

Courtney E Campany

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EDUCATION

Doctor of Philosophy

Western Sydney University, Richmond, NSW, Australia
Thesis: 'Resource allocation in Eucalyptus '

2016

Master of Sciences—Ecology

Appalachian State University, Boone, NC, USA
Thesis: 'Total soil respiration and soil heterogeneity following fire in the Linville Gorge Wilderness Area'

2006

Bachelor of Sciences—Biological Sciences

North Carolina State University, Raleigh, NC, USA

2002

CURRENT EMPLOYMENT

Western Sydney University—Hawkesbury Institute for the Environment Research Fellow

Lead field researcher on a joint industry partnership with Horticulture Innovation Australia to evaluate root to shoot balance in trees produced for landscape use. Assessing morphological variables of nursery trees across Australia to fill knowledge gaps related to how species, container size, fertilization, irrigation and climate impact tree growth and balance. Data will be used to assess current quality standards for landscape trees aimed at significantly increasing urban greenspaces in Australia by 2020.

01/2016-
present

PROFESSIONAL HISTORY

Western Sydney University—Hawkesbury Institute for the Environment PhD Student

Postgraduate research which focuses on investigating resource and carbon allocation in Eucalypts. Focused on integrating the effects of climate change, source-sink regulation and within canopy variation on ecophysiological processes. Tested the ability to scale leaf-level carbon gain to whole plant production, while also developing our understanding of how carbon is allocated among plant tissues. Generated empirical data on multiple scales that can be used to test theoretical assumptions of leaf physiological behaviour and validate process based models of tree and forest growth.

09/2012-
08/2016

University of Idaho—College of Natural Resources Research Scientist

Used data from the extensive sampling of plant biomass and soil at the conclusion of the Aspen Free-Air CO₂ Enrichment (Aspen FACE) experiment to analyze the impacts of elevated CO₂ and ozone on ecosystem scale nutrient cycling. Used carbon and nitrogen pools of plant components and soil to understand how Aspen forest communities respond to global climate change. Developed allometric approaches to quantify the cumulative input of carbon through net primary productivity across the duration of the Aspen FACE experiment.

09/2010-
08/2012

University of Nevada, Reno—College of Agriculture and Natural Resources Rangeland Ecologist

Planned and coordinated the ecosystem scale belowground harvest of the Aspen FACE experiment in order to measure the effects of elevated CO₂ and ozone on root production and soil carbon storage. Managed a multi-institution field crew in excavation of large volume soil pits using a variety of ecological methods to sample coarse and fine root production, soil bulk density, ground cover composition and leaf litter production. Post-harvest responsibilities included sample processing and analysis of carbon, nitrogen and stable isotopes for all samples.

03/2009-
08/2010

PROFESSIONAL
HISTORY

**Oak Ridge National Laboratory—Environmental Sciences Division
Post-Master Research Associate**

Research scientist for ORNL FACE experiment investigating the effects of CO₂ on established Sweetgum forest stands. Responsible for data collection, sample processing, and site maintenance. Duties included systematic measurements and analyses of litter production/chemistry, rhizosphere responses through minirhizotron imaging and soil ion exchange with resin capsules. Participated in collaborative experiments measuring soil nitrogen mineralization, soil enzyme activity, and leaf canopy photosynthesis.

06/2008-
02/2009

**University of Tennessee—Department of Ecology and Evolutionary Biology
Research Coordinator**

Laboratory manager and research scientist for the Old-Field Community Climate and Atmospheric Manipulation (OCCAM) project. Maintained a large scale open-top chamber experiment manipulating CO₂, precipitation and temperature on old-field communities through project completion. Responsible for collection and analysis of all long-term ecological datasets and management of scientific personnel in the lab and field site. Responsible for design and implementation of the woody seedling encroachment addition to the OCCAM experiment during the final two growing seasons.

11/2006-
06/2008

TEACHING

**Appalachian State University—Department of Biology
Biology Lab Instructor (General and Advanced)**

Taught weekly biology labs related to water quality, evolution, life form classification and basic processes in both plant and animals. Focused lesson plans on cellular osmosis, plant identification with dichotomous keys, microscopic exploration of plant tissues and water quality in urban environments. Reviewed class performance with supervisors and used students' comments to improve future lesson plans and teaching techniques.

08/2003-
05/2006

**Western Sydney University—Hawkesbury Institute for the Environment
Carbon Accounting Practical Instructor**

Combined field and laboratory practical introducing students to the scientific measurements necessary to construct ecosystem scale carbon budgets. Includes sampling and processing of plant and soil components and techniques of measuring tree allometry at forestry plantation and flux tower experimental sites.

2015-2017

PUBLICATIONS

Campany C, Medlyn B and Duursma R. 2017. Reduced growth due to sink limitation is not fully explained by reduced photosynthesis. (*accepted Tree Physiology*)

Campany C, von Caemmerer S, Medlyn B, Tjoelker M and Duursma R. 2016. Coupled response of stomatal and mesophyll conductance to light enhances photosynthesis of shade leaves under sunflecks. *Plant, Cell & Environment* 39(12): 2762-2773.

Aspinwall M, Drake H, **Campany C**, Varhammar A, Ghannoum O, Tissue D, Reich P and Tjoelker M. 2016. Convergent acclimation of leaf photosynthesis and respiration to prevailing ambient temperatures under current and warmer climates in *Eucalyptus tereticornis*. *New Phytologist* 212(2): 354-367.

Talhelm A, Pregitzer K, Kubiske M, Zak D, **Campany C**, Burton A, Dickson R, Hendrey G, Isebrands J, Lewin K, Nagy J and Karnosky D. 2014. Elevated carbon dioxide and ozone alter productivity and ecosystem carbon content in northern temperate forests. *Global Change Biology* 20: 2492-2504.

Classen A, Norby R, **Campany C**, Sides K and Weltzin J. 2010. Climate change alters seedling emergence and establishment in an old-field ecosystem. *PLoS ONE* 5(10): e13476. doi:10.1371.

Kardol P, **Campany C**, Souza L, Norby R, Weltzin J and Classen A. 2010. Climate change effects on plant biomass alter dominance patterns and community evenness in an experimental old-field ecosystem. *Global Change Biology* 16: 2676-2687.

PUBLICATIONS	Kardol P, Cregger M, Campany C and Classen A. 2010. Changes in plant community composition affect multifactor climate change effects on soil ecosystem functioning. <i>Ecology</i> 91(3): 767-781.	
	Campany C , Tjoelker M and Duursma R. Elevated atmospheric CO ₂ and drought alter carbon allocation above but not belowground in <i>Eucalyptus saligna</i> . (<i>in preparation</i>)	
PRESENTATIONS	Campany C . Using whole tree chambers to investigate processes that drive tree carbon uptake and allocation from the leaf to the whole tree. <i>Invited Seminar</i> , Hawkesbury Institute for the Environment. Richmond, NSW, Australia.	11/2016
	Campany C , Medlyn B, Tjoelker M, von Caemmerer S and Duursma R. Are whole canopies optimized for carbon gain? How wasteful water use in shade leaves of <i>Eucalyptus</i> trees constrain theoretical relationships of photosynthesis and resource distribution. Ecological Society of America, Baltimore, MD, USA	08/2015
	Campany C , Medlyn B and Duursma R. Effects of belowground space limitation on performance of <i>Eucalyptus</i> seedlings: Nutrient limitation or sink inhibition? Ecological Society of Australia, Alice Springs, NT, Australia	08/2014
	Pregitzer K, Campany C , and Talhem A. Fine root respiration: Importance for ecosystem carbon fluxes. 24 th New Phytologist Symposium. St Hugh's College, University of Oxford, UK	04/2010
	Campany C , Norby R, and Classen A. Influence of climate change factors on emergence, growth and survivorship of woody seedling establishment in a constructed old-field community. Ecological Society of America, Milwaukee, WI, USA	08/2008
	Campany C , Norby R, Classen A, and Weltzin J. Interactive effects of atmospheric and climate change on aboveground production in a constructed old-field system. Ecological Society of America, San Jose, CA, USA	08/2007
GRANTS & FELLOWSHIPS	Scholarship to attend Stable Isotopes in Biosphere System workshop Center for Water, Carbon and Food, University of Sydney	2013
	Hawkesbury Institute for the Environment Postgraduate Research Award	2012-2015
	Sigma Xi Outstanding Graduate Research Award	2007
REVIEWER	Journal of Plant Ecology	