DANIEL E. FOSTER

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PROFESSIONAL SUMMARY

Data scientist with 7+ years of experience leveraging cutting-edge quantitative analysis and domain expertise in quantifying forest biomass and environmental research. Skilled in data preprocessing, machine learning, and statistical modeling. Strong communicator with a track record of presenting insights from quantitative analysis. Seeking to contribute to solutions for the climate crisis.

EDUCATION

PhD, Environmental Science, Policy, & Management   December 2022
University of California, Berkeley

Master of Forestry   May 2018
University of California, Berkeley

EXPERTISE & SKILLS

- Statistical analysis, machine learning, data management, and geospatial data
  - Expert: R, Stan, SQL, high performance computing, LiDAR
  - Proficient: QGIS, ArcPro, LANDSAT, Google Earth Engine, Linux
  - Comfortable: Python, FUSION
- Strong research design, environmental monitoring, and quantitative analysis skills
- Collaborative and team-based data science work

SELECTED WORKS

Foster, D., Stephens, S., De Valpine, P., and Battles, J., 2024. Threats to the persistence of sugar pine (*Pinus lambertiana*) in the western USA. *Forest Ecology and Management*, *554,* 121659.

Foster, D.E., Battles, J.J., Collins, B.M., York, R.A. and Stephens, S.L., 2020. Potential wildfire and carbon stability in frequent-fire forests in the Sierra Nevada: trade-offs from a long-term study. *Ecosphere*, *11*(8), p.e03198.

Foster, D.E., Collins, B.M, and Stephens, S.L., 2019. Incorporating disturbance effects on fuels into the emissions estimation system. Final report for California Air Resources Board project 15-AQP007.

PROFESSIONAL EXPERIENCE

Analyst
Moody's Risk Management Solutions   January 3, 2023 – Present (40 Hr/Wk)

- Evaluated impact of updates to the Climate Change Conditioning scenarios for the North Atlantic Hurricanes model and communicated findings to internal stakeholders.
- Co-developed client-facing SQL tool to summarize exposure data in SQL databases and explain change in model results.
- Developed digital infrastructure in R and SQL to manage batch analyses in a high-performance computing environment and produce publication-ready maps communicating results.
- Performed product acceptance testing to investigate and communicate the impacts of improvements to catastrophe models.

Graduate Student Researcher   October 1, 2019 – December 30, 2022 (20 Hr/Wk)
Battles & Stephens Labs (UC Berkeley)

- Conceptualized, designed, and implemented a forest and fuels monitoring program to measure the effects of prescribed fire on spatial pattern and fuel loading. Developed geo-statistical analyses and communicated findings for publication.
- Managed databases, performed statistical analyses, and visualized data using R and Stan. Used a remote high-performance computing environment to process large amounts of LiDAR data.
- Developed demographic rates models for sugar pine and presented findings via peer-reviewed manuscript and conference presentation.

- Designed a novel sampling protocol for quantifying the spatial distribution of forest biomass and collaborated with federal scientists for implementation.

Assistant Specialist   May 14, 2018 – October 1, 2019 (40 Hr/Wk)
Stephens Lab (UC Berkeley)
- Analyzed forest biometrics data and published findings on the carbon costs and benefits of fuel reduction treatments.
- Developed a geospatial analysis using ArcGIS and machine learning to generate annual updates of statewide fuel condition maps.
- Managed training, planning, and logistics for field crews and mentored undergraduate senior thesis projects.
- Mentored two undergraduates in the creation of their senior thesis projects.

Graduate Student Researcher and Graduate Student Instructor   September 1, 2016 – December 30, 2017 (20 Hr/Wk)
Department of Environmental Science, Policy, and Management (UC Berkeley)
- Led field crew technicians in collecting forest inventory data and establishing monitoring plots.
- Taught undergraduate discussion sections and generated course content.

Conservation Practitioner II   September 1, 2015 – May 13, 2016 (40 Hr/Wk)
The Nature Conservancy (Maryland Field Office)
- Updated and enacted site management plan for Piney Branch Bog in response to ongoing development upstream.
- Developed geospatial analysis (marsh protection potential index) for the Maryland Coastal Resiliency Assessment in partnership with Maryland Department of Natural Resources.

Chesapeake Conservation Corps Member   August 15, 2014 – August 14, 2015 (40 Hr/Wk)
The Nature Conservancy (Maryland Field Office)
- Developed an ArcGIS geodatabase of historical fires in Maryland from state records dating back to the 1970s.
- Wrote 50+ page report describing modern Maryland fire regime using state records.

ADDITIONAL PEER-REVIEWED PUBLICATIONS

Stephens, S.L., **Foster, D.E.**, Battles, J.J., Bernal, A.A., Collins, B.M., Hedges, R., Moghaddas, J.J., Roughton, A.T., and York, R.A., 2023. Forest Restoration and Fuels Reduction Work: Different Pathways for Achieving Success in the Sierra Nevada. *Ecological Applications* e2932.

York, R., Levine, J., **Foster, D.**, Stephens, S. and Collins, B., 2022. Silviculture can facilitate repeat prescribed burn programs with long-term strategies. *California Agriculture*, *75*(3), pp.104-111.

Malandra, F., Vitali, A., Morresi, D., Garbarino, M., **Foster, D.E.**, Stephens, S.L., Urbinati, C., 2022. Burn Severity Drivers in Italian Large Wildfires. *Fire*, *5*, 180.

Moore, I. B., Collins, B. M., **Foster, D. E.**, Tompkins, R. E., Stevens, J. T., & Stephens, S. L. (2021). Variability in wildland fuel patches following high-severity fire and post-fire treatments in the northern Sierra Nevada. *International Journal of Wildland Fire*, *30*(12), 921-932.

Steel, Z.L., **Foster, D.**, Coppoletta, M., Lydersen, J.M., Stephens, S.L., Paudel, A., Markwith, S.H., Merriam, K. and Collins, B.M., 2021. Ecological resilience and vegetation transition in the face of two successive large wildfires. *Journal of Ecology*, *109*(9), pp.3340-3355.

Dudney, J., York, R.A., Tubbesing, C.L., Roughton, A.T., **Foster, D.**, Stephens, S.L. and Battles, J.J., 2021. Overstory removal and biological legacies influence long-term forest management outcomes on introduced species and native shrubs. *Forest Ecology and Management*, *491*, p.119149.

Levine, J.I., Collins, B.M., York, R.A., **Foster, D.E.**, Fry, D.L. and Stephens, S.L., 2020. Forest stand and site characteristics influence fuel consumption in repeat prescribed burns. *International Journal of Wildland Fire*, *29*(2), pp.148-159.

Hatch, L.E., Jen, C.N., Kreisberg, N.M., Selimovic, V., Yokelson, R.J., Stamatis, C., York, R.A., **Foster, D.**, Stephens, S.L., Goldstein, A.H. and Barsanti, K.C., 2019. Highly speciated measurements of terpenoids emitted from laboratory and mixed-conifer forest prescribed fires. *Environmental Science & Technology*, *53*(16), pp.9418-9428.

ADDITIONAL REPORTS, OUTREACH, AND SOFTWARE

Foster, D.E., 2022. Linking Pattern and Process in the Disturbance Ecology of Sierra Nevada Mixed Conifer Forests. Ph.D. Dissertation.

Conference presenter, "Sugar pine: Demographic status, trajectory, and stressors" North American Forest Ecology Workshop. June 24, 2022.

Guest speaker, "Demographic status, trajectory, and stressors of Pinus lambertiana" UC Berkeley Ecolunch. March 8, 2022.

Foster, D., Stephens, S., Moghaddas, J. and Van Wagtendonk, J., 2021. Rfuels package: forest fuels from Brown's transects. *Berkeley: URL https://github. com/danfosterfire/Rfuels.*

Interviewee, *The burning question: How to fuel the fight against Californian wildfires*. Sophia Friesen for the Berkeley Science Review. November 29, 2021.

Guest speaker, "Fuel treatment effects on forest carbon" UC Berkeley Botanical Garden. May 9, 2019.

Guest speaker, "Fuel treatment effects on forest carbon" Calaveras Prescribed Fire Training Exchange. November 10, 2018.

The Nature Conservancy, 2016. Maryland Coastal Resiliency Assessment. M.R. Canick, N. Carlozo, and **D. Foster**.

ACHIEVEMENTS AND AWARDS

Baker-Bidwell Continuing Fellowship (2017-2018)

Cal Alumni Foresters Scholarship (2017-2018)

Prescribed Fire Experience
- Participation in 30+ prescribed burns on private, state, and UC Berkeley lands
- November 2018 Calaveras TREX (prescribed fire training exchange)

Through-hiked the Pacific Crest Trail in 2012