

A. JOSHUA LEFFLER
USDA-ARS
6300 OLD MAIN HILL
UTAH STATE UNIVERSITY
LOGAN, UT 84322 USA

PHONE: 1-435-797-3070
FAX: 1-435-797-3075
E-MAIL: JLEFFLER@CC.USU.EDU

CURRICULUM VITAE

EDUCATION

1999 Ph.D. Biology. University of New Mexico. Albuquerque, NM
1994 B.S. Biology. University of Utah. Salt Lake City, UT

APPOINTMENTS

2009-present Research Ecologist. USDA-ARS. Logan, UT
2006-2009 Postdoctoral Fellow. Utah State University. Logan, UT
2004-2006 Assistant Professor. Louisiana Tech University. Ruston, LA
2005-present Adjunct Professor. University of New Mexico. Albuquerque, NM
1999-2004 Postdoctoral Fellow. Utah State University. Logan, UT
1998-2003 Instructor. University of New Mexico. Albuquerque, NM

RESEARCH INTERESTS

I seek mechanistic explanations of pattern and process in the areas of plant water relations, gas exchange, and nutrient acquisition with the goal of linking plant physiological traits to population dynamics, community structure, and ecosystem functioning.

TEACHING EXPERIENCE

Ecology of Our World (non-majors, Utah State University)
Restoration Ecology (Utah State University)
Inventory, Monitoring, and Assessment (Utah State University)
Introduction to Environmental Science (Louisiana Tech University)
Introduction to Natural Resources and Conservation (Louisiana Tech University)
Plant Physiological Ecology (Louisiana Tech University)
Climate Change Ecology (Utah State University, Louisiana Tech University)
Aridland Ecology (Louisiana Tech University)
Biodiversity of Australia (University of New Mexico)

PEER-REVIEWED PUBLICATIONS

- Hooker, T.D., Stark, J.M., Norton, U., **Leffler, A.J.**, Peek, M., and Ryel, R. 2008. Distribution of ecosystem C and N within contrasting vegetation types in a semiarid rangeland in the Great Basin, USA. *Biogeochemistry* 90:291–308.
- Rowland, D.L., **Leffler, A.J.**, Sorensen, R.B., Dorner, J.W., and Lamb, M.C. 2008. Testing the efficacy of deuterium application for tracing water uptake in peanuts. *Transactions of the ASABE* 51:455–461.
- Ryel, R.J., Ivans, C.Y., Peek, M.S., and **Leffler, A.J.** 2008. Functional differences in soil water pools: a new perspective on plant water use in water-limited ecosystems. *Progress in Botany* 69:397–422.
- Leffler, A.J.**, Peek, M.S., Hipps, L., Ivans, S., Ryel, R.J., and Caldwell, M.M. 2007. Potential contribution of respiration by *Anabrus simplex* (Mormon crickets) to net CO₂ exchange in three Great Basin ecosystems. *Western North American Naturalist* 67:109–119.
- Ivans, S., Hipps, L., **Leffler, A.J.**, and Ivans, C.Y. 2006. Response of water vapor and CO₂ fluxes in semi-arid lands to seasonal and intermittent precipitation pulses. *Journal of Hydrometeorology* 7:995–1010.
- Peek, M.S., **Leffler, A.J.**, Hipps, L., Ivans, S., Ryel, R.J. and Caldwell, M.M. 2006. Root turnover and relocation in the soil profile in response to seasonal soil water variation in a natural stand of Utah juniper (*Juniperus osteosperma*). *Tree Physiology* 26:1469–1476.
- Leffler, A.J.** and Caldwell, M.M. 2005. Photosynthetic capacity and relative depth of water extraction along an ecotone of *Juniperus osteosperma* (Utah juniper) and *Artemisia tridentata* (big sagebrush). *Journal of Ecology* 93:783–793.
- Leffler, A.J.**, Peek, M.S., Ryel, R.J., Ivans, C.Y. and Caldwell, M.M. 2005. Hydraulic redistribution through the root systems of senesced plants. *Ecology* 86:633–642.
- Peek, M.S., **Leffler, A.J.**, Ivans, C.Y., Ryel, R.J. and Caldwell, M.M. 2005. Fine root distribution and persistence under field conditions of three co-occurring Great Basin species of different life form. *New Phytologist* 165:171–180.
- Huxman, T.E., Snyder, K., Tissue, D., **Leffler, A.J.**, Ogle, K., Pockman, W.T., Sandquist, D.R., Potts, D.L. and Schwinning, S. 2004. Precipitation pulses and carbon fluxes in semiarid and arid ecosystems. *Oecologia* 141:254–268.
- Ryel, R.J., **Leffler, A.J.**, Peek, M.S., Ivans, C.Y. and Caldwell, M.M. 2004. Water conservation in *Artemisia tridentata* through redistribution of precipitation. *Oecologia* 141:335–345.
- Leffler, A.J.**, Ivans, C.Y., Ryel, R.J. and Caldwell, M.M. 2004. Gas exchange and growth responses of the desert shrubs *Artemisia tridentata* and *Chrysothamnus nauseosus* to shallow- versus deep-soil water in a glasshouse experiment. *Environmental and Experimental Botany* 51:9–19.

- Peek, M.S., **Leffler, A.J.**, Flint, S.D. and Ryel, R.J. 2003. How much variance is not explained by ecologists: Additional perspectives. *Oecologia* 137:161–170.
- Ryel, R.J., Caldwell, M.M., **Leffler, A.J.** and Yoder, C.K. 2003. Rapid soil moisture recharge to depth by roots. *Ecology* 84:757–764.
- Ivans, C.Y., **Leffler, A.J.**, Spaulding, U., Stark, J.M., Ryel, R. and Caldwell, M.M. 2003. Root responses and nitrogen acquisition by *Artemisia tridentata* and *Agropyron desertorum* following small summer rainfall events. *Oecologia* 134:317–324.
- Leffler, A.J.**, Ryel, R.J., Hips, L., Ivans, S. and Caldwell, M.M. 2002. Carbon acquisition and water use in a northern Utah *Juniperus osteosperma* (Utah juniper) population. *Tree Physiology* 22:1221–1230.
- Leffler, A.J.** and Enquist, B.J. 2002. Carbon isotope composition of tree leaves from dry tropical forests of Guanacaste, Costa Rica: Comparison across tropical ecosystems and tree life history. *Journal of Tropical Ecology* 18:151–159.
- Ryel, R.J., Caldwell, M.M., Yoder, C.K., Or, D. and **Leffler, A.J.** 2002. Hydraulic redistribution in a stand of *Artemisia tridentata*: Evaluation of benefits to transpiration assessed with a simulation model. *Oecologia* 130:173–184.
- Leffler, A.J.** and Evans, A.S. 2001. Physiological variation among *Populus fremontii* populations: Short- and long-term relationships between $\delta^{13}\text{C}$ and water availability. *Tree Physiology* 21:1149–1155.
- Enquist, B.J. and **Leffler, A.J.** 2001. Long-term tree ring chronologies from sympatric tropical dry-forest trees: Individualistic responses to climatic variation. *Journal of Tropical Ecology* 17:41–60.
- Leffler, A.J.**, England, L.E. and Naito, J.N. 2000. Vulnerability of Fremont cottonwood individuals to xylem cavitation. *Western North American Naturalist* 60:204–210.
- Leffler, A.J.** and Evans, A.S. 1999. Variation in carbon isotope composition among years in the riparian tree *Populus fremontii*. *Oecologia* 119:311–319.

RECENT PRESENTATIONS

- Ecological Society of America, Albuquerque, NM, 2–7 August 2009. “A tale of two landscapes: Assessing aspen in northern and southern Utah with ecological indicators.”
- North American Forest Ecology Workshop, Logan, UT, 22–26 June 2009. “Aspen condition on Cedar Mountain: Ecological indicators of decline.”
- Restoring the West Conference, Utah State University, Logan, UT, 16–18 September 2008. “Efficacy and consequences of aspen treatments: The USU/Deseret Land & Livestock Manipulation Project.”
- Ecological Society of America, Milwaukee, WI, 3–8 August 2008. “Forest treatments to regenerate aspen in northern Utah: Pre-treatment findings.”

- Ecological Society of America, Montreal, QC, 7–12 August 2005. “Evaluation of water use and infiltration in peanuts with a $\delta^2\text{H}$, soil water content, and root distribution model.”
- Ecological Society of America, Portland, OR, 1–6 August 2004. “Potential contribution of Mormon crickets to net CO_2 exchange in three Great Basin ecosystems.”
- Ecological Society of America, Savannah, GA, 3–8 August 2003. “Hydraulic redistribution in *Bromus tectorum*: the role of shoots.”
- Invited Seminar, California State University, Sacramento, CA, 1 November 2002. “The ecology of plant water uptake.”
- Ecological Society of America, Tucson, AZ, 4–9 August 2002. “Physiological changes in Utah juniper and big sagebrush along a sagebrush/juniper transition zone.”
- Invited Seminar, Weber State University, Ogden, UT, 31 October 2001. “Above- and below-ground physiological activity in Utah juniper and big sagebrush.”
- Ecological Society of America, Madison, WI, 5–10 August 2001. “Xylem sap flow in a northern Utah *Juniperus osteosperma* population.”
- Ecological Society of America, Snowbird, UT, 6–10 August 2000. “Individual responses to water deficit in the riparian tree *Populus fremontii*.”
- Ecological Society of America, Spokane, WA, 8–12 August 1999. “Variation in $\delta^{13}\text{C}$ among *Populus fremontii* populations.”
- Invited Seminar, Northern Arizona University, Flagstaff, AZ, 9 October 1998. “Multi-scale physiological patterns in Fremont cottonwood.”

RECENT GRANTS/AWARDS

- 2008 Evaluating the magnitude and extent, and assessing causes, of aspen (*Populus tremuloides*) mortality in southern Utah – USU Cedar Mountain Initiative (CO-PI, \$148,778)
- 2008 Ecohydrology of quaking aspen (*Populus tremuloides*) communities – USU Water Initiative (CO-PI, \$20,000)
- 2007 Reversing aspen decline: assessing the effects of forest manipulation on resource values and ecosystem process and function (CO-PI and Author, \$397,913)
- 2007 Nitrogen retention in cottonwood and Russian olive dominated riparian systems – Center for Invasive Plant Management (CO-PI and Author, \$4,963)
- 2006 Nitrogen Cycling In Oil Brine Contaminated Sites – Louisiana Applied Oil Spill Research and Development Program (PI, \$56,556)
- 2005 Pioneering plants to remediate oil and brine spills – Louisiana Applied Oil Spill Research and Development Program (PI, \$47,131)
- 2005 An International Experience for Undergraduates: Australian Biodiversity and Ecological Research – National Science Foundation (CO-PI, \$114,140)

- 1999 Biodiversity of Australia Field Course – National Science Foundation
Teaching Post-Doc
- 1998 Spatial and temporal variation in the physiology of a riparian tree –
NSF Dissertation Improvement Grant (CO-PI, \$10,400)

SERVICE

Restoring the West 2009 Planning Committee
NSF International REU Best Practices Workshop, 2001
NSF Grant Proposal Reviewer (OISE, DEB), 2002–present
Manuscript Reviewer, 2002–present
Oecologia, Journal of Ecology; Functional Ecology; Flora; Environmental
and Experimental Botany; Plant, Cell, and Environment