### **Courtney E Campany**

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#### **EDUCATION**

#### **Doctor of Philosophy**

2016

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

Master of Sciences—Ecology

2006

Appalachian State University, Boone, NC, USA

Thesis: 'Total soil respiration and soil heterogeneity following fire in the Linville Gorge

Wilderness Area'

**Bachelor of Sciences—Biological Sciences** 

North Carolina State University, Raleigh, NC, USA

2002

#### **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 Australian 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.

# 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.

# 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  $CO_2$  Enrichment (Aspen FACE) experiment to analyze the impacts of elevated  $CO_2$  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.

# 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  ${\rm CO_2}$  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.

09/2012present

09/2010-08/2012

03/2009-08/2010

# PROFESSIONAL HISTORY

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

06/2008-02/2009

Research scientist for ORNL FACE experiment investigating the effects of  $CO_2$  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.

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

11/2006-06/2008

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 CO<sub>2</sub>, 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.

# Appalachian State University—Department of Biology Master's Thesis Research

08/2003-05/2006

Examination of the influence of a low-intensity ground fire on total soil respiration in the Linville Gorge Wilderness Area, Burke Co., NC. Analyzed how the heterogeneity of total soil respiration and the relative contribution of roots or microorganisms to the observed patterns of soil respiration would impact the recovery of ecosystem carbon fluxes and forest functioning following fire. Measured soil and microbial respiration, root distributions, litter production, tissue chemistry and soil organic matter.

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

01/2004-12/2005

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.

#### **PUBLICATIONS**

Aspinwall M, Drake H, Campany C, Varhammar A, Ghannoum O, Tissue D, Reich P and Tjoelker M. Convergent acclimation of leaf photosynthesis and respiration to prevailing ambient temperatures under current and warmer climates in *Eucalyptus tereticornis*. New Phytologist, doi:10.1111/nph.14035

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.

Kardol P, Cregger M, **Campany C** and Classen A. 2010. Changes in plant community composition affect multifactor climate change effects on soil ecosystem functioning. Ecology 91(3): 767-781.

PUBLICATIONS	<b>Campany C</b> , von Caemmerer S, Medlyn B, Tjoelker M and Duursma R. Rapid response of mesophyll conductance to light availability allows shade leaves to take advantage of sunflecks. ( <i>in review</i> )	
	<b>Campany C,</b> Medlyn B and Duursma R. Below-ground sink limitation alters growth and carbon balance of Eucalyptus seedlings. ( <i>in review</i> )	
	<b>Campany C</b> , Mark Tjoelker, and Duursma R. Elevated atmospheric CO₂ and drought alter carbon allocation above but not belowground in Eucalyptus saligna. <i>(in preparation)</i>	
PRESENTATIONS	<b>Campany C</b> , 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
	<b>Campany C</b> , 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, <b>Campany C</b> , and Talhem A. Fine root respiration: Importance for ecosystem carbon fluxes.  24 <sup>th</sup> 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
	<b>Campany C,</b> 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