

**M. Ross Alexander**  
**Curriculum Vitae**  
(Updated July 2015)

**Personal Data**

Home Address: 1918 E Greenlee Rd. Rear  
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School Address: The Laboratory of Tree-Ring Research  
The University of Arizona  
1215 E. Lowell St.  
Tucson, AZ 85721-0045

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**Education**

2012- Present

PhD student at the University of Arizona  
Laboratory of Tree Ring Research  
School of Natural Resources and the Environment  
Faculty Advisor: Valerie Trouet  
Cumulative GPA: 4.0

2012 Indiana State University, Terre Haute, IN.

Masters of Science, Earth and Quaternary Sciences.

Faculty Advisor: Dr. James H. Speer

Thesis: Dynamics of Coarse Woody Debris on the Forest Floor in the Eastern Deciduous Forest in Indiana.

2010 Hanover College, Hanover Indiana, Cum Laude.

Bachelor of Arts, Biology

Bachelor of Arts, Chemistry

Faculty Advisor: Dr. Darrin L. Rubino

Biology Thesis: Residence Time of Coarse Woody Debris on the Forest Floor in Southeastern Indiana Forests.

Chemistry Thesis: Analysis of Elemental Concentrations of CWD via ICP-OES Spectroscopy.

## Professional Experience

Co-Lecturer, *Plant Taxonomy*, Spring-Term 2015, Hanover College, Hanover, IN.  
Faculty Supervisor: Dr. Darrin L. Rubino

Graduate Student Research Assistant: Dr. Valerie Trouet, Laboratory of Tree-Ring Research, The University of Arizona, Tucson, Arizona. 2012-Present

- Collected, Prepared, and dated tree-ring samples from coniferous and deciduous forests across the United States.
- Prepared samples for  $\delta^{13}\text{C}$  isotopic analysis

Graduate Student Oversight to the Science Education for New Civic Engagements and Responsibilities (SENCER) Student Leadership Team: Dr. Jim Speer, Indiana State University, Terre Haute, Indiana. 2011-2012

- Organized and focused the undergraduate members of the SENCER Student Leadership Team toward the goal of spreading the SENCER teaching model around campus.
  - The SENCER model aims to engage students more fully in the STEM curriculum by introducing scientific concepts through hands-on learning and important civic issues.
- Traveled to and presented at the Summer Institute in Asheville North Carolina (Summer 2010), the Washington D.C. Symposium (April 2011), and the Summer Institute in Indianapolis Indiana (Summer 2011).
- Organized the 2010 Midwest Regional SENCER Workshop at the Indiana State Campus.

Field/Lab Assistant: Hanover College Summer Institute. Summer 2008-2010.

- A week long ecology experience for high school students
  - Stream Ecology and Dendrochronology sections
- Assisted with basic field techniques in each subset of the program.
- Exposed students to the various fields of ecology through hands-on approaches.

Field/ laboratory technician: Dr. Darrin L. Rubino, Hanover College, Hanover, Indiana. 2008-2010

- Collected, prepared, and measured dendroarchaeology samples
- Collected, prepared, measured, and dated coarse woody debris samples.
- Rudimentary anatomical wood identification.

Field researcher: Central Muscatatuck Watershed Project, Madison, Indiana. Summer of 2008: Robert Miller, NRCS

- Performed basic water quality assessment
- Conducted benthic macroinvertebrate surveys
- Coordinated with local project volunteers

## Refereed Publications

*In Preparation*

**Alexander, M.R.**, C.R. Rollinson, D.J.P. Moore, J.H. Speer, D.L. Rubino. Residence Times of Multiple Hardwood Species in the Central Hardwood Region. In preparation for *Natural Areas*.

**Alexander, M.R.**, C.R. Rollinson, F. Babst, M. Litvak, D.J.P. Moore, V. Trouet. Quantifying the Uncertainties in Tree-Ring-Derived Estimates of Aboveground Biomass. In preparation for *Environmental Research Letters*.

*Accepted*

2014

1. Babst, F., **M.R. Alexander**, P. Szejner, O. Bouriaud, S. Klesse, J. Roden, P. Ciais, B. Poulter, D. Frank, D.J.P. Moore, V. Trouet. 2014. A tree-ring perspective on the terrestrial carbon cycle. *Oecologia* **176**(2), pp. 307-322.
2. Babst, F., O. Bouriaud, **M.R. Alexander**, V. Trouet, D. Frank. 2014. Towards consistent measurements of carbon accumulation: A multi-site assessment of biomass and basal area increment across Europe. *Dendrochronologia* **32**(2), pp.153-161.

2012

3. Rosene, P.J., **M.R. Alexander**, J.H. Speer. 2012. Assessment of the SENCER Teaching Model at Indiana State University After Two Years. *Science Education and Civic Engagement: An International Journal*. Winter 2012.
4. Speer, J.H., **Alexander, M.R.**, Pettit, J.L., Whitaker, J., Flowers, S.C., Rosene, P.J., Lehman, A., and Kelley, A. 2012. The SENCER Teaching Model Applied to Sustainability to make STEM Education Engaging. *Greening of the Campus Conference Proceedings*. 11p.

## Non-refereed Publications and Reports

2012

**Alexander, M.R.**, D.L. Rubino, J.H. Speer. 2012. Dynamics of Coarse Woody Debris on the Forest Floor in the Eastern Deciduous Forest in Indiana. Master's Thesis. Indiana State University.

2010

**Alexander, M.R.**, D.L. Rubino. 2010. Residence Time of Coarse Woody Debris on the Forest Floor in Southeastern Indiana Forests. Undergraduate Thesis. Hanover College Library.

**Alexander, M.R.**, D.L. Rubino, C. Philipp 2010. Analysis of Elemental Concentrations of CWD via ICP-OES Spectroscopy. Undergraduate Thesis. Hanover College Library.

2008

**Alexander, M.R.** 2008. Assessment of headwater habitats within the Central Muscatatuck watershed, South Eastern Indiana. Jefferson County Soil and Water Conservation District.

### **Published Abstracts** (\* indicates presenter)

2015

**Alexander, M.R.\***, Christine R. Rollinson, Flurin Babst, Marcy Litvak, David J.P. Moore, Valerie Trouet. 2015. Quantifying Uncertainties in Tree-Ring Estimates of Biomass at the Valles Caldera, NM. Ecological Society of America 100<sup>th</sup> Annual Meeting. Trouet, V\*, Flurin Babst, **M. Ross Alexander**, Paul Szejner, Olivier Bouriaud, Stefan Klesse, John S. Roden, Philippe Ciais, Benjamin Poulter, David C. Frank, David J.P. Moore. 2015 A tree-ring perspective on terrestrial carbon dynamics. Ecological Society of America Annual Meeting

**Alexander, M.R.\***, Flurin Babst, David J.P. Moore, Valerie Trouet. 2015. Where Does the Carbon Go? Turning Tree Rings into Carbon. University of Arizona Earth Week: Tree-Ring Day.

**Alexander, M.R.\***, F. Babst, F. Montané, V. Trouet, D.J.P. Moore 2015. Eddy Meets Dendro: Carbon Allocation in Two Contrasting Forest Ecosystems. 5<sup>th</sup> North American Carbon Program Principle Investigators Meeting. Washington, D.C. Francesc Montané\*, Andrew M Fox, **M. Ross Alexander**, Flurin Babst, Valerie Trouet, Andrew David Richardson, Min Chen, Avelino F. Arellano, David Hollinger, David Moore). 2015. Comparing simulations of the Community Land Model (CLM) with observations on multiple timescales for temperate forests in North America. 5<sup>th</sup> North American Carbon Program Principle Investigators Meeting. Washington, D.C.

2014

Francesc Montané\*, Andrew M. Fox, Tim Hoar, Avelino Arellano, Yao Liu, Gabriel Moreno, Tristan Quaife, Andrew D. Richardson, Valerie Trouet, **M. Ross Alexander**, Min Chen, David Hollinger, David J.P. Moore. 2014. Assimilating multiple data types in the Community Land Model (CLM) for temperate forests in North America. The American Geophysical Union Fall Meeting

2013

**Alexander, M.R.\*** 2013. Tree Rings = Carbon: A Multidisciplinary Approach to Investigating the Carbon Cycle. Institute of the Environment Environmental Research Grad Blitz.

**Alexander, M.R.\*** 2013. Where does the carbon go? Using Tree rings to quantify above ground carbon storage. The University of Arizona Student showcase.

**Alexander, M.R.\***, Babst, F., Moore, D.J.P., Trouet, V. 2013 Constraining the Carbon Cycle through Tree Rings: A Case Study of the Valles Caldera, NM. The American Geophysical Union Fall Meeting.

Speer, J.H.\* , D.L. Rubino, J. Robb, **M.R. Alexander**. 2013. The Effect of Fire on Multiple Arboreal Species in the Eastern Deciduous Forest. Second American Dendrochronology Conference

Dynes, E.\* , V. Trouet, **M.R. Alexander**, D.J.P. Moore, N. Trahan. 2013. Using dendroecology to date mountain pine beetle outbreaks in northwestern Colorado. Second American Dendrochronology Conference

**Alexander, M.R.\***, D.J. Moore, V. Trouet. 2013. Informing carbon balance models with tree-ring data from a high-elevation *Pinus ponderosa* site in New Mexico. Second American Dendrochronology Conference.

**Alexander, M.R.\***, D.J.P. Moore, F. Babst, V. Trouet. 2013. Can Tree Rings be Used to Quantify the Pools and Flows of Aboveground Carbon Stocks? 4<sup>th</sup> NACP All-Investigators Meeting

**Alexander, M.R.\***, J.H. Speer, D.L. Rubino. 2012. Nutrient and Decay Dynamics of Coarse Woody Debris in Indiana Forests. American Association of Geographers Annual Meeting.

2012

**Alexander, M.R.**, J.H. Speer, D.L. Rubino. 2012. Nutrient and Decay Dynamics of Coarse Woody Debris in Indiana Forests. American Association of Geographers Annual Meeting.

2011

Speer, J.H.\* , **M.R. Alexander**, A. Kelley, A. Lehman, P.J. Rosene. 2011. Implementation of the SENCER Program at Indiana State University: Assessment after Two Years. SENCER Summer Institute.

Rosene, P.J.\* , **M.R. Alexander\***, J.H. Speer. 2011. Assessing the Effectiveness of the SENCER Model at Indiana State University. SENCER Summer Institute.

**Alexander, M.R.**, L. Adams, A., Kelley, A. Lehman, P. Rosene, J.H., Speer, J. Whitaker. 2011. Bennett Award Presentation: The SENCER Leadership Team at Indiana State University on How to Involve Students More in Curriculum Development. SENCER Summer Institute.

**Alexander, M.R.\***, J.H. Speer, D.L. Rubino. 2011. Analysis of elemental concentrations within coarse woody debris in relation to residence time on the forest floor in Indiana forests. American Association of Geographers Annual Meeting.

Speer, J.H.\* , **M.R. Alexander\***, P.J. Rosene\*, J. Whitaker\*, E. Mauntel, D.J. Rosene, A. Lehman, C. Dupont, L. Adams. 2011. Students Influencing Curriculum Change: The Undergraduate Leadership Team at Indiana State University. SENCER Washington D.C. Symposium.

Rosene, P.J.\* , **M.R. Alexander\***, Speer, J.H. 2011. Assessing the Effectiveness of the SENCER Model at Indiana State University. SENCER Washington D.C. Symposium.

2010

**Alexander, M.R.\***, D.L. Rubino, C. Phillip. 2010. Residence Time of Coarse Woody Debris on the Forest Floor in Southeastern Indiana. Butler University 22<sup>nd</sup> Annual Undergraduate Research conference.

2009

**Alexander, M.R.\***, D.L. Rubino. 2009. Residence Time of Coarse Woody Debris on the Forest Floor in Southeastern Indiana. Indiana Academy of Science.

**Alexander, M.R.\***, D.R. Karns. 2009. Assessment of headwater habitats within the Central Muscatatuck watershed, South Eastern Indiana. Butler University 21<sup>st</sup> Annual Undergraduate Research Conference.

## Grants and Fellowships

2013

Graduate and Professional Student Council, University of Arizona, Travel Award, 2013. **\$500.**

- Provides funding for graduate students to travel to pertinent conferences and meetings to present original research.
  - Award granted to attend the 2013 Annual Meeting of the American Association of Geographers in San Francisco, CA.

Institute of the Environment, University of Arizona, Graduate Student Travel Award, 2013. **\$500.**

- This award provides funding for graduate students to travel to meetings, workshops, conferences, or symposia to present their research, or to do fieldwork.
  - Award granted to attend the 2013 Flux Course in Boulder, CO and to conduct field work at the Niwot Ridge Long-term Ecological Research Site.

Stable Isotope Ratio Facility for Ecological Research (SIRFER) Isocamp Scholarship, 2013 **\$1,500**

- This award provides funding for graduate students to travel to Salt Lake City and Participate in the annual Isocamp course offered by the SIRFIR laboratory.

2012

North American Dendroecological Fieldweek Graduate Research Fellow, 2012. **\$3,000.**

- Fellowship aids in the continued development of NADEF project.
  - Includes presentation at National Conference (Informing carbon balance models with tree-ring data from a high-elevation *Pinus ponderosa* site in New Mexico. Second American Dendrochronology Conference)
  - Development of project or use of skills obtained in a peer-reviewed publication (In preparation).

Indiana State University College of Graduate and Professional Studies Student Research Grant, 2011. Nutrient and Decay Dynamics of Coarse Woody Debris in Indiana Forests **\$500.**

- Conference Travel Expenses (AAG 2012)

*2011*

Indiana State University Earth and Environmental Systems Departmental Funds, 2011.  
**\$300.**

- Conference Travel Expenses (AAG 2011)

Indiana State University College of Graduate and Professional Studies Student  
Research Grant, 2010. Analysis of elemental concentrations within coarse woody  
debris in relation to residence time on the forest floor in Indiana forests. **\$500.**

- Conference Travel Expenses (AAG 2011)

Indiana State University Earth and Environmental Systems Departmental Funds, 2010.  
**\$300.**

- Conference Travel Expenses (AAG 2011)

*2010*

Rivers Institute at Hanover College Research Grant, 2010. Analysis of Elemental  
Concentrations in CWD via ICP-OES Spectroscopy. **\$1500.**

- Senior Thesis Project

*2009*

Patricia Walne Research Grant, 2009. Residence Time of Coarse Woody Debris on the  
Forest Floor in Southeastern Indiana Forests. **\$900.**

- Senior Research project

*2008*

Rivers Institute at Hanover College Research Grant, 2008. Assessment of Headwater  
regions within the Central Muscatatuck Watershed. **\$2,540.**

- Summer research project

*2007*

United States Fish and Wildlife Service, 2007. The Effect of Fire on Multiple Arboreal  
Species in the Eastern Deciduous Forest. J.H. Speer, D.L. Rubino, J.R. Robb.  
**\$40,160**

- Senior Personnel
  - Sample collection and surface preparation
  - Visual and statistical crossdating of samples

## Presentations

2015

**Alexander, M.R.** Where Does the Carbon Go? Turning Tree Rings into Carbon. Earth Week: Tree-Ring Day, The University of Arizona

2014

**Alexander, M.R.** The Carbon Cycle. Guest lecture in GEO240 Our Dynamic Landscape. The University of Arizona

2013

**Alexander, M.R.**, Miller, K. 2013. An Introduction to the Laboratory of Tree-Ring Research. Presented to the Climate Reconstruction Course, Arizona State University.

**Alexander, M.R.** 2013. Tree Rings = Carbon: A Multidisciplinary Approach to Investigating the Carbon Cycle. Institute of the Environment Environmental Research Grad Blitz.

**Alexander, M.R.** 2013. Estimating Aboveground Biomass from Tree Rings at the Valles Caldera National Preserve. Earth Week: Tree-Ring Day, The University of Arizona.

2012

**Alexander, M.R.**, J.H. Speer, D.L. Rubino. 2012. Nutrient and Decay Dynamics of Coarse Woody Debris in Indiana Forests. American Association of Geographers Annual Meeting.

2011

Speer, J.H., **Alexander, M.R.**, Rosene, P.J., Kelley, A., Whitaker, J., Lehman, A. 2011. Science Education for New Civic Engagements and Responsibilities (SENCER): The Indiana State University Story. Madonna University, Livonia, Michigan. October 21, 2011.

Speer, J.H., Whitaker, J., Pettit, J., Flowers, S., **Alexander, M.R.**, Rosene, P.J., and Kelley, K. 2011. Sustainability at Indiana State University. Madonna University, Livonia Michigan. October 21, 2011.

E. Riley, **M.R. Alexander**, A. Dorobek, S. Soltice. 2011. When "Students" Are The Answer, What Are The Questions? SENCER Summer Institute, Butler University, Indianapolis, IN.

Speer, J.H., **M.R. Alexander**. 2011. Sustainability at Indiana State University. Freshman Orientation luncheon.

2010

**Alexander, M.R.\***, D.L. Rubino, C. Phillip. 2010. Residence Time of Coarse Woody Debris on the Forest Floor in Southeastern Indiana. Butler University 22<sup>nd</sup> Annual Undergraduate Research conference.

**Alexander, M.R.\***, D.L. Rubino. 2010. Residence Time of Coarse Woody Debris on the Forest Floor in Southeastern Indiana. Senior Bio-Day. Hanover College.



2009

**Alexander, M.R.\***, D.L. Rubino. 2009. Residence Time of Coarse Woody Debris on the Forest Floor in Southeastern Indiana. Indiana Academy of Science.

**Alexander, M.R.\***, D.R. Karns. 2009. Assessment of headwater habitats within the Central Muscatatuck watershed, South Eastern Indiana. Butler University 21<sup>st</sup> Annual Undergraduate Research Conference.

2008

**Alexander, M.R.** 2008. "Assessing the headwater streams within the Central Muscatatuck Watershed". Central Muscatatuck Watershed Volunteer Appreciation Luncheon.

## Honors and Awards

### *Graduate*

2015

Clifford W. Carstens, Jr. Scholarship, The University of Arizona College of Agriculture and Life Sciences

Pistor-Stanley Scholarship, The University of Arizona College of Agriculture and Life Sciences

2014

Clifford W. Carstens, Jr. Scholarship, The University of Arizona College of Agriculture and Life Sciences

Galileo Circle Scholar, The University of Arizona College of Science

2012

North American Dendroecological Field week Graduate Research Fellow  
Benjamin Moulton Award, Indiana State University

2011

William E. Bennett Award for Extraordinary Contributions to Citizen Science, National Center for Science and Civic Engagement

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### *Undergraduate*

2010

Dr. Enos Pray Biology Award, Hanover College

Dr. Keith White Chemistry Award, Hanover College

Hanover College Parents Association Scholarship Leadership Award, Hanover College

Alumni Association Senior Award, Hanover College

Heartland College Athletic Conference Bohlsem Academic All Conference Award,  
Hanover College

Dean's List, Hanover College, 4 semesters

2009

Eileen Sinclair Spring Term Off-Campus Scholarship, Hanover College

2007

Beta Beta Beta Biology Honor Society, Hanover College, 2007-present

Realizing the Dream Scholarship, Independent Colleges of Indiana, 2007

2006

Franklin Band Scholarship, 2006  
Mathews Educational Assistance, 2006-2010  
Indiana Association of Orthodontists Essay Scholarship, 2006  
Robert and Glenda Stein Trust, 2006  
MainSource Bank Scholarship, 2006  
Mary-Hatfield Jenkins Memorial, 2006  
Hanover College Honors Scholarship, 2006-2010

## **Academic Experience and Skills**

### **Identification and Taxonomy skills:**

Vascular plants—Eastern Deciduous Hardwood Forests, rudimentary wildflower  
Benthic macro-invertebrates (Genus)—limited to river- and stream-dwelling species.

Classification based upon Hoosier Riverwatch program

Wood anatomy and identification—Concentration Eastern Deciduous Hardwood species

### **Laboratory:**

Aspects of dendrochronological analysis, Inductively Coupled Plasma Atomic Emissions Spectroscopy, combustion analysis of carbon, preparation of tree rings for isotopic analysis.

### **PhD Curriculum** (\* indicates courses in progress)

Principles of Research, Earth's Changing Carbon Cycle, Biostatistics, Time Series Analysis, Dendrochronology Workshop, The Climate System, Data Analysis through R, Data Assimilation Techniques, Personal Vision Leadership and Communication Skills for Environmental Scientists, Science and Decision Makers, Biosphere-Atmosphere Interactions.

### **Master's Curriculum**

Quaternary Paleoecology, Advanced Climatology Seminar, Introduction to Remote Sensing, Advanced topics in Quaternary Sciences, Geoscience Research Methods, Research Design, Dendroecology (University of Arizona), Fundamentals of Tree-Ring Research, Conservation Biology, Soil Classification and Genesis.

### **Undergraduate Curriculum in Biology/Chemistry**

Biology: General Biology, Cell Biology, Plant Taxonomy, Genetics, Biological Diversity, Ecology, Forest Community Dynamics, Plant Anatomy and Physiology, Tropical Biology.

Chemistry: General Chemistry I & II, Organic Chemistry I & II, General Physics I & II, Analytical Chemistry, Inorganic Chemistry, Biochemistry, Advanced Laboratory Techniques.

## **Workshops, Conferences and Professional Training**

*2015*

Ecological Society of America 100<sup>th</sup> annual meeting, Baltimore, MD  
5<sup>th</sup> NACP All Investigators Meeting, Washington, D.C.

*2013*

University of Arizona GPSC Travel Award Judge  
The Annual Meeting of the American Geophysical Union, San Francisco, CA  
The Flux Course. The University of Colorado  
Stable Isotopes in Ecology. The University of Utah  
Second American Dendrochronology Conference. Tucson, AZ  
4<sup>th</sup> NACP All Investigators Meeting, Albuquerque, NM

*2012*

North American Dendroecological Field week, Jemez Springs, NM. Dendroclimate Group  
American Association of Geographers Annual Meeting  
Biogeography and Paleoenvironmental Change -- Chair, Organizer

*2011*

North American Dendroecological Field week, Blacksburg, VA. Wood Anatomy Group  
Dendroecology Short Course. Laboratory of Tree-Ring Research, The University of Arizona.  
American Association of Geographers Annual Meeting.  
Biogeography and Paleoenvironmental Change -- Organizer  
Dendrochronology III: Dendrochronological Applications III -- Chair  
Indiana State Museum Arbor Day

*2009*

Beta Beta Beta (Hanover College), President 2008-2009.  
Central Muscatatuck watershed, volunteer. 2008-2009.

## **Professional Affiliations**

American Geophysical Union—2013-present  
American Association of Geographers—2010-present

- Biogeography Specialty Group—2010-present
- Paleoenvironmental Change Specialty Group—2010-present

Tree Ring Society—2011-present  
Indiana Academy of Science—2009-2012.  
Beta Beta Beta Biological Honor Society—2008-present