

Eli A. Carlisle

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Department of Land, Air, & Water Resources
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EDUCATION

Ph.D., Ecology, University of California, Davis. 3/2009.

Dissertation: The effects of land-use change on soil carbon transformations in oak woodlands and vineyards in Napa Valley. Advisor: Dr. David R. Smart.

B.A., Dept. of Ecology and Evolutionary Biology, Princeton University, June 1997

Senior Thesis: The Population Dynamics of the Seedling and Small Sapling Layer of a Neotropical Forest. Advisor: Dr. Stephen Hubbell.

Graduated with Departmental Honors.

RESEARCH EXPERIENCE

Project Scientist, Dept. of LAWR, 6/2014 – present

Advisor: Dr. Louise Jackson

Continuing work examining physiological, morphological, and phenological traits that might convey drought tolerance or increased water use efficiency in production hybrid processing tomatoes as well as processing tomatoes introgressed with genetic material from wild tomato species. Initiating a study on managing Fresh Market tomatoes under limited water across several different management systems and environments in CA.

Post-Doctoral Research, Dept. of LAWR, 1/2013 – 5/2014

Advisor: Dr. Louise Jackson

Designed and executed a field experiment examining physiological, morphological, and phenological traits that might convey drought tolerance or increased water use efficiency in production hybrid processing tomatoes as well as processing tomatoes introgressed with genetic material from wild tomato species.

Post-Doctoral Research, Dept. of Plant Sciences, 4/2009 – 12/2012

Advisor: Dr. Arnold Bloom

Conducted research in plant nitrogen uptake, assimilation, and isotope discrimination through the use of stable nitrogen isotopes. Worked on crystallizing Rubisco in the presence of manganese and NAD⁺. Worked on the design of a custom instrument to monitor oxygen evolution and CO₂ consumption under greenhouse and field conditions.

Conducted research on the effect of inorganic N form on wheat yield and mineral nutrient concentration and distribution.

Doctoral Research, U.C. Davis, 9/2002 – 3/2009

Advisor: Dr. David Smart

Conceived and executed parallel field and laboratory experiments to examine the effects of land use changes on soil carbon and nitrogen transformations in vineyard and adjacent oak woodlands. Created annual soil CO₂ efflux budgets of vineyard and oak woodlands. Used stable isotopes to differentiate root/rhizosphere respiration from microbial respiration and to examine the effects of cultivation on soil physical properties. Modeled CO₂ transport through the soil.

Consultant, California Sustainable Winegrowing Alliance, 12/2007 – 1/2010

Wrote white paper on Californian vineyard greenhouse gas footprints. Disseminated information through grower outreach via presentations, farm days, and trade journal articles.

Research Technician, Dept. of Viticulture and Enology, U.C. Davis, 5/2001-8/2002

Collected and analyzed samples for a number of ongoing projects including *in situ* root grapevine growth and senescence research using minirhizotron camera systems, stable isotopic tracer studies of groundwater NO₃ and N₂O, and stable isotope tracer research on hydraulic lift and transport in grapevines. Assisted with vineyard construction and maintenance.

Research Technician, Dept. of Vegetable Crops, U.C. Davis, 9/2000-5/2001

Assisted with a study investigating links between land use history of grasslands and agricultural systems, microbial community composition and nitrogen and carbon cycling. Conducted point-frame transects to describe plant community composition, including species frequency counts and percent cover. Identified plant species from native perennial grasslands and non-native annual grasslands. Assisted with projects monitoring the conversion of conventional specialty crops and broccoli production to large-scale organic production.

Bachelors Research, Dept. of Ecology and Evolutionary Biology, Princeton University 9/1993-6/1997

Identified tree species and completed a census of the regeneration layer of a 50 ha plot of a neotropical rainforest. Analyzed multiyear data to examine community level population dynamics of the regeneration layer.

TEACHING EXPERIENCE

American River College, Sacramento

Instructor, General Biology

Fall 2009-Present

Instructor, Survey of Biology

Spring 2012-Present

Instructor, Fundamentals of Biology Fall/Spring 2007- 2010
Instructor, Native Trees and Shrubs of California Fall 2005, Fall 2010

University of California, Davis

Teaching Assistant, Agroecology Winter 2007, 2008
Associate-In, Environmental Career Discovery Group Spring 2007
Mentor, Environmental Career Discovery Group 2006-2007
Teaching Assistant, Soil Physics Fall 2005
Teaching Assistant, Precision Viticulture Winter 2005, 2006

PROFESSIONAL ASSOCIATIONS

Ecological Society of America

INTERNSHIPS

Plant Propagation Internship, U.C. Davis Arboretum, U.C. Davis 10/2004-4/2005

Learned greenhouse propagation and potting techniques. Assisted with plant production for spring and fall sales.

AWARDS

CDFA Specialty Crop Block Grant, 10/2014-6/2017

U.C. Davis Graduate Group in Ecology Block Grant, 10/2003 – 1/2004

Kearney Foundation of Soil Science Fellowship, 10/2003-10/2005

Career Discovery Group Fellowship, 10/2006-6/2007

Mary John Goree Scholarship, 9/1993-6/1997

ACADEMIC SERVICE

American River College Academic Senate

Served as the biology department adjunct faculty representative 2007-2009

OTHER PROFESSIONAL EXPERIENCE

Senior Calibration Engineer, JYHoriba/Spex Industries, Edison NJ, 11/1997-6/2000

Calibrated and linearized both steady state and dynamic measurement spectrofluorometers and CCD 3-D fluorometers while providing communication between Research and Development and Production. Created service and calibration manuals for several different types of spectrofluorometers, provided technical hardware and software support and installation for domestic and international customers. Taught users how to operate the system and troubleshoot system problems.

PRESENTATIONS

1. Carlisle, E., and Smart, D.R. (2007) Land-use change and soil carbon dynamics in vineyards and oak woodlands PS63-108 Ecological Society of America Meetings, San Jose, CA
2. Carlisle, E., Steenwerth, K.L., and Smart, D.R. (2005) Conversion of Oak Woodlands to vineyards alters physical constraints on soil CO₂ respiration in a Mediterranean Climate ecosystem. Third USDA Symposium on Greenhouse gases and Carbon Sequestration in Agriculture and Forestry, Baltimore, Maryland
3. Carlisle, E.A., Steenwerth, K.L., and Smart, D.R. (2003) The influence of land conversion on carbon mineralization and CO₂ emissions from vineyards and adjacent oak woodlands in the Napa Valley. Soil Carbon Sequestration Workshop: The interface between science and policy. U.C. Davis, Davis, CA
4. Carlisle, E.A. (2008) Viticultural practices and greenhouse gas emissions. Napa Valley Viticultural Fair, Napa, CA
5. Carlisle, E. (2009) Changes in soil carbon distribution and composition down the soil profile in oak woodland and vineyard soils. 16th International Symposium GiESCO. U.C. Davis, Davis, CA
6. Carlisle, E. (2009) The use of stable carbon isotopes to examine the effects of land-use change in Napa Valley vineyard and oak woodlands. Viticulture and Enology Departmental Seminar Series. U.C. Davis, Davis, CA

PUBLICATIONS

1. Easlon, H.M., **Carlisle, E.**, McKay, J.K., and Bloom, A.J. (2015) Does low stomatal conductance enhance growth at elevated CO₂ in *Arabidopsis thaliana*? Plant Physiology DOI:10.1104/pp.114.245241
2. Myers, S.S., Zanobetti, A., Kloog, I., Bloom, A.J., **Carlisle, E.**, Dietterich, L.H., Fitzgerald, G., Hasegawa, T., Holbrook, N.M., Huybers, P., Leakey, A.D.B., Nelson, R.L., Ottman, M.J., Raboy, V., Sakai, H., Sartor, K.A., Schwartz, J., Seneweera, S., Tausz, M., and Usui, Y. (2014) Rising atmospheric CO₂ lowers zinc, iron, and protein concentrations in food. *Nature* 510(7503): 139-142 http://ucanr.edu/sites/Jackson_Lab/files/205564.pdf
3. **Carlisle, E.**, Yarnes, C., Toney, M.D., and Bloom, A.J. (2014) Nitrate reductase 15N discrimination in *Arabidopsis thaliana*, *Zea mays*, *Aspergillus niger*, *Picea angusta*, and *Escherichia coli*. *Frontiers in Plant Science* 5:317. DOI: 10.3389/fpls.2014.00317 http://ucanr.edu/sites/Jackson_Lab/files/205562.pdf
4. **Carlisle, E.**, Myers, S., Raboy, V., and Bloom, A.J. (2012) The effects of inorganic nitrogen form and CO₂ concentration on wheat yield and nutrient accumulation and distribution. *Front in Plant Science*. **3**:195. doi: 10.3389/fpls.2012. http://ucanr.edu/sites/Jackson_Lab/files/205561.pdf
5. Bloom, A.J., Asensio, J.S., Randall, L., Racmlevitch, S., Cousins, A.B., and **Carlisle, E.A.** (2012) CO₂ enrichment inhibits shoot nitrate assimilation in C₃ but not C₄ plants and slows growth under nitrate in C₃ plants. *Ecology* 93: 355-367. http://ucanr.edu/sites/Jackson_Lab/files/205560.pdf
6. Steenwerth, K.L., Pierce, D.L., **Carlisle, E.A.**, Spencer, R.G.M., and Smart, D.R. (2010) A vineyard agroecosystem: disturbance and precipitation affect soil respiration under Mediterranean conditions. *Soil Science Society of America Journal* 74: 231-239. http://ucanr.edu/sites/Jackson_Lab/files/205568.pdf

7. Rodríguez-Pérez, R.J., D. Riaño, **E. Carlisle**, S. Ustin, D.R. Smart (2007) Evaluation of Hyperspectral Reflectance Indexes to Detect Grapevine Water Status in Vineyards. *American Journal of Enology and Viticulture* 58: 302-317
http://ucanr.edu/sites/Jackson_Lab/files/205565.pdf
8. **Carlisle, E.**, K.L. Steenwerth, and D.R. Smart (2006) Effects of land-use: soil respiration from oak woodlands and adjacent vineyards. *Journal of Environmental Quality* 35: 1396-1404. http://ucanr.edu/sites/Jackson_Lab/files/205563.pdf
9. Steenwerth, K.L., L.E. Jackson, **E.A. Carlisle**, K.M. Scow (2006) Microbial communities of a native perennial bunchgrass do not respond consistently across a gradient of land use intensification *Soil Biology & Biochemistry* 38(7): 1797-1811.
http://ucanr.edu/sites/Jackson_Lab/files/205569.pdf
10. Smart, D.R. **E. Carlisle**, M. Goebel, and B.A. Nunez (2005) Transverse hydraulic redistribution by a grapevine. *Plant Cell & Environment* 28(2): 157-166.
http://ucanr.edu/sites/Jackson_Lab/files/205566.pdf
11. Smart, D.R., C. Stockert, T. Bauerle, **E. Carlisle**, and M. Goebel (2005) Artifacts of grapevine root proliferation following installation of minirhizotron observation tubes. *Acta Hort.* (ISHS) 689:153-158
http://ucanr.edu/sites/Jackson_Lab/files/205567.pdf