

DANIEL MATTHEW JOHNSON
Associate Professor
Warnell School of Forestry and Natural Resources
University of Georgia
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EDUCATION

Ph.D. Plant Physiological Ecology (Biology Department), 2006, Wake Forest University,
Advisor: William K. Smith
M.S. Forestry, 1999, North Carolina State University, Advisor: Ross S. Whetten
B.S. Biochemistry, 1996, North Carolina State University

APPOINTMENTS

Associate Professor, 2021-present, University of Georgia, Athens GA
Assistant Professor, 2018 – 2021, University of Georgia, Athens GA
Assistant Professor, 2014 – 2018, University of Idaho, Moscow ID
Research Scientist, 2011-2014, Duke University, Durham NC
Assistant Professor, 2010 – 2011, Ohio University, Athens OH
Postdoctoral Research Associate, 2007-2010, US Forest Service, Corvallis OR
 Courtesy Faculty Appointment, Department of Forest Ecosystems and Society, Oregon State
 University
Visiting Assistant Professor, 2006-2007, Lenoir-Rhyne College, Hickory, NC

PUBLICATIONS (* indicates graduate student author, **indicates postdoctoral author)

Smith-Martin CM, Muscarella R, Hammond WM, Jansen S, Brodribb TJ, Choat B, Johnson DM, Vargas G, Uriarte M. 2023. Hydraulic vulnerability of tropical forests is largely independent of water availability. *Ecology Letters* 26:1829-1839.

Sparks AM, Blanco AS, Wilson DR, Schwilk DW, Johnson DM, Adams HD, Bowman DMJS, Hardman DD, Smith AMS. 2023. Fire intensity impacts on physiological performance and mortality in *Pinus monticola* and *Pseudotsuga menziesii* saplings: a dose-response analysis. *Tree Physiology* 43:1365-1382.

*Weygint WA, Eitel JUH, Maguire AJ, Vierling LA, Johnson DM, Campbell CS, Griffin KL. 2023. Leaf temperatures and environmental conditions predict daily stem radial variations in a temperate coniferous forest. *Ecosphere* 2023;14:e4465.

Feltrin RP, Smith AMS, Adams HD, Thompson RA, Kolden CA, Yedinak KM, Johnson DM. 2023. Death from hunger or thirst? Phloem death, rather than xylem hydraulic failure, as a driver of fire-induced conifer mortality. *New Phytologist* 237:1154-1163.

Johnson DM, Katul G, Domec JC. 2022. Catastrophic hydraulic failure and tipping points in plants. *Plant, Cell and Environment* 45:2231-2266. (Invited Review)

*Wilson LA, Spencer RN, Aubrey DP, O'Brien JJ, Smith AMS, Thomas RW, Johnson DM. 2022. Longleaf pine seedlings are extremely resilient to the combined effects of experimental fire and drought. *Fire* 5:128

*Benson MC, Miniati CF, Oishi AC, *Denham SO, Domec JC, Johnson DM, Missik JE, Phillips RP, Wood JD, Novick KA. 2022. The xylem of anisohydric *Quercus alba* L. is more vulnerable to embolism than isohydric co-dominants. *Plant, Cell and Environment* 45:329-346.

**Trueba S, Thérroux-Rancourt G, Earles JM, Buckley TN, **Love DM, Johnson DM, Brodersen C. 2022. The 3d construction of leaves is coordinated with water use efficiency in conifers. *New Phytologist* 233:851-861.

- *Mrad A, Johnson DM, **Love DM, Domec JC. 2021. The roles of conduit redundancy and connectivity in xylem hydraulic functions. *New Phytologist* 231:996-1007.
- Domec JC, King JS, Carmichael MJ, Overby AT, Wortemann R, Smith WK, Maio G, Noormets A, Johnson DM. 2021. Root water gates and not changes in root structure provide new insights into plant physiological responses to drought, flooding, and salinity. *Journal of Experimental Botany* 72:4489-4501.
- **Sonawane BV, Koteyeva N, Johnson DM, Cousins A. 2021. Differences in leaf anatomy determines temperature response of leaf hydraulic and mesophyll CO₂ conductance in phylogenetically related C₄ and C₃ grass species. *New Phytologist* 230:1802-1814.
- *Hammond WM, Johnson DM, Meinzer FC. 2021. A thin line between life and death: radial sap flux failure signals trajectory to tree mortality. *Plant, Cell and Environment* 44:1311-1314.
- *Feltrin RP, Smith AMS, Adams HD, Kolden CA, Johnson DM. 2021. Short- and long-term effects of fire on stem hydraulics in *Pinus ponderosa* saplings. *Plant, Cell and Environment* 44:696-705.
- *Feltrin RP, Johnson DM, Sparks AM, Adams HD, Kolden CA, Nelson AS, Smith AMS. 2020. Drought increases vulnerability of *Pinus ponderosa* saplings to fire-induced mortality. *Fire* 3, 56; doi:10.3390/fire3040056
- *Miller ML, Roddy AB, Brodersen CR, McElrone AJ, Johnson DM. 2020. Anatomical and hydraulic responses to desiccation in emergent conifer seedlings. *American Journal of Botany* 107:1177-1188.
- Halbritter A + 115 other authors, including DMJ. 2020. The handbook for standardized field and laboratory measurements in terrestrial climate-change experiments and observational studies. *Methods in Ecology and Evolution* 11:22-37.
- *Baker KV, Tai X, *Miller ML, Johnson DM. 2019. Six co-occurring conifer species in northern Idaho exhibit a continuum of hydraulic strategies during an extreme drought year. *AoB Plants* 11:plz056.
- Rosner S, Johnson DM, Voggender K, Domec J-C. 2019. The conifer curve: fast prediction of hydraulic conductivity loss and vulnerability to cavitation. *Annals of Forest Science* 76:82.
- McCulloh KA, Domec J-C, Johnson DM, Smith DD, Meinzer FC. 2019. A dynamic yet vulnerable pipeline: integration and coordination of hydraulic traits across whole plants. *Plant, Cell and Environment* 42:2789-2807.
- *Steady WD, *Feltrin RP, Johnson DM, Sparks AM, Kolden CA, Talhelm AF, Lutz JA, Boschetti L, Hudak AT, Nelson AS, Smith AMS. 2019. The survival of *Pinus ponderosa* saplings to increasing levels of fire intensity and impacts on post-fire growth. *Fire* doi:10.3390/fire2020023
- *Maguire AJ, Eitel JUH, Vierling LA, Johnson DM, Griffin KL, Boelman NT, Jensen JE, Greaves HE, Meddens AJ. 2019. Terrestrial lidar scanning reveals fine-scale linkages between microstructure and photosynthetic functioning of small-stature spruce trees at the forest-tundra ecotone. *Agricultural and Forest Meteorology* 269:157-168.
- *Boren EJ, Boschetti L, Johnson DM. 2019. Characterizing the variability of the structure parameter in the PROSPECT leaf optical properties model. *Remote Sensing* 11:1236.
- Brodersen CR, Germino MJ, Johnson DM, Reinhardt K, Smith WK, Resler LM, Bader M, Sala A, Kueppers LM, Broll G, Cairns DM, Holtmeier F, Wieser G. 2019. Seedling survival at timberlines is critical to conifer mountain forest elevation and extent. *Frontiers in Forests and Global Change* doi: 10.3389/ffgc.2019.00009.
- Knipfer T, Reyes C, Earles JM, Berry ZC, Johnson DM, Brodersen CR, McElrone AJ. 2019. Spatiotemporal coupling of vessel cavitation and discharge of stored xylem water in a tree sapling. *Plant Physiology* 179:1658-1668.
- Polley HW, Johnson DM, Jackson RB. 2018. Projected drought effects on the demography of Ashe juniper populations inferred from remote measurements of tree canopies. *Plant Ecology* 10:1259-1267.
- **Sparks AM, Talhelm AF, *Feltrin RP, Smith AMS, Johnson DM, Kolden CA, Boschetti L. 2018. An experimental assessment of the impact of drought and fire on western larch injury, recovery and mortality. *International Journal of Wildland Fire* 27:490-497.

- *Schwantes AM, Parolari AJ, Swenson JJ, Johnson DM, Domec J-C, Jackson RB, Pelak N, Porporato A. 2018. Accounting for landscape heterogeneity improves spatial predictions of tree vulnerability to drought. *New Phytologist* 220:132-146.
- Johnson DM, **Berry ZC, *Baker KV, **Smith DD, McCulloh KA, Domec J-C. 2018. Leaf hydraulic parameters are more plastic in species that experience a wider range of leaf water potentials. *Functional Ecology* 32:894-903.
- Johnson DM, Domec J-C, **Berry ZC, *Schwantes AM, Woodruff DR, McCulloh KA, Polley HW, Wortemann R, Swenson JJ, Mackay DS, McDowell NG, Jackson RB. 2018. Co-occurring woody species have diverse hydraulic strategies and mortality rates during an extreme drought. *Plant, Cell and Environment* 41:576-588.
- Jolly WM, Johnson DM. 2018. Pyro-ecophysiology: Shifting the paradigm of live wildland fuel. *Fire* 1, 8; doi:10.3390/fire1010008.
- **Sparks AM, Kolden CA, Smith AMS, Boschetti L, Johnson DM, Cochrane MA. 2018. Fire intensity impacts on post-fire response of temperate coniferous forest net primary productivity. *Biogeosciences* 15:1173-1183.
- *Miller ML, Johnson DM. 2017. Vascular development in very young conifer species: theoretical hydraulic capacities and potential resistance to embolism. *American Journal of Botany* 104:979-992.
- *Schwantes AM, Swenson JJ, Gonzalez-Roglich M, Johnson DM, Domec J-C, Jackson RB. 2017. Measuring canopy loss and climatic thresholds from an extreme drought along a 5-flod precipitation gradient across Texas. *Global Change Biology* 23:5120-5135.
- *Sparks AM, Kolden CA, Johnson DM, Talhelm AF, **Yedinak KM, Smith AMS. 2017. Impacts of fire radiative flux on mature *Pinus ponderosa* growth and vulnerability to secondary mortality agents. *International Journal of Wildland Fire* 26:95-106.
- Smith AMS, Talhelm AF, Johnson DM, *Sparks AM, Kolden CA, **Yedinak KM, Apostol KG, **Tinkham WT, Abatzoglou JT, Lutz JA, Davis AS, Pregitzer KS, Adams HD, Kremens RL. 2017. Effects of fire radiative energy density doses on *Pinus contorta* and *Larix occidentalis* seedling physiology and mortality *International Journal of Wildland Fire* 26:82:94.
- Johnson DM, **Wortemann R, McCulloh KA, Jordan-Meille L, **Ward E, Warren JM, Palmroth S, Domec J-C. 2016. A test of the hydraulic vulnerability segmentation hypothesis in conifer and angiosperm tree species. *Tree Physiology* 36:983-993.
- Polley HW, Johnson DM, Jackson RB. 2016. Canopy foliation and area as predictors of mortality risk from episodic drought for individual trees of Ashe juniper. *Plant Ecology* 217:1105-1114.
- Gleason SM, Westoby M, Jansen S, Choat B, Brodribb TJ, Cochard H, Delzon S, Hacke UG, Jacobsen AL, Johnson DM, Lens F, Maherali H, Martínez-Vilalta J, Mayr S, McCulloh KA, Morris H, Nardini A, Plavcová L, Pratt RB, Schreiber SG, Zanne AE. 2016. Research priorities concerning the importance and evolution of a safety-efficiency tradeoff in xylem. *New Phytologist* 211:1156-1158.
- *Sparks A, Kolden C, Talhelm A, Smith A, Apostol K, Johnson DM, Boschetti L. 2016. Spectral indices accurately quantify changes in seedling physiology following fire: towards mechanistic assessments of carbon dynamics following wildfire. *Remote Sensing* 8:572, doi:10.3390/rs8070572.
- Gleason SM, Westoby M, Jansen S, Choat B, Hacke UG, Pratt RB, Bhaskar R, Brodribb TJ, Bucci SJ, Cao K-F, Cochard H, Delzon S, Domec J-C, Fan Z-X, Field TS, Jacobsen AL, Johnson DM, Lens F, Maherali H, Martínez-Vilalta J, Mayr S, McCulloh KA, Mencuccini M, Mitchell PJ, Morris H, Nardini A, Pittermann J, Plavcova L, Schreiber SG, Sperry JS, Wright IJ, Zanne AE. 2016. Weak tradeoff between xylem safety and xylem-specific hydraulic efficiency across the world's woody plant species. *New Phytologist* 209:123-136.
- Sack L, Ball MC, Brodersen C, Davis SD, Des Marais DL, Donovan LA, Givnish TJ, Hacke UG, Huxman T, Jansen S, Jacobsen AL, Johnson DM, Koch GW, Maurel C, McCulloh KA, McDowell NG, McElrone A, Meinzer FC, Melcher PJ, North G, Pellegrini M, Pockman WT, Pratt RB, Sala A, Santiago LS, Savage JA, Scoffoni C, Sevanto S, Sperry J, Tyerman SD, Way D, Holbrook NM. 2016. Plant hydraulic transport as a central hub integrating plant and

- ecosystem function: meeting report for “Emerging Frontiers in Plant Hydraulics” (Washington, DC, May 2015). *Plant, Cell and Environment* 39:2085-2094.
- Smith AMS, *Sparks AM, Kolden CA, Abatzaglou JT, Talhelm AF, Johnson DM, Boschetti L, Lutz JA, Apostol KG, **Yedinak KM, **Tinkham WT, Kremens RJ. 2016. Towards a new paradigm in fire severity research using dose-response experiments. *International Journal of Wildland Fire* 25:158-166.
- **Berry ZC, Johnson DM, Reinhardt K. 2015. Vegetation zonation patterns across a temperate mountain cloud-forest ecotone are not explained by variation in hydraulic functioning or water relations. *Tree Physiology* 35:925-935.
- Domec J-C, King JS, **Ward E, Oishi AC, Palmroth S, Radecki A, Bell DM, Miao G, Gavazzi M, Johnson DM, McNulty SH, Sun G, Noormets A. 2015. Conversion of natural forests to managed forest plantations decreases tree resistance to prolonged droughts. *Forest Ecology and Management* 355:58-71.
- McCulloh KA, Johnson DM, *Petitmermet J, *McNellis B, Meinzer FC, Lachenbruch B. 2015. A comparison of hydraulic architecture in three similarly-sized woody species differing in their maximum potential height. *Tree Physiology* 35:723-731.
- Johnson DM, Sherrard ME, Domec J-C and RB Jackson. 2014. Role of aquaporin activity in regulating deep and shallow root hydraulic conductance during extreme drought. *Trees* 28:1323-1331.
- Johnson DM, Brodersen CR, Reed M, Domec J-C and RB Jackson. 2014. Contrasting hydraulic architecture and function in deep and shallow roots of two co-occurring tree species from an arid habitat. *Annals of Botany* 113: 617-627.
- McCulloh KA, Johnson DM, Meinzer FC and DR Woodruff. 2014. The dynamic pipeline: Hydraulic capacitance and xylem hydraulic safety in four tall conifer species. *Plant, Cell and Environment* 37:1171-1183.
- Johnson DM, Domec J-C, Woodruff, DR, McCulloh KA and FC Meinzer. 2013. Contrasting hydraulic strategies in two tropical lianas and their host trees. *American Journal of Botany* 100:374-383.
- Meinzer, FC, Domec J-C, Johnson DM, McCulloh KA, and DR Woodruff. 2013. The dynamic pipeline: homeostatic mechanisms that maintain the integrity of xylem water transport from roots to leaves. *Acta Horticulturae*. 991: 1235-131.
- Johnson DM, McCulloh KA, Woodruff DR and FC Meinzer. 2012. Hydraulic safety margins and embolism reversal in stems and leaves: why are conifers and angiosperms so different? *Plant Science* 195:48-53.
- Johnson DM, McCulloh KA, Meinzer FC and Woodruff DR. 2012. Evidence for leaf xylem embolism as a primary factor in dehydration-induced declines in leaf hydraulic conductance. *Plant, Cell and Environment* 35:760-769.
- Domec J-C and Johnson DM. 2012. Homeostasis or disturbance of homeostasis in minimum leaf water potential explains the isohydric vs. anisohydric behavior of *Vitis vinifera* L. cultivars? *Tree Physiology* 32:245-248.
- McCulloh KA, Johnson DM, Meinzer FC, Voelker SL, Lachenbruch B, and J-C Domec. 2012. Hydraulic architecture of two species differing in wood density: opposing strategies in co-occurring tropical pioneer trees. *Plant, Cell and Environment* 35:116-125.
- Johnson DM, McCulloh KA, Meinzer FC, Woodruff DR, and DM Eissenstat. 2011. Hydraulic patterns and safety margins, from stem to stomata, in three eastern US tree species. *Tree Physiology* 31:659-668.
- McCulloh KA, Johnson DM, Meinzer FC and Lachenbruch B. 2011. An annual pattern of native embolism in small diameter branches of four tall conifer species. *American Journal of Botany* 98:1-9.
- Barnard, D, Meinzer FC, Lachenbruch B, McCulloh KA, Johnson DM and Woodruff DR. 2011. Climate-related trends in sapwood biophysical properties in two conifers: avoidance of hydraulic dysfunction through coordinated adjustments in xylem efficiency, safety and capacitance. *Plant, Cell and Environment* 34:643-654.

- Meinzer FC, Lachenbruch B, McCulloh KA, Woodruff DW and Johnson DM. 2010. Response to commentary by Petit and Anfodillo. *Oecologia* 165:275.
- Meinzer FC, Lachenbruch B, McCulloh KA, Woodruff DW and Johnson DM. 2010. The blind men and the elephant: the impact of context and scale in evaluating conflicts between plant hydraulic safety and efficiency. *Oecologia* 164:287-296.
- Johnson DM, Meinzer FC, Woodruff D and McCulloh KA. 2009. Leaf xylem embolism, detected acoustically and by cryo-SEM, corresponds to decreases in leaf hydraulic conductance in four evergreen species. *Plant, Cell and Environment* 32:828-836.
- Johnson DM, McCulloh KA, Woodruff D and Meinzer FC. 2009. Leaf hydraulic conductance, measured *in situ*, declines and recovers daily: leaf hydraulics, water potential and gas exchange in four temperate and three tropical tree species. *Tree Physiology* 29:879-887.
- Meinzer FC, Johnson DM, Lachenbruch B, McCulloh KA and Woodruff DW. 2009. Xylem hydraulic safety margins in woody plants: coordination of stomatal control of xylem tension with hydraulic capacitance. *Functional Ecology* 23:922-30.
- Smith WK, Germino MJ, Johnson DM and Reinhart KS. 2009. Effects of global climate change on high-altitude forests. *Botanical Review* 75:163-190.
- Reinhardt KS, Johnson DM and Smith WK. 2009. Age-class differences in Fraser fir (*Abies fraseri*) photosynthesis and water relations. *Canadian Journal of Forest Research* 39: 1-5.
- Hughes NM, Johnson DM, Akhalkatsi M, Abdaladze O, Reinhardt KS. 2009. Microsite and community characterization of *Betula litwinowii* seedling facilitation in the Caucasus Mountains, Republic of Georgia. *Arctic, Antarctic and Alpine Research* 41:112-118.
- Woodruff, D, Meinzer FC, Lachenbruch B and Johnson DM. 2009. Coordination of leaf structure and gas exchange along a height gradient in a tall conifer. *Tree Physiology* 29:261-272.
- Johnson DM and Smith WK. 2008. Cloud immersion alters microclimate, photosynthesis and water relations in *Rhododendron* and *Abies* seedlings, southern Appalachian Mountains, USA. *Tree Physiology* 28:385-392.
- Johnson DM and Smith WK. 2007. Stomatal versus non-stomatal limitations to carbon gain in timberline *Abies lasiocarpa* seedlings during prolonged drought. *Canadian Journal of Forest Research* 37:568-579.
- Johnson DM and Smith WK. 2006. Low clouds and cloud immersion enhance photosynthesis in understory species of a southern Appalachian spruce-fir forest. *American Journal of Botany* 93: 1625-1632.
- Johnson DM, Smith WK, Vogelmann TC and Brodersen CR. 2005. Leaf architecture, incident light direction, and mesophyll fluorescence profiles inside a broadleaf, conifer needle and cotyledon. *American Journal of Botany* 92:1425-1431.
- Johnson DM and Smith WK. 2005. Refugial forests of the Southern Appalachians: photosynthesis and survival in high altitude, current-year *Abies fraseri* seedlings. *Tree Physiology* 25:1379-1387.
- Johnson DM, Smith WK and Silman MR. 2005. Climate-independent paleoaltimetry using stomatal density in fossil leaves as a proxy for CO₂ partial pressure: COMMENT. *Geology* 33:e82.
- Johnson DM, Germino MJ and Smith WK. 2004. Abiotic factors limiting photosynthesis in seedlings of *Abies lasiocarpa* and *Picea engelmannii* at alpine timberline. *Tree Physiology* 24:377-386.
- Smith WK, Brodersen CR, Hancock TE and Johnson DM. 2004. Evaluating the effects of complex plant architecture on temperature and gas exchange using heat-sensitive liquid crystals and image analysis. *Functional Ecology* 18:148-153.
- Smith WK, Germino MJ, Hancock TE and Johnson DM. 2003. Another perspective for interpreting altitudinal limits of alpine timberlines. *Tree Physiology* 23:1101-1112.

Refereed Book Chapters

- Sack L, Scoffoni C, Johnson DM, Buckley TN and TJ Brodribb. 2015. The anatomical determinants of leaf hydraulic function. In U. Hacke [ed.] *Functional and Ecological Xylem Anatomy*, Springer.

- Johnson DM, KA McCulloh and Reinhardt KS. 2011. Physiological and structural changes during the earliest phases of tree growth. *In* Dawson TE, Meinzer FC and B Lachenbruch [eds.] *Size- and Age-Related Changes in Tree Structure and Function*, Springer.
- Smith WK and Johnson DM. 2009. Biophysical Effects of Altitude on Plant Gas Exchange. *In* *Biophysical Plant Ecology: Perspectives and Trends*. Academic Press, Springer, NY.
- Smith WK, Johnson DM and Reinhart KS. 2008. Alpine Forests. *In* *Encyclopedia of Ecology*. Elsevier Press, Amsterdam.

Grants Awarded

- NSF-MRI: 2023-2026. MRI: Track 1 Acquisition of a High Resolution X-ray Computed Microtomography System with In Situ Capabilities for Multidisciplinary Research and Education. C Garing PI, DMJ, D Menke, B Urbanowicz, T Salguero co-PIs. \$1,165,225.
- USDA-AFRI. 2023-2026. Partnership: Impacts of pre-fire fertilization treatments on the mortality and post-fire productivity of northwestern and southeastern Pinus timber species. \$791,669, DMJ UGA PI (\$257,419 to UGA). A. Smith U. Idaho PI, H. Adams Washington State U. PI.
- NSF-RCN. 2023-2028. RCN: PSInet - a global water potential network. \$499,997. K. Novick and J. Guo PIs, DMJ co-PI (\$52,638 to UGA).
- Georgia Forestry Commission. 2023. Connecting urban forestry practitioners to tree physiologists to tackle urban tree stress. DMJ PI, \$15,100, UGA VPR's office contributed an additional \$3,000 and the Warnell School contributed an additional \$4,000.
- University of Georgia Faculty Seed Grants, 2022, "Linking tree and soil water transport with electrical resistivity to advance understanding of drought tolerance." \$10,850. D. Markewitz PI, DMJ co-PI.
- National Science Foundation, Division of Integrative Organismal Systems 2020-2024, "Collaborative Research: Quantifying the amount and functional significance of long-term stored-water in trees." \$1,163,517. DMJ UGA PI (\$343,606 to UGA), K. Reinhardt (Idaho State U PI) and R. Emanuel (NC State/Duke PI).
- United States Forest Service, "Regional Assessment of Wind Damage in Forests" 2020-2024. K. Gandhi PI, DMJ and B. Bullock co-PIs (\$470,000)
- U.S. Department of Agriculture, AFRI, "Determining the capacity for the water stored in wood to help trees withstand drought." 2020-2023, \$196,872 (\$46,000 to UGA) G. Goldsmith (Chapman U.) PI, Co-PIs DM Johnson and ZC Berry
- National Science Foundation, Division of Integrative Organismal Systems 2018-2022, "The dynamics of embolism formation and repair in xylem conduits: from bubble scale to loss in plant hydraulic transport capacity." JC Domec PI, G Katul co-PI, DM Johnson Collaborator \$557,085 (\$144,237 to UGA).
- National Science Foundation, Division of Integrative Organismal Systems 2017-2022, "Conifer leaf anatomy determines hydraulic functioning." DM Johnson PI \$775,327 (\$367,898 to U Idaho, transferred to UGA)
- National Science Foundation, Division of Integrative Organismal Systems 2016-2018, Meeting: "Reconciling methodological discrepancies in the measurement of hydraulic vulnerability to embolism." DM Johnson PI. \$38,385. The Ecological Society of America Physiological Ecology section contributed an additional \$1,700 to the meeting.
- National Science Foundation, Division of Integrative Organismal Systems 2015-2016. DM Johnson U Idaho PI, K McCulloh (U Wisconsin PI), J-C Domec (Duke PI). "RAPID: Collaborative Research: What are the mechanisms of tree recovery after an extreme episodic drought?" \$193,427 (\$111,279 to U Idaho).
- National Science Foundation, Division of Integrative and Organismal Systems 2012-2015. DM Johnson U Idaho/Duke PI, K McCulloh (U Wisconsin PI), co-PIs F Meinzer, D Woodruff and J-C Domec. "Collaborative Research: How do seedlings survive? Hydraulics, carbon

- acquisition and drought tolerance in the earliest phases of tree growth” \$762,657 (\$377,220 to Duke)
- U.S. Department of Agriculture, AFRI-Climate Change. 2012-2016. “Drought-induced mortality of trees: ecosystem changes under climate change.” RB Jackson PI, Co-PIs DM Johnson, J-C Domec, J Swenson and W Polley. \$749,385.
- National Science Foundation, Division of Integrative Systems, 2009-2013. K. McCulloh (PI), co-PIs DM Johnson, F Meinzer and B Lachenbruch. “The plant hydraulic continuum from root to leaf: avoidance of catastrophic xylem failure under dynamic conditions.” \$549,000.
- Ohio University Research Council. 2011. “Measurement of hydraulic parameters in tree seedlings.” \$7,800.
- Ohio University Research Challenge Grant. 2011. \$5,000.
- National Science Foundation, Doctoral Dissertation Enhancement Award, Office of International Science and Engineering, 2005-2006. “Ecological facilitation by *Rhododendron caucasicum* extends the *Betula litwinowii* alpine treeline, Caucasus Mountains of Georgia.” \$26,000.
- Vecellio Research Grant, Wake Forest University, 2004: “Light absorption and chlorophyll distribution in different leaf types measured using chlorophyll fluorescence.” \$1,500.
- Richter Grant, Wake Forest University, 2003: “Carbon limitation in high-elevation conifer seedlings: implications for treeline stability with global climate change” \$2,000.

TEACHING

Courses taught (Asterisk indicates a new course developed)

- Dendrology (FORS 3010) University of Georgia, Fall 2019, Fall 2020, Fall 2021, Fall 2022, Fall 2023
- *Foundations of Plant Water Relations, University of Georgia, Fall 2022
- *Secondary Xylem Structure and Function (FORS8035; co-taught) Spring 2021
- *Advanced Tree Physiology (FORS8030) University of Georgia, Spring 2019, Spring 2020, Spring 2022, Spring 2023
- *Heat, Drought and Fire: Forest Persistence on a Changing Planet (FYOS1001) University of Georgia, Spring 2022
- *Life in Moving Fluids (using the Vogel book of the same title) University of Georgia, Fall 2018, Fall 2023
- *Woody Plant Physiology (FOR 447/547) University of Idaho, Spring 2016, Spring 2017
- *Treeline: Structure and Function (FOR502), Spring 2016, Co-taught with Lee Vierling, Jan Eitel, Kevin Griffin (Columbia U.) and Natalie Boelman (Columbia U.)
- *Dendrology (FOR 320) University of Idaho, Spring 2015, Fall 2015, Fall 2016, Fall 2017
- *Current Literature in Plant Physiology and Ecology (FOR 551), University of Idaho (Fall 2014, Spring 2015, Fall 2015, Spring 2016, Fall 2016, Spring 2017)
- *Plant Physiological Ecology (PBIO 426/526) Ohio University, Spring 2011
- *Issues of Scale in Ecology (PBIO 691) Ohio University, Winter 2010
- Plant Ecology (PBIO209) Ohio University, Fall 2010
- Woody Plant Physiology (co-taught with 3 other instructors; FES561) Oregon St. Univ – Fall 2009
- *Plant Hydraulic Architecture (FES/WSE 599) Oregon State University – Fall 2008
- Environmental Science (SCI300), Lenoir-Rhyne College - Fall 2006, Spring 2007
- Concepts of Biology (BIO110), Lenoir-Rhyne College - Fall 2006, Spring 2007

Teaching training:

- NSF/Michigan State University FIRST (Faculty Institutes for Reforming Science Teaching) IV Teaching Fellow 2009-2010 – Workshops on how to incorporate active learning methods into scientific courses.
- UGA Teaching Academy Fellow – 2019-2020

Laboratory courses taught:

Dendrology (NCSU, FOR212)
 Plant Physiological Ecology Lab (WFU, BIO328L)
 Introductory Biology Lab (WFU, BIO111L)
 Biology and the Human Condition Lab (WFU, BIO101L)

WORKSHOPS ORGANIZED AND CO-ORGANIZED

Connecting urban forestry practitioners to tree physiologists to tackle urban tree stress, March 26-29, Athens GA. (lead organizer)
 AGU 2022: Co-organizer and co-convener for Forest Ecophysiology: Forest Physiological and Ecological Processes From Molecules to Ecosystem (co-organizer with Doug Aubrey, William Hammond and Andrew Maguire) December 2022, Chicago IL
 AGU 2021: Co-organizer and co-convener for Forest Ecophysiology: Forest Physiological and Ecological Processes From Molecules to Ecosystem (co-organizer with Doug Aubrey, William Hammond and Andrew Maguire) Dec. 15-16 2021, New Orleans LA
 Hydraulics Methods Workshop for graduate students and postdocs (lead organizer), McCall Idaho August 2017
 Advanced Reforestation and Regeneration Workshop (co-Organizer, lead organizer A Nelson), Moscow ID February 2017
 Reconciling Methodological Discrepancies in the Measurement of Hydraulic Vulnerability to Embolism (lead organizer), Sept 2-5 2016, Berkeley CA
 Treeline Workshop: Identifying Mechanisms Driving Treeline Elevations (co-organizer, lead organizer WK Smith), Aug. 14-18 2015, McCall ID

INVITED PRESENTATIONS

Longleaf Pine and Water Research Forum March 2023 Awendaw, SC
 University of North Carolina at Wilmington February 2022 (online)
 9th International Fire Ecology and Management Congress December 2021 (online)
 Plant Environmental Physiology Group (Lisbon, Portugal; online) September 2021
 Virginia Commonwealth University May 2021 (online)
 Kennesaw State University February 2020
 The Jones Center at Ichauway March 2019
 Wake Forest University Department of Biology February 2019
 UGA Warnell School of Forestry October 2018
 UGA Plant Biology October 2018
 Coweeta Hydrological Lab, NC September 2018
 Multiscale Plant Vascular Biology – Gordon Research Conference, Mount Snow, VT, June 2018
 Oregon State University, College of Forestry, April 2018
 Oklahoma State University, Department of Plant Biology, Ecology and Evolution, March 2018
 Emerging Frontiers in Plant Hydraulics, Washington D.C., May 2015
 U Idaho, FRFS Seminar Series, May 2015
 University of Idaho, CNR, Water Resources Seminar, also broadcast to Pocatello, Biose, and Idaho Falls, October 7, 2014
 The DeVlieg Signature Lecture Series – MOSS Visiting Scientist Program October 29-31 2014
 University of Idaho, College of Natural Resources. February 2014.
 USDA-ARS, Water Management Research Unit. Fort Collins, Colorado. February 2014.
 University of North Carolina – Wilmington, Department of Biology and Marine Biology. January 2014.
 Idaho State University, Biology Department Seminar Series, September, 2013.
 American Society of Plant Biology, Xylem Physiology Symposium, Providence, Rhode Island. July, 2013.
 International Working Group on Plant Mortality, Bordeaux, France. June 2013.

Wake Forest University, Department of Biology, April 2013.
 Washington State University, Department of Biological Sciences. January 2013.
 Smithsonian Museum of Natural History, Washington D.C. April 2012.
 University of Pittsburgh, Pymatuning Seminar Series. 2011.

Conference Presentations (* indicates graduate student author)

2023 – ESA Presentations Justine, Vanessa, Clara, others?

- Munro, H., Bullock, B., Johnson, D., Loehle, C., Vogt, J. T., & Gandhi, K. (2023). Responses of forests to disturbances from high wind events and future trends. In *Southeastern Society of American Foresters 2023 Annual Meeting*. Panama City Beach, FL.
- Bahramian, J., Minick, K., Johnson, D., Reinhardt, K., & Emanuel, R. (2022). Tracing Tree Water Storage and Transport in Trembling Aspen and Douglas Fir in Idaho, USA: An in Situ Study Using Deuterated Water and CRDS Spectroscopy. In *American Geophysical Union Annual Meeting*. Chicago.
- Minick, K., Bahramian, J., Reinhardt, K., Sprenger, M., Johnson, D., Tucker, L., . . . Emanuel, R. (2022). StorAge Selection (SAS) function application to whole tree water storage and transport using enriched 2H tracing and sap flow in two tree species of North Carolina. In *American Geophysical Union Annual Meeting*. Chicago.
- Johnson, D., Partelli-Feltrin, R., Smith, A., Adams, H., Kolden, C., Yedinak, K., & Thompson, A. (2022). Phloem and cambium death, rather than xylem hydraulic failure, is a driver of fire-induced conifer mortality. In *American Geophysical Union Annual Meeting*. Chicago.
- Baker, K., Johnson, D., Brantley, S., Gandhi, K., Bullock, B., Stuber, S., & Vogt, J. T. (2022). Hurricane effects on pine tree water use: Short term trauma and long term sensitivity. In *American Geophysical Union Annual Meeting*. Chicago.
- *Weygint, W., Eitel, J., Vierling, L., Griffin, K., Johnson, D., Campbell, C., & Maguire, A. (2022). Towards predicting diurnal stem radial variations across ecosystems: what role can thermal remote sensing play?. In *American Geophysical Union Annual Meeting*. Chicago.
- Novick, K., Johnson, D., Guo, J., Beverly, D., & McCulloh, K. (2022). Towards a global water potential network. In *American Geophysical Union Annual Meeting*. Chicago.
- *Harmon, M., Johnson, D.M., & Brantley, S. (2022). Longleaf pine (*Pinus palustris*) seedlings show possible decoupling from water in upper soil layers during in situ artificial drought. Ecological Society of America Meeting, Montreal, August 2022.
- Duloisy, L. Johnson, D.M., 18 additional authors, Goldsmith, G.R. (2022). Developing a continental-scale perspective on wood water storage and capacitance. Ecological Society of America Meeting, Montreal, August 2022.
- Baker, K., Cannon, J., Scully, S., Bullock, B., Gandhi, K., Vogt, J., & Johnson, D.M. (2021). Simulated Wind Damage on Longleaf Pine Trees: What Doesn't Kill You, Might Kill You Slowly. American Geophysical Union Annual Meeting, December 2021, New Orleans
- Johnson, D.M., Reinhardt, K., Emanuel, R., Love, D., Tucker, L., Domec, J. -C., & Rojas, J. (2021). Tree Water Storage and Release in Heartwood and Deep and Shallow Sapwood. American Geophysical Union Annual Meeting, December 2021, New Orleans
- Mrad, A., Johnson, D., Love, D., & Domec, J. -C. (2021). The roles of conduit redundancy and connectivity in xylem hydraulic functions. American Geophysical Union Annual Meeting, December 2021, New Orleans
- *Harmon, M., Struber, S., Johnson, D., & Brantley, S. (2021). Longleaf pine (*Pinus palustris*) water use during and after severe drought: exploring legacy effects in sap flow. American Geophysical Union Annual Meeting, December 2021, New Orleans
- *Rojas, J., Baker, K., Johnson, D., & Brantley, S. (2021). Contrasting Functional Significance of Wood Water Storage in Longleaf Pine (*Pinus palustris*) and Sand Post Oak (*Quercus margarettae*). American Geophysical Union Annual Meeting, December 2021, New Orleans
- *Tucker, L., Reinhardt, K., Johnson, D., Emanuel, R., Minick, K., Love, D., & Rojas, J. (2021). Coordination of sap flux and water storage at various heights and depths inside stems in two

- tree species of differing hydraulic strategies. American Geophysical Union Annual Meeting, December 2021, New Orleans
- *Weygint, W., Eitel, J., Maguire, A., Vierling, L., Johnson, D., Colin, C., & Griffin, K. (2021). Physiological Linkages between Conifer Leaf Temperatures and Daily Tree Wood Growth: Implications for Thermal Remote Sensing Products. American Geophysical Union Annual Meeting, December 2021, New Orleans
- Hammond, W., Choat, B., Johnson, D., & Jansen, S. (2021). The global vulnerability of plant xylem. American Geophysical Union Annual Meeting, December 2021, New Orleans
- Minick, K., Reinhardt, K., Johnson, D., Love, D., Tucker, L., Bahramian, J., Emanuel, R. (2021). Sapwood and heartwood water storage and transport differ in pine and oak trees: assessment using a novel in situ 2H isotope tracing method and StorAge selection function analysis. American Geophysical Union Annual Meeting, December 2021, New Orleans
- Bahramian, J., Johnson, D., Reinhardt, K., Minick, K., Love, D., & Emanuel, R. (2021). Deuterium as a Tracer to Investigate Tree Water Transport in Tree Species with Varying Ecohydrological Strategies. American Geophysical Union Annual Meeting, December 2021, New Orleans
- Munro, H., Bullock, B., Johnson, D., Gandhi, K., & Vogt, J. T. (2021). Reconstructing loblolly pine plantations for the rapid assessment of tornado damage. Southern Mensurationists Conference. Blacksburg, VA
- *Harmon, M., Love, D.M., Brantley, S., & Johnson, D.M. (2021) Longleaf pine seedling physiology: a tale of two soils. Association of Southeastern Biologists Annual meeting (online) March 2021.
- *Harmon, M., Love, D.M., Brantley, S., & Johnson, D.M. (2020) Grass-stage pine seedling physiology: water use under droughty conditions differs across soil types. Ecological Society of America Annual Meeting (online) August 2020.
- *Wilson, L.A., Hammond, W., Adams, H., & Johnson, D.M. (2020) It's the heat and the humidity: anatomical and physiological traits within pine needles predict response in changes to VPD. Ecological Society of America Annual Meeting (online) August 2020.
- *Partelli Feltrin, R., Smith, A.M.S., & Johnson, D.M. Short- and long-term effects of fire on stem hydraulics in *Pinus ponderosa* saplings. Ecological Society of America Annual Meeting (online) August 2020.
- Love, D., Johnson, D.M., Trueba, S., & Brodersen, C.R. Hydraulic conductivity and vulnerability in *Pinus* shoots. Ecological Society of America Annual Meeting (online) August 2020.
- Love, D., Johnson, D.M., Trueba, S., & Brodersen, C.R. (2019). Hydraulic conductance and vulnerability segmentation in *Pinus* shoots: coordination between xylary and extraxylary conductance. American Geophysical Union Annual Meeting. San Francisco, CA, December 20
- *Baker, K., & Johnson, D. (2019). Second Year Effects of Reducing Stand Density on Seasonal Water Use in *Pinus ponderosa*. American Geophysical Union Annual Meeting. San Francisco, CA
- Sonawane BV, Koteyeva NK, Johnson DM, Cousins AB. Temperature response of leaf CO₂ and H₂O diffusion in a C₃ and C₄ grass. Gordon Research Conference: CO₂ Assimilation in Plants from Genome to Biome, Sunday River ME, June 9-14 2019.
- Johnson, D.M. 2018. Tree responses to drought: from physiological plasticity to mortality. Gordon Research Conference: Multiscale Plant Vascular Biology, Mount Snow VT, June 2018.
- Mackay, S., Tai, X., Grossiord, C., Johnson, D.M., Ewers, B., McDowell, N., & Sperry, J. (2018). Do surviving trees foretell forest growth declines under warm drought climates? American Geophysical Union, December, Washington D.C.
- *Baker, K., Howard, A., & Johnson, D.M. 2018. Capacitive recharge, hydraulic redistribution, and nighttime transpiration as competing water sinks in *Pinus ponderosa*. American Geophysical Union Annual Meeting, December, Washington D.C.
- *Partelli Feltrin R, Smith AMS, Johnson DM. 2018. Fire and drought effects on *ponderosa* pine sapling survival. Ecological Society of America Annual Meeting, Aug., New Orleans, LA.

- Reinhardt K, Emanuel RE, Johnson DM, Perry LB. 2018. How cloudy is too cloudy? A test of the light-limitation hypothesis in a temperate mountain cloud forest. Ecological Society of America Annual Meeting, Aug., New Orleans, LA.
- DS Mackay, C Grossiord, DM Johnson, NG McDowell, P Savoy, JS Sperry. Plants Hydraulic Modeling Helps in Understanding the Cost-benefit Tradeoffs of Deep Roots for Surviving Droughts. Asia Oceana Geosciences Society Meeting, June 2018, Honolulu, Hawaii.
- Berry ZC, Venturas MD, Smith DD, Knipfer T, McElrone AJ, Brodersen CR, Choat B, Jacobsen AL, Hacke UG, Miller ML, Domec J-C, McCulloh KA, Cuneo I, Albuquerque C, Johnson DM. 2017. A comparison of micro-CT imaging and excised segment methods to measure xylem embolism in a relatively long-veesled species, *Castanea dentata*. Ecological Society of America, Portland OR.
- *Partelli Feltrin R, Smith AMS, Johnson DM. 2017. *Testing for fire-induced xylem hydraulic failure in Pinus ponderosa saplings*. Ecological Society of America, Portland OR.
- *Maguire AJ, Eitel JUH, Boelman N, Griffin KL, Jensen JE, Johnson DM, Vierling LA. 2017. Characterizing the structural growth environment of successfully established spruce seedlings at northern treeline using lidar remote sensing. Ecological Society of America, Portland OR.
- *Johnson DM, Berry ZC, Bake KV, Smith DD, Botany, McCulloh KA, Domec J-C. 2017. Species that experience a wider range of leaf water potentials have greater plasticity in leaf hydraulic parameters. Ecological Society of America, Portland OR.
- *Baker KV, Johnson DM. 2017. Modeling resistance to drought in mixed conifer forests in the Pacific Northwest under climate change. Ecological Society of America, Portland OR.
- McCulloh KA, Bermudez R, Stefanski A, Johnson DM, Domec J-C, Smith DD, Reich PB. 2017. The impact of heat, drought and their combined effect on the vulnerability to embolism of saplings growing at the temperate-boreal ecotone. Ecological Society of America, Portland OR.
- *Miller, ML, Johnson DM. 2017. Vascular development in very young conifer seedlings: theoretical hydraulic capacities and potential resistance to embolism. Ecological Society of America, Portland OR.
- *Maguire AJ, Eitel JUH, Vierling LA, Johnson DM, Griffin KL, Boelman NT, Jensen JE, Hiers E. 2017. Using Terrestrial Lidar to Elucidate Structure-to-Function Relationships of Spruce Saplings at the Forest-Tundra Ecotone. Fall Meeting of the American Geophysical Union. New Orleans, LA.
- *Schwantes A, Swenson J, Gonzalez-Roglich M, Johnson DM, Domec J-C, Jackson RB. 2017. Drought induced canopy loss: Climate thresholds and extent of dieback along a 5-fold precipitation gradient across Texas. Ecological Society of America, Portland OR.
- *Schwantes A, Swenson J, Gonzalez-Roglich M, Johnson DM, Domec J-C, Jackson RB Identifying Climatic Thresholds that Control the Spatial Patterning of Drought-Induced Canopy Loss across a 4-Fold Precipitation Gradient in Texas. 2016. American Geophysical Union, San Fransisco, CA.
- *Boren EJ, Boschetti L, Johnson DM. 2016. A comparison of different radiative transfer model inversion methods for canopy water content retrieval. American Geophysical Union, San Fransisco, CA.
- Berry ZC, Smith DD, McCulloh KA, Domec J-C, Johnson DM. 2016. What happens in the drought after the drought? A comparison of carbon and water maintenance strategies across multiple drought events. 1st Gordon Conference on Multiscale Vascular Plant Biology, Newry ME.
- *Baker KV, Johnson DM. 2016. Hydraulic strategies of six co-occurring conifer species in northern Idaho during a severe drought. Ecological Society of America, Fort Lauderdale FL.
- *Riley ML, Roddy AB, Brodersen CR, Johnson DM. 2016. A comparison of vascular development and desiccation in stems of very young *Pseudotsuga menziesii* and *Pinus ponderosa*. Ecological Society of America, Fort Lauderdale FL.
- *Schwantes A, Swenson J, Gonzalez-Roglich M, Johnson DM, Domec J-C, Jackson RB. 2015. Regional estimates of drought-induced tree canopy loss across Texas. American Geophysical Union, San Fransisco, CA.

- *Boren E, Boschetti L, Johnson DM. 2015. Characterizing the uncertainty of vegetation moisture content retrieval through radiative transfer inversion with Landsat 8 OLI data. American Geophysical Union, San Francisco, CA.
- Reinhardt K, Johnson DM, Berry ZC. 2015. Investigating cloud-vegetation linkages in southern Appalachian mountain cloud forests at leaf to ecosystem scales. Ecological Society of America, Baltimore MD.
- Johnson DM, Wortemann R, McCulloh KA, Jordan Meille L, Palmroth S, Ward E, Warren J, Domec J-C. 2015. A test of the hydraulic vulnerability segmentation hypothesis in conifer and angiosperm species. Ecological Society of America, Baltimore MD.
- Wortemann R, Johnson DM, Domec JC. 2014. Comparison of the ecophysiology of three local tree species at an early stage. Ecological Society of America, Sacramento, CA.
- Johnson DM, Meinzer FC, McCulloh KA, Woodruff DR, Domec JC. 2013. Embolism avoidance versus embolism repair: The curious case of conifers. American Society of Plant Biologists Annual Meeting, Providence, RI (invited as part of "Xylem Physiology" symposium).
- Domec JC, Schwantes A, Johnson DM, Swenson JJ, McDowell N, Ogee J, Polley HW, Pockmann W, Jason RB. 2013 Why can't process-based models kill trees when modelling drought-induced mortality? How can we fix that? Ecological Society of America, Minneapolis, MN.
- Domec JC, Palmroth S, Ward EJ, Johnson DM, McCulloh KA, Gonzalez-Benecke CA, Warren J, Oren R. 2013. Long-term effects of CO₂ enrichment (Duke FACE) on the hydraulic properties (conductivity and embolism) of roots, trunks and branches of loblolly pine trees: Impacts on whole-plant hydraulic performance. AGU Fall Meeting, San Francisco, CA.
- Meinzer FC, Domec JC, Johnson DM, McCulloh KA. 2013. The dynamic pipeline: homeostatic mechanisms that maintain the integrity of xylem water transport from roots to leaves. - IX International Workshop on Sap Flow, Ghent, Belgium.
- Palmroth S, Oren R, Johnson DM, Ward EJ. 2013. Variable conductivity and embolism in roots, trunks and branches of tree species growing under future atmospheric CO₂ concentration (DUKE FACE site): impacts on whole-plant hydraulic performance and carbon assimilation. AGU Fall Meeting, San Francisco, CA.
- Reinhardt K, Emanuel RE, Johnson DM. 2013. Islands in the Sky: Ecophysiological Cloud-Vegetation Linkages in Southern Appalachian Mountain Cloud Forests. AGU Fall Meeting, San Francisco, CA.
- McCulloh KA, Johnson DM, Petitmermet JP, McNellis BE, Meinzer FC, Lachenbruch B. 2012. Are shrubs short because of their hydraulic architecture? A comparison of co-occurring trees and shrubs. Ecological Society of America, Portland OR. (*poster presentation)
- McCulloh KA, Johnson DM, Woodruff DR. 2012. The dynamic pipeline: Hydraulic capacitance and xylem hydraulic safety in four tall conifer species. Ecological Society of America, Portland OR.
- Johnson DM, Domec J-C, Woodruff DR, McCulloh KA, Meinzer FC. 2012. Two tropical lianas and their host trees have contrasting hydraulic strategies. 2012. Ecological Society of America, Portland OR.
- Woodruff DR, Meinzer FC and Johnson DM. 2011. Temporal variation in storage of nonstructural carbohydrates along a height gradient in Douglas fir trees. Ecological Society of America, Austin TX. (*poster presentation)
- Johnson DM, McCulloh KA, Meinzer FC and B Lachenbruch. 2009. The terminal portion of the plant hydraulic continuum: branch and leaf vulnerabilities to hydraulic dysfunction. Second International Conference on Forests and Water in a Changing Climate, Raleigh NC.
- Johnson DM, Woodruff DR, McCulloh KA and FC Meinzer. 2009. Daily cycles of leaf hydraulic conductance measured in situ. Botanical Society of America, Snowbird, UT.
- McCulloh KA, Johnson DM, Meinzer FC and B Lachenbruch. 2009. Safety and efficiency trade-offs at inter- and intra-specific scales. Ecological Society of America, Albuquerque, NM.
- Meinzer FC, Johnson DM, Lachenbruch B, McCulloh KA and DR Woodruff. 2009. Xylem hydraulic safety margins in woody plants: Coordination of stomatal control of xylem tension with hydraulic capacitance. Ecological Society of America, Albuquerque, NM.

- Johnson DM, Meinzer FC, Woodruff D and KA McCulloh. 2008. Water stress-induced decreases in leaf hydraulic conductance are associated with ultrasonic acoustic emissions. Ecological Society of America, Milwaukee, WI.
- Woodruff DR, Meinzer FC, Lachenbruch B, McCulloh KA, Warren JM and DM Johnson. 2008. Leaf hydraulic regulation of water flux in Douglas fir. Ecological Society of America, Milwaukee, WI.
- Smith WK, Jackson ST and Johnson DM. 2007. Functional significance of conifer leaf shape in an evolutionary context. Botanical Society of America, Chicago, IL.
- Johnson DM and Smith WK. 2006. Cloud immersion enhances understory photosynthesis in the southern Appalachian Mountains. Ecological Society of America, Memphis, TN.
- Reinhardt KA, Johnson DM and Smith WK. 2006. Ecophysiology of broad-leaved treeline species along an altitudinal gradient in the Caucasus Mountains of Georgia. Ecological Society of America, Memphis, TN.
- Johnson DM and Smith WK. 2006. Cloud immersion and understory photosynthesis in the southern Appalachian Mountains. Association of Southeastern Biologists, Gatlinburg, TN.
- Johnson DM and Smith WK. 2005. Photosynthesis and survival in high-altitude, current-year seedlings of *Abies fraseri* in the southern Appalachian Mountains. Botanical Society of America, Austin, TX.
- Smith WK, Germino MJ and Johnson DM. 2005. Mechanisms of treeline altitude and migration: conifer seedling survival in the treeline ecotone. Treeline workshop, Glacier National Park, MT. S
- Smith WK, Germino MJ and Johnson DM. 2005. Importance of the Radiation Environment to Timberline/Treeline. Treeline workshop, Glacier National Park, MT.
- Johnson DM, Smith WK and Vogelmann TC. 2004. Chlorophyll fluorescence profiles inside a representative broadleaf and conifer needle. Botanical Society of America, Snowbird, UT.
- Johnson DM, Germino MJ and Smith WK. 2003. Abiotic factors limiting carbon gain in seedlings of *Abies lasiocarpa* and *Picea engelmannii* at treeline. Ecological Society of America, Savanna, GA.
- Germino MJ, Smith WK, Broderson CR and Johnson DM. 2003. Photosynthetic variation in young and old conifers across an alpine-treeline ecotone. Ecological Society of America, Savanna, GA.
- Johnson DM, Germino MJ and Smith WK. 2003. Abiotic factors limiting carbon gain in seedlings of *Abies lasiocarpa* and *Picea engelmannii* at treeline. Altitudinal Treeline Workshop: Institute for Cosmic Ray Research, Mt. Norikura, Japan.
- Johnson DM and Whetten RS. 1999. A novel Pleckstrin Homology Domain-containing protein from *Pinus taeda*. Current Topics in Plant Biochemistry Symposium, University of Missouri-Columbia. (*poster presentation)

SERVICE

Co-Vice Chair Multiscale Vascular Plant Biology Gordon Conference (2022-2024; Co-Chair 2024-2026)

Co-Secretary of Ecological Society of America Physiological Ecology Section (2016-2018)

Botanical Society of America, Graduate Awards Committee (2010-2013)

Editorial Review Board member for *Tree Physiology* (2013-Present)

Associate Editor for *AoB Plants* (2018-present)

Subject Matter Editor for *Ecosphere* (Physiology Editor) (2023-present)

University of Georgia, University Council, 2023- present

Warnell Teaching Effectiveness Committee 2021-Present

Warnell Administrative Committee 2021-2022
 University of Georgia Graduate Council 2019-2022
 University of Georgia Graduate Program Committee 2021-2022
 University of Georgia Graduate Appeals Committee 2019-2021

College of Natural Resources Committee Service – CNR Lab Space Committee – 2014 - 2015
 College of Natural Resources Committee Service – Silviculture faculty position search – Fall 2014
 Moscow ID, Community Committee Service – UI Arboretum Associates Board Member – 2014 – 2016
 University of Idaho Scholarly and Creative Activity Committee - Spring 2016
 College of Natural Resources Committee Service - Administrative Assistant II Job Search Committee - Spring 2016
 College of Natural Resources Committee Service – Endowed Chair Seedling Regeneration Faculty Search Committee – Spring 2017
 College of Natural Resources Committee Service – Endowed Chair Seedling Regeneration Faculty Search Committee – Spring 2018
 University of Idaho EPR and Accreditation Committee – 2017-2018

Reviewer for multiple scientific journals including: Agricultural and Forest Meteorology, American Journal of Botany, Canadian Journal of Forest Research, Ecological Monographs, Ecology, Forest Ecology and Management, Functional Ecology, Functional Plant Biology, Journal of Ecology, Journal of the Torrey Botanical Society, Journal of Visualized Experiments, New Phytologist, Oecologia, Plant, Cell and Environment, Plant Ecology and Diversity, Plant Physiology, Plant Physiology and Biochemistry, Plant Signaling and Behavior, Tree Physiology and Trees-Structure and Function.

Reviewer for DOE Terrestrial Ecosystem Science Program, NSF- Integrative and Organismal Systems (IOS) and Centers for Research Excellence in Science and Technology (CREST) Programs. Panelist for DOE and NSF programs.

OUTREACH (selected recent)

Athens Science Café – Fire and drought impacts on trees March 2022
 UGA Sustainability Faculty Learning Community – Invited to lead discussion on ecological considerations in forestry - March 2022
 Led faculty brown bag discussion on teaching effectiveness/strategies during the pandemic 1/27/21 and on engagement with students in class 9/24/21
 Taught GA Extension Agents “Native Edible Fruits” with Holly Campbell 1/29/21
 Taught GA Extension Agents “Winter Tree Identification” with Holly Campbell 2/26/2021
 Taught GA Extension Agents “Wild Harvest in Georgia-Native Georgia Nuts” with Holly Campbell 3/26/21
 Taught GA Extension Agents “Georgia Oaks: Learning Their Morphology, Ecology, and Identification” with Holly Campbell 4/16/21
 Led Tree ID walk at Sandy Creek Nature Preserve 10/30/21 “Tree ID on the Greenway”
 Seminar on Forestry Problems in the Southeast at Healthy Forests: Managing for Bugs, Wildlife, and Big Trees Workshop on November 9 2020
 Tree ID walk February 2019. Native tree ID for the public at the UGA Botanical Garden

MENTORING AND ADVISING

Graduate Students Advised as Major Professor

Megan Miller, M.S. 2017, University of Idaho
 Kathrn Baker, Ph.D. 2019, University of Idaho
 Raquel Partelli-Feltrin Ph.D. 2020, University of Idaho (co-advised)

Sarah Forget M.N.R, 2021, University of Georgia
Luke Wilson M.S. 2021, University of Georgia
Monica Harmon, M.N.R. 2023, University of Georgia
Hunter Scully, M.N.R. 2023, University of Georgia

Justine Velasquez, Ph.D. student, current
Vanessa Gremler, M.S. student, current
Clara Nibbelink, M.S. student, current
Liam Stiefel, M.S. student, current
Colin Smith, Ph.D. student, current
Andrew Johnson, M.N.R. student, current

Postdoctoral Researchers Mentored

Remi Wortemann 2012-2014
Carter Berry 2015-2016
Dave Love 2018-2021
Kathryn Baker 2020-2023

Undergraduate Students Mentored

Jason Schlafman 2014-2015
Laura Young 2015-2016
Kentrell Richardson 2020-2021
Katherine Carlsrud 2022-present
Preston Harden 2023-present