

Marshall University
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EDUCATION

- 2014 Ph.D. in Ecology, University of North Carolina at Chapel Hill
2006 B.S. in Biology, Environmental Studies minor, College of Charleston, *magna cum laude*

PROFESSIONAL EMPLOYMENT

- January 2019 – present: Assistant Professor at Marshall University, Department of Biological Sciences, Huntington, WV
June 2014 – December 2018: Postdoctoral Research Associate and Instructor at the University of Wyoming, Laramie, WY (mentors: William Lauenroth & John Bradford)
January – May 2014: Adjunct Instructor at High Point University, High Point, NC
Instructor of record – Introduction to Biology and Environmental Science Labs

PUBLICATIONS (* denotes student author)

Peer-reviewed Publications

- 2021 Smith, A.J.*, D.R. Schlaepfer, **K.A. Palmquist**, I.C. Burke & W.K. Lauenroth. Allometric modeling of bunchgrasses in big sagebrush plant communities. *Rangeland Ecology and Management* 79: 77-86.
- 2021 **Palmquist, K.A.**, D.R. Schlaepfer, R.R. Renne, S.C. Torbit, K.E. Doherty, T.E. Remington, G. Watson, J.B. Bradford & W.K. Lauenroth. Divergent climate change effects on widespread dryland plant communities driven by climatic and ecohydrological gradients. *Global Change Biology (in press): 1:17.*
- 2020 Bradford, J.B., D.R. Schlaepfer, W.K. Lauenroth & **K.A. Palmquist**. Robust ecological drought projections for drylands in the 21st century. *Global Change Biology* 26(7): 3906-3919.
- 2020 Jordan, S.E.*, **K.A. Palmquist**, J.B. Bradford & W.K. Lauenroth. Soil water availability shapes species richness in mid-latitude shrub steppe plant communities. *Journal of Vegetation Science* 31(4): 646-657.
- 2019 Renne, R.R.*, D.R. Schlaepfer, **K.A. Palmquist**, J.B. Bradford, I.C. Burke & W.K. Lauenroth. Soil and stand structure explain shrub mortality patterns following global change-type drought and extreme precipitation. *Ecology* 100(12): e02889.
- 2019 Bradford, J.B., D.R. Schlaepfer, W.K. Lauenroth, **K.A. Palmquist**, J. Chambers, J. Maestas & S. Campbell. Climate-driven shifts in soil temperature and moisture regimes suggest opportunities to enhance assessments of dryland resilience and resistance. *Frontiers in Ecology and Evolution* 7: 358 (invited paper).

- 2019 Lindquist, L.W.*, **K.A. Palmquist**, S.E. Jordan* & W.K. Lauenroth. Impacts of climate change on groundwater recharge in Wyoming big sagebrush ecosystems are contingent on elevation. Western North American Naturalist 79(1): 4.
- 2019 Pennington, V.E.*, J.B. Bradford, **K.A. Palmquist** & W.K. Lauenroth. Patterns of big sagebrush plant community composition and stand structure in the Western United States. Rangeland Ecology and Management 72(3): 505-514.
- 2018 **Palmquist, K.A.**, T.E. Martyn*, D.R. Schlaepfer, J.B. Bradford & W.K. Lauenroth. STEPWAT2: an individual-based model for exploring the impact of climate and disturbance on dryland plant communities. Ecosphere 9(8): e02394.
- 2018 Rottler, C.M.*, I.C. Burke, **K.A. Palmquist**, J.B. Bradford & W.K. Lauenroth. Current reclamation practices after oil and gas development do not speed up succession or plant community recovery in big sagebrush ecosystems in Wyoming. Restoration Ecology 26: 114-123.
- 2018 Peet, R.K., **K.A. Palmquist**, T.R. Wentworth, M.P. Schafale, A.S. Weakley & M.T. Lee. Carolina Vegetation Survey: an initiative to improve regional implementation of the U.S. National Vegetation Classification. Phytocoenologia 48(2): 171-179 (invited paper).
- 2017 Pennington, V.E.*, **K.A. Palmquist**, J.B. Bradford & W.K. Lauenroth. Climate and soil texture influence patterns of forb species richness and composition in big sagebrush plant communities across their spatial extent in the western US. Plant Ecology 218: 957-970.
- 2016 **Palmquist, K.A.**, D.R. Schlaepfer, J.B. Bradford & W.K. Lauenroth. Spatial and ecological variation in dryland ecohydrological responses to climate change: Implications for management. Ecosphere 7(11): 1-20.
- 2016 Pennington, V.E.*, D.R. Schlaepfer, J.L. Beck, J.B. Bradford, **K.A. Palmquist** & W.K. Lauenroth. Sagebrush, greater sage-grouse, and the occurrence and importance of forbs. Western North American Naturalist 76(3): 298-312.
- 2016 **Palmquist, K.A.**, D.R. Schlaepfer, J.B. Bradford & W.K. Lauenroth. Mid-latitude shrub steppe plant communities: Climate change consequences for soil water resources. Ecology 97(9): 2342-2354.
- 2016 Lopez, B.L., K.R. Burgio, M.B. Carlucci, **K.A. Palmquist**, A. Parada, V.P. Weinberger & A.H. Hulbert. A new framework for inferring community assembly processes using phylogenetic information, relevant traits, and environmental gradients. One Ecosystem 1 (e9501): 1-24.
- 2016 Tessel, S.M., **K.A. Palmquist** & R.K. Peet. Species-Area Relationships. In Oxford Bibliographies Online: Ecology. Ed. David Gibson. New York: Oxford University Press.
- 2016 **Palmquist, K.A.**, R. K. Peet & S.C. Carr. Xeric longleaf pine vegetation of the Atlantic and East Gulf Coast Coastal Plain: an evaluation and revision of Associations within the U.S. National Vegetation Classification. Proceedings of the US National Vegetation Classification 1(1): 1-70.
- 2015 Mitchell, S.M, **K.A. Palmquist**, S. Cohen & N.L. Christensen. Patterns of vegetation composition and diversity in pine-dominated ecosystems of the Outer Coastal Plain of North

- Carolina: Implications for ecosystem restoration. Forest Ecology and Management 356: 64-73.
- 2015 Martyn, T.*, C.W. Beltz*, **K.A. Palmquist**, V.E. Pennington*, C.M. Rottler* & W.K. Lauenroth. Daubenmire versus line-point intercept: a response to Thacker et al. (2015). Rangelands 37(4): 158-160.
- 2015 **Palmquist, K.A.**, R.K. Peet & S.R. Mitchell. Scale-dependent responses of longleaf pine vegetation to fire frequency and environmental context across two decades. Journal of Ecology 103: 998-1008.
- 2014 **Palmquist, K.A.**, R.K. Peet & A.S. Weakley. Changes in plant species richness following reduced fire frequency and drought in one of the most species-rich savannas in North America. Journal of Vegetation Science 25: 1426-1437.
- 2014 +Coyle, J.R., F.W. Halliday, B.E. Lopez, **K.A. Palmquist**, P.A. Wilfahrt & A.H. Hurlbert. Using trait and phylogenetic diversity to evaluate the generality of the stress-dominance hypothesis in eastern North American tree communities. Ecography 37: 1-13 (editor's choice). +all authors contributed equally.

Book Chapters

- 2018 Reeves, M.C., M.E. Manning, J.P. DiBenedetto, **K.A. Palmquist**, W.K. Lauenroth, J.B. Bradford, & D.R. Schlaepfer. Effects of climate change on rangeland vegetation in the northern Rockies. In: J.E. Halofsky, J.E. and D.L. Peterson, eds. *Climate Change and Rocky Mountain Ecosystems*, Chapter 7, First edition. Springer International Publishing, Switzerland. Pages 97-114.
- 2014 Peet, R.K., **K.A. Palmquist** & S.M. Tessel. Herbaceous layer species richness of southeastern forests and woodlands: patterns and causes. In: F.S. Gilliam, ed. *The Herbaceous Layer in Forests of Eastern North America*, Chapter 10, Second edition. Oxford University Press, New York, New York. Pages 255-276.

Manuscripts in Review or Revision

- Schlaepfer, D.R., W.K. Lauenroth, J.B. Bradford & **K.A. Palmquist**. Solar geoengineering may increase climate change droughts in drylands. *Earth's Future (in revision).*
- Renne, R.R, D.R. Schlaepfer, **K.A. Palmquist**, W.K. Lauenroth & J.B. Bradford. Estimating complex ecological variables at high resolution in heterogeneous terrain using a multivariate matching algorithm. Methods in Ecology and Evolution (in revision).

Manuscripts in Preparation

- England, M.* & **K.A. Palmquist**. The future of the big sagebrush ecosystem: plant community response to wildfire and invasive annual grass in a changing climate (*in prep*). Target journal: *Global Change Biology*.
- Shupe, R.*, T.E. Hutchinson, A.C. Axel & **K.A. Palmquist**. The effects of fire on oak forest regeneration: a 25-year study (*in prep*). Target journal: *Forest Ecology and Management*.
- Shupe, R.*, T.E. Hutchinson & **K.A. Palmquist**. The long-term effects of prescribed fire on species richness and composition of the herbaceous layer in mixed-oak forests (*in prep*). Target journal: *Plant Ecology*.

GRANTS AND FELLOWSHIPS (\$705,604 awarded, \$597,754 external)

2022	US Fish and Wildlife Service, “Identifying sustainable grazing regimes for the 21 st century that prevent annual grass invasion to maintain wildlife habitat across the big sagebrush biome” (co-PI) (funds allocated Spring 2022)	\$44,016
2021	US Geological Survey North-Central Climate Adaptation Science Center, “Interactive effects of climate change and livestock grazing on plant communities within large intact big sagebrush landscapes”, submitted (co-PI)	\$101,291
2021	Department of Defense, MCRD Parris Island SC, “Vegetation Survey and Assessment of Vegetation Vulnerability to Sea-level Rise” (PI)	\$89,817
2021	WV NASA Space Grant Consortium, “Data integration for red spruce management: using NASA products to resolve scale mismatches and produce an updated red spruce map” (PI)	\$30,000
2021	NASA WVSGC Research Enhancement Award, Marshall University	\$1,000
2020	Faculty Summer Research Award, Marshall University	\$2,000
2019	MU-ADVANCE Path Forward Travel Grant	\$1,000
2019	Quinlan Travel Grant, Marshall University	\$500
2019	Faculty Summer Research Award, Marshall University	\$2,000
2019	WV NASA EPSCoR Research Seed Grant, “Quantifying the vulnerability of longleaf pine woodlands to drought” (PI)	\$20,000
2018	USGS North-Central Climate Adaptation Science Center, “Big sagebrush plant community response to wildfire and invasive annual grasses in the 21 st century” (PI)	\$200,000
2017	US Geological Survey, “Modeling the response of big sagebrush plant communities to altered climate and disturbance” (co-PI)	\$24,000
2016	WWISE travel grant, Wyoming-EPSCoR, University of Wyoming	\$1,000
2015	University of Basel, Switzerland, “Albedo modification impact on global temperate dryland ecosystem water balance” (co-PI)	\$73,612
2015	Biodiversity Institute, University of Wyoming, “Soil water dynamics and plant biodiversity in big sagebrush ecosystems across space” (PI)	\$50,000
2015	US Geological Survey, “Analysis, revision, and documentation of longleaf pine associations of the National Vegetation Classification (Group 007) occurring in the Carolinas, Georgia, and Florida” (co-author)	\$79,955
2015	WWISE travel grant, Wyoming-EPSCoR, University of Wyoming	\$1,600
2015	INBRE Bioinformatics Training Travel Grant, University of Wyoming	\$1,800
2014	International Association for Vegetation Scientist Young Scientist Travel Award	\$2,300
2013	Graduate Professional School Travel Award, University of North Carolina	\$400
2013	Dr. William Coker Fellowship, University of North Carolina	\$11,500
2013	Alma Holland Beers Scholarship, University of North Carolina	\$1,500
2013	North Carolina Native Plant Society Shin Grant	\$1,000
2013	Graduate Student Transportation Grant, University of North Carolina	\$250
2012	US Geological Survey, Subcontract to the University of North Carolina through the Ecological Society of America. “U.S. National Vegetation Classification peer review testing” (co-author)	\$33,054
2012	Alma Holland Beers Scholarship, University of North Carolina	\$1,500

2012	Dr. William Coker Fellowship, University of North Carolina	\$1,500
2012	Caldwell Travel Scholarship, University of North Carolina	\$500
2011	Dr. William Coker Fellowship, University of North Carolina	\$1,850
2010	Alma Holland Beers Scholarship, University of North Carolina	\$2,950
2008	Mrs. Coker Botany Fellowship, University of North Carolina	\$20,000
2005	SURF, Effects of Irrigation Timing and Water Quality on Cotton Physiology and Development, College of Charleston	\$5,000

TEACHING EXPERIENCE

2021F, '20S, '19F	Principles of Ecology (lecture and lab), Marshall University
2021S, '19S	Plant Ecology (lecture and lab), Marshall University
2020F	Graduate Seminar II, Marshall University
2020F	Graduate Seminar I, Marshall University
2020F	Terrestrial Ecosystem Ecology (lecture), Marshall University
2016	Terrestrial Ecosystem Ecology (lecture), University of Wyoming,
2015	Vegetation Ecology (lab), University of Wyoming,
2014	Intro to Biology (lab), High Point University,
2014	Intro to Environmental Science (lab), High Point University

STUDENT MENTORING

2021F	Adviser of Matthew Roswall's Senior Capstone, Marshall University
2021Su	Adviser of Mary Doherty's Senior Capstone, Marshall University
2021	Adviser of Cassie Bacon's Internship, Marshall University
2021Sp	Adviser of Khyla Johnson's Senior Capstone, Marshall University
2020F	Adviser of Jordan Bowman's Senior Capstone, Marshall University
2020F	Adviser of Aria Searles's Senior Capstone, Marshall University
2019 – present	Adviser of Maggie England's Master's degree in Biological Sciences, Marshall University.
2019 – present	Committee member: Katie Biggert (MS, Marshall U), Fen Annarino (MS, Marshall U), Madeline Thompson (MA, Marshall U), Beth Stepp (MA, Marshall U), Anna McCallum (MS, Marshall U), Zachary Shamblin (MS, Marshall U), Martin Holredge (PhD, Utah State U), Joanna Spooner (PhD, U of North Carolina Chapel Hill)
2019 – 2021	Adviser of Rebekah Shupe's Master's degree in Biological Sciences, Marshall University
2015 – 2018	Co-adviser of Samuel Jordan's Master's degree in Forestry and Environmental Studies entitled "Impacts of grazing and ecohydrology on plant biodiversity patterns in big sagebrush ecosystems". Yale University
2016 – 2018	Co-adviser of Lukas Lindquist's Wyoming Research Scholars undergraduate research project entitled "Sagebrush, climate change, and groundwater recharge in Wyoming". University of Wyoming
2014 – 2019	Additional students and computer programmers mentored at the University of Wyoming, Yale University, and Marshall University: Trace Martyn (MS, UWY), Caitlin Rottler (PhD, UWY), Rachel Renne (MS, Yale), Lexi Smith (MS, Yale),

Victoria Pennington (MS, UWY), Ashish Tiwari (MS, UWY), Chandler Hakaup (BS, UWY), and Frederick Pierson (BS, MU)

INVITED PRESENTATIONS

- 2021 **Palmquist, K.A.** Individual-based modeling as a tool to quantify the interacting effects of climate change and disturbances on plant communities over large geographic areas. Data Science Seminar Series, Marshall University. Virtual. (April 21, 2021)
- 2021 **Palmquist, K.A.** Vulnerability of dryland plant communities to climate change and disturbance in the 21st century. Department of Biology Seminar Series, University of Alberta. Virtual. (April 16, 2021)
- 2020 **Palmquist, K.A.** Vulnerability of dryland plant communities to climate change and disturbance in the 21st century. Department of Biology Seminar Series, University of Nebraska at Omaha. Virtual. (November 18, 2020)
- 2020 **Palmquist, K.A.** Response of big sagebrush plant communities to climate change, grazing, and cheatgrass throughout the 21st century. USGS Climate Adaptation Science Center Webinar Series. (September 23, 2020)
- 2019 **Palmquist, K.A.** Plant biodiversity and climate change impacts in temperate ecosystems. Department of Biology Seminar Series, Miami University of Ohio. Oxford, OH. (October 10, 2019)
- 2019 **Palmquist, K.A.** The effects of fire and climate change in temperate plant communities. US Forest Service Northern Research Station. Delaware, OH. (April 21, 2019)
- 2017 **Palmquist, K.A.** How high-performance computing can benefit ecological research at the University of Wyoming. Advanced Research Computing Center workshop at the University of Wyoming. Laramie, WY.
- 2013 **Palmquist, K.A.** & R.K. Peet. Small-scale species richness in longleaf pine savannas: patterns and drivers. Botanical Society of America Annual Meeting. New Orleans, LA.
- 2012 **Palmquist, K.A.**, R.K. Peet, J.M. White & K. Israel. Long-term vegetation change in contrasting North Carolina ecosystems. ESA Annual Meeting, Portland Oregon.
- 2011 **Palmquist, K.A.**, R.K. Peet & A.S. Weakley. Species richness patterns, compositional shifts, and turnover in the longleaf pine ecosystem across 18 years. College of Charleston Biology Lecture Series, Charleston, SC.

SELECTED RECENT PRESENTATIONS

- 2021 **Palmquist, K.A.**, R.R. Renne, D.R. Schlaepfer, J.B. Bradford & W.K. Lauenroth. Grazing and climate change interact to influence big sagebrush plant community functional type composition. ESA Annual Meeting, Virtual.
- 2019 **Palmquist, K.A.**, J.B. Bradford, D.R. Schlaepfer, R.R. Renne & W.K. Lauenroth. Climate change impacts on shrub steppe plant communities vary with environmental context and geography. ESA Annual Meeting, Louisville, KY.

- 2018 **Palmquist, K.A.** & W.K. Lauenroth. Herbarium specimens reveal shifts in the timing of big sagebrush reproduction over the last two centuries. ESA Annual Meeting, New Orleans, LA.
- 2017 **Palmquist, K.A.**, S.E. Jordan, J.B. Bradford, D.R. Schlaepfer & W.K. Lauenroth. Resource quantity and resource heterogeneity shape species richness and beta-diversity patterns in big sagebrush plant communities. ESA Annual Meeting, Portland, OR.
- 2016 **Palmquist, K.A.**, W.K. Lauenroth, J.B. Bradford & D.R. Schlaepfer. Spatial and ecological variation in big sagebrush ecohydrological responses to climate change: Implications for management and conservation. ESA Annual Meeting, Fort Lauderdale, FL.

AWARDS

- 2016 Own It! Award Nominee, given by WY EPSCoR to honor outstanding women in STEM fields
- 2013 Eugene P. Odum Award, given by the SE Chapter of the Ecological Society of America for the best oral presentation on ecological research given by a student at the Association for Southeastern Biologists Annual Meeting, \$500
- 2012 University of North Carolina Impact Award, recognizes graduate students whose research contributes to the educational, economic, physical or social well-being of the citizens of North Carolina, \$500

PROFESSIONAL MEMBERSHIPS

Ecological Society of America – Member of Southeastern Chapter, Early Career Ecologist Section, and Vegetation Section

International Association for Vegetation Science (IAVS)

Association of Southeastern Biologists (ASB)

Southern Appalachian Botanical Society (SABS)

PROFESSIONAL SERVICE

- 2021 – present Central Appalachian Spruce Restoration Initiative, Research Committee Member
- 2020 – present Associate Editor, Plant Ecology
- 2020 – present Southern Appalachian Botanical Society Council, Member at Large
- 2019 – present Associate Editor, Southeast Coastal Plain Region, US National Vegetation Classification
- 2020 External reviewer for USGS Climate Adaptation Science Center proposals
- 2020 Reviewer of Ecological Society of America Abstracts
- 2019 – 2021 Chair of the Vegetation Section of the Ecological Society of America
- 2019 – 2020 Reviewer of Ecological Society of America Organized Oral Session proposals
- 2017 – 2019 Vice Chair of the Vegetation Section of the Ecological Society of America
- 2014 – present Reviewer for *Journal of Vegetation Science* (7), *Western North American Naturalist* (4), *Plant Ecology* (2), *Global Ecology and Biogeography* (2), *American Journal of Botany* (1), *Community Ecology* (1), *Ecological Monographs* (1), *Ecology* (1), *Fire Ecology* (1), *Functional Ecology* (1), *Global Change Biology* (1), *Journal of Ecology*

- (1), *Landscape Ecology* (1), *Restoration Ecology* (1), *Southwestern Naturalist* (1), *Wetlands* (1)
- 2017 External reviewer for NSF, Division of Environmental Biology
- 2015 – 2017 IAVS Young Scientist’s Section Steering Committee
- 2015,18-21 Judge for the Tom Damman Award, the best student oral presentation in Vegetation Science at the annual meeting of the Ecological Society of America (ESA)
- 2015,18-20 Judge for the Murray F. Buell Award and E. Lucy Braun Award, the best student oral presentation and best student poster presentation at the annual meeting of the ESA
- 2014 Judge for the Quatterman-Keever Award, the best student poster in ecology at the annual meeting of the Association for Southeastern Biologists
- 2011,19-20 Peer reviewer for the US National Vegetation Classification

UNIVERSITY SERVICE

- 2020 – present Campus Sustainability Committee, Member, Marshall University
- 2020 – present Marshall University Faculty Senator
- 2020 – present Chair of the Department of Biological Sciences Scholarships Committee, Marshall University
- 2020 – present Chair of the College of Science Greenhouse Committee, Marshall University
- 2019 – present Co-chair of the Department of Biological Sciences Seminar Series, Marshall University
- 2019 – present Department of Biological Sciences Curriculum Committee, Member, Marshall University
- 2019 – present Campus Tree Committee, Member, Marshall University