

**DANIEL MATTHEW JOHNSON**  
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Warnell School of Forestry and Natural Resources  
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## **EDUCATION**

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

## **APPOINTMENTS**

Assistant Professor, 2018 – present, 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)**

- \*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
- \*Feltrin RP, Smith AMS, Adams HD, Kolden CA, Johnson DM. 2020. Short- and long-term effects of fire on stem hydraulics in *Pinus ponderosa* saplings. *Plant, Cell and Environment* (in press)
- \*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*
- 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* (in press) DOI: <https://doi.org/10.1104/pp.18.01303>
- 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, Martinez-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, Lachebruch 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 DM Johnson. 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 CO<sub>2</sub> 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***

- U.S. Department of Agriculture, AFRI, “Determining The Capacity For The Water Stored In Wood To Help Trees Withstand Drought” 2020-2022, \$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 2018-2021, “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 coPI, DM Johnson Collaborator \$557,085 (\$144,237 to UGA).
- National Science Foundation, Division of Integrative Organismal Systems 2017-2021, “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 Wisc. 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. Wisc. 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 Univ.)

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

\*Advanced Tree Physiology (FORS8030) University of Georgia, Spring 2019, Spring 2020

\*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.

### *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

Treeline Workshop: Identifying Mechanisms Driving Treeline Elevations (co-organizer, lead organizer WK Smith), Aug. 14-18 2015, McCall ID  
 Reconciling Methodological Discrepancies in the Measurement of Hydraulic Vulnerability to Embolism (lead organizer), Sept 2-5 2016, Berkeley CA  
 Advanced Reforestation and Regeneration Workshop (co-Organizer, lead organizer A Nelson), Moscow ID February 2017  
 Hydraulics Methods Workshop for graduate students and postdocs (lead organizer), McCall Idaho August 2017

### **INVITED PRESENTATIONS**

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  
 Reforestation Short Course, Boise ID, May 2017  
 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, Student Section Society of American Foresters November 20, 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**

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 Fransisco, CA  
 \*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 Fransisco, CA  
 Sonawane BV, Koteyeva NK, Johnson DM, Cousins AB. Temperature response of leaf CO<sub>2</sub> and H<sub>2</sub>O diffusion in a C<sub>3</sub> and C<sub>4</sub> grass. Gordon Research Conference: CO<sub>2</sub> Assimilation in Plants from Genome to Biome, Sunday River ME, June 9-14 2019.

- 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. Poster presentation.
- \*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. Poster presentation.
- 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. Poster presentation.
- 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-veined 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, Baker 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 Francisco, CA. (\*poster)
- 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 Francisco, CA. (\*poster)
- 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. 1 st 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 Francisco, CA. (\*poster)
- 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. (\*poster)
- 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, Jackson 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 CO<sub>2</sub> 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 CO<sub>2</sub> 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-Secretary of ESA Physiological Ecology Section (2016-2018)

Editorial Review Board member for Tree Physiology (2013-Present)  
Associate Editor for Fire (Physiology Editor) (2018-present)  
Associate Editor for AoB Plants (2018-present)

University of Georgia Graduate Council 2019-Present  
University of Georgia Graduate Appeals Committee 2019-Present  
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

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