

# DANIEL E. FOSTER

(408) 472-9831 • danfoster@berkeley.edu • <https://dfoster.science>

---

Ecologist with 6+ years of experience leveraging cutting edge quantitative analysis and domain expertise in forests, fire, and carbon to improve real-world decision-making. Fluent in study design, experimental implementation, data collection, statistical analysis, and communicating results to maximize impact.

## EDUCATION

---

### PhD, Environmental Science, Policy, & Management

December 2022 (expected)

University of California, Berkeley

- Dissertation Committee: John Battles (Forest Ecology and Ecosystem Dynamics Laboratory), Scott Stephens (Wildland Fire Science Laboratory), and Perry de Valpine (Population ecology, modeling, and statistical methods)
- Dissertation title (working): **Pattern-process feedbacks in the disturbance ecology of Californian mixed conifer forests**
- Coursework in applied remote sensing, species distribution models, hierarchical statistical modeling

### Master of Forestry

May 2018

University of California, Berkeley

- Advisor: Scott Stephens (Wildland Fire Science Laboratory)
- Thesis: **Effects of fuels treatments on carbon pools and fluxes in Sierra Nevada mixed conifer forests**
- Coursework in fire ecology, silviculture, spatial ecology, and quantitative methods

### B.A. History

December 2011

University of California, Berkeley

- Concentration in early modern state finance
- Departmental Honors

## EXPERTISE & TOOLS

---

Quantitative analysis and data management

R, Stan, Python, Git, MS Access, SQL, Linux

Forest & fire science

Flammap, FOFEM, Farsite, Behave, Forest Vegetation Simulator

Geospatial data

LiDAR, ESRI ArcGIS, Google Earth Engine

Applied research design

Communicating results

R Shiny, MS Word, Powerpoint

Project management

## PROFESSIONAL EXPERIENCE

---

### Graduate Student Researcher

October 2019 – Present

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 complex spatial statistical analyses and will communicate findings by authoring manuscripts intended for publication in peer-reviewed journals.
- Cleaned, synthesized, and maintained extensive forest monitoring databases tracking temporal changes in forest resources in response to fuel management treatments, enabling ongoing use of these data to address novel questions in peer-reviewed publications.
- Used R daily at an expert level to manage databases, perform statistical analyses, and generate figures and maps to communicate results.
- Led demographic analysis of sugar pine leveraging 965 Forest Inventory and Analysis plots to assess six key drivers of demographic success and highlight two priorities for conservation planning. Transferred knowledge to stakeholders via a manuscript (planned for a peer reviewed journal) and oral presentations using PowerPoint.
- Created a novel sampling protocol to advance collection of spatially explicit fuels data and feed next-generation wildfire models. Communicated with stakeholders to present progress and solicit feedback in 4 presentations. Collaborated with federal scientists to scale the protocol up across a network of 100+ inventory plots in Sequoia and Kings Canyon National Parks.
- Trained and supervised field crews of 2 – 3 members on two research projects. Promoted diversity, equity, inclusion, and safety by facilitating a community agreement among crewmembers.
- Mentored an undergraduate senior thesis project, empowering a future scientist with new skills and professional guidance.

- Developed a reproducible workflow to generate spatial data products from LiDAR data and coauthored a publication which used these products to identify risk factors for forest loss as a result of repeated wildfires.

### Assistant Specialist

May 2018 – September 2019

Stephens Lab (UC Berkeley)

- Analyzed forest biometrics data from a 20-year long term research project to evaluate the carbon costs and benefits of forest fuel reduction treatments. Published findings in a peer-reviewed journal.
- Developed a geospatial analysis using ArcGIS and R to generate annual updates of statewide maps of fuel conditions for the California Air Resources Board.
- Managed training, planning, and logistics for two field crews collecting field monitoring data on University of California, US Forest Service, and National Park Service lands on a post-fire reforestation project. Cleaned and stewarded resulting data products.
- Mentored two undergraduate senior thesis projects, building capacity for future research by transferring skills and experience.

### Graduate Student Researcher and Graduate Student Instructor

September 2016 – December 2017

Department of Environmental Science, Policy, and Management (UC Berkeley)

- Led teams of 2-4 field crew technicians to collect comprehensive forest inventory data at Blodgett Forest Research Station and establishing field monitoring plots for a post-fire regeneration study on the Plumas National Forest.
- Wrote burn plan, inventoried equipment, marked and cut firelines to prepare for fall prescribed burns.
- Responsible for crew training, crew safety, data stewardship, and coordinating with Forest Service personnel.
- Generated course content, including weekly concept reviews and testing material for 5 midterms and 3 final exams.
- Reached over 125 undergraduate students by teaching discussion sections and labs.

### Conservation Practitioner II

September 2015 – May 2016

The Nature Conservancy (Maryland Field Office)

- Led volunteers, interns, and AmeriCorps crews in performing land management activities.
- Prepared burn units, inventoried fuels, maintained equipment, and served as FFT-2 prescribed fire crewmember.
- 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 (see [report](#) p. 28-42 and [data portal](#)).

### Chesapeake Conservation Corps Member

August 2014 – August 2015

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.
- Performed a wide variety of stewardship activities, including prescribed fire, invasive species management, fuels monitoring, fireline construction, boundary and equipment maintenance, data stewardship, and equipment inventories.

### Intern

October 2013 – July 2014

Responsive Law

- Researched pending state legislation and drafted testimony to legislators on behalf of legal services consumers
- Used python to build legislation tracking database to monitor the status of 50,000-plus state bills
- Wrote blog entries, produced quarterly supporter newsletters, and prepared mass mailings
- Managed, updated, and cleaned database of over 8,500 supporters using Salsa online marketing platform

## PEER-REVIEWED PUBLICATIONS

---

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.

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.

**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.

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.

## REPORTS, OUTREACH, AND SOFTWARE

---

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 Wagtenonk, J., 2021. Rfuels package: forest fuels from Brown's transects. Berkeley: URL <https://github.com/danfosterfire/Rfuels>.

**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.

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.

## ACHIEVEMENTS AND AWARDS

---

### **Baker-Bidwell Continuing Fellowship (2017-2018)**

- One semester of full funding (\$20,000) awarded to a graduate student doing research to benefit the management of California's forests

### **Cal Alumni Foresters Scholarship (2017-2018)**

- \$2,000 scholarship awarded to promising foresters and natural resource managers

### **Prescribed Fire Experience**

- Participation in 30+ prescribed burns on private, state, and UC Berkeley lands
- Attained Wildland Firefighter Type-2 (FFT2) Certification (currently inactive)
- November 2018 Calaveras TREX (prescribed fire training exchange)

### **Through-hiked the Pacific Crest Trail in 2012**

- On-foot 2,700-mile journey from Mexico to Canada on the Pacific Crest Trail backpacking route