

Oren Pollak Memorial Research Fund

2017 Update

The Oren Pollak Memorial Research Fund was established in 2000 in memory of Dr. Oren Pollak, a leading grassland ecologist and restoration pioneer, as well as an ardent champion and mentor for grassland ecology students. As The Nature Conservancy's lead ecologist in California in the early 1990s, Dr. Pollak established the grassland research program that continues today. He later became Director of Science in the Conservancy's Oregon Chapter. Since 2000, the Pollak Fund has granted more than \$75,000 in grasslands research funding for student scientists. This year, The Nature Conservancy awarded two grants.

2017 Grant Recipients

Lina Aoyama, M.S. Candidate, UC Berkeley

Landscape Approach to Conserving Carbon Stocks on California Rangelands

Study site: Tejon Ranch Conservancy, Frazier Park, CA

As a consequence of dramatic, global environmental change, ecological state transitions are increasing. An ecological state transition is when one dominant vegetation community is replaced by another. In California, warmer and drier conditions over the next 100 years are likely to increase the frequency and extent of one such transition, that of shrub encroachment on grasslands.

Because most California grasslands are managed as rangelands, shrub encroachment is both an economic and ecological concern for ranchers and conservationists. Unfortunately, this transition can also increase soil erosion, reduce stream flows, reduce forage production, and alter wildlife habitat. However, some studies show a surprising benefit of shrublands, which is that they potentially increase carbon sequestration due to their woody plants.

How do we incorporate carbon sequestration potential in conservation management decisions? With the support of the Oren Pollak Memorial



Research Fund, Lina is combining empirical data on above- and below-ground carbon, spatially explicit ecological site descriptions, and state-and-transition models to investigate the interaction of carbon and range dynamics to help inform the management of California's grasslands in a warming climate.

Hannah Soukup, M.S. Candidate, University of Oregon

Impact of fire on soil fungal communities in restored prairies

Study sites: Washington (Puget Trough) and Oregon (West Eugene, Fern Ridge Reservoir, and The Nature Conservancy's Willow Creek Preserve).

The health of plant communities depend on the health of below-ground fungal communities. Fungi play a leading role in regulating ecosystem processes and affect plant community structure. In grassland soils, fungi are important regulators of decomposition, which can be a rate-limiting step in carbon and nutrient cycling within terrestrial ecosystems. Fungi also contribute significantly to overall soil structure.

In Pacific Northwest prairie systems, we have little information about which fungi are present in intact versus restored prairies. This is important because mycorrhizal communities are likely impacted by ongoing restoration activities like prescribed fire. With the support of the Oren Pollak Memorial Research Fund, Hannah is studying the soil fungal communities of multiple prairies, characterizing species richness, taxa abundance, and response to prescribed fires to better understand the impact of common management practices on fungal communities and related ecosystem function.



© Gary N. Crabbe

Past Recipients

2016 Lauren Smith, Oregon State University

Investigating post-fire recovery of invertebrate-mediated ecosystem services in restored and unrestored grasslands

Study Sites: Several grassland sites in eastern Oregon, including The Nature Conservancy's Boardman Preserve.

2016 Vincent Jansen, University of Idaho

Using remote-sensing to measure grazing effects on a native grassland ecosystem

Study Site: Zumwalt Conservation Area, Oregon

2015 Marina LaForgia, University of California, Davis

Seed bank-mediated species diversity under a changing climate

Study site: McLaughlin Natural Reserve, Southeast of Clearlake, CA

2015 Eric Slessarev, University of California, Santa Barbara

Relating Plant Allocation Strategies and Soil Mineralogy to Predict Carbon Storage in Californian Grasslands

Study site: TNC's Dye Creek Preserve; University of California's Sedgwick, Hastings, McLaughlin, and Blue-Oak Reserves; and University of California's Sierra Foothill and Hopland Research and Extension Centers

2015 Kristina Wolf, University of California, Davis

Restoring trophic cascades? Comparing wildlife abundance, diversity, and habitat utilization in restored and unrestored grasslands of California's Central Valley

Study site: Four locations across the Central Valley, CA

2015 Erin Elsey, San Francisco State University

Effects of drought on early and late emerging *Bombus* species in restored alpine meadows in the Sierra Nevada

Study site: Perazzo Meadows, Three Cornered (part of Carmen Valley restoration), Davies Creek (part of Merrill Davies restoration) and other Sierra meadows represented in long-term data sets

2015 Kristina Gill, University of California, Santa Barbara

Using Ancient Plant Remains to Determine the Extent and Composition of Native Grassland Habitats on Santa Cruz Island Prior to Historical Impacts

Study site: 15 sites across Santa Cruz Island, Channel Islands, CA

2014 Lauren Smith, Oregon State University

How both large-scale and small-scale grassland restoration impacts beneficial invertebrate diversity

2012 Sara Reid, University of California, Berkeley

Native Forbs, Traditional Knowledge, and Cooperative Restoration of a California Grassland

- 2011 Miriam Tsalyuk, University of California, Berkeley**
Monitoring California's grassland conservation easements using satellite imagery
- 2010 Michelle A. Ocken, California State University, Chico**
Habitat requirements and seasonal phenology of the western burrowing owl (*Athene cunicularia hypugaea*) in the northern Sacramento Valley, California
- 2009 Christina McNeal, California State University of Northridge**
Germination and recruitment of *Ephedra californica* at the Carrizo Plain National Monument
- 2008 Angela J. Brandt, Oregon State University**
Is the abiotic or biotic environment a greater driver of observed highly-localized extinctions of native forbs in the California grasslands?
- 2007 Chiho Kimoto, Oregon State University**
Effects of livestock grazing and native plant diversity on the native pollinator community at northeastern Oregon's Zumwalt Prairie Preserve
- 2006 Kris Hulvey, University of California, Santa Cruz**
Effects of native forb abundance on invasion resistance: Using a native tarweed to manage yellow starthistle in California grasslands
- 2005 Jennifer Hernandez, University of California, Berkeley**
Restoring a keystone species to California grasslands
- 2004 Joan Schwan, Sonoma State University**
Effects of livestock grazing on vernal pool plant communities on the Santa Rosa plain
- 2004 Rebecca Hufft, University of California, Santa Cruz**
The survival, reproduction and restoration of native grasses at Elkhorn Slough National Estuarine Research Reserve
- 2003 Andrea S. Lueders, Oregon State University**
Influences of native and non-native habitats on breeding grassland birds in northeastern Oregon
- 2002 Lisa Norfolk, Chico State University**
Effects of different defoliation regimes on root and shoot growth of Nebraska Sedge
- 2002 Natasha Teutsh, University of California, Berkeley**
Exploring the feedbacks between the soil microbial community and the performance of invasive grasses in California
- 2001 Jan Goerrissen, University of California**
Habitat associations of grassland birds in native and exotic California grasslands

2000 Valerie Eviner, University of California, Berkeley

Effects of invasive plant species on competitive interactions and ecosystem dynamics in California annual grasslands

2000 Kimberly Reeve Morghan, University of California, Davis

A study of the ecology of two California native C4 grasses, *Aristida ternipes* and *Aristida Oligantha*

2000 Megan Lulow, University of California, Davis

The significance of arrival order on plant community development in California grasslands of the north Central Valley