

# Zachary L. Steel

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## EDUCATION

University of California, Davis, Ph.D. Ecology	2014–2018
University of California, Davis, M.S. Ecology	2008–2011
Whitman College, B.A. Biology	2002–2006

## EMPLOYMENT

University of California, Berkeley:

Post-doctoral Researcher	2019–Present
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University of California, Davis:

Graduate Student Researcher	2014–2018
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Jr. Specialist Researcher	2012–2014
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Fire Science Consortium Technical Coordinator	2012–2013
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US Fulbright Program, Santiago, Chile:

Research Fellow	2011
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University of California, Davis:

Graduate Student Researcher	2008–2011
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University of California, Santa Cruz:

Assistant Biologist	2007–2008
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PRBO Conservation Sciences:

Biology Technician	2007–2008
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## PUBLICATIONS

### Journal Articles

**Steel, Z. L.**, B. M. Collins, D. B. Sapsis, and S. L. Stephens. 2021. “Quantifying pyrodiversity and its drivers”. *Proc. R. Soc. B* 288:1948.

**Steel, Z. L.**, A. Fogg, R. Burnett, L. J. Roberts, H. D. Safford. 2021. “When bigger isn’t better – implications of large high-severity wildfire patches for avian diversity and community composition”. *Diversity and Distributions*.

**Steel, Z. L.**, M.J. Goodwin, M.D. Meyer, G.A. Fricker, H.S.J. Zald, M.D. Hurteau, and M.P. North. 2021. Do forest fuel reduction treatments confer resistance to beetle infestation and drought mortality? *Ecosphere* 12(1):e03344.

**Steel, Z. L.**, B. Campos, W. Frick, R. Burnett, and H. D. Safford. 2019. “The effects of wildfire severity and pyrodiversity on bat occupancy and diversity in fire-suppressed forests”. *Scientific Reports* 9, 16300.

Wilkins, L. G. E., K. R. Matthew, **Z. L. Steel**, S. C. Nussle, and S. M. Carlson. 2019. “Population dynamics of *Rana sierrae* at Dusy Basin: Influence of non-native predators, drought, and restoration potential”. *Ecosphere* 10(11):e02951.

- Steel, Z. L.**, M. Koontz, and H. Safford. 2018. "The changing landscape of wildfire: Burn pattern trends and implications for California's yellow pine and mixed conifer forests". *Landscape Ecology* 33(7), 1159-1176.
- Steel, Z. L.**, A. E. Steel, J. Williams, J. H. Viers, P. Marquet, and O. Barbosa. 2017. "Patterns of bird diversity and habitat use in mixed vineyard-matorral landscapes of Central Chile". *Ecological Indicators* 73:345-357.
- Grof-Tisza, P., **Z. L. Steel**, E. Cole, M. Holyoak, and R. Karban. 2017. "Testing predictions of movement behavior in a hilltopping moth". *Animal Behavioral* 133:161-168.
- Grof-Tisza, P., **Z. L. Steel**, and R. Karban. 2017. "The spatial distribution and oviposition preference of the Ranchman's tiger moth, *Platyrepia virginalis* (Lepidoptera: Arctiidae)". *Journal of the Lepidopterists' Society* 71(1):16-19.
- Steel, Z. L.**, H. D. Safford, and J. H. Viers. 2015. "The fire frequency-severity relationship and the legacy of fire suppression in California forests". *Ecosphere* 6(1):1-23.
- Schwartz, M.W., L. B. Smith, and **Z. L. Steel**. 2013. "Conservation investment for rare plants in urban environments". *PLOS ONE* 8(12):e83809.
- Siegel, R. B., R. L. Wilkerson, J. F. Saracco, and **Z. L. Steel**. 2011. "Elevational distribution of common bird species on the Sierra Nevada's west slope". *Western Birds* 42:2-26.

#### *In Review or Revision*

- Steel, Z. L.**, D. Foster, M. Coppoletta, J. M. Lydersen, B. Wing, S. L. Stephens, and B. M. Collins. *In Review*. "Ecological resilience and vegetation transition in the face of multiple large wildfires". *Journal of Ecology*.
- Levine, J., B. Collins, **Z. Steel**, P. de Valpine, and S. Stephens. *In Review*. "High-severity fire risk heightened both on and near industrially managed forests". *Frontiers in Ecology and the Environment*.
- Jager, H., J. Long, R. Malison, B. Murphy, A. Rust, L. Silva, R. Sollman, **Z. Steel**, M. Bowen, J. Dunham, J. Ebersole, and R. Flitcroft. *In Review*. "Resilience of terrestrial and aquatic fauna to historical and future wildfire regimes in western North America". *Ecology and Evolution*.
- Weeks, J. M., H. Safford, J. Miller, **Z. Steel**, E. Batzer. *In Review*. "High Severity Fire Drives Floristic Homogenization in Human-Altered Forests", *Journal of Ecology*.
- Stephens, S., S. Thompson, G. Boisrame, B. Collins, L. Ponisio, K. Rakhmatulina, **Z. Steel**, J. Stevens, K. Wilken, and J. van Wagtenonk. *In Revision*. "Fire, water, and biodiversity in the Sierra Nevada: A possible triple win". *Environmental Research Communications*.
- Williams, J., H. Safford, N. Enstice, J. Tangenberg, and **Z. Steel**. *In Revision*. "High severity burn area and proportion exceed historic conditions in forests of Sierra Nevada and adjacent ranges (USA)".

#### *Technical Reports and Software*

- Steel, Z. L.**, M. Meyer, A. Wuenschel, S. Ostojka, and M. North. 2020. "Climate-wise reforestation toolkit". Rshiny web application prepared for the US Forest Service, and the California Climate Hub. [Available online](#)
- Steel, Z. L.**, B. R. Campos, and H. D. Safford. 2018. "Bat occupancy in Sierra Nevada wildfire areas and implications for post-fire management". Prepared for US Forest Service, Region 5. [PDF](#)
- Campos, B. R., **Z. L. Steel**. FIRE-BAT spatial predictive tool. ArcGIS toolbox prepared for US Forest Service, Region 5. [Users Manual](#)
- Campos, B. R., R. D. Burnett, and **Z. L. Steel**. 2017. "Bird and bat inventories in the Storrie and Chips fire areas 2015-2016: Final report to the Lassen National Forest". Point Blue Conservation Science, Petaluma, CA. Point Blue Contribution No. 2142. [PDF](#)
- Steel, Z. L.** and H. D. Safford. 2017. "Acoustic inventory and monitoring of bat species in the Power Fire burn area – 2014, 2015, and 2016 field season". Prepared for Eldorado National Forest, California, USDA Region 5. [PDF](#)

Fogg, A. M, **Z. L. Steel** and R. D. Burnett. 2017. "Avian Monitoring in Feds and Power fires: Final Report". Point Blue Conservation Science, Petaluma, CA. Point Blue Contribution No. 2138. [PDF](#)

Schwartz, M. W., et al. 2013. "Sensitive Animals - Appendix 15 to SEKI Natural Resources Condition Assessment". Natural Resource Report NPS/SEKI/NRCA—2013/665. National Park Service. Fort Collins, Colorado. Assessments within:

**Steel, Z. L.**, E. Reddy and R. Green. The American Pika - *Ochotona princeps*

**Steel, Z. L.**, J. Shields. Sierra Nevada Bighorn Sheep - *Ovis canadensis sierrae*

Copeland, S., K. Dybala, **Z. L. Steel**. California Condor - *Gymnogyps californianus*

**Steel, Z. L.**, Sierra Nevada Chipmunks - *Tamias spp.*

**Steel, Z. L.**, M. L. Bond, R. B. Siegel, and P. Pyle. 2012. "Avifauna of Sierra Nevada Network parks: Assessing distribution, abundance, stressors, and conservation opportunities for 145 bird species". Natural Resource Report NPS/SEKI/NRCA—2012/506. National Park Service, Fort Collins, Colorado. [PDF](#)

## TEACHING

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### Graduate Teaching:

Guest Lecturer – UCD, Fire Ecology	Winter 2020-2021
Guest Lecturer – UCB, Fire Ecology Seminar	Spring 2020
Co-Instructor – UCD, Fire Ecology	Winter 2018
Guest Lecturer – UCD, Ecogeomorphology	Spring 2014–2018
Certificate of Completion – UCD Foundations of Teaching workshop series	Fall 2017
Guest Lecturer – American River College, Experimental Design	Spring 2017
Teaching Assistant – UCD, Trees and Forests; PLS 144	Fall 2015
Teaching Assistant – UCD, Trees and Forests; PLS 144	Fall 2014

### Mentoring:

Undergraduate Mentor – Student research experience	Spring 2019-Present
Undergraduate Mentor – Association for Women in Science Mentoring program	2019
High School Mentor – Student & Landowner Education Stewardship program	2015–2016
Undergraduate Mentor – Student research experience	Summer 2009

### Outdoor Education:

Naturalist/Raft Guide – UCD, Outdoor & Watershed Sciences programs	2013-2018
Teacher/Scientist – Earthwatch citizen science programs	2013
Naturalist/Kayak Guide – San Juan Islands, WA	Summers 2006-2007

### Undergraduate Teaching:

Teaching Assistant – Whitman College, Genetics; BIO 205	Fall 2005
Teaching Assistant – Whitman College, Ecology; BIO 277	Spring 2005

## AWARDS

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### *Grants written & funded:*

2020-23: *Implications of increasing the scale of managed wildfire on forest carbon stocks and pyrodiversity*. Funded by California Department of Forestry and Fire Protection (CALFIRE). \$422,000

2017-18: *Ecological implications of wildfire and forest restoration on birds and bats (phase II)*. Funded by US Forest Service. \$122,000

2014-17: *Ecological implications of wildfire and forest restoration on birds and bats (phase I)*. Funded by US Forest Service. \$127,000

2011: *Quantifying avian habitat use and carbon stocks in Chilean vineyards*. Funded by US Fulbright Program. \$17,000

### *Fellowships received:*

2014-18 (7 quarters): *Graduate Group of Ecology Fellowship*. Funded by UC Davis. \$79,000

2017: *Ecology Student Endowment*. Funded by UC Davis. \$1500

2010: *Graduate Group of Ecology Fellowship*. Funded by UC Davis. \$11,000

2002-06: *Walter Brattain Merit scholarship*. Funded by Whitman College. \$32,000

2001-02 (2 awards): *Governor's college scholarship*. Funded by State of California. \$2000

## PRESENTATIONS

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International Association of Landscape Ecology 2021

*Quantifying pyrodiversity and its drivers*

Western Section of the Wildlife Society Annual Meeting (**Invited plenary**) 2021

*Implications of changing fire patterns on habitats and wildlife*

Natural Areas Association Annual Meeting (**Invited**) 2020

*Implications of changing fire regimes for Sierra Nevada bat and bird communities*

Ecological Society of America Annual Meeting 2020

*What doesn't kill you makes you stronger - or not: Conifer mortality following forest treatments and drought ([Recording available with ESA access](#))*

The Wildlife Society Annual Conference 2019

*The Influence of Burn Severity and Pyrodiversity on Bat Communities in Sierra Nevada Forests*

Mediterranean Forest Ecosystems International Conference (MedPine6) 2018

*Changing patterns of severe wildfire lead to bird diversity declines & community transitions in conifer forests of California, USA*

Ecological Society of America Annual Meeting 2018

*Bat species occupancy varies across a disturbance gradient; implications for a future of extreme wildfire events*

Instituto Politécnico Nacional, CIIDIR-Unidad Oaxaca, Mexico (**Invited**) 2017

*Murcielagos en un paisaje caracterizado por incendios: Impactos en diversidad y uso de habitat*

Ecological Society of America Annual Meeting 2017

<i>The influence of spatial context and successional pathways on bird communities following high-severity wildfire</i>	
Northwest Science Conference ( <b>Invited</b> )	2017
<i>The influence of burn severity on bat species occurrence in post-fire landscapes</i>	
Mediterranean Ecosystems Conference (MEDECOS)	2017
<i>Shifting patterns of California fire and forest landscapes in an era of global change</i>	
Natural Areas Conference	2016
<i>The Changing Landscape of California Fire: Trends in Burn Patterns and Post-Fire Forest Heterogeneity</i>	
Universidad Mayor, Santiago, Chile ( <b>Invited</b> )	2011
<i>Mercados de carbono: una oportunidad potencial para biodiversidad en agroecosistemas</i>	
Buenos Aires Fulbright Regional Enhancement Seminar	2011
<i>Carbon Sequestration: Risk or tool for biodiversity?</i>	
Bay Area Conservation Biology Symposium	2011
<i>Assessing species vulnerability to climate change in the Willamette Valley Ecoregion</i>	

## Service

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**Professional Society Memberships:** Ecological Society of America, The Wildlife Society, Natural Areas Association, International Association of Landscape Ecology

**Journal Referee:** *Global Change Biology, Landscape Ecology, PLOS One, Ecosphere, Ecography, Diversity and Distributions*

**Special Symposium co-organizer:** "Toward a comprehensive understanding of pyrodiversity: How landscape- scale heterogeneity in fire history influences biodiversity across taxa, fire regimes, and spatial scales." Accepted for the International Association of Landscape Ecology 2021 meeting, Reno, NV