

Karen E. Tanner

Ph.D. Candidate, Parker Lab, University of California, Santa Cruz
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EDUCATION

- Ph.D. Ecology & Evolutionary Biology with a designated emphasis in Coastal Science and Policy, University of California, Santa Cruz – degree expected spring 2020
- B.S. Biology, Mills College, Oakland, CA, with Highest Honors – 2012
- B.S. Art, James Madison University, Harrisonburg, VA, with Great Honor – 1994

RESEARCH EXPERIENCE

Doctoral Research, Dept. Ecology & Evolutionary Biology, advised by Ingrid M. Parker

- Testing novel science-based strategies to improve salt marsh restoration success
- Evaluating the impacts of solar energy infrastructure on desert habitats and annual plant demography

Graduate Student Researcher appointments

- P.I. Kerstin Wasson, Research Coordinator, Elkhorn Slough National Estuarine Research Reserve
 - Effects of planting pattern and biochar soil amendment across salinity and moisture gradients in a high marsh restoration site at Elkhorn Slough, spring 2019
- P.I. Rebecca R. Hernandez, University of California, Davis
 - Effects of renewable energy development on desert annual plant seed banks and aboveground community composition, eight quarters, 2016 – 2019
- P.I. Kara A. Moore-O’Leary, University of California, Davis
 - Developed monitoring protocol for rare endemic plant species at Ash Meadows National Wildlife Refuge for the U.S. Fish & Wildlife Service, summer 2015
 - Modeled demographic performance of annual plants to seasonal variation, microhabitat variation, and experimental treatments mimicking solar energy infrastructure, fall 2014

Jill Barrett Research Scholar, Biology Dept., Mills College – P.I. Bruce M. Pavlik, Kara A. Moore-O’Leary

- Designed and implemented an experimental study measuring impacts of solar development on desert annual plants, spring, summer 2011

PROFESSIONAL EXPERIENCE

Junior Specialist, Dept. Evolution and Ecology, University of California, Davis. Supervisor: Kara A. Moore-O’Leary

- Identified and installed sites, developed survey methods, and created GIS resources during development of a rare plant monitoring program at Ash Meadows National Wildlife Refuge. Trained field technicians and volunteer crews, led data collection surveys. Winter – summer 2014

Research Technician, BMP Ecosciences. Supervisor: Bruce M. Pavlik

- Project lead for experimental shading study on select annual species, and field technician for population biology study on a suite of rare Mojave Desert plants. Winter 2012 – winter 2014

Senior Product Lead, Product Lead, Software Quality Engineer at Adobe Systems, Inc. Supervisor: Mike Abbott

- Translated engineering specifications into broad based quality assurance plans for 7 shrinkwrap releases of the Illustrator product. Led a globally distributed team engaged in analytical problem-solving and software qualification. February 1998 – July 2009

Software Quality Engineer, Claris Corporation. Supervisor: Robert Hunt. May 1996 – February 1998

Software Quality Engineer, Apple Computer, Inc. under contract with ADIA. January 1995 – May 1996

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INTERNSHIPS

U.S. Fish & Wildlife Service. Supervisor: Susan Euing

Collection and organization of data on mating, nesting and chick rearing behavior of the Alameda Point least tern colony. Collection and processing of seed from endangered plant species at Antioch Dunes National Wildlife Refuge. Spring – summer 2010

FELLOWSHIPS AND HONORS

- 4 years Dept. Ecology & Evolutionary Biology Research Grant, University of California, Santa Cruz – \$1,500 each (2018, 2017, 2016, 2015)
- 2018 Future Leaders in Coastal Science Award – \$19,000
- 2018 Jean H. Langenheim Graduate Fellowship in Plant Ecology and Evolution – \$3,200
- 2018 Hardman Native Plant Award – \$1,000
- 2017 Best Student Talk Award at the California Invasive Plant Council 2017 meeting – \$250
- 2017 California Invasive Plant Council Travel Grant – \$150
- 2017 Marilyn C. Davis Memorial Scholarship – \$1,500
- 2016 SCB Conservation Grant, Southern California Botanists – \$1,000
- 2016 Research Scholarship, Northern California Botanists – \$1,000
- 2016 Award for outstanding performance as a teaching assistant, UC Santa Cruz – \$500
- 2015 Natalie Hopkins Award recipient, California Native Plant Society – \$500
- 2014 Honorable Mention for research proposal submitted to NSF Graduate Research Fellowships Program
- 2014 Doc Burr Award recipient, California Native Plant Society – \$850
- 2013 Educational Grant recipient, California Native Plant Society – \$300
- 2013 EcoArts Festival, Ecological Society of America – artwork “Rustle In The Brush” included in “An Evening of Art & Music” session
- 2012 Phi Beta Kappa induction, Mills College
- 2012 Vera Long Prize, Mills College – awarded for an outstanding thesis on environmental biology
- 2012 Bruce McCollum Prize (shared), Mills College – for senior science majors with the highest GPA
- 2 years Dean’s Scholarship, Mills College – \$7,000 (2011) and \$3,500 (2010)
- 2010 Jill Barrett Foundation grant recipient, Mills College – \$2,000
- 2009 Service Learning Commendation, San Jose City College – awarded for honors work in Organic Chemistry developing software-based resources and laboratory instrumentation manual
- 2007 People’s Choice Award: Crazy Ivan, Adobe Systems, Inc. – awarded for innovation in technology

PUBLICATIONS

- Moore-O’Leary KA, **KE Tanner**, C Levine. (2019). Site-specific protocol for monitoring abundance and traits of nine endemic rare plants at Ash Meadows National Wildlife Refuge. *Prepared for U.S. Fish and Wildlife Service, National Wildlife Refuge System, Pacific Southwest Region, Inventory & Monitoring Program. Sacramento, CA.*
- **Tanner, KE** and RR Hernandez. (2018). Optimizing solar facility configuration effects on habitat, managed plants, and essential species interactions - Final Experimental Data Summary: PV-Annual Plant Nexus Project. *Report prepared for the California Energy Commission.*
- Grodsky, SM, **KE Tanner**, J Whitney, and RR Hernandez. (2018). Optimizing solar facility configuration effects on habitat, managed plants, and essential species interactions - Final Environmental Data Summary. *Report prepared for the California Energy Commission.*

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- Moore-O'Leary, KA, RR Hernandez, SR Abella, **KE Tanner**, AC Swanson, J Kreidler, and JE Lovich (2017). Sustainability of utility-scale solar energy – critical energy concepts. *Frontiers in Ecology and the Environment* 7 (15), 385-394.
- Pearse, D, H Holmlund, J Herman, S Grove, J Winnikoff, **K Tanner**, S Sianta, N Macias, A Vershinina. (2017). A Review of: *Invasion Genetics: The Baker and Stebbins Legacy*. Edited by Barrett, Colautti, Dlugosch, and Rieseberg. *Quarterly Review of Biology*, Reviews and Brief Notices, Evolution, volume 92, 334.
- **Tanner, KE**, KA Moore, and BM Pavlik. Chapter 2 in Moore-O'Leary, KA and BM Pavlik, Measuring and Evaluating Rare Plant Demography in the California Deserts: Implications for Solar Energy Development. *Report prepared for the California Energy Commission*.
- **Tanner, KE** and KA Moore-O'Leary. Rare Plant Fact Sheets for the Endemic Plants of Ash Meadows National Wildlife Refuge. *Technical materials prepared for the U.S. Fish & Wildlife Service*.
- **Tanner, KE**, KA Moore-O'Leary, and BM Pavlik. (2014). Measuring impacts of solar development on desert plants. *Fremontia* 42, 15-16.
- **Tanner, KE** (2011). Community susceptibility to invasion is regulated by niche space availability and the invasive potential of arriving exotic species. *Mills Academic Research Journal (MARJ)*.

In review (Ecological Applications)

- **Tanner, KE**, KA Moore-O'Leary, S Haji, IM Parker, BM Pavlik and RR Hernandez. Microhabitats associated with solar energy development alter demography of two desert annuals.

In prep

- **Tanner, KE**, KA Moore-O'Leary, IM Parker, BM Pavlik and RR Hernandez. Photovoltaic panels create altered microhabitats in desert landforms that differ across environmental drivers (target *Global Change Biology*, expected submission June 2019).
- Hernandez, RR, **KE Tanner**, KA Moore-O'Leary, S Haji, IM Parker and BM Pavlik. Unearthing the buried treasure of seed bank retention in desert annuals (target *Journal of Arid Environments*, expected submission summer 2019).
- **Tanner, KE**, S Haji, KA Moore-O'Leary, IM Parker, and RR Hernandez. Soil microbial communities of desert landforms affect annual seed banks (target *Journal of Arid Environments*, expected submission summer 2019).

ORAL PRESENTATIONS

Solar development impacts on annual plants in California's desert (*invited talk*). California Native Plant Society, Santa Clara Chapter Meeting, Los Altos, CA (2019)

Testing science-based strategies to improve salt marsh restoration success.

SERCAL Conference, Santa Barbara CA (2019); 9th Biennial Plant Research Symposium, Santa Cruz, CA (2019); Bay Area Vegetation Manager's Workgroup Meeting, Presidio, CA (2018)

Effects of renewable energy development on demography of *Brassica tournefortii*.

California Invasive Plant Council Symposium, Palm Springs, CA (2017)

Harnessing plant interactions to improve restoration outcomes in a salt marsh.

Dept. Ecology & Evolutionary Biology Symposium, Santa Cruz, CA (2017); 8th Biennial Plant Research Symposium, Santa Cruz, CA (2017)

Effects of renewable energy development on annual plant seed bank dynamics.

26th Graduate Student Meeting, California Botanical Society, Santa Barbara, CA (2017)

Demographic effects of experimental shading and microtopography on desert annual plant performance.

Ecological Society of America Annual Meeting, Baltimore, MD (2015); Dept. Ecology & Evolutionary Biology Symposium, Santa Cruz, CA (2016)

Changes to shade and water regimes imposed by solar development affect desert plant performance and

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community attributes. Ecological Society of America Annual Meeting, Sacramento, CA (2014); 7th Biennial Plant Research Symposium, Santa Cruz, CA (2015)

Designing an experimental study to investigate impacts of utility-scale solar development on desert annuals. California Native Plant Society Conservation Conference, San Diego, CA (2012)

POSTER PRESENTATIONS

Testing novel science-based strategies to improve salt marsh restoration success.

9th National Summit on Coastal and Estuarine Restoration and Management, Long Beach, CA (2018); Ecological Society of America Annual Meeting, New Orleans, LA (2018)

Desert annual plants and communities exhibit variable response to shade and water regime changes associated with solar development. California Native Plant Society Conservation Conference, San Jose, CA (2015)

Ethanol - A student investigation of the economic practicality of corn and newspaper biofuels. 239th American Chemical Society National Meeting & Exposition, San Francisco, CA (2010)

TEACHING EXPERIENCE

Teaching assistant appointments at University of California, Santa Cruz:

Plant Ecology BIOE 145 (2017) – Evolution BIOE 109 (2016) – Systematic Botany BIOE 117 (2016)

Community Ecology BIOE 293 (2015) – Ecology BIOE 20C (2015)

Teaching assistant appointments at Mills College, Oakland, California:

Genetics BIO 135 (2011)

MENTORING

To date I have mentored 3 senior thesis students at UCSC, 2 summer interns in the Research Experience for Undergraduates program, and 2 visiting interns from other institutions (CalPoly and Antioch College). I have also trained 18 consultants and 71 undergraduate students on field data collection and laboratory techniques, including 52 women and 14 individuals from demographic groups under-represented in the sciences.

TRAINING

Graduate Student Professional Communication Certificate Program – UCSC, winter 2019

ANR Drone Camp – University of California Informatics and GIS program, summer 2019

AFFILIATIONS

The Coastal Society – 2018 to present

Sigma Xi, Northern California Botanists, Southern California Botanists – 2016 to present

Ecological Society of America, Society for Conservation Biology – 2015 to present

California Invasive Plant Council (Cal-IPC) – 2013 to present

Phi Beta Kappa – 2012 to present

California Native Plant Society – 2011 to present

OUTREACH & ACTIVITIES

Invited panelist for WISE (Women in Science and Engineering) undergraduate outreach program (spring 2019)

Program coordinator and lead instructor for monthly citizen science outreach workshop, the [UCSC Arboretum](#)

[Phenology Walk](#), affiliated with the [USA National Phenology Network](#) (2017 to present)

Hosted Watsonville high school students for Rotary Club Job Shadowing event (2018 - 2019)

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Contributed articles “Lessons on plant restoration from Whistlestop Lagoon” (2018) and “Can positive plant interactions improve restoration outcomes?” (2017) to the Slough News, a community newsletter published by the Elkhorn Slough Foundation

Formed partnership with San Lorenzo High School faculty (Hayward, CA) to develop student-run citizen science phenology monitoring program (2018)

Citizen science restoration planting event with the Carmel Garden Club at Elkhorn Slough (2017)

California Native Plant Society, Santa Clara Chapter: Rare Plant committee member (2014 – 2016), Rare Plant Treasure Hunt participant (2012 – 2016), LIVECoRPs conservation committee member and interim Invasive Plant Chair (2012 – 2014)

Volunteer gardening and plant propagation, Mills College Botanic Garden (2011)

Volunteer shift supervisor at Wildlife Center of Silicon Valley, with primary roles in volunteer training, animal intake and examination, and animal care (2003 – 2009)

Earthwatch Institute volunteer researcher on (1) bird population study in the cloud forests of Ecuador with P.I. Constance Dustin Becker, Kansas State University, 2004; (2) osprey population study at Flathead Lake, Montana with P.I. Charles R. Blem, Virginia Commonwealth University, 2002