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updated December 28, 2016

Althea A. ArchMiller

Curriculum Vitae

Education

- 2011–2015 **PhD**, *Auburn University*, Auburn, AL, 4.00.
Forestry
- 2007–2008 **Graduate Certificate**, *University of Wisconsin*, Madison, WI, 4.00.
Geographical Information Systems (GIS)
- 2003–2007 **BA**, *Gustavus Adolphus College*, St. Peter, MN, 3.95 *summa cum laude*.
Biology Honors with Geography Minor

Doctorate Dissertation

- title *Temporal and spatial variation in longleaf pine soil respiration and its heterotrophic and autotrophic components*
- supervisors Lisa Samuelson (chair), Art Chappelka, Yucheng Feng, Yingru Li, Dale Brockway
- description A comprehensive study on longleaf pine soil respiration: Measurement and analysis of the intra-annual variation, spatial heterogeneity, and the proportion of soil respiration derived from heterotrophic respiration.

Teaching Experience

- | | | |
|-------------|---|---|
| Spring 2016 | Statistical Modeling of Ecological Data | <i>Co-Instructor, University of Minnesota, MN</i> |
| Summer 2014 | Experimental Methods | <i>Guest Lecturer, Auburn University, AL</i> |
| Fall 2013 | Tree Physiology | <i>Instructor, Auburn University, AL</i> |
| Fall 2013 | Dendrology | <i>Field Exam Proctor, Auburn University, AL</i> |
| Fall 2012 | Tree Physiology | <i>Guest Lecturer, Auburn University, AL</i> |
| Spring 2008 | Geographic Information Systems | <i>Private Tutor, Edgewood College, WI</i> |
| Spring 2007 | Organismal Biology | <i>Teacher's Assistant, Gustavus Adolphus College, MN</i> |
| Spring 2007 | Organismal Biology | <i>Tutor, Gustavus Adolphus College, MN</i> |
| Spring 2007 | Ecology, Evolution & Behavior | <i>Tutor, Gustavus Adolphus College, MN</i> |
| Spring 2006 | Conservation Biology | <i>Guest Lecturer, Gustavus Adolphus College, MN</i> |

Research Experience

- 2015–Current **Postdoctoral Research**, *Department of Fisheries, Wildlife, and Conservation Biology, College of Food, Agriculture, and Natural Resources, University of Minnesota, MN.*
Spatio-temporal modeling of the Minnesota moose population
 - Expanding a Bayesian model of moose abundance to include time-series random effects
 - Developing a spatially-explicit Bayesian model to increase precision of moose abundance estimates
 - Simulating data to test model assumptions and performance**Efficacy and validity of group peer-assessment in graduate ecological statistics course**
 - Implemented an individual- and group-based calibrated peer-assessment technique
 - Evaluated the validity and satisfaction associated with this technique
- 2015–Current **Collaborative Research**, *Entomology and Plant Pathology Department, College of Agriculture, Auburn University, AL.*
Meta-analysis of the efficacy of fungicide to control soybean rust in the United States
 - Synthesizing the effects of fungicide on crop yield, seed weight, and disease severity
 - Writing data analysis and results sections of resulting publication
- 2011–2015 **PhD Dissertation Research**, *Center for Longleaf Pine Ecosystems, School of Forestry & Wildlife Sciences, Auburn University, AL.*
Intra-annual variation in longleaf pine soil respiration
 - Measured soil respiration and related covariates monthly in 4 longleaf pine stands for a year
 - Analyzed the effect of drought on the soil respiration-temperature relationship
 - Applied multivariate statistics to determine the other exogenous factors affecting the intra-annual variation in longleaf pine soil respiration**Spatial and diurnal variation in longleaf pine soil respiration**
 - Completed high-resolution soil respiration study in a 64-year-old longleaf pine forest
 - Analyzed spatial variation in soil respiration using GIS and geostatistics
 - Tested for diurnal hysteresis of soil respiration between morning, midday, and afternoon**Partitioning autotrophic (root) and heterotrophic (microbial) respiration**
 - Partitioned autotrophic and heterotrophic respiration through the use of small root exclusion collars in three 26-year-old longleaf pine forests
 - Collected heterotrophic to total soil respiration data from over 125 studies
 - Completed a preliminary global meta-analysis to determine the factors affecting the proportion heterotrophic to total soil respiration
- 2007–2008 **GIS Graduate Certificate Research**, *University of Wisconsin–Madison and United States Fish and Wildlife Service, WI.*
Augmentation of the National Wetlands Inventory (NWI) dataset by incorporation of digital linear hydrography
 - Designed, implemented, and documented a process for enhancing linear NWI features with soil and topography data
 - Increased the wetlands coverage and analysis capabilities of the NWI dataset.
- 2007–2008 **GIS Research Analyst Project**, *Colorado State University, Colorado Department of Transportation, and University of Wisconsin–Madison, WI.*
Lynx habitat use and roadway interaction research
 - Analyzed habitat use of radio-collared lynx with geospatial and compositional analyses
 - Identified high-risk areas of roadway crossing events in Colorado
 - Produced statistics and professional maps for Colorado State University publication

- 2005–2007 **Biology Honors Research**, *Biology Department*, Gustavus Adolphus College, MN.
From farmland to prairie: tallgrass prairie restoration in the Linnaeus Arboretum
- o Analyzed site conditions, including soil quality and plant diversity in an 80-acre farm field
 - o Created a comprehensive, site-specific prairie restoration and management plan, which has since been implemented
 - o Developed grading plans with GIS spatial analysis to enhance micro-habitats and vistas for future prairie use

Professional Experience

- 2008–2011 **Environmental & GIS Specialist**, *Stantec Consulting*, Cottage Grove, WI.
Specialized in data collection, analysis, and mapping for various environmental projects.
- o Wrote, edited, and reviewed reports and regulatory applications
 - o Conducted botanical and wildlife surveys within terrestrial and aquatic habitats
 - o Created site-specific landscape designs and restoration plans for project sites
 - o Integrated field-collected GPS data and desktop baseline data into graphical displays
- 2007–2008 **GIS Intern**, *United States Geological Survey*, Madison, WI.
Specialized in digitization and improvement of National Wetlands Inventory coverage
- o Scanned and digitized original wetlands inventory maps
 - o Improved the coverage of the dataset through augmentation research project
- 2005–2006 **Ecology Intern Supervisor**, *Cedar Creek Natural History Area*, Bethel, MN.
Specialized in plant identification & experimental upkeep/design for various ecological studies.
- o Led in the maintenance and data collection of several experimental sites
 - o Collected, organized, and analyzed field samples for multiple research projects
 - o Identified plants, animals, and insects for field biodiversity surveys
 - o Developed and implemented new experimental protocol
 - o Trained and monitored 25 interns

Publications

Peer-Reviewed Articles

1. **ArchMiller**, Fieberg, Walker, Holm. 2016. Group peer assessment for summative evaluation in a statistics course for graduate ecologists. *Assessment and Evaluation in Higher Education*. doi:10.1080/02602938.2016.1243219.
2. **ArchMiller**, Samuelson, and Li. 2016. Spatial variability of soil respiration in a 64-year-old longleaf pine forest. *Plant and Soil* 403(1):419–435. doi:10.1007/s11104-016-2817-1.
3. **ArchMiller** and Samuelson. 2016. Partitioning longleaf pine soil respiration into its heterotrophic and autotrophic components through root exclusion. *Forests* 7(2):39. doi:10.3390/f7020039.
4. **ArchMiller** and Samuelson. 2016. Intra-annual variation of soil respiration across four heterogeneous longleaf pine forests in the southeastern United States. *Forest Ecology and Management* 359:370–380. doi:10.1016/j.foreco.2015.05.016.
5. **ArchMiller**, Bauer, Koch, Wijayawardena, Anil, Kottwitz, Munsterman, and Wilson. 2015. Formalizing the definition of meta-analysis in *Molecular Ecology*. *Molecular Ecology* 24:4041–4051. doi:10.1111/mec.13264.

Peer-Reviewed Articles (In Revision)

1. Delaney, **ArchMiller**, Delaney, Wilson, Sikora. Fungicide effectiveness on soybean rust in the southeastern United States 2004:2014: a meta-analysis. *Plant Disease*. Submitted 10/20/2016.

Peer-Reviewed Articles (In Review)

1. Fieberg, Forester, Street, Johnson, **ArchMiller**, Matthiopoulos. Species distribution models: Predictive snipers or shots in the dark? *Ecology Letters*.

Other Works

1. Fieberg, Forester, Street, Johnson, **ArchMiller**, and Matthiopoulos. 2016. R code and output supporting: Species distribution models: Predictive snipers or shots in the dark? *Data Repository for the University of Minnesota*. doi:10.13020/D6T590.
2. **ArchMiller**, Delaney, Delaney, Wilson, and Sikora. 2016. Complete data and analysis for: Fungicide effectiveness on soybean rust in the Southeastern United States: A meta-analysis. *Data Repository for the University of Minnesota*. doi:10.13020/D62P4F.
3. **ArchMiller** and Samuelson. 2014. Temporal and spatial variability of soil carbon flux in longleaf pine forests in the southeastern United States. *24th IUFRO World Congress Abstracts*.
4. **ArchMiller** and Samuelson. 2013. Spatial heterogeneity of soil respiration in a 64-year-old longleaf pine forest at Fort Benning, Georgia. *Ecological Society of America 98th Annual Meeting Abstracts*.
5. **Archer** and Samuelson. 2012. Soil respiration in a longleaf pine chronosequence. *Ecological Society of America 97th Annual Meeting Abstracts*.
6. **Archer**. 2011. *Geographical Information Systems for Tree Physiology Research*. Technical Manual and User's Guide, Center for Longleaf Pine Ecosystems, Auburn University.
7. **Archer** Map author in: Crooks, Haas, Baruch-Mordo, Middledorf, Magle, Shenk, Wilson, and Theobald. 2008. *Roads and connectivity in Colorado: animal-vehicle collisions, wildlife mitigation structures, and lynx-roadway interactions*. Colorado State University.

R Packages

1. Fieberg and **ArchMiller**. uhcplots. *R package to create Used-Habitat Calibration plots described in Fieberg et al. (In Revision for Ecology Letters)*. Package for R on GitHub. Initialized August 7, 2016. <https://github.com/aaarchmillier/uhcplots>.

■ Awards, Scholarships, and Grants

2016	Professional Development Grant	\$500, College of Food, Agriculture and Natural Resource Sciences, University of Minnesota
2015	Graduate School Marshal	Auburn University Graduation Ceremony, Auburn, AL
2014	Best Poster Award: Forest Environment	International Union of Forest Research Organizations World Congress
2014	Featured Artist	Cultural Arts Festival, Auburn University
2012–2013	James Floyd Goggans Endowed Fellowship in Forest Biology	\$750, Auburn University
2010	Winner: National Logo Design Contest	\$500, American Physical Society Department of Plasma Physics
2009	Best National Solution (Collaborator)	\$10k, Climate Leadership Challenge, Madison, WI

2007–2008	GIS Certificate Student Outstanding Achievement Award		<i>UW–Madison</i>
2006–2007	Academic Assistant in Biology	\$150/semester,	<i>Gustavus Adolphus College</i>
2006–2007	Sigma-Xi Undergraduate Research Grant	\$486,	<i>Gustavus Adolphus College</i>
2006–2007	Undergraduate Research, Scholarship, & Creativity Grant	\$486,	<i>Gustavus Adolphus College</i>
2005–2007	Uhler Scholar for Natural Resources Research	\$2,500/yr,	<i>Gustavus Adolphus College</i>
2005–2007	Koschmann Environmental Studies Scholar	\$2,500/yr,	<i>Gustavus Adolphus College</i>
2005–2007	Outstanding Service Award for Biology		<i>Gustavus Adolphus College</i>
2003–2007	Partners in Scholarship Scholar	\$9,000/yr,	<i>Gustavus Adolphus College</i>
2003–2007	Alworth Science & Math Scholar	\$4,300/yr,	<i>Nelly Alworth Memorial Fund, Duluth, MN</i>

Presentations

- Fall 2016 Tips for reproducible research in R: increasing your research impact while decreasing your research headaches. *University of Minnesota Libraries and Psychology Seminar of Reproducible Research*. Planned Lightning Talk.
- Fall 2016 Letting the “Good” Data Speak: Partial Data Cloning with Sightability Models. *The Wildlife Society Annual Meeting*, Raleigh, North Carolina. Oral presentation.
- Fall 2016 Making the Grade: Collaborative Peer Assessment in a Graduate-Level Statistics Course for Ecologists. *Annual Postdoc Research Symposium*, University of Minnesota. Poster presentation.
- Spring 2016 Fungicide Effectiveness on Soybean Diseases in the Southeastern United States: A Meta-Analysis. *2016 Rust Symposium*, Pensacola Beach, Florida. Poster presentation (co-author).
- Spring 2015 Temporal and spatial variation in longleaf pine soil respiration and its heterotrophic and autotrophic components. *PhD Seminar*, Auburn University. Oral presentation.
- Spring 2015 Temporal and spatial variability of soil carbon flux in longleaf pine forests in the southeastern United States. *School of Forestry and Wildlife Sciences Advisory Council Meeting*, Auburn University. Poster presentation.
- Fall 2014 Temporal and spatial variability of soil carbon flux in longleaf pine forests in the southeastern United States. *24th International Union of Forest Research Organizations World Congress*, Salt Lake City, UT. Poster presentation.
- Fall 2014 Temporal and spatial variability of soil respiration in longleaf pine forests in the Southeast. *School of Forestry and Wildlife Sciences Homecoming Poster Symposium*, Auburn University. Poster presentation.
- Spring 2014 Patterns of CO₂ release from soil in longleaf pine forests. *School of Forestry and Wildlife Sciences Advisory Council Meeting*, Auburn University. Poster presentation.
- Spring 2014 Introduction to Meta-Analysis. *School of Forestry and Wildlife Sciences Quantitative Lunch Series*, Auburn University. Oral presentation.

- Fall 2013 Spatial variation in soil carbon flux in a 64-year-old longleaf pine forest at Fort Benning, Georgia. *School of Forestry and Wildlife Sciences Homecoming Poster Symposium*, Auburn University. Poster presentation.
- Summer 2013 Spatial heterogeneity of soil respiration in a 64-year-old longleaf pine forest at Fort Benning, Georgia. *Ecological Society of America 98th Annual Meeting*, Minneapolis, MN. Poster presentation.
- Summer 2013 Spatial Regression Techniques: Case study with soil respiration data. *School of Forestry and Wildlife Sciences Quantitative Lunch Series*, Auburn University. Oral presentation.
- Spring 2013 Ecosystem carbon pools in longleaf pine forests at Fort Benning, Georgia. *17th Biennial Southern Silvicultural Research Conference*, Shreveport, LA. Poster presentation.
- Fall 2012 Longleaf pine soil respiration research at Fort Benning, Georgia. *Strategic Environmental Research and Development Program Forestry Progress Meeting*, Athens, GA. Oral presentation.
- Summer 2012 Soil respiration in a longleaf pine chronosequence. *Ecological Society of America 97th Annual Meeting*, Portland, OR. Poster presentation.
- Spring 2012 Soil respiration in a longleaf pine chronosequence. *School of Forestry and Wildlife Sciences Seminar Series*, Auburn University. Oral presentation.
- Spring 2012 Carbon dynamics in longleaf pine stands of varying ages. *Alabama Natural Resources Council Outreach Symposium*, Auburn, AL. Poster presentation.
- Spring 2007 From farmland to prairie: tallgrass prairie restoration in the Linnaeus Arboretum, Gustavus Adolphus College, St. Peter, MN. *National Conference of Undergraduate Research*, San Rafael, CA. Poster presentation.
- Spring 2007 From farmland to prairie: tallgrass prairie restoration in the Linnaeus Arboretum. *Sigma Xi Undergraduate Research Symposium*, Gustavus Adolphus College, St. Peter, MN. Oral presentation.

Service

- Ongoing Peer-reviewer
 - o *Biogeochemistry*
 - o *Forests*
 - o *Assessment and Evaluation in Higher Education*
 - o *Ecosystems*
 - o *Journal of Animal Ecology*
 - o *Sustainability*
- 2016–Current Elected Postdoc Representative *Dept. of Fisheries, Wildlife and Conservation Biology*
- 2016–Current Kolshorn Planning Committee *Dept. of Fisheries, Wildlife and Conservation Biology*
- 2016–Current Science Mentor for PlantingScience
 - o Power of Sunlight Project
 - o Power of Seeds Project
- 2016 Volunteer: undergraduate résumé reviewer *The Wildlife Society Conference*
- 2016 Oral Presentation Moderator *Population Modeling and Dynamics Sessions, North American Congress for Conservation Biology*

2016	Volunteer	<i>North American Congress for Conservation Biology</i>
2016	Judge	<i>Graduate Research Symposium, Natural Resources Association of Graduate Students, University of Minnesota</i>
2011–2015	Photo Contest Committee	<i>School of Forestry & Wildlife Sciences, Auburn University</i>
2012–2014	Senator	<i>Graduate Student Council, Auburn University</i>
2014	Oral Presentation Moderator	<i>Graduate Student Forum, Auburn University</i>
2006–2007	Planning Board Member	<i>MayDay! Peace Conference, Gustavus Adolphus College</i>
2006–2007	Captain	<i>Gustavus Adolphus Women's Ultimate Frisbee Team</i>
2004–2006	Co-President and Member	<i>Crossroads International Program: Diversity Education Committee, Gustavus Adolphus College</i>

Professional Development

- 2016 Writing to learn in technical fields, Center for Writing, University of Minnesota
- 2016 Teaching Enrichment Series, Center for Educational Innovation, University of Minnesota
 - o How to address scholastic dishonesty and disruptive conduct in the classroom
 - o Copyright crash course for instructors
 - o Getting feedback you can use
 - o Small changes with big impact
 - o Action! Tips for integrating a student media assignment into your curriculum
 - o Active learning 101: A whirlwind tour
- 2016 Internationalizing Your Classes, Department of Fisheries, Wildlife, and Conservation Biology Teaching Workshop, University of Minnesota
- 2016 Effective On-line Grading, Transforming the Teaching and Learning Environment Virtual Conference
- 2015 Social / Behavioral or Humanist Research Investigators and Key Personnel, Collaborative Institutional Training Initiative at the University of Miami, FL
- 2015 Data Sharing in the Sciences Workshop, University of Minnesota
- 2015 Active Learning Workshop: Never Grade a Quiz Again Workshop, Biggio Center for the Enhancement of Teaching and Learning, Auburn University
- 2015 Active Learning Workshop: Collaborative Learning, Biggio Center for the Enhancement of Teaching and Learning, Auburn University
- 2015 Conversations in Celebration of Teaching & Expo in Support of Research and Creative Scholarship, Auburn University
- 2014–2015 Preparing Future Faculty Program, Biggio Center for the Enhancement of Teaching and Learning, Auburn University
- 2014 How Copyright Helps Faculty Create Effective Teaching Materials Seminar, Biggio Center for the Enhancement of Teaching and Learning, Auburn University

- 2014 Fall Break EASL Teaching Retreat: Flipping the Classroom, Biggio Center for the Enhancement of Teaching and Learning, Auburn University
- 2014 Active Learning with Eric Mazur Seminar, Biggio Center for the Enhancement of Teaching and Learning, Auburn University
- 2012 LI-6400XT Photosynthesis and Florescence Measurements Advanced Training Course, Li-Cor Biosciences, Lincoln, NE
- 2012 WriteFest for Graduate Students: Breaking the Writing-Block, Miller Writing Center, Auburn University
- 2011 Longleaf pine forest plant identification, mini-course, Auburn University
- 2010 Wildland Fire Fighter Training Courses S-130, S-190, and L-180, Fox Valley Technical College, WI
- 2010 Four Hour Safety Awareness Training for Oil Spill Workers, Total Safety, U.S., Inc., MI
- 2008 National History Inventory Screening and Methodology Training, Wisconsin Department of Natural Resources, WI

Professional Affiliations

- o Society of Conservation Biology
- o The Wildlife Society
- o Ecological Society of America: Microbial Ecology and Physiological Ecology Sections
- o Phi Kappa Phi Honor Society
- o The Honor Society of Agriculture: Gamma Sigma Delta
- o Wisconsin Land Information Association
- o Phi Beta Kappa Honor Society
- o Sigma Xi: The Scientific Research Society