

Danica Schaffer-Smith

The Nature Conservancy
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EDUCATION

Ph.D. Environmental Science and Policy (May 2018). Nicholas School of the Environment, Duke University, Durham, NC. Advisor: Dr. Jennifer Swenson.

M.E.S.M. Environmental Science and Management, Conservation Planning (June 2010). Bren School of Environmental Science & Management, University of California, Santa Barbara.

B.S. Environmental Science, Minor in Biology (May 2006). The University of Redlands, CA

RESEARCH INTERESTS

I am interested in ecology and global environmental change. In my research, I apply satellite remote sensing and geospatial analysis tools to support evidence-based, locally appropriate solutions to conservation and resource management challenges.

SKILLS

Software: R, Python/ArcPy, ENVI, Javascript/Google Earth Engine, FUSION, Circuitscape, Marxan
Language: Proficiency in Spanish, basic French

PUBLICATIONS

Schaffer-Smith, D., Tomscha, S.A., Jarvis, K.J., Maguire, D.Y., Treglia, M.L., & Liu, J. 2018. [Network analysis as a tool for quantifying the spatial, temporal, and cross-scale dynamics of metacoupled systems: an example using global soybean trade](#). *Ecology & Society*, 23 (4): 3. doi: 10.5751/ES-10460-230403

Schaffer-Smith, D., Swenson, J.J., Reiter, M.E., & Isola, J.E. 2018. [Quantifying shorebird habitat in managed wetlands by modeling shallow water depth dynamics](#). *Ecological Applications*, 28(6): 1534-1545. doi: 10.1002/eap.1732

Barbaree, B.A., Reiter, M.E., Hickey, C.M., Elliot, N.K., **Schaffer-Smith, D.**, Reynolds, M.D., Page, G.W. 2018. [Dynamic surface water distributions dictate shorebird movements within a highly modified interior landscape](#). *Landscape Ecology*. doi: 10.1007/s10980-018-0638-8

Schaffer-Smith, D., Swenson, J.J., Barbaree, B.A., & Reiter, M.E. 2017. [Three decades of Landsat-derived spring surface water dynamics in an agricultural wetland mosaic](#); Implications for Migratory Shorebirds. *Remote Sensing of Environment*, 193: 180-192. doi:10.1016/j.rse.2017.02.016

Austin, K.G., González-Roglich, M., **Schaffer-Smith, D.**, Schwantes, A.M., & Swenson, J.J. 2017. [Trends in size of tropical deforestation events signal increasing dominance of industrial-scale drivers](#). *Environmental Research Letters*. doi: 10.1088/1748-9326/aa6a88

Schaffer-Smith, D., Swenson, J.J. 2016. Open Source Remote Sensing and (Some) GIS for Ecologists. *Remote Sensing and GIS for Ecologists Using Open Source Software*. Wegmann, M., Leutner, B., & Dech, S. Eds. *Landscape Ecology*. doi:10.1007/s10980-016-0468-5

Schaffer-Smith, D., Swenson, J.J., & Bóveda-Penalba, A.J. 2016. [Rapid conservation assessment for endangered species using habitat connectivity models](#). *Environmental Conservation*, 43(3): 221-230. doi:10.1017/S0376892915000405

In Preparation

Schaffer-Smith, D., Swenson, J.J., Reiter, M.E., Isola, J.E. Shorebird response to flood dynamics during spring migration at a globally important stopover site 1997 – 2015. *Ecography*.

Schaffer-Smith, D., Sesser, K.A., Reiter, M.E., Isola, J.E. Waterbird habitat fluctuations within managed wetlands under dry and wet climate extremes in California's Central Valley 2015 – 2018. *Biological Conservation*.

Walker, N.J., Schaffer-Smith, D., Swenson, J.J., & Urban, D.L. Multigraphs for connectivity assessment. *Landscape Ecology*.

PROFESSIONAL EXPERIENCE

Senior Staff Scientist/Biologist, Cardno ENTRIX, Concord, CA (2010-2012).

- Conducted research, fieldwork, and technical writing for NEPA/CEQA compliance projects including Habitat Conservation Plans.
- Field Lead and Technical Writer/Editor during Deepwater Horizon Natural Resources Damage Assessment, supporting the Birds and Wildlife, Marine Mammals, Shoreline, Shallow Water Sediment, Water Column, Human Use and Restoration Planning Groups.

Restoration and Invasives Monitoring Intern, Irvine Ranch Conservancy, Irvine, CA (2009).

- Designed and Implemented a study of post-fire Coastal Sage Scrub seedling recruitment.
- Evaluated the effectiveness of exotic plant species control programs through post-treatment inventories in 3 watersheds on the Irvine Ranch.
- Trained and supervised 6 assistants in field data collection and data management.

Assistant Biologist-Environmental Analyst, ECORP Consulting, Inc., Redlands, CA (2006-2008).

- Planned and conducted biological assessments, surveys for plant and wildlife species of concern, wetland delineations, exotics removal and restoration site monitoring throughout southern California.
- Ensured compliance with Incidental Take Permits, Streambed Alteration Agreements, and Mitigation and Monitoring Plans at construction sites.
- Wrote survey reports and prepared CEQA documents for public and private sector clients under >60 contracts.

AWARDED GRANTS & FELLOWSHIPS

NatureNet Science Fellowship (2018, 2-yr stipend and \$40,000 research budget)

P.E.O. Scholar Award (2017, \$15,000)

Graduate School Summer Research Fellowship (2017, \$5,500)

Graduate Training Enhancement Grant, NCAR Data Analytics workshop (2016, \$975)
Nicholas School Internship Fund (2016, \$2,000 to Walker)
NSF Geography and Spatial Sciences Doctoral Dissertation Research Improvement (2015, \$15,996)
Graduate School Domestic Travel Award (2015, \$1,300)
Nicholas School Internship Fund (2014, \$1,500 to Ernest)
Center for Latin American Studies Research Award (2014, \$3,000 to Ernest)
Center for Latin American Studies Research Travel Grant (2014, \$750 to Ernest)
NASA-MSU Professional Enhancement Award (2014, \$750)
NASA Earth and Space Science Fellowship (2013, \$90,000)
Center for Latin American Studies Mellon Research Travel Grant (2013, \$1,500)
Planet Action Satellite Imagery Grant (2012)
GeoEye Foundation Satellite Imagery Grant (2012)
Bren School Corporate Partners Fellowship (2009, \$6,000)
Monica Florian Prize for Land Development, Building, and Land Use Policy Issues (2008, \$5,000)
Santa Barbara Scholarship Foundation Awards (2002-2005, 2008 – 2009)

SELECTED RECENT PRESENTATIONS

Schaffer-Smith, D., J.J. Swenson, M.E. Reiter, & J.E. Isola. 2017. Using Water Depth Sensors and High-resolution Topographic Mapping to Inform Wetland Management at a Globally Important Stopover Site for Migratory Shorebirds. Poster #PA23A-0368, AGU Meeting. New Orleans, Louisiana.

Schaffer-Smith, D., J.J. Swenson, and M.E. Reiter. 2016. Shorebird response to Landsat-derived flood dynamics during migration. Oral Presentation, The Wildlife Society Meeting. Raleigh, NC.

Schaffer-Smith, D., Maguire, D., Tomscha, S., Treglia, M. & Liu, J. 2016. Applying the telecoupling framework through the lens of Landscape Ecology. 2016. Oral Presentation, US-IALE Annual Symposium. Asheville, North Carolina.

Schaffer-Smith, D., J.J. Swenson, and M.E. Reiter. 2015. Flood Dynamics in the Sacramento Valley over the Last 30 Years: When and Where Were the Rest Stops for Shorebirds during Migration? Poster # H51N-1589, AGU Meeting. San Francisco, California.

Schaffer-Smith, D., J.J. Swenson, and A.J. Bóveda-Penalba. 2015. Rapid conservation assessment for endangered species using habitat connectivity models. Poster, BIOCON Peru International Meeting: Biodiversity and Conservation of the Tropical Andes and the Amazon Rainforest. Lima, Peru.

ADDITIONAL RESEARCH CONTRIBUTIONS

Anderson, A., Koh, K., Schaffer-Smith, D., Shapiro, E., & Su, W. 2010. Using Surface Winds to Improve the Accuracy of Fire Spread Modeling for Hazard Assessment: A Case Study in Santa

Monica Mountains National Recreation Area, California. Group Master's Thesis, Bren School of Environmental Science and Management.

Schaffer-Smith, D., Shapiro, E., and Uecker, J. 2010. Wetland and Riparian Protection Priorities in Napa and Sonoma Counties. Prepared for the Bay Area Open Space Council's Upland Habitat Goals Program as part of a Conservation Planning course at the Bren School of Environmental Science & Management.

Schaffer-Smith, D. 2009. Riparian Invasive Species Survey and Stewardship Effectiveness Analysis Report. Prepared and presented for the Irvine Ranch Conservancy.

Schaffer-Smith, D. 2009. Recruitment Patterns in Coastal Sage Scrub in the Northern Irvine Ranch Wildlands. Prepared and presented for the Irvine Ranch Conservancy.

Avalos, G. et al. 2005. Impacts of the Guápiles-Siquirres-Limón Highway on Avifauna in Braulio Carrillo National Park. Report and Presentation for the Ministry of Agriculture and the Environment, Costa Rica.

PRESS COVERAGE

November 2017 [EnvironmentalResearchWeb](#)

November 2017 [Mongabay](#)

May 2017 [ScienceDaily](#)

April 14, 2017 Cambridge Core [Blog](#), **Cambridge University Press**

April 5, 2017 [News](#), **California Migratory Bird Conservation Partnership**

April 4, 2017 [Interview](#), **Capital Public Radio**, Sacramento, CA

April 3, 2017 [Rice News](#), **California Rice Commission**

March 28, 2017 [California Water News](#), Maven's Notebook

March 27, 2017 [ScienceDaily](#)

April 14, 2016 [Interview](#), **North Carolina Public Radio WUNC**, Durham, NC

April 12, 2016 [ScienceDaily](#)

TEACHING EXPERIENCE

Certificate in College Teaching Program, Duke University (2014 - 2018).

Co-Instructor, Nicholas School of the Environment, Lidar Remote Sensing (2018)

Supporting Instructor, Nicholas School of the Environment, Satellite Remote Sensing (2016)

Teaching Assistant, Nicholas School of the Environment (2012-2013, 2016-2018).

Geospatial Analysis for Landscape Management, Landscape Ecology, Introduction to Environmental Science and Policy

Writing Consultant, Bren School Communications Center, UC Santa Barbara (2009 – 2010).

Tutor, The University of Redlands, Biology, Chemistry, French, Spanish (2003 – 2006).

MENTORING

Nathan Walker (MEM 2017), Remote Sensing Course Project, Master's Project

Peter Satin (MEM 2017), Research Assistantship

Katie Warnell (MEM 2016), Remote Sensing Course Project

Bethany Williams (MEM 2016), Remote Sensing Course Project

Maggie Ernest (MEM 2015), Remote Sensing Course Project, Research Assistantship, Master's Project

Alexandria Hunt (MEM 2015), Remote Sensing Course Project

Mengjun Yu (MEM 2015), Remote Sensing Course Project

Katie Locklier (MEM 2014), Remote Sensing Course Project

SELECTED SERVICE & OUTREACH ACTIVITIES

Reviewer, *PLOS One* (2018), *Southeastern Geographer* (2017), *Landscape Ecology* (2016), *Environmental Conservation* (2016), Cambridge University Press (2014).

Bird Bander, **North Carolina Museum of Natural Sciences**, Raleigh, NC (2012-Present).

Invited speaker (2016). **Wake Chapter of the Audubon Society**. Raleigh, North Carolina.

Member, **Duke University Judicial Board** (2016-2017).

Invited speaker. (2015). Duke Student Associations for Geospatial Analysis and Wetland Science.

Invited speaker. (2015). **Point Blue Conservation Science**. Petaluma, California.

Volunteer, Females Excelling More in Math Engineering and Science STEM programs for girls (2014).

Invited speaker (2013). **San Martín Regional Government**. Moyobamba, Peru.

Volunteer, California Tiger Salamander Study, Jepson Prairie Reserve, **UC Davis** (2011-2012).

Volunteer, Restoration site maintenance and monitoring, **Cheadle Center for Biodiversity and Ecological Restoration**, Santa Barbara, California (2008-2009).