

## Curriculum Vitae

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Kevin R. Hultine, Ph.D.  
Desert Botanical Garden  
1201 N. Galvin Parkway  
Phoenix, AZ 85008  
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### Education

Ph.D. School of Renewable Natural Resources, with a Ph.D. minor in Hydrology,  
University of Arizona, Tucson, AZ, 2004  
Dissertation title: Water uptake by *Prosopis velutina*: the role of soil hydraulic limits and  
root function

M.S. School of Renewable Natural Resources, University of Arizona, Tucson, AZ, 2001  
Thesis title: Reverse flow in tap- and main lateral roots of semi-arid riparian tree species:  
evidence for hydraulic redistribution

B.S. School of Forestry, University of Idaho, Moscow, ID, 1997  
Thesis title: A comparison of three methods for determining the stomatal density of pine  
needles

### Academic experience

Research Ecologist/Plant Physiologist, Desert Botanical Garden, Department of  
Research, Conservation and Collections, Phoenix, July 2011 - Present

Adjunct Professor, Arizona State University, School of Life Sciences, July 2011 - Present

Adjunct Professor, Northern Arizona University, School of Earth Sciences and  
Environmental Sustainability, June 2011 - Present

Visiting Faculty, Northern Arizona University, School of Earth Sciences and  
Environmental Sustainability, August 2010 to May 2011

Staff Scientist, University of Utah, Entrada Field Station, October 2008 to June 2010

Assistant Research Professor. University of Utah, Department of Biology Stable Isotope  
Ratio Facility for Environmental Research, January 2007 to August 2010

Research Associate. University of Utah, Department of Biology Stable Isotope Ratio  
Facility for Environmental Research, March 2004 to January 2007

Graduate advisor: David G. Williams (University of Arizona)

Postdoctoral advisor: James R. Ehleringer (University of Utah)

#### Manuscripts in review or revision

Bush SE, **Hultine KR**, Ehleringer JR. Sap-flux-scaled transpiration of co-occurring riparian tree species differing in native status and wood anatomy in northern Utah, USA. *Agricultural and Forest Meteorology*

Huber J, Dettman DL, Williams DG, **Hultine KR**. Gas exchange characteristics of giant cacti species varying in stem morphology and life history strategy. *American Journal of Botany*

Madliger CL, Love OP, **Hultine KR**, Cooke SJ. The conservation physiology toolbox: status and opportunities. *Conservation Physiology*

**Hultine KR**, Dettman DL, Williams DG, Puente R, English NB, Butterfield BJ, Búrquez A. Relationships among climate, stem growth and biomass  $\delta^{13}\text{C}$  in the giant saguaro cactus (*Carnegie gigantea*). *Ecology*

#### Publications

53. **Hultine KR**, Bush SB, Ward JK, Dawson TE. (2018). Does sexual dimorphism predispose dioecious riparian trees to sex ratio imbalances under climate change? *Oecologia*. In press

52. Long R, Bush SE, Grady KC, Smith D, Potts DL, D'Antonio CM, Dudley TL, Fehlberg SD, Gaskin JF, Glenn EP, **Hultine KR**. (2017). Can local adaptation explain varying patterns of herbivory tolerance in a recently introduced tree in North America? *Conservation Physiology*. <https://doi.org/10.1093/conphys/cox016>

51. Madliger CL, Franklin CE, **Hultine KR**, van Klunen M, Lennox RJ, Love OP, Rummer JL, Cooke SJ. (2017). Conservation physiology and the quest for a “good” Anthropocene. *Conservation Physiology*. [Doi.org/10.1093/conphys/cox003](https://doi.org/10.1093/conphys/cox003)

50. Kropp H, Ogle K, Vivoni ER, **Hultine KR**. (2016). The sensitivity of evapotranspiration to plant neighbor interactions: implications for patch and stand-scale models. *Ecosystems*. DOI: 10.1007/s10021-017-0112-5

49. Cailleret M, Jansen S, Robert E, DeSoto L, Aakala T, Antos J, Beikircher, B, Bigler C, Bugmann H, Caccianiga M, Čada, Vojtěch; Camarero, Jesus Julio; Cherubini, Paolo; Cochard, Hervé; Coyea, Marie; Cufar, K, Das A, Davi H, Delzon S, Dorman, M, Gea-Izquierdo G, Gillner S, Haavik L, Hartmann H, Hereş A-M, **Hultine K**, Janda P, Kane J, Kharuk VI, Kitzberger T, Klein T, Kramer K, Lens F, Levanic T, Linares JC, Lloret F, Lobo do Vale R, Lombardi F, López Rodríguez R, Makinen H, Mayr S, Mészáros I, Metsaranta J, Minunno F, Oberhuber W, Papadopoulos A, Peltoniemi M, Petritan AM, Rohner B, Sangüesa-Barreda G, Sarris D, Smith, J, Stan A, Sterck F, Stojanović D, Suarez M, Svoboda M, Tognetti, R, Torres-Ruiz J; Trotsiuk V, Villalba R, Vodde, F,

Westwood A, Wyckoff P, Zafirov N, Martinez-Vilalta J. (2016). A global synthesis of radial growth patterns preceding tree mortality. *Global Change Biology*. DOI: 10.1111/gcb.13528

48. **Hultine KR**, Majure LC, Nixon VS, Arias S, Búrquez A, Goettsch B, Puente-Martinez R, Zavala-Hurtado A. (2016). The role of botanical gardens in the conservation of Cactaceae. *Bioscience*. **66**: 1057-1065

47. **Hultine KR**, Grady KC, Wood TE, Shuster SM, Stella JC, Whitham, TG. (2016). Climate change perils for dioecious plant species. *Nature Plants*. DOI 10.1038/NPLANTS.2016.109

46. **Hultine KR**, Williams DG, Dettman DL, Butterfield BJ, Puente-Martinez, R. (2016). Stable isotope physiology of stem succulents detects functional tradeoffs and bioclimatic specificity across a broad range of volume to surface area ratio. *Oecologia*. **182**: 679-690

45. Kenkel J, Sisk TD, **Hultine KR**, Sesnie SE, Bowker MA, and Johnson NC. (2016). Indicators of vehicular emission inputs into semi-arid roadside ecosystems. *Journal of Arid Environments*. **134**: 150-159

44. Madliger CL, Cooke SJ, Crespi EJ, Funk JL, **Hultine KR**, Hunt KE, Rohr JR, Sinclair BJ, Suski CD, Willis CKR, and Love OP. (2016). Success stories and emerging themes in conservation physiology. *Conservation Physiology*. **4**: doi:10.1093/conphys/cov057

43. Brown TB, **Hultine KR**, Steitzer H, Denny EG, Denslow MW, Granados J, Henderson S, Moore D, Nagai S, Sonnentag O, San Clements O, Sánchez-Azofeifa A, Tazik D, and Richardson A. (2015). Using phenocams to monitor our changing Earth: towards a global phenocam network. *Frontiers in Ecology and the Environment*. **14**: 84-93

42. **Hultine KR**, Bean DW, Dudley TL, and Gehring CA. (2015). Species introductions and their cascading impacts on biotic interactions in desert riparian ecosystems. *Integrative and Comparative Biology* **55**: 587-601

41. **Hultine KR**, Dudley TL, Koepke DF, Bean DW, Glenn EP, and Lambert AM. (2015) Patterns of herbivory-induced mortality of a dominant non-native tree/shrub (*Tamarix* spp.) in a southwestern US watershed. *Biological Invasions* **17**: 1729-1742

40. Houdeshel CD, **Hultine KR**, Collins-Johnson N, and Pomeroy CA. (2015) Evaluation of three vegetation treatments in bioretention gardens in a semi-arid climate. *Landscape and Urban Planning* **135**: 62-72

39. Williams DG, **Hultine KR**, and Dettman DL. (2014). Functional tradeoffs in succulent stems may predict responses to climate change in columnar cacti. *Journal of Experimental Botany* **65**: 3405-3413

38. Nagler PL, Pearlstein S, Glenn EP, Brown T, Bateman H, Bean D, and **Hultine KR**. (2013). Rapid dispersal of saltcedar (*Tamarix* spp.) biocontrol beetles (*Diorhabda carinulata*) on a desert river detected by phenocams, MODIS imagery and ground observations. *Remote Sensing of Environment* **140**: 206-219
37. **Hultine KR**, Burtch KG, and Ehleringer JR. (2013) Gender specific patterns of carbon uptake and water use in a dominant riparian tree species exposed to a warming climate. *Global Change Biology* **19**: 3390-3405
36. Glenn EP, Nagler PL, Morino K and **Hultine KR**. (2013) Phreatophytes under stress: transpiration and stomatal conductance of saltcedar (*Tamarix* spp.) in a high salinity environment. *Plant and Soil* **371**: 655-672
35. **Hultine KR**, Dudley TL. And Leavitt SW. (2013) Herbivory-induced mortality increases with radial growth in an invasive riparian phreatophyte. *Annals of Botany* **111**: 1197-1206
34. Houdeshel CD, Pomeroy CA, and **Hultine KR**. (2012) Bioretention design for xeric climates based on ecological principles. *Journal of the American Water Resources Association* **48**: 1178-1190
33. Meng R, Dennison PE, Jamison LR, van Riper C III, Nagler P, **Hultine K**, Bean DW, and Dudley T. (2012). Detection of tamarisk defoliation by the northern tamarisk leaf beetle on multitemporal Landsat 5 Thematic Mapper imagery. *GI Science and Remote Sensing* **49**: 510-537
32. Glenn EP, Nelson SG, Ambrose B., Martinez R, Soliz D, and **Hultine K**. (2012) Comparison of salinity tolerance of three *Atriplex* spp. in well-watered and drying soils. *Environmental and Experimental Botany* **83**: 62-72
31. Nagler PL, Brown T, **Hultine KR**, van Riper III C, Bean DW, Murray RS, Pearlstein S, and Glenn EP. (2012) Regional-scale impacts of the *Tamarix* leaf beetle (*Diorhabda carinulata*) on the leaf phenology and water use of *Tamarix* spp. *Remote Sensing of Environment* **118**: 227-240
30. Glenn EP, Morino K, Nagler PL, Murray RS, Pearlstein S, and **Hultine KR**. (2012) Role of saltcedar and capillary rise in salinizing a non-flooding terrace on a flow-regulated desert river. *Journal of Arid Environments* **79**: 56-65
29. Doody T, Glenn E, Nagler P, Moore GW, Morino K, **Hultine KR**, and Benyon R. (2011) Potential for water salvage by removal of non-native species from dryland river systems. *Hydrological Processes* **25**: 4117-4131

28. **Hultine KR**, and Bush SE. (2011) Ecohydrological consequences of non-native riparian vegetation in the southwestern U.S.: a review from an ecophysiological perspective. *Water Resources Research* DOI:10.1029/2010WR010317
27. Bateman HL, Dudley TL, Bean DW, Ostoja SM, **Hultine KR**, and Kuehn MJ. (2010) A river system to watch: documenting the effects of saltcedar (*Tamarix* spp.) biocontrol in the Virgin River Valley. *Ecological Restoration* **28**: 405-410
26. **Hultine KR**, Nagler PL, Morino K, Bush SE, Burtch, KG, Dennison PE, Glenn EP, and Ehleringer JR. (2010) Sap flux-scaled transpiration by tamarisk (*Tamarix* spp.) before, during and after episodic defoliation by the saltcedar leaf beetle (*Diorhabda carinulata*). *Agricultural and Forest Meteorology* **150**: 1467-1475
25. Bush SE, **Hultine KR**, Sperry JS and Ehleringer JR (2010) Calibration of heat dissipation sap-flux probes on ring- and diffuse-porous trees. *Tree Physiology* **30**: 1545-1554
24. **Hultine KR**, Belnap J, Dennison PE, Ehleringer JR, Lee ME, Nagler PL, Snyder KA, Uselman SM, van Riper III C, and West JB. (2010). Tamarisk biocontrol in the western United States: ecological and societal implications. *Frontiers in Ecology and the Environment* **8**: 467-474
23. **Hultine, KR**, Bush, SE, and Ehleringer JR. (2010). Ecophysiology of riparian cottonwood and willow before, during and after two years of groundwater removal. *Ecological Applications* **20**: 347-361
22. Nagler PL, Morino K, Didan, K, Erker J, Osterberg J, **Hultine K**, Glenn EP (2009). Wide area estimates of saltcedar (*Tamarisk* spp.) evapotranspiration on the lower Colorado River measured by heat balance and remote sensing methods. *Ecohydrology* **2**: 18-33
21. Dennison PE, Nagler PL, **Hultine KR**, Glenn EP, and Ehleringer JR. (2009). Remote monitoring of tamarisk defoliation and evapotranspiration following saltcedar leaf beetle attack. *Remote Sensing of Environment* **113**: 1462-1472
20. **Hultine KR**, Jackson TL, Burtch KG, Schaeffer SM, and Ehleringer JR (2008). Elevated stream inorganic nitrogen impacts on a dominant riparian tree species: results from an experimental riparian stream system. *JGR Biogeosciences* **113**, G04025, DOI:10.1029/2008JG000809
19. Glenn EP, Morino K, Didan K, Jordan F, Carrol K, Nagler P, **Hultine K**, Waugh J (2008). Vegetation density and evapotranspiration in a heavily grazed phreatophytic shrub community in a nitrate-contaminated desert watershed: implications for local water balance. *Ecohydrology* **1**: 316-329

18. **Hultine KR**, Bush SE, West AG, Burtch KG, Pataki DE and Ehleringer JR (2008). Gender specific patterns in above ground allocation and water use in a dominant riparian tree species: box elder (*Acer negundo*). *Tree Physiology* 28, 1383-1394
17. West AG, **Hultine KR**, Sperry JS, Bush SE and Ehleringer JR. (2008). Interannual and seasonal variation in transpiration in a piñon-juniper woodland. *Ecological Applications* 18, 911-927
16. Bush SE, Pataki DE, **Hultine KR**, West AG, Sperry JS and Ehleringer JR (2007) Wood anatomy constrains stomatal responses to atmospheric vapor pressure deficit in irrigated, urban trees. *Oecologia* **156**, 13-20
15. Scott RL, Cable WL, **Hultine KR** (2007) Ecohydrologic significance of hydraulic redistribution in a semiarid savanna. *Water Resources Research* 44, W02440, DOI 10.1029/2007WR006149
14. **Hultine KR**, Bush SE, West AG and Ehleringer JR (2007) Population structure, physiology and ecohydrological impacts of dioecious riparian tree species of western North America. *Oecologia* **154**, 85-93
13. West AG, **Hultine KR**, Jackson TL and Ehleringer JR (2007) Contrasting hydraulic strategies explain differential summer moisture use of *Pinus edulis* and *Juniperus osteosperma*. *Tree Physiology* **27**, 1711-1720
12. West AG, **Hultine KR**, Burtch KG, and Ehleringer JR (2007) Seasonal variation in moisture use in a pinon-juniper woodland. *Oecologia* 153, 787-798
11. **Hultine KR**, Bush SE, West AG and Ehleringer JR (2007) The effect of gender on sap flux-scaled transpiration in a dominant riparian tree species: box elder (*Acer negundo*). *JGR Biogeosciences* **112**, G03S06, DOI 10.1029/2006JG000232
10. **Hultine KR**, Koepke DF, Pockman WT, Fravolini A, Sperry JS, and Williams DG (2006) Influence of soil texture on hydraulic properties and water relations of a dominant warm-desert phreatophyte. *Tree Physiology* **26**, 313-323
9. Fravolini A, **Hultine KR**, Brugnoli E, Gazal R, English N, and Williams DG (2005) Precipitation pulse use by an invasive woody legume: the role of soil texture and pulse size. *Oecologia* **144**, 618-627
8. Huxman TE, Wilcox BP, Scott RL, Snyder KA, Breshears D, Small EE, **Hultine KR**, Pockman WT and Jackson RB (2005) Woody plant encroachment and the water cycle: an ecohydrological framework. *Ecology* **86**, 308-319
7. Williams DG, Cable W, **Hultine K**, Hoedjes JCB, Yopez EA, Simonneaux V, Er-Raki S, Boulet G, de Bruin HAR, Chebouni A and Timoul F (2004) Components of

evapotranspiration in an olive orchard determined by eddy covariance, sap flow, and stable isotope techniques. *Agricultural and Forest Meteorology* **125**, 241-258

6. **Hultine KR**, Scott RL, Cable WL and Williams DG (2004) Hydraulic redistribution by a dominant, warm-desert phreatophyte: seasonal patterns and response to precipitation pulses. *Functional Ecology* **18**, 530-538

5. **Hultine KR**, Williams DW, Burgess SSO and Keefer TO (2003) Contrasting Patterns of hydraulic redistribution by three desert phreatophytes. *Oecologia* **135**, 167-175

4. **Hultine KR**, Cable WL, Burgess SSO and Williams DG (2003) Hydraulic redistribution by deep roots of a Chihuahuan Desert phreatophyte. *Tree Physiology* **23**, 353-360

3. **Hultine KR** and Marshall JD (2001) A comparison of three methods for determining the stomatal density of pine needles. *Journal of Experimental Botany* **52**, 359-363

2. **Hultine KR** and Marshall JD (2000) Altitude trends in conifer leaf morphology and stable carbon isotope composition. *Oecologia* **123**, 32-40

1. McDowell SCL, McDowell NG, Marshall JD and **Hultine KR** (2000) Carbon and nitrogen allocation to male and female reproduction in Rocky Mountain Douglas-fir (*Pseudotsuga menziesii* var. *glauca*, Pinaceae). *American Journal of Botany* **87**, 539-546

#### Book chapters

3. Bean D, Dudley TL, and **Hultine KR**. (2013) Bring on the beetles! The biology of tamarisk biocontrol. In. *Tamarix: A case study of ecological change in the American West*, eds. A. Sher, M. Quigley. Oxford University Press

2. **Hultine KR**, and Dudley, TL. (2013) The biology of *Tamarix* from organism to landscape. In. *Tamarix: A case study of ecological change in the American West*, eds. A. Sher, M. Quigley. Oxford University Press

1. Goodrich DC, Williams D, Unkrich CL, Scott RL, **Hultine KR**, Pool D, Coes AL, Hogan JF and Miller S. (2004) Ephemeral channel recharge and evapotranspiration from near-channel vegetation. In, *Groundwater Recharge in a Desert Environment: the Southwestern United States*, eds. FM Phillips, JF Hogan and B Scanlon, Water Science and Application series, Washington DC, American Geophysical Union

#### Funding

USDA National Institute of Food and Agriculture, Agriculture and Food Research Initiative \$500,00 “Host plant allocation strategies and mortality in response to a specialist herbivore”, KR Hultine, D. Bean co-PI, C D’Antonio co-PI, T Dudley co-PI, S Fehlberg co-PI, K Grady co-PI, 3 years

National Science Foundation \$2,500,000 “Collaborative research: Landscape genetic connectivity of a foundation species: implications for dependent communities facing climate change and exotic species invasion”, G. Allan, C. Gehring co-PI, K. Grady co-PI, KR Hultine co-PI, T Whitham co-PI, 5 years

Bureau of Reclamation, Desert Landscape Conservation Cooperative \$149,000, “From genotype to river basin: the combined impacts of climate change and biocontrol on a dominant riparian invasive tree/shrub (*Tamarix* spp.)”, KR Hultine, D. Bean co-PI, T. Dudley co-PI, S. Fehlberg co-PI, K Grady co-PI, A. Salywon co-PI, 2 years

National Science Foundation \$394,716 “Collaborative Research: Quantifying nitrogen uptake in bioretention designed for semiarid climates”, C. Pomeroy, KR Hultine co-PI, 3 years

University of Utah Seed Grant Program \$27,647, “Water and carbon exchange in bioretention stormwater facilities”, C. Pomeroy, KR Hultine co-PI, 1 year

Bureau of Reclamation \$321,087, “Developing a salt and water budget for saltcedar stand replacement vegetation on the lower Colorado River at Cibola National Wildlife Refuge and Dolores River at Entrada Research Station, P. Nagler, E Glenn co-PI, KR Hultine co-PI, K McDonald co-PI, 2 years

USDA, CAPS, \$34,750, “Monitoring tamarisk defoliation by the saltcedar leaf beetle along the middle Colorado River watershed”, P. Dennison, KR Hultine co-PI, JR Ehleringer co-PI, 1 year

Bureau of Reclamation, \$150,000, “Episodic defoliation of tamarisk by the saltcedar leaf beetle: implication for regional-level riparian ET on the Colorado Plateau” KR Hultine, PL Nagler, co PI, 3 years

University of Utah Seed Grant Program \$26,000, “Coupled biophysical-hydrological response to climate variability” S. Burian, KR Hultine co-PI, 1 year

Water Resource Research Center, University of Arizona, \$13,724, “Isotope bihydrology of an ephemeral drainage” DG Williams, KR Hultine co-PI, D Goodrich co-PI, 1 year

Conference presentations (not including poster presentations)

Hultine KR, Puente R, Búrquez, DG Williams, Dettman DL, Butterfield B. (2017). Relationships among growth, internal water storage and precipitation in giant saguaro and other Sonoran Desert giant cacti. Ecological Society of America’s annual meeting (Portland, OR)

Hultine KR, Bush SE, D’Antonio C, Dudley, TL, Fehlberg SD, Grady KC, Long R. (2016). Species introductions in desert riparian ecosystems: cascading impacts of local

adaptation and resource allocation strategies on biotic interactions. Society for Environmental Biology (Brighton, UK)

Hultine KR, Bean DW, Dudley TL, Gehring CA. (2015). Species introductions and their cascading impacts on biotic interactions in desert riparian ecosystems. Society for Integrative and Comparative Biology (West Palm Beach, FL)

Hultine KR, Wood T, Grady K, Shuster S, Stella J, Whitham T. (2014). Climate change perils for dioecious plants. Ecological Society of America's annual meeting (Sacramento, TX)

Hultine KR. (2014). Functional tradeoffs in succulent stems predict responses to climate change in columnar cacti. Arizona Botanical Society's annual meeting (Tucson, AZ)

Hultine KR. (2011) Herbivory-induced mortality increases with radial growth in an invasive riparian phreatophyte. Ecological Society of America's annual meeting (Austin, TX)

Hultine KR, Bush SE, Nagler PL, Morino K, Dennison PE, Burtch KG, Glenn EP, and Ehleringer JR. (2010) From leaf to basin: evaluating the impacts of introduced plant species on evapotranspiration fluxes from riparian ecosystems in the southwestern U.S. American Geophysical Union's annual meeting (San Francisco, CA)

Hultine KR, Bush SE, Nagler PL. (2010) Effects of biological control on water use by tamarisk and other riparian invasives. 2010 Tamarisk Symposium (Grand Junction, CO)

Hultine KR. (2009). Soil hydraulic properties and plant water relations: controls over plant community structure and function in arid environments. Ecological Society of America's annual meeting (Albuquerque, NM)

Hultine KR, Belnap J, Dennison PE, Ehleringer JR, Lee ME, Nagler PL, Snyder KA, Uselman SM, van Riper III C, and West JB. (2009) Biocontrol of tamarisk in the western United States: an event underway with significant ecological and societal implications. Tamarisk and Russian olive Research Conference (Reno, NV)

Hultine KR. (2008). Tamarisk (*Tamarix*) water flux patterns before, during and after episodic defoliation by the salt cedar leaf beetle on the Colorado Plateau, USA. 7<sup>th</sup> Annual International Workshop on Sap Flux (Seville, Spain)

Hultine KR, Jackson, TL, Burtch KG, Schaffer SM, and Ehleringer JR (2008) Elevated stream inorganic nitrogen impacts on a dominant riparian tree species: results from an experimental riparian stream system. Utah State University's annual Spring Runoff Conference (Logan, UT)

Hultine KR, Bush SE, West AG, Burtch KG and Ehleringer JR (2006) Gender specific patterns of carbon uptake and water loss in a dominant riparian tree species, *Acer*

*negundo*. Ecological Society of America's annual meeting (Memphis TN)

Hultine KR, Bush SE, West AG and Ehleringer JR (2005) Dioecy impacts on plant water fluxes in riparian ecosystems. American Geophysical Union's annual meeting (San Francisco CA)

Hultine KR (2002) Transpiration by mesquite on a desert river floodplain. American Geophysical Union, Chapman Conference on Eco-Hydrology of Semiarid Landscapes: Interactions and Processes (Taos, NM)

Hultine KR, Williams DG, Cable WL and Burgess SSO (2002) Hydraulic redistribution by deep roots of a Chihuahuan Desert phreatophyte. Ecological Society of America's annual meeting (Tucson AZ)

Hultine KR, Williams DG, Cable WL and Burgess SSO (2001) Downward recharge through root systems: has the decline of walnut trees altered the hydrology of semi-arid riparian systems? American Geophysical Union's annual meeting (San Francisco CA)

Hultine KR, Williams DG, and Burgess SSO (2001) Contrasting seasonal patterns of root and stem sap flow in three tree species in a desert arroyo. Ecological Society of America's annual meeting (Madison WI)

#### Teaching experience

Instructor, ENV 326, Environmental Ecology, Northern Arizona University, Flagstaff, 3-credit lecture course, Taught in the Spring of 2011

Instructor, ENV 326L, Environmental Ecology Lab, Northern Arizona University, Flagstaff, AZ, 1-credit lab course, Taught in the Spring of 2011

Instructor, ENV 555, The Environmental Science/Policy Interface, Northern Arizona University, Flagstaff, AZ, 3-credit graduate level course, Taught in the Spring of 2011

Instructor, ENV 698, Research Methods, Northern Arizona University, Flagstaff, AZ, 2-credit graduate level course, Taught in the Fall of 2010

Instructor, ENV 440/540, Conservation Biology, Northern Arizona University, Flagstaff, AZ, 3-credit lecture course, Taught in the Fall of 2010

Instructor, ENV 440L/540L, Conservation Biology Lab, Northern Arizona University, Flagstaff, AZ, 1-credit field course, Taught in the Fall of 2010

Instructor, ENV 101, Introduction to Environmental Sciences, Northern Arizona University, 3-credit lecture course, Taught in the Fall of 2010 and Spring of 2011

Instructor, Biology 5465, Desert Plant Ecology Lab, University of Utah, Salt Lake City, UT, 2-Credit combined field, lab and lecture course, Taught in the Fall of 2008, and 2009

Instructor, Biology 4950, 4955, Graded independent study, University of Utah, Salt Lake City, UT

Guest lecturer, Biology 5460, Desert Plant Ecology, University of Utah, Salt Lake City, UT

Assistant in the annual Stable Isotope Ecology Laboratory summer course (2004-2007)

Teaching Assistant, Renewable Natural Resources 570, Functional Ecology of Aridland Plants, University of Arizona, Tucson, AZ

Teaching Assistant, Renewable Natural Resources 202, Native Plant Taxonomy, University of Arizona, Tucson, AZ

#### Memberships

Ecological Society of America, Physiological Section  
American Geophysical Union, Hydrology Section  
American Society of Plant Biologists

#### Other synergistic and professional activities

Serving as Plant Science Editor of the Oxford journal *Conservation Physiology*  
<http://conphys.oxfordjournals.org>  
2015 - present

Watershed Restoration Science Team member for the Virgin River Ecohydrological Assessment prepared for the Walton Family Foundation, Freshwater Initiative Program  
[http://www.stillwatersci.com/case\\_studies.php?cid=69](http://www.stillwatersci.com/case_studies.php?cid=69), 2011-2014

Watershed Restoration Science Team member for Riparian Restoration Framework for the Upper Gila River, Arizona. Prepared for the Gila Watershed Partnership of Arizona, and the Walton Family Foundation, Freshwater Initiative Program, 2012-2014

Serving on editorial board for the Oxford journal *Tree Physiology*  
[http://www.oxfordjournals.org/our\\_journals/treephys/about.html](http://www.oxfordjournals.org/our_journals/treephys/about.html)  
2007-present

Participant in NEON Intermountain Region Observatory Network (IRON)  
<http://www.neon-iron.org/>. 2006-2010

Participant in *Sustainability of semi-Arid Hydrology and Riparian Areas* (SAHRA),  
<http://www.sahra.arizona.edu/>, 2001-2004