

CURRICULUM VITAE

Robert A. Washington-Allen

e-mail: washingtonra@utk.edu

website: <http://geography.utk.edu/about-us/faculty/dr-robert-washington-allen/>

Interests: I am interested in the application of concepts in landscape ecology, physical geography, synecology/biogeography, environmental monitoring, ecological restoration and remote sensing and geographic information system (GIS) technologies to the assessment of the sustainability of landscapes primarily managed by rural peoples. I currently chair 1 MS and 1 PhD student, and I am on the committees of 10 PhD and 3 MS graduate students. My colleagues and I have received ~\$13 million in grants and I have 30 peer-reviewed journal articles.

Professional Preparation

- 2003** Utah State University, Logan, Utah
PhD. in Ecology
- 1994** Utah State University, Logan, Utah
M.S. in Range Ecology
- 1983** The Ohio State University, Columbus, Ohio
B.S. in Zoology

Selected Appointments

Present – January 2013 Assistant Professor, Department of Geography, University of Tennessee, Burchfiel Geography Building, Knoxville, TN 37996-0925

December 2012–August 2007 Assistant Professor, Department of Ecosystem Science & Management, Texas A&M University, 2138 TAMU, College Station, TX 77843-2138, Tel: +979-845-8803, Fax: +979-845-6049, washington-allen@tamu.edu

August 2007–August 2005 Research Assistant Professor, Center for Regional and Environmental Studies, Department of Environmental Sciences, University of Virginia, 257 Clark Hall, 291 McCormick Rd, PO Box 400123, Charlottesville, VA 22904-4123

Present – 2005 Consultant Landscape Ecologist for Oneida Total Integrated Enterprises (OTIE) on EPA Regional Vulnerability Analysis (ReVA) Project

2007–2004 Adjunct Professor, Department of Geography, University of Tennessee, 304 Burchfiel Building, Knoxville, TN 37996-0925. Dept. Chair Dr. Carol Harden, 1-865-974-0406.

2004–1994 Research and Development Staff Scientist, Oak Ridge National Laboratory, Environmental Sciences Division, (contractor: University of Tennessee-Battelle).

1988–1990 Lecturer in Natural and Agricultural Resources Management at the National University of Lesotho's Lesotho Agricultural College, Lesotho, Southern Africa.

University Teaching Experience

2014 Spring Semester, University of Tennessee, Geography 435: Biogeography & 513: Remote Sensing Topics

2013 Fall Semester, University of Tennessee, Geography 309: Special Topics: Pastoralism in Drylands

2013 Spring and Fall Semester, University of Tennessee, Geography 413: Remote Sensing: Applications and Types

2009-2012 Fall Semester, Texas A&M University
FRSC/GEOG 462 Advanced GIS for Natural Resource Management

2008-2012 Spring Semester, Texas A&M University
RLEM 316 Rangeland Communities and Ecosystems

2008-2011 Spring Semester, Texas A&M University
RLEM 314 Rangeland Management Principles Around the World

2008 & 2011 Fall Semester, Texas A&M University
BAEN/FRSC/GEOG 652 Advanced GIS for Natural Resource Management

2006 Fall Semester, University of Virginia
EVSC 410/710 – Introductory Remote Sensing

1988-1990 Lecturer in Natural and Agricultural Resources Management at the National University of Lesotho's Lesotho Agricultural College, Lesotho, Southern Africa.

1987-1984 United States Peace Corps Volunteer in Lesotho, Southern Africa. I was a Math/Science Teacher and taught British Commonwealth Qualifying Exams in science, biology, physics, and chemistry.

Selected Awards and Achievements

2015 Invited to speak at American Geophysical Union Fall Meetings in San Francisco in the GC017: Climate-vegetation interaction and land cover/land use change in semi-arid Grassland Ecosystems Symposium

2015 Invited to speak at the Association of American Geographers 2015 Annual Meeting in *Symposium on Physical Geography: Environmental Reconstruction – A Nexus of Biogeography, Climatology and Geomorphology*

2014 Invited to speak at North Carolina State University Department of Forestry & Environmental Resources.

2011 Invited to speak to the Plant Biology Department at Michigan State University, East Lansing, Michigan.

2010 Invited to speak at the Society for Range Management's Remote Sensing and Geographic Information Systems Committee's Sponsored Symposia on High Resolution Remote Sensing

2008 Invited to speak at USGS Quantitative Detection of Ecological Thresholds Workshop, Duluth, Minnesota

2007 Invited to USFS-Sponsored Sustainable Rangeland Roundtable Workshop on Regional and National Scale Fragmentation of US Rangelands

2007 Invited to give Keynote talk at the American Geophysical Union Symposium: Remote Sensing of Vegetation Structure

2003 Invited to talk at the Swiss Federal Institute Forest, Snow, and Landscape Research in Birmensdorf, Switzerland

Organized Workshops and Symposium

2006 June Environmental Remote Sensing for Natural Resources Management Workshop for graduate students and professionals held June 12– 23, 2006 at the GIS/Remote Sensing Laboratory Faculdade de Agronomia e Engenharia Florestal, Universidade Eduardo Mondlane, Maputo Mozambique. A Workshop by the Center for

Regional Environmental Studies, Department of Environmental Sciences, University of Virginia in Collaboration with Universidade Eduardo Mondlane, Maputo Mozambique. The U.S. Department of State's Bureau of Educational and Cultural Affairs financially supported this workshop.

2006 August Developed and Co-Chaired with Dr. Lucinda F. Salo of BRD-USGS the Symposium titled: Catastrophic Thresholds, Perspectives, Definitions, and Applications, at the Ecological Society of America, 91st Annual Meeting, Memphis, TN

Selected Publications

Reviews

Washington-Allen, R.A. and L. F. Salo. 2007. Meeting Review: Catastrophic Thresholds, Perspectives, Definitions, and Applications. Bulletin of the Ecological Society of America 88:219-225

(http://www.esapubs.org/bulletin/current/apr07web_pdfs/print/apr07bulletin_meetreview.pdf)

Washington-Allen, R.A. 1995. Rangeland health: New methods to classify, inventory, and monitor rangelands, by National Research Council. J. Range Manage. 48:94-95

Book Chapters

Reeves, MC, Angerer J, Hunt ER, Kulawardhana, RW, Loboda T, Loveland T, Metternicht G, Ramsey RD Washington-Allen RA. *in press.* A Global View of Remote Sensing of Rangelands: Evolution, Applications, & Future Pathways. In Remote Sensing Handbook. Volume II: Land Resources: Monitoring, Modeling, and Mapping (Thenkabail, P.S. ed.). Boca Raton, FL: CRC Press/Taylor & Francis Group.

Washington-Allen, R.A., R.D. Ramsey, T. Van Niel, and N. E. West. 2014. Detection of Harbingers of Catastrophic Regime Shifts in Drylands. Chapter 13, pp 273 – 289 *In:* Glenn R. Guntenspergen (Ed.) Application of Threshold Concepts in Natural Resource Decision Making. Springer Science+Business Media, LLC 2014, DOI 10.1007/978-1-4899-8041-0_13.

Washington-Allen, R.A. and S. Ravi. 2012. Rangeland Monitoring & Assessment. Chapter 5. 35.18. In Victor Squires (Ed.), Range and Animal Sciences and Resources Management, EOLSS (Encyclopedia of Life Support Systems) EOLSS/UNESCO, Paris, www.eolss.net

Zimmermann, N. E., R. A. Washington-Allen, R. D. Ramsey, M. E. Schaepman, L. Mathys, B. Koetz, M. Kneubuehler, T. C. Edwards. 2007. Modern remote sensing for environmental monitoring of landscape states and trajectories, Pages 65-91 *in:* F. Kienast, O. Wildi, & S. Ghosh (Eds.). *A changing world: challenges for landscape research.* Landscape Series, Vol. 8. Springer, New York, New York.

Technical Reports

Reeves, M. C. and J.E Mitchell. 2012. A synoptic review of U.S. rangelands: A technical document supporting the Forest Service 2010 RPA Assessment. Gen. Tech. Rep. RMRS-GTR-288. Fort Collins, CO. 128 p.

US Forest Service. 2012. Future of America's Forest and Rangelands: Forest Service 2010 Resources Planning Act Assessment. Gen. Tech. Rep. WO-87. Washington, DC. 198 p.

Reister, David, Robert Washington-Allen, and Art Stewart. 2001. "Remote Sensing for Environmental Baseline and Monitoring." *Final Report, US DOE FEW FEAC320 Natural gas and oil technology partnership program* (2001).

Articles in Peer-Reviewed Journals

Haghverdi, Amir *, Brian G. Leib, Robert A. Washington-Allen, Paul D. Ayers, & Michael J. Buschermohle *in press*. High-resolution prediction of field-scale soil available water content within the crop root zone. *Journal of Hydrology*.

Haghverdi, Amir *, Brian G. Leib, Robert A. Washington-Allen, Paul D. Ayers, & Michael J. Buschermohle 2015. Perspectives on delineating management zones for variable rate irrigation. *Computers and Electronics in Agriculture* 117: 154–167.

<http://dx.doi.org/10.1016/j.compag.2015.06.019>

Moore, G.W., C.B. Edgar, J.B. Vogel, R.A. Washington-Allen, R.G. March*, & , R. Zehnder. 2015. Tree mortality from an exceptional drought spanning mesic to semiarid ecoregions. *Ecological Applications*. <http://dx.doi.org/10.1890/15-0330.1>

Teale**, N.G., H. Mahan**, S. Bleakney**, A. Berger**, N. Shibley**, O.W. Frauenfeld**, S.M. Quiring, A.D. Rapp, E.B. Roark, and R. A. Washington-Allen. *in press*. Impacts of Vegetation and Precipitation on Throughfall Heterogeneity in a Tropical Pre-Montane Transitional Cloud Forest. *Biotropica*

Feagin, R.A., Williams, A.M., Popescu, S., Stukey, J., and R.A. Washington-Allen. 2012. The use of Terrestrial Lidar Scanning (TLS) in dune ecosystems: The lessons learned. *Journal of Coastal Research* DOI: 10.2112/JCOASTRES-D-11-00223.1

Ribeiro, N.S., C.N. Matis, I.R. Moura, R.A. Washington-Allen, and A. Ribeiro. 2013. Monitoring vegetation dynamics and carbon stock density in miombo woodlands. *Carbon Balance and Management* 2013, 8:11 <http://www.cbmjournal.com/content/8/1/11>

Buenemann, M., C. Martius, J. W. Jones, S. M. Herrmann, D. Klein, M. Mulligan, M. S. Reed, M. Winslow, R. A. Washington-Allen, R. Lal and D. Ojima. 2011. Integrative geospatial approaches for the comprehensive monitoring and assessment of land management sustainability: rationale, potentials, and characteristics. *Land Degradation & Development* 22(2): 226-239, DOI: 10.1002/ldr.1074

Evans, G.R., R.A. Washington-Allen, R.D. Child, J.E. Mitchell, B.R. Bobowski, R.V. Loper, B.H. Allen-Diaz, D.W. Thompson, G.R. Welling, and T.B. Reuwsaat. 2010. Criterion III: Indicators for Maintenance of Rangeland Productive Capacity. Chapter 4. In: Mitchell JE (ed). *Criteria and Indicators for Sustainable Rangeland Management*. Sustainable Rangeland Management. Laramie, WY: University of Wyoming Extension Publication No. SM-56:139-170, Society for Range Management Monograph 4.

Washington-Allen, R.A., D. Briske, H.H. Shugart, and L.F. Salo. 2010. Catastrophic thresholds, perspectives, definitions, and applications: An introduction. *Ecology and Society* 15 (3): 38. [online] URL:

<http://www.ecologyandsociety.org/vol15/iss3/art38/>

Briske, D., R.A. Washington-Allen, C. Johnson, T. Stringham, D. Lockwood, J. Lockwood and H.H. Shugart. 2010. Catastrophic thresholds, perspectives, definitions, and applications: A synthesis. *Ecology and Society* 15 (3): 37. [online] URL:

<http://www.ecologyandsociety.org/vol15/iss3/art37/>

Washington-Allen, R.A., N.E. West, R. Douglas Ramsey, D.K. Phillips and H.H. Shugart. 2009. Retrospective assessment of soil stability on a landscape subject to

commercial grazing. *Environmental Monitoring and Assessment*: [online] DOI 10.1007/s10661-008-0661-3

Lutz, D.A., R.A. Washington-Allen, and H.H. Shugart. 2008. Remote sensing of boreal forest biophysical and inventory parameters: a review. *Canadian Journal of Remote Sensing* 34(Suppl. 2):S286-S313.

Washington-Allen, R. A., R. D. Ramsey, N. E. West, and B. E. Norton. 2008. Quantification of the ecological resilience of drylands using digital remote sensing. *Ecology and Society* 13(1): 33. [online] URL: <http://www.ecologyandsociety.org/vol13/iss1/art33/>

Ribeiro, N.S., S. S. Saatchi, H. H. Shugart and R.A. Washington-Allen. 2008. Aboveground biomass and leaf area index (LAI) mapping for Niassa Reserve, northern Mozambique. *Journal of Geophysical Research* 113, G02S02, doi:10.1029/2007JG000550

Fatoyinbo, T. E., M. Simard, R. A. Washington-Allen, and H. H. Shugart. 2008. Landscape-scale extent, height, biomass, and carbon estimation of Mozambique's mangrove forests with Landsat ETM+ and Shuttle Radar Topography Mission elevation data, *Journal of Geophysical Research* 113:G02S06, doi:10.1029/2007JG000551.

Ribeiro, N.S., H. H. Shugart, and R.A. Washington-Allen. 2008. The Effects of Fire and Elephants on Species Composition and Structure of The Niassa Reserve, Northern Mozambique. *Forest Ecology and Management* 255:1626-1636.

Washington-Allen, R.A., R. D. Ramsey, N. E. West, and R. A. Efrogmson. 2006. A remote sensing-based protocol for assessing rangeland condition and trend. *Rangeland Ecology and Management* 59(1):19-29.

Miller, N. L., A. W. King, M. A. Miller, E.P. Springer, M. L. Wesley, K. E. Bashford, M. E. Conrad, K. Costigan, P.N. Foster, H. K. Gibbs, J. Jin, J. Klazura, B. M. Lesht, M. V. Mashavaram, F. Pan, J. Song, D. Troyan, and R.A. Washington-Allen. 2005. The DOE Global Water Cycle Pilot Project. *Bulletin of the American Meteorological Society* 86(3): 359-374.

Olsen, L.M., R.A. Washington-Allen, and V.H. Dale. 2005. Time-series analysis of land cover using landscape metrics. *GIScience and Remote Sensing* 42(3) 200-223.

Washington-Allen, R.A., R. D. Ramsey, and N. E. West. 2004. Spatiotemporal mapping of the dry season vegetation response of sagebrush steppe. *Community Ecology* 5(1):69-79.

Mann, L. K., A. W. King, V. H. Dale, W. W. Hargrove, R. A. Washington Allen, L. Pounds, and T. L. Ashwood. 1999. The role of classification in geographic information systems modeling of habitat pattern: Threatened calcareous ecosystems. *Ecosystems* 2: 524-538

Washington-Allen, R.A., R.D. Ramsey, B.E. Norton, and N.E. West. 1998. Change Detection of the effect of severe drought on subsistence agropastoral communities on the Bolivian Altiplano. *International Journal of Remote Sensing* 19:1319-1333.

Dale, V.H., A.W. King, L. K. Mann, R.A. Washington-Allen, and R.A. McCord. 1998. Assessing land-use impacts on natural resources. *Environmental Management* 22:203-211