology Lab, Montana State University*
- 2006-2009      *Postdoctoral Research Scientist, Hu Quaternary Paleoecology Lab, University of Illinois*

### REFEREED MANUSCRIPTS

(Graduate or undergraduate student advised directly # or indirectly \*; post-doc @)

Summary: Thompson Reuters Research ID: <http://www.researcherid.com/rid/B-1330-2010>

**ISI-Web of Knowledge: h-index = 26, total citations > 2750, mean of 54/paper.** Nine publications meet the “Highly Cited Paper” designation as of October 2018, placing them in the top 1% of papers in the journal’s discipline(s).

- 54.** Keane, R.E., R.A. Loehman, L.M. Holsinger, D.A. Falk, **P.E. Higuera**, S.M. Hood, and P.F. Hessburg. 2018. Use of landscape simulation modeling to quantify resilience for ecological applications. *Ecosphere* 9:e02414.
- 53.** @Davis, K.T., S.Z. Dobrowski, Z.A. Holden, **P.E. Higuera**, and J.T. Abatzoglou. In Press. Microclimatic buffering in forests of the future: The role of local water balance. *Ecography* 41:1-11.

52. #Hankin, L.E., **P.E. Higuera**, K.T. Davis, and S.Z. Dobrowski. 2018. Accuracy of node and bud-scar counts for aging two dominant conifers in western North America. *Forest Ecology and Management* 427:365-371.
51. @Davis, K.T., **P.E. Higuera**, A. Sala. 2018. Anticipating fire-mediated impacts of climate change using a demographic framework. *Functional Ecology*. 32: 1729-1745.
50. Morris, J.L., S. Cottrell, C.J. Fettig, R.J. DeRose, K.M. Mattor, V.A. Carter, J. Clear, J. Clement, W.D. Hansen, J.A. Hicke, **P.E. Higuera**, A.W.R. Seddon, H. Seppä, R.L. Sherriff, J.D. Stednick, and S.J. Seybold. 2018. Bark beetles as agents of change in social-ecological systems. *Frontiers in Ecology and the Environment*. 16: S34-S43.
49. Stevens-Rumann, C.S., Kemp, K.B., **Higuera, P.E.**, Harvey, B.J., Rother, M.T., Donato, D.C., Morgan, P. & Veblen, T.T. 2018. Evidence for declining forest resilience to wildfires under climate change. *Ecology Letters*. 21: 243-252.
48. Hudiburg, T.W., **P.E. Higuera**, and J.A. Hicke. 2017. Fire-regime variability impacts forest carbon dynamics for centuries to millennia. *Biogeosciences*. 14: 3873-3882.
47. McLauchlan, K.K., L.M. Gerhart, J.J. Battles, J.M. Craine, A.J. Elmore, **P.E. Higuera**, M.C. Mack, M.C., B.E. McNeil, D.M. Nelson, N. Pederson, S.S. Perakis. 2017. Centennial-scale reductions in nitrogen availability in temperate forests of the United States. *Scientific Reports*. 7: 7856. doi:10.1038/s41598-017-08170-z
46. Itter, M.S., A.O. Finley, M.B. Hooten, **P.E. Higuera**, J.R. Marlon, R. Kelly, and J.S. McLachlan. 2017. A model-based approach to wildland fire reconstruction using sediment charcoal records. *Environmetrics*. 28: e2450.
45. Crausbay, S.D., **P.E. Higuera**, D.G. Sprugel, and L.B. Brubaker. In Press. Fire catalyzed rapid ecological change in lowland coniferous forests of the Pacific Northwest over the past 14,000 years. *Ecology*. doi: 10.1002/ecy.1897.
44. @Morris, J.L., **P.E. Higuera**, S. Haberle, and C. Whitlock. In Press. Modern pollen from small hollows reflects *Athrotaxis cupressoides* density across a wildfire gradient in subalpine forests of the Central Plateau, Tasmania, Australia. *The Holocene*. doi: 10.1177/0959683617702228
43. @Morris, J.L., S. Cottrell, C.J. Fettig, W.D. Hansen, R.L. Sherriff, V.A. Carter, J.L. Clear, J. Clement, R.J. DeRose, J.A. Hicke, **P.E. Higuera**, K.M. Mattor, A.W.R. Seddon, H.T. Seppä, J.D. Stednick, S.J. Seybold. 2017. Managing bark beetle impacts on ecosystems and society: priority questions to motivate future research. *Journal of Applied Ecology*. 54: 750-760.
42. #Young, A.M., **Higuera, P.E.**, Duffy, P.A., and F.S. Hu. 2017. Climatic thresholds shape northern high-latitude fire regimes and imply vulnerability to future climate change. *Ecography*. 40: 606-617.
41. Leys, B., **P.E. Higuera**, K.K. McLauchlan, and P.V. Dunnette#. 2016. Wildfires and geochemical change in a subalpine forest over the past six millennia. *Environmental Research Letters*. 11: 125003.
40. Johnstone, J.F., C.D. Allen, J.F. Franklin, L.E. Frelich, B.J. Harvey, **P.E. Higuera**, M.C. Mack, R.K. Meentemeyer, M.R. Metz, G.L.W. Perry, T. Schoennagel, and M.G. Turner. 2016. Changing disturbance regimes, ecological memory, and forest resilience. *Frontiers in Ecology and the Environment*. 7: 369-378. \*Highly cited paper
39. Marlon, J.R., R. Kelly, A.L. Daniau, B. Vannièrè, M.J. Power, P. Bartlein, **P.E. Higuera**, O. Blarquez, S. Brewer, and T. Brücher. 2016. Reconstructions of biomass burning from sediment-charcoal records to improve data-model comparisons. *Biogeosciences* 13:3225-3244.

38. Kranabetter, J.M., K.K. McLauchlan, S.K. Enders, J.M. Fraterrigo, **P.E. Higuera**, J.L. Morris, E.B. Rastetter, R. Barnes, B. Buma, D.G. Gavin, L.M. Gerhart, L. Gillson, P. Hietz, M.C. Mack, B. McNeil, and S. Perakis. 2016. Temporal scaling of biogeochemical response to ecosystem disturbance. *Ecosystems*. 19: 387-395.
37. Abbot, B.W., J.B. Jones, E.A.G. Schuur, F.S. Chapin III, and 96 others including **P.E. Higuera**. 2016. Biomass offsets little or none of permafrost carbon release from soils, streams, and wildfire: an expert assessment. *Environmental Research Letters*. 11: 034014  
*\*Highly cited paper*
36. Tinkham, W.T., A.M.S. Smith, **P.E. Higuera**, J.A. Hatten, N.W. Brewer, and S.H. Doerr. 2016. Replacing time with space: using laboratory fire to explore the effects of repeated burning on black carbon degradation. *International Journal of Wildland Fire*. 25: 242-248.
35. Smith, A. M. S., C. A. Kolden, T. B. Paveglio, M. A. Cochrane, D. M. J. S. Bowman, M. A. Moritz, A. D. Kliskey, L. Alessa, A. T. Hudak, C. M. Hoffman, J. A. Lutz, L. P. Queen, S. J. Goetz, **P. E. Higuera**, L. Boschetti, M. Flannigan, K. M. Yedinak, A. C. Watts, E. K. Strand, J. W. van Wagtenonk, J. W. Anderson, B. J. Stocks, and J. T. Abatzoglou. 2016. The Science of Firescapes: Achieving Fire-Resilient Communities. *BioScience*. 66:130-146. *\*Highly cited paper*
34. #Kemp, K.B., **P.E. Higuera**, and P. Morgan. 2016. Fire legacies impact conifer regeneration across environmental gradients in the U.S. northern Rockies. *Landscape Ecology*. 31: 619-636.
33. Hu, F.S., **P.E. Higuera**, P.A. Duffy, M.L. Chipman, A.V. Rocha, #A.M. Young, R. Kelly, and M.C. Dietze. 2015. Tundra fires in the Arctic: Natural variability and responses to climate change. *Frontiers in Ecology and the Environment*. 13: 369-377.
32. **Higuera, P.E.**, J.T. Abatzoglou, J.S. Littell, and P. Morgan. 2015. The changing strength and nature of fire-climate relationships in the northern Rocky Mountains, U.S.A., 1902-2008. *PLoS ONE*, 10:e0127563.
31. @Morris, J.L., K.K. McLauchlan, and **P.E. Higuera**. 2015. Sensitivity and complacency of sedimentary biogeochemical records to climate-mediated forest disturbances. *Earth-Science Reviews*, 148:121-133.
30. Klos, P.Z., J. Abatzoglou, A. Bean, J. Blades, M.A. Clark, M. Dodd, T.E. Hall, A. Haruch, **P.E. Higuera**, J.D. Holbrook, V.S. Jansen, #K. Kemp, A. Lankford, T.E. Link, T. Magney, A.J.H. Meddens, L. Mitchell, B. Moore, P. Morgan, B.A. Newingham, R.J. Niemeyer, B. Soderquist, A.A. Suazo, K.T. Vierling, V. Walden, and C. Walsh. 2015. Indicators of climate change in Idaho: An assessment framework for coupling biophysical change and social perception. *Weather, Climate, and Society*, 7, 238-254.
29. Chipman, M.L., V. Hudspeth, **P.E. Higuera**, P.A. Duffy, R.F. Kelly, W.W. Oswald, and F.S. Hu. 2015. Spatiotemporal patterns of tundra fires: Late-Quaternary records from Alaska. *Biogeosciences*, 12: 4017-4027.
28. **Higuera, P.E.**, C.E. Briles, and C. Whitlock. 2014. Fire-regime complacency and sensitivity to centennial- through millennial-scale climate change in Rocky Mountain subalpine forests, Colorado, U.S.A. 2014. *Journal of Ecology*, 102: 1429-1441.
27. #Dunnette P.V., **P.E. Higuera**, K.K. McLauchlan, K.M. Derr, @C.E. Briles, M.H. Keefe. 2014. Biogeochemical impacts of wildfires over four millennia in a Rocky Mountain subalpine watershed. *New Phytologist*, 203: 900-912.
26. McLauchlan, K., **P.E. Higuera**, D.G. Gavin, S. S. Perakis, M.C. Mack, H. Alexander, J. Battles, F. Biondi, B. Buma, D. Colombaroli, S. Enders, D.R. Engstrom, F.S. Hu, J.R.

- Marlon, J.D. Marshal, M. McGlone, J.L. Morris, L.E. Nave, B.N. Shuman, E.A.H. Smithwick, D.H. Urrego, D.A. Wardel, C.J. Williams, and J.J. Williams. 2014. Reconstructing disturbances and their biogeochemical consequences over multiple timescales. *Bioscience*. 64: 105-116.
25. \*Kelly, R. F., \*M.L. Chipman, **P.E. Higuera**, V. Stefanova, L.B. Brubaker, and F.S. Hu. 2013. Recent burning of boreal forests exceeds variability of the past 10,000 years. *PNAS*, 110: 13055-13060. *\*Highly cited paper*
24. McWethy, D.B., **P.E. Higuera**, C. Whitlock, T.T. Veblen, D.M.J.S. Bowman, G. Cary, S.G. Haberle, R.E. Kean, B.D. Maxwell, M.S. McGlone, G.L.W. Perry, J.M. Wilmshurst, A. Holz, and A. Tepley. 2013. A conceptual framework for predicting temperate ecosystem sensitivity to human impacts on fire regimes. *Global Ecology & Biogeography*, 22: 900-912.
23. \*Brewer, N.W., A.M.S. Smith, J.A. Hatten, **P.E. Higuera**, A.T. Hudak, R.D. Ottmar, and W.T. Tinkham. 2013. Fuel Moisture Influences on Fire-altered Carbon in Masticated Fuels: An Experimental Study. *Journal of Geophysical Research-Biogeosciences*, 118, 30-40.
22. \*Barrett, C.M., Kelly, R.F., **Higuera, P.E.**, and F.S. Hu. 2013. Climatic and land-cover influences on the spatiotemporal dynamics of Holocene boreal fire regimes. *Ecology*, 92: 389-402.
21. Rocha, A.V., M.M. Loranty, **P.E. Higuera**, M.C. Mack, F.S. Hu, B.M. Jones, A.L. Breen, E.B. Rastetter, S.J. Goetz, and G.R. Shaver. 2012. The footprint of Alaskan tundra fires during the past half-century: implications for surface properties and radiative forcing. *Environmental Research Letters*, 7: 044039, doi:10.1088/1748-9326/7/4/044039.
20. **Higuera, P.E.**, \*Chipman, M.L., Barnes, J.L., Urban, M.A., Hu, F.S. 2011a. Variability of tundra fire regimes in Arctic Alaska: millennial scale patterns and ecological implications. *Ecological Applications*, 21: 3211-3226.
19. **Higuera, P.E.**, C. Whitlock, and #J. Gage. 2011b. Fire history and climate-vegetation-fire linkages in subalpine forests of Yellowstone National Park, Wyoming, U.S.A., AD 1240-1975. *The Holocene*, 21:327-341.
18. \*Kelly, R.F., **P.E. Higuera**, \*C.M. Barrett, and F.S. Hu. 2011. A signal-to-noise index to quantify the potential for peak detection in sediment-charcoal records. *Quaternary Research*, 75: 11-17.
17. Hu, F.S., **P.E. Higuera**, J.E. Walsh, W.L. Chapman, P.A. Duffy, L.B. Brubaker, and M.L. Chipman. 2010. Tundra burning in Alaska: linkages to climatic change and sea-ice retreat. *Journal of Geophysical Research – Biogeosciences*, 115, G04002 doi:10.1028/2009JG001270.
16. **Higuera, P.E.**, Gavin, D.G., Bartlein, P.J. and Hallett, D.J. 2010. Peak detection in sediment-charcoal records: impacts of alternative data analysis methods on fire-history interpretations. *International Journal of Wildland Fire*, 19: 996-1014.
15. Whitlock, C., **P.E. Higuera**, D. McWethy, and C.E. Briles. 2010. Paleocological perspectives on fire ecology: revisiting the fire regime concept. 2010. *The Open Ecology Journal*, 3: 6-23.
14. Ali, A.A., **P.E. Higuera**, Y. Bergeron, and C. Carcaillet. 2009. Comparing fire-history interpretations based on area, number and estimated volume of macroscopic charcoal in lake sediments. *Quaternary Research* 72: 462-486.
13. Marlon, J.R., P.J. Bartlein, M.K. Walsh, S.P. Harrison, K.J. Brown, M.E. Edwards, **P.E. Higuera**, M.J. Power, C. Whitlock, R.S. Anderson, C. Briles, A. Brunelle, C. Carcaillet, M. Daniels, F.S. Hu, M. Lavoie, C. Long, T. Minckley, P.J.H. Richard, S.L. Shafer, W.

- Tinner, and C. Umbanhowar. 2009. Wildfire responses to abrupt climate change in North America. *PNAS* 106: 2519-2524. *\*Highly cited paper*
12. Brubaker, L.B., **P.E. Higuera**, T.S. Rupp, M. Olson, P.M. Anderson, and F.S. Hu. 2009. Linking sediment charcoal records and ecological modeling to understand causes of past fire-regime change in boreal forests. *Ecology* 90: 1788-1801.
  11. **Higuera, P.E.**, L.B. Brubaker, P.M. Anderson, F.S. Hu, and T.A. Brown. 2009. Vegetation mediated the impacts of postglacial climate change on fire regimes in the south-central Brooks Range, Alaska. *Ecological Monographs* 79: 201-219. *\*Highly cited paper*
  10. Marlon, J.R., P.J. Bartlein, C. Carcaillet, D.G. Gavin, S.P. Harrison, **P.E. Higuera**, F. Joos, M.J. Power, and I.C. Prentice. 2008. Climate and human influences on global biomass burning over the past two millennia. *Nature Geoscience* 1: 697-702. *\*Highly cited paper*
  9. Briles, C.E., C. Whitlock, P.J. Bartlein, and **P.E. Higuera**. 2008. Regional and local controls on postglacial vegetation and fire in the Siskiyou Mountains, northern California, USA. *Palaeogeography Palaeoclimatology Palaeoecology* 265: 159-169.
  8. **Higuera, P.E.**, L.B. Brubaker, P.M. Anderson, T.A. Brown, A.T. Kennedy, and F.S. Hu. 2008. Frequent Fires in Ancient Shrub Tundra: Implications of Paleorecords for Arctic Environmental Change. *PLoS ONE* 3:e0001744.
  7. Sugimura, W., D.G. Sprugel, L.B. Brubaker, and **P.E. Higuera**. 2008. Millennial-scale changes in local vegetation and fire regimes on Mt. Constitution, Orcas Island, Washington, USA, using small hollow sediments. *Canadian Journal of Forest Research* 38: 566-575.
  6. Power, M.J., and 84 others including **P.E. Higuera**. 2008. Changes in fire regimes since the Last Glacial Maximum: an assessment based on a global synthesis and analysis of charcoal data. *Climate Dynamics* 30: 887-907. *\*Highly cited paper*
  5. **Higuera, P.E.**, M.E. Peters, L.B. Brubaker, and D.G. Gavin. 2007. Understanding the origin and analysis of sediment-charcoal records with a simulation model. *Quaternary Science Reviews* 26:1790-1809.
  4. Peters, M.E., and **P.E. Higuera**. 2007. Quantifying the source area of macroscopic charcoal with a particle dispersal model *Quaternary Research* 67:304-310.
  3. Hu, F.S., L.B. Brubaker, D.G. Gavin, **P.E. Higuera**, J.A. Lynch, T.S. Rupp, and W. Tinner. 2006. How climate and vegetation influence the fire regime of the Alaskan Boreal Biome: the Holocene perspective. *Mitigation and Adaptation Strategies for Global Change* 11:829-846.
  2. **Higuera, P.E.**, D.G. Sprugel, and L.B. Brubaker. 2005. Reconstructing fire regimes with charcoal from small-hollow sediments: a calibration with tree-ring records of fire. *The Holocene* 15:238-251.
  1. Trombulak, S.C., **P.E. Higuera**, and M. DesMeules. 2001. Population trends of wintering bats in Vermont. *Northeastern Naturalist* 8:51-62.

#### NON-REFEREED MANUSCRIPTS

6. **Higuera, P.E.** 2015. Taking time to consider the causes and consequences of large wildfires. *PNAS*. 112: 13137-13139. *\*Invited Editorial*
5. **Higuera, P. E.**, J. L. Barnes, M. L. Chipman, M. Urban, and F. S. Hu. 2011. Tundra fire history over the past 6000 years in the Noatak National Preserve, northwestern Alaska. *Alaska Park Science* 10:37-41.
4. McWethy D.B., S.T. Gray, **P.E. Higuera**, J.S. Littell, G.T. Pederson, A.J. Ray, and C. Whitlock. 2010. Climate and terrestrial ecosystem change in the U.S. Rocky Mountains and Upper

Columbia Basin: Historical and future perspectives for natural resource management. Natural Resource Report NPS/GRYN/NRR—2010/260. National Park Service, Fort Collins, Colorado.

3. **Higuera, P.E.**, D.G. Gavin, P.D. Henne, and R.F. Kelly. 2010. Recent advances in the analysis and interpretation of sediment-charcoal records. *PAGES Newsletter*, 18: 57-59.
2. **Higuera, P. E.** 2006. Late Glacial and Holocene Fire History in the Southcentral Brooks Range, Alaska: Direct and Indirect Impacts of Climatic Change on Fire Regimes. Ph.D. Dissertation. University of Washington, Seattle.
1. **Higuera, P. E.** 2002. Reconstructing fire regimes with charcoal and pollen from small hollows: a calibration with tree-ring records of fire. MS Thesis. University of Washington, Seattle.

### PROFESSIONAL PRESENTATIONS, OF > 80 (\* INDICATES INVITED TALK)

(Graduate student directly advised #; post-doc @)

- Higuera, P.E.**, T.W. Hudiburg, K.M. McLauchlan, B.A. Shuman, J.A. Hicke. 2017. Causes and Consequences of Fire-regime Variability in Rocky Mountain Subalpine Forests. Annual meeting of the **Ecological Society of America, Portland, OR.** (poster)
- #Hankin, L.E., **P.E. Higuera**, @K.T. Davis, and S.Z. Dobrowski. 2017. Seasonal to annual climate impacts post-fire conifer regeneration in the Northern Rockies. 102nd Annual meeting of the Ecological Society of America, Portland, OR.
- \***Higuera, P.E.** 2016. Coupled climate-fire-ecosystem dynamics from decades to millennia. Fall Meeting, **American Geophysical Union, San Francisco, CA.** (talk)
- Higuera, P.E.**, T.W. Hudiburg, and J.A. Hicke. 2015. Combining paleoecology and ecosystem modeling to study forest ecosystem consequences of wildfires from decades to millennia. Fall Meeting, **American Geophysical Union, San Francisco, CA.** (talk)
- #Hoecker, T.J., F.S. Hu, R. Kelly, and **P.E. Higuera**. 2015. Spatiotemporal Trends in late-Holocene Fire Regimes in Arctic and Boreal Alaska. Annual meeting of the American Geophysical Union, San Francisco, CA. *\*Outstanding Student Paper Award*
- \***Higuera, P.E.** 2015. Taking time to consider the causes and ecosystem consequences of fire-regime variability. **6th International Fire Ecology and Management Congress, San Antonio, TX.** (talk)
- #Young, A.M., **P.E. Higuera**, P.A. Duffy, F.S. Hu, and L. Boschetti. 2014. Climatic Controls of Wildfire in the Boreal Forest and Arctic Tundra Biomes across Multiple Spatial and Temporal Scales. Fall Meeting, **American Geophysical Union, San Francisco, CA.** (talk)
- \***Higuera, P. E.**, Calder, W.J., Chipman, M., Gill, J., and R. Kelly. 2014. IGNITE: Why we study the past: PaleoEcology in a time of rapid global change. Annual meeting of the **Ecological Society of America, Sacramento, CA.** (talk)
- Crausbay, S., **Higuera, P.E.**, Brubaker, L.B., and Sprugel, D.G. 2014. Fire as a catalyst for rapid ecological change in the Puget Lowlands over the Holocene. Annual meeting of the **Ecological Society of America, Sacramento, CA.** (talk)
- #Kemp, K.B., **Higuera, P.E.**, and Morgan, P. 2014. Post-fire tree recruitment in the U.S. Northern Rockies: the influence of seed source proximity and environmental conditions. Annual meeting of the **Ecological Society of America, Sacramento, CA.** (talk)

- \*Morris, J.L. and **P.E. Higuera**. 2014. Holocene fire histories from the subalpine interior of Tasmania, Australia. **International Association of Wildland Fire: Large Wildland Fires: Social, Political and Ecological Effects, Missoula, MT.** (talk)
- \***Higuera, P.E.**, R.F. Kelly, and F.S. Hu. 2013. Resilience and sensitivity of high-severity fire regimes to climatic variability from centuries to millennia. Fall Meeting, **American Geophysical Union, San Francisco, CA.** (talk)
- \***Higuera, P.E.**, J.T. Abatzoglou, J.S. Littell, and P. Morgan. 2013. The changing nature of fire-climate relationships in the U.S. Northern Rockies, 1902-2008. **VII Southern Connection Congress, Dunedin, New Zealand.** (talk)
- #Dunnette, P.V. and **P.E. Higuera**. Long-term interactions among climate, fire, and biogeochemical cycling in a Rocky Mountain subalpine watershed. **Ecological Society of America, Portland, OR.** (poster)
- Higuera, P.E.**, M. Chipman, J. Barnes, P.A. Duffy, and F.S. Hu. 2011. Interannual- to millennial-scale interactions among climate, vegetation, and fire in tundra ecosystems of Alaska, USA. **Ecological Society of America, Austin, TX.** (talk)
- \***Higuera, P.E.**, M. Chipman, J.A. Allen, L. Brubaker, C. Whitlock, F.S. Hu. 2009. Interactions of climate, vegetation, and fire during the Holocene: lessons from high-latitude and high-elevation ecosystems. **American Geophysical Union, San Francisco, CA.** (talk)
- \***Higuera, P.E.**, M. Chipman, J.A. Allen, S. Rupp, M. Urban, F.S. Hu. 2008. Tundra fire regimes in the Noatak National Preserve, northwestern Alaska, since 6000 yr BP. **International Association of Wildland Fire, Jackson Hole, WY.** (talk)
- Higuera, P.E.**, L.B. Brubaker, P.M. Anderson, F.S. Hu, B. Clegg, T. Brown, and S. Rupp. 2005. The relative importance of vegetational vs. climatic controls on post-glacial fire regimes in the southern Brooks Range, AK. **Ecological Society of America, Montreal, Quebec.** (talk)
- \***Higuera, P.E.**, M.E. Peters, D.G. Gavin. 2004. Holocene fire-history records from lake sediments: improving accuracy and precision through quantitative modeling. **International Association for Landscape Ecology, US Regional Association, Las Vegas, Nevada.** (talk)
- Higuera, P.E.**, L.B. Brubaker, and D.G. Sprugel. 2002. Reconstructing fire regimes with small hollows: A calibration with tree-ring records. **Ecological Society of America, Tucson, AZ.** (talk)

## GRANTS AND FELLOWSHIPS

- 2017-2021 National Science Foundation, Division of Environmental Biology ([DEB-1655121](#)): “Collaborative Research: Causes and consequences of fire-regime variability in Rocky Mountain forests.” Higuera (PI), and co-PIs T. Hudiburg (U. Idaho), K. McLauchlan (Kansas St. Univ.), B. Shuman (U. Wyoming). Total: **\$860,087** (University of Montana \$351,300).
- 2016-2019 USDI, BLM, Joint Fire Science Program: “Identifying ecological and social resilience in fire-prone landscapes” Higuera (PI), and co-PIs Elizabeth Covelli Metcalf, Alex Metcalf, Dave McWethy, and Carol Miller (USFS). Total: **\$290,560** (University of Montana \$227,926).
- 2016-2019 USDI, BLM, Joint Fire Science Program: “Climate variability and post-fire forest regeneration in the Northern Rockies.” Higuera (PI), and co-PIs Kimberly Taylor (principal author), S. Dobrowski, and Sean Parks (USFS). Total: **\$355,327**.

- 2014-2016 USDI, BLM, Joint Fire Science Program, Graduate Research and Innovation: “Spatially-explicit impacts of climate on past, present, and future fire regimes in Alaskan boreal forest and tundra ecosystems.” Adam Young (student investigator), Higuera (PI). Total: **\$24,999**.
- 2013-2018 National Science Foundation, Macrosystems Ecology ([1241846](#)): “Collaborative Research and NEON: MSB Category 2: PaleON - a PaleoEcological Observatory Network to Assess Terrestrial Ecosystem Models.” Jason McLachlan, Notre Dame (lead PI), Higuera (UIdaho / UMontana lead), et al. Total: > \$4 million, University of Idaho / Montana, **\$449,778**.
- 2012-2015 USDI, BLM, Joint Fire Science Program, Graduate Research and Innovation: Interactions Among Climate, Wildfire, and Tree Regeneration at Lower Treeline in the Northern Rockies. K. Kemp (student investigator), Higuera (PI). Total: **\$24,999**.
- 2011-2016 National Science Foundation, Research Coordination Network ([1145815](#)), “RCN: The Novus project for integrating paleo- and neo-ecosystem ecology.” Kendra McLauchlan, Kansas State University (PI), and co-PIs Daniel Gavin and Philip Higuera. Total: \$505,409, University of Idaho, \$0.
- 2010-2015 National Science Foundation, Partnerships for International Research and Education ([0966472](#)): “PIRE: Wildfire feedbacks and consequences of altered fire regimes in the face of climate and land-use change in Tasmania, New Zealand, and the western U.S.” Cathy Whitlock (PI), Higuera (co-PI, UIdaho lead), et al. Total: > \$3,800,000 million, University of Idaho, **\$335,203**.
- 2010-2015 National Science Foundation, Arctic System Science ([1023669](#)): “Collaborative Research: Integrating paleoecological analysis and ecological modeling to elucidate the responses of tundra fire regimes to climate change.” Feng Sheng Hu (PI) and co-PIs, Mike Dietze, Paul Duffy, and Philip Higuera (UIdaho lead). Total: > \$1,100,000 (+ \$370 k logistical support), University of Idaho, **\$456,612**.
- 2006-2009 National Park Ecological Research Post-doctoral Fellowship, PI: [www.esa.org/nper/](http://www.esa.org/nper/) **\$138,000**.
- 2006-2010 USDI, BLM, Joint Fire Science Program: “Reconstructing fire regimes in tundra ecosystems to inform a management-oriented ecosystem model.” Higuera, co-PI and principal author; Feng Sheng Hu (PI). Total **\$306,780**.
- 2000-2003 National Science Foundation Graduate Research Fellowship

## UNIVERSITY TEACHING

- 2015- Associate Professor, Univ. of Montana, Dept. of Ecosystem & Conservation Sciences: *Fire Management and Environmental Change* (FORS 230), annually 2018 → *Fire Ecology* (FORS 333), annually 2015 → *Elements of Ecological Restoration* (NRSM 265), co-teach 1 credit, annually 2015 → *Fire & Disturbance Ecology* (FORS 595), 2017, 2019
- 2010-2015 Assistant Professor, University of Idaho, College of Natural Resources: *Fire Ecology and Management* (FOR 326/426), annually, 2010-2014 *Fire Behavior* (FOR 450), annually, 2010-2015 *Computational Data Analysis and Visualization* (FOR 504), 2012, 2014 *Altered Ecologies* (FOR 504-02), 2013



*Global Fire and Ecological Feedbacks (FOR 504-02), 2011*

2007-2009 Adjunct Instructor, Montana State University, Department of Earth Sciences:  
*Biogeography (GEOG 302), 2008 (co-instructor), 2009*  
*Weather and Climate (GEOG 303), 2008*  
*Mountain Geography (GEOG 430), 2008*  
*Advanced Biogeography (GEOG 505), 2009*

**POST DOC, GRADUATE, AND UNDERGRADUATE ADVISING**

**Post Docs (3):** Kimberly Davis (2016-), Jesse Morris (2013-2015), Kelly Derr (2013-2014)

**Graduate Students, primary (6):**

*Completed:* Paul Dunnette (MS, U of ID, 2010-2013), Lacey Hainkin (MS, U of MT, 2016-2018), Tyler Hoecker (MS, U of ID and U of MT, 2014-2017), Kerry Kemp (PhD, U of ID, 2010-2015), Adam Young (PhD, MS in Stat. Sci., U of ID, 2011-2018)

*Current:*

Kyra Wolf (PhD, U of MT, 2017-)

**Graduate Students, secondary (10):** Carolyn Barrett (PhD, U of IL, 2006-2012), Polly Buotte (PhD, U of ID, 2014-2015), Nolan Brewer (MS, U of ID, 2009-2012), Jay Chin (PhD, Australian Nat. University, 2011-), Carl Davidson (MS, U of IL, 2011-2012), Ryan Kelly (PhD, U of IL, 2008-2014), Lauren Perreault (MS, ID St. Univ., 2009-2010), Katie Morrison (MS, U of ID, 2011-2014), Vanessa Selimovic (PhD, U Montana, 2015-), Kara Yedinak (PhD, WA St. Univ., 2009-2013).

**Undergraduate research projects/theses (10):** Lawrence Crofutt (U of MT, Forestry, 2017-2018), Lucas Townsend (U of MT, Forestry, 2016-2017), Cassidy Robertson (Ecology and Con. Bio., U of ID, 2014-2015); Patrick Flannigan (Env. Sci., U of ID, 2013); Shannon Pauli (Fire Ecology and Management, U of ID, 2012-2013); Cody Parker (Env. Sci., U of ID, 2012-2013); Travis Reeves (Env. Sci., U of ID, 2011); Alison Kennedy (Montana St. Univ., 2007); Andrew Whitmore (Montana St. Univ., 2006-2007); Jason Smith (U of WA, 2000-2001).

**UNIVERSITY SERVICE**

2017 → Director, Systems Ecology Intercollegiate Graduate Program (MS, PhD), University of Montana  
 2015→ Member, W.A. Franke College of Forestry and Conservation, Space Committee  
 2015-2016 Member, University Ecology Programs and Organization Review Committee

**U. IDAHO**

2014-2015 Member, College of Natural Resources, College Curriculum Committee  
 2014-2015 Member, College of Natural Resources, committee on lab space  
 2013-2014 Member, College of Natural Resources, committee to reevaluate tenure and promotion criteria  
 2013-2015 Member, Department of Forest, Rangeland, and Fire Sciences, Graduate Program Committee

- 2013-2014 Member, Department of Forest, Rangeland, and Fire Sciences, Forest Biologist search committee
- 2013-2014 Member, Department of Forest, Rangeland, and Fire Sciences, tenure and promotion review committee
- 2011-2012 Member, Department of Forest, Rangeland, and Fire Sciences, Department Head search committee
- 2009-2015 Provided over 25 invited guest lectures in forest resources, rangeland ecology and management, geography, and environmental science courses.

## PROFESSIONAL AND PUBLIC SERVICE

- 2017-2018 Deevey Award Coordinator, Paleoecology Section of the Ecological Society of America
- 2017 Member, NSF proposal review panel, x 2.
- 2015 Member, NSF proposal review panel.
- 2013-2014 Chair, Paleoecology Section of the Ecological Society of America.
- 2013 DeVleig Distinguished Lecturer Series, McCall Outdoor Science School, U. Idaho.
- 2012-2013 Vice Chair, Paleoecology Section of the Ecological Society of America.
- 2007 → Development and deployment of programs for charcoal analysis and chronology development for sediment records: *CharAnalysis*, *MCAgeDepth*, *CRSModel*.
- 2006-2009 Secretary, Paleoecology Section of the Ecological Society of America
- 2006-2012 Instructor, North Cascades Institute, Diablo, Washington. Designed and co-taught two-day courses on forest and fire ecology for adults each summer.
- 2005, 2010 Co-organized and led workshop for 20-30 participants on reconstructing fire regimes with sediment charcoal records at the Ecological Society of America meeting.
- 2007 → Ad hoc peer review for journals (avg. 9/yr): *Annals of the Association of American Geographers*, *Biology Letters*, *Canadian Journal of Forest Research*, *Climatic Change*, *Ecology*, ***Ecology Letters***, *Ecological Monographs*, *Ecosphere*, *Ecosystems*, *Fire Ecology*, *Forest Ecology and Management*, *Frontiers in Ecology and the Environment*, *Global Change Biology*, *International Journal of Wildland Fire*, Island Press, *Journal of Applied Ecology*, *Journal of Biogeography*, *Journal of Ecology*, *Journal of Paleolimnology*, *Journal of Quaternary Science*, *Journal of Vegetation Science*, *Mires and Peat*, ***Nature***, *Nature Communications*, *New Phytologist*, *Palaeogeography Palaeoclimatology Palaeoecology*, *PLoS ONE*, *Philosophical Transactions of the Royal Society – Biological Sciences*, *Polar Science*, ***PNAS***, *The Holocene*, *Quaternary International*, *Quaternary Research*, *Quaternary Science Reviews*.
- 2007 → Ad hoc peer review for scientific funding agencies (avg. 3/yr, excluding NSF panels): U.S. National Science Foundation, National Aeronautics and Space Administration, Joint Fire Science Program, Swiss National Science Foundation, ANR (France), NSERC (Canada), New Netherlands Polar Programme.

**PROFESSIONAL DEVELOPMENT**

- 2015 “Selling your story: presentation skill building series,” University of Montana, Faculty Development Program. Five-class program on presentation skills for faculty.
- 2014 “Bayesian Modeling for Practicing Ecologists” One of 22 professionals selected to participate in this nine-day NSF-funded workshop at Colorado State University.
- 2011 “Stable Isotopes in the Paleoenvironment” Student in five-day NSF-funded short course at Kansas State University.
- 2011 COMPASS workshop for science communication. Participant in one-day workshop.

**HONORS AND AWARDS**

- 2012 Outstanding Research Award, College of Natural Resources, University of Idaho
- 2009 Awarded, USGS Mendenhall Postdoctoral Fellowship (declined)
- 2004, 2<sup>nd</sup> place, Edward S. Deevey Award for Excellence in Paleoecology, presented to the best student presentation in paleoecology at the Ecological Society of America Meeting, Portland, OR, and Montreal, Quebec.
- 2005
- 2003 1<sup>st</sup> place, student poster competition, Study of Environmental Arctic Change open science meeting, Seattle, WA. \$1000 award to attend an international meeting.
- 2001 2<sup>nd</sup> place, Edward S. Deevey Award for Excellence in Paleoecology, presented to the best student presentation in paleoecology at the Ecological Society of America Meeting, Madison, WI.
- 2000 Xi Sigma Pi Forestry Honors Society, University of Washington.
- 1998 Elbert C. Cole Award for outstanding performance in the Dep. of Biology, Middlebury College.

**PROFESSIONAL ASSOCIATIONS**

- 2012 → Association for Fire Ecology
- 2006 → International Paleofire Working Group
- 2006 → American Geophysical Union
- 2000 → Ecological Society of America, Paleoecology Section member

**INVITED LECTURES AND SEMINARS**

- 2017 USFS, Missoula Fire Science Lab Seminar Series
- 2016 Systems Ecology Graduate Seminar Series, University of Montana
- 2015 Department of Ecosystem and Conservation Sciences, University of Montana
- 2014 Department of Geography Climate Change Seminar, University of Idaho
- 2014 Department of Geography departmental seminar, University of Utah
- 2012 Paleoworks Master Class on charcoal analysis, Australian National University, Canberra, Australia
- 2012 Webinar to fire managers via JFSP-funded Alaska Fire Science Consortium: “Tundra burning in Alaska: rare events or harbinger of climate change?” May 24th
- 2011 Forest Ecology Seminar Series, University of Montana
- 2010 Keynote speaker, Bonanza Creek LTER Symposium, Fairbanks, Alaska
- 2009 Quaternary Ecosystem Science Training International Group, guest lecturer, France

2009 Department of Biology, University of Denver  
2008 Department of Geography, University of Wisconsin  
2007 Department of Ecology, Montana State University  
2007 Department of Geography, University of Oregon  
2006 Department of Earth Sciences, Montana State University