

Zachary L. Steel

Department of Environmental Science and Policy • University of California, Davis
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Education

University of California, Davis

PhD: Ecology

Completion expected fall 2018

Advisor: Dr. Hugh Safford

Dissertation: “Implications of shifting wildfire patterns for ecological process and wildlife community composition in Sierra Nevada Forests”

Master of Science: Ecology

March 2011

Professional Certificate: Conservation Management Training

Davis, CA

Advisor: Dr. Mark Schwartz

Masters Thesis: “Addressing uncertainty in climate change vulnerability assessments: A case study of species in the Willamette Valley, Oregon.”

Whitman College

Bachelor of Arts: Biology

May 2006

Minor: Latin American Studies

Walla Walla, WA

Advisor: Dr. Charles Drabek

Undergraduate Honors Thesis: “Road disruption of bird diversity and density in a Costa Rican rainforest.”

Areas of Research Interest

My research interests include effects of human land use on natural processes, landscape dynamics, and conservation of biodiversity. Specifically, my current research focuses on human-induced changes to wildfire patterns in California, and subsequent responses of bird and bat communities to these shifts and to post-fire forest management.

Research & Professional Experience

UC Davis - Graduate Student Researcher &

Oct 2014 – Present

UC Davis - Research Ecologist

Apr 2012 – Sept 2014

Collaborated with the Forest Service and Point Blue Conservation

Davis, CA

Sciences to assess fire patterns and impacts of fire on wildlife communities

and forest processes within the Sierra Nevada and other Californian ecosystems.

Sierra Nevada Fire Science Consortium Technical Coordinator

April 2012 - Aug 2013

Managed fire science communication between researchers,

Davis, CA

practitioners and the public for the Sierra Nevada region of the

California Fire Science Consortium. Organized field tours, webinars as well as

composed and edited research briefs for non-academic audiences.

Fulbright Research Fellow

March - Dec 2011

In partnership with Chilean scientists and land owners, assessed the biodiversity and ecosystem services in a vineyard/natural landscape in Chile's wine region. The project resulted in two invited presentations and one published article. Santiago, Chile

UCD Graduate Student Researcher

Sept 2010 – Mar 2011

Contributed to a variety of research projects including a study of the spatial distribution of endangered plant species expenditures in California, an investigation of the effectiveness of a portfolio of global protected areas in preserving critical habitat, and climate change/energy policy analysis. Sept 2008 – Mar 2010 Davis, CA

Institute of Bird Populations

May 2010 – Dec 2011

Composed a technical report on the condition and management of the avifauna within the southern Sierra Nevada National Parks, as part of the Sequoia and Kings Canyon Natural Resource Condition Assessment and NPS Inventory and Monitoring program. Davis, CA

UCSC Assistant Biologist

Dec 2007 – March 2008

Conducted avian point count surveys to assess impacts of various configurations of natural, restored and agricultural lands on the presence of beneficial, insectivorous birds in Sacramento Valley walnut orchards. Collected data was used in a PhD dissertation and multiple publications. Chico, CA

PRBO (currently Point Blue) Conservation Sciences

April – July 2008

Monitored an avian community and nest-vegetation associations as indicators of restoration success within a riparian area of Shasta County, CA. Resulted in two reports to funders and stakeholders. April – July 2007 Redding, CA

Publications

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* <https://doi.org/10.1007/s10980-018-0665-5>

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, *Platyprepia 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:art8.

Schwartz, M.W., L. B. Smith, and Z. L. Steel. 2013. Conservation investment for rare plants in urban environments. *PLOS ONE* 8(12):e83809.

- 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/NRR—2012/506. National Park Service, Fort Collins, Colorado.
- 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.
- Steel, Z. L.**, A. Fogg, L. J. Miller, R. Burnett, and H. D. Safford. *In prep.* Spatial context determines successional pathways among post-wildfire bird communities
- Steel, Z. L.**, B. Campos, W. Frick, H. D. Safford. *In prep.* Bat occupancy across a gradient of burn severity in Sierra Nevada forests.
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Teaching Experience

Graduate Teaching

Lecturer – UCD, Co-taught Fire Ecology	Winter 2018
Guest Lecturer – UCD, Ecogeomorphology	Springs 2014-18
Certificate of completion – UCD Foundations in 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
Teaching Assistant – UCD, Graduate Group of Ecology Orientation Trip	Sept 2009

Mentoring

High School mentor - Student & Landowner Education & Watershed Stewardship program (SLEWS)	2015-16
Undergraduate mentor – Research experience	Summer 2009

Outdoor Education

Naturalist/Raft Guide – UCD, Outdoor & Watershed Sciences Programs	2013-Present
Teacher/scientist – Earthwatch citizen science programs	June – Oct 2013
Naturalist/Kayak Guide – San Juan Islands, WA	Summers 2006 & 07

Undergraduate Teaching

Teaching Assistant – Genetics; BIO 205

Fall 2005

Teaching Assistant – Ecology; BIO 277

Spring 2005

Presentations

Instituto Politécnico Nacional, CIIDIR-Unidad Oaxaca, Mexico, 2017. *“Murciélagos en un paisaje caracterizado por incendios: Impactos en diversidad y uso de hábitat”* (Invited)

Ecological Society of America, 2017. “The influence of spatial context and successional pathways on bird communities following high-severity wildfire”

Northwest Science Conference, 2017. *“The influence of burn severity on bat species occurrence in post-fire landscapes”* (Invited)

Mediterranean Ecosystems (MEDECOS) Conference, 2017. *“Shifting patterns of California fire and forest landscapes in an era of global change”*

Natural Areas Conference, 2016. *“The Changing Landscape of California Fire: Trends in Burn Patterns and Post-Fire Forest Heterogeneity”*

Eldorado National Forest – Power Fire Restoration Scientist Meeting, 2015
“Birds and Bats in the Power fire”

National Forests Region 5 Ecology Program Meeting, 2014
“The fire frequency – severity relationship & legacy of fire suppression in CA’s forests”

Environmental Systems Research Institute (ESRI) Users Conference, 2012.
“Soil and Vegetation Interact to Influence California’s Fire Regimes” (Poster)

Universidad Mayor, Santiago, Chile; International Seminar - Sustentabilidad: Enfoques y Desafíos, 2011.
“Mercados de carbono: una oportunidad potencial para biodiversidad en agroecosistemas” (Invited)

Buenos Aires Fulbright Regional Enhancement Seminar, 2011.
“Carbon Sequestration: Risk or tool for biodiversity?”

Bay Area Conservation Biology Symposium, 2011.
“Assessing species vulnerability to climate change in the Willamette Valley Ecoregion.”

UC Davis Ecology Symposium, 2010.
“Species Vulnerability in an Uncertain Future” (Poster)

Whitman Undergraduate Conference, 2006.
“Birds in Paradise: Road Disruption of Bird Populations in a Tropical Rain Forest.”

Honors, Grants and Awards

US Forest Service & UC Davis funding agreement	2017-18
UC Davis, Graduate Group of Ecology Fellowship	Seven quarters 2014-18
UC Davis, Ecology Student Endowment	2017
US Forest Service & UC Davis funding agreement	2014-17
Fulbright Fellowship – Chile	March - Dec 2011
UC Davis, Graduate Group of Ecology Fellowship	One quarter 2010
Graduated from Whitman College with Honors in Biology	May 2006
Whitman achievement based scholarship	2002 – 2006
California Governor's scholarship	Two awards 2001 & 2002