

Matthew D. Powers

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EDUCATION

Ph.D. Forest Science, Michigan Technological University, 2008
M.S. Forest Ecology and Management, Michigan Technological University, 2005
B.S. Biology (Physics minor), graduated with honors, Ball State University, 2002

WORK EXPERIENCE

2018-Present: Assistant Professor, Department of Forest Engineering, Resources and Management, Oregon State University
2013-2018: Instructor, Department of Forest Engineering, Resources and Management, Oregon State University
2011-2013: Research Scientist II, School of Forest Resources and Environmental Science, Michigan Technological University (and Northern Institute of Applied Climate Science)
2009-2011: Postdoctoral Research Associate, USDA Forest Service Northern Research Station
2009: Lecturer and Research Associate, School of Forest Resources and Environmental Science, Michigan Technological University
2003-2008: Graduate Research Assistant, School of Forest Resources and Environmental Science, Michigan Technological University
1999-2000: Research Technician, Department of Physics and Astronomy, Ball State University
1998-1999: Honors Undergraduate Fellow, Department of Physics and Astronomy, Ball State University

COURSES TAUGHT

Professional Communication and Ethics (OSU); 2018-Present
Forest Policy (OSU); 2018-Present
Introduction to Forestry (OSU); 2015-Present
Silviculture Practices (OSU); 2014-Present
Integrated Prescriptions (OSU); 2014-2017
Forest Ecology (OSU); 2013-2017
Tree Physiology and Genetics (MTU); 2009

OTHER TEACHING AND OUTREACH EXPERIENCE

2013-2019: USDA Forest Service National Advanced Silviculture Program; Inventory, Monitoring, and Decision Support Module (Instructor)
2015-2018: Oregon State University, Forestry Field School (Guest Lecturer)
2016: Oregon State University, Forest Management Planning & Design (Guest Lecturer)

- 2013, 2012: USDA Forest Service National Advanced Silviculture Program; Ecological Systems Module (Instructor/Assistant)
- 2012: USDA Forest Service National Advanced Silviculture Program, Local Lake States Silviculture Session (Assistant Director)
- 2012: Forest Vegetation Dynamics (MTU): Guest Lecturer
- 2012, 2010: USDA Forest Service National Advanced Silviculture Program, Local Lake States Silviculture Session (Instructor)
- 2008: Practice of Silviculture (MTU): Instructor for Regeneration and Site Preparation
- 2007: Forest and Landscape Ecology (MTU): Guest Lecturer
- 2005, 2006: Forest and Landscape Ecology (MTU): Graduate Teaching Assistant
- 2005: USDA Forest Service Program of Advanced Studies in Silviculture, Biological and Earth Sciences Module (Teaching Assistant)

OTHER PROFESSIONAL EXPERIENCE

- 2002-2003: Preserve Assistant, The Nature Conservancy, Indiana Field Office
- 2000-2002: Intern, The Nature Conservancy, Upper St. Joseph River Project Office, Indiana Chapter (summers only)

PEER-REVIEWED PUBLICATIONS

- *Williams, NG, and Powers, MD. 2019. Medium-term effects of active management on the structure of mature Douglas-fir (*Pseudotsuga menziesii*) stands. *Ecosphere* 10(8): 1-31.
- *Williams, NG, and Powers, MD. 2019. Carbon storage implications of active management in mature *Pseudotsuga menziesii* forests of western Oregon. *Forest Ecology and Management* 432: 761-775.
- *Priebe, JE, Powers, MD, and Cole, EC. 2018. Species, tree size, and overstory environment affect likelihood of ice storm damage to understory trees in a mature Douglas-fir forest. *Forest Ecology and Management* 409: 777-788.
- Powers, M, Kolka, K, Bradford, J, Palik, B, and Jurgensen, M. 2017. Forest floor and mineral soil respiration rates in a northern Minnesota red pine chronosequence. *Forests* 9(16): 1-15.
- Nagel, LM, Palik, BJ, Battaglia, MA, D'Amato, AW, Guldin, JM, Swanston, CW, Janowiak, MK, Powers, MD, Joyce, LA, Miller, CA, Peterson, DL, Ganio, LM, Kirchbaum, C, Roske, MR. 2017. Adaptive Silviculture for Climate Change: A national experiment in manager-scientist partnerships to apply an adaptation framework. *Journal of Forestry* 115(3): 167-178.
- Powers, MD, Kolka, RK, Bradford, JB, Palik, BJ, Fraver, S, and Jurgensen, MF. 2012. Carbon stocks across a chronosequence of thinned and unmanaged red pine (*Pinus resinosa*) stands. *Ecological Applications* 22(4): 1297-1307.
- Kolka, RK, Steber, A, Brooks, KN, Perry, CH, and Powers, MD. 2012. Harvest season, soil texture and landscape position effects on soil compaction in northern Minnesota aspen harvests. *Northern Journal of Applied Forestry* 29(1): 21-25.

- Powers, MD, Kolka, RK, Palik, BJ, McDonald, R, and Jurgensen, M. 2011. Long-term management implications on carbon storage in Lake States forests. *Forest Ecology and Management*. 262: 424-431.
- Powers, MD, Pregitzer, KS, Palik, BJ, Webster, CR. 2011. The physiological basis for regeneration response to variable retention harvest treatments in three pine species. *Forestry*. 84(1): 13-22.
- Powers, MD, Palik, BJ, Bradford, JB, Fraver, S, Webster, CR. 2010. Thinning method and intensity influence long-term mortality trends in a red pine forest. *Forest Ecology and Management*. 260: 1138-1148.
- Powers, MD, Pregitzer, KS, Palik, BJ, and Webster, CR. 2010. Wood $\delta^{13}\text{C}$, $\delta^{18}\text{O}$, and radial growth responses of residual red pine to variable retention harvesting. *Tree Physiology*. 30(3): 326-334.
- Bump, JK, Webster, CR, Vucetich, JA, Peterson, RO, Shields, JM, and Powers, MD. 2009. Ungulate carcasses perforate ecological filters and create biogeochemical hotspots in forest herbaceous layers allowing trees a competitive advantage. *Ecosystems*. 12(6): 1996-1007.
- Powers, MD, Pregitzer, KS, Palik, BJ, and Webster, CR. 2009. Water relations of pine seedlings in contrasting overstory environments. *Forest Ecology and Management*. 258: 1442-1448.
- Powers, MD, and Nagel, LM. 2009. Pennsylvania sedge cover, forest management, and deer density influence tree regeneration dynamics in a northern hardwood forest. *Forestry*. 82(3): 241-254.
- Powers, MD, Webster, CR, Pregitzer, KS, and Palik, BJ. 2009. Spatial dynamics of radial growth and growth efficiency in residual *Pinus resinosa* following aggregated retention harvesting. *Canadian Journal of Forest Research*. 39(1): 109-117.
- Powers, MD, Pregitzer, KS, and Palik, BJ. 2008. Physiological performance of three pine species provides evidence for gap partitioning. *Forest Ecology and Management*. 256: 2127-2135.
- Powers, MD, Pregitzer, KS, and Palik, BJ. 2008. $\delta^{13}\text{C}$ and $\delta^{18}\text{O}$ trends across overstory environments in whole foliage and cellulose of three *Pinus* species. *Journal of the American Society for Mass Spectrometry*. 19: 1330-1335.
- Powers, MD, and Nagel, LM. 2008. Disturbance dynamics influence *Carex pensylvanica* abundance in a northern hardwood forest. *Journal of the Torrey Botanical Society*. 135(3): 317-327.
- Talhelm, AF, Qadir, SA, Powers, MD, Bradley, KL, Friend, AL, and Pregitzer, KS. 2007. ^{13}C labeling of plant assimilates using a simple canopy-scale open air system. *Plant Soil*. 296: 227-234.
- *Indicates students for whom I served as the major professor/primary advisor.

OTHER PUBLICATIONS

- Powers, MD. 2016. Forest management in the face of drought: silvicultural strategies for reducing drought impacts. *Western Forester* 61(3): 6-9. *Invited Article*
- Powers, M, and Wessell, S. 2016. Management impacts and developmental patterns in mature Douglas-fir forests of the Pacific Northwest: an annotated bibliography. USDA Forest Service and USDI BLM Report.

Handler, SD, Swanston, CW, Butler, PR, Brandt, LA, Janowiak, MK, Powers, MD, and Shannon, PD. 2014. Climate change vulnerabilities within the forestry sector for the Midwestern United States. In: Climate Change in the Midwest: A Synthesis Report for the National Climate Assessment, J.A. Winkler, J.A. Andresen, J.L. Hatfield, D. Bidwell, and D. Brown, eds., Island Press, 114-151

PRESENTATIONS

- Williams, N, and Powers, M. 2018. Carbon storage implications of active management in mature *Pseudotsuga menziesii* forests of western Oregon. Society of American Foresters National Convention, October 5, Portland, OR.
- Marcum, S, and Powers, M. 2018. Overstory growth and recruitment following uneven-aged conversion treatments in Douglas-fir plantations. Western Forestry Graduate Research Symposium, April 13, Oregon State University, Corvallis, OR.
- Marcum, S, and Powers, M. 2017. Creating mixed-species, uneven-aged forests from Douglas-fir plantations in the central Oregon Cascades. Western Forestry Graduate Research Symposium, April 21, Oregon State University, Corvallis, OR.
- Gunsolus, A, Powers, M, and Fitzgerald, S. 2017. Group selection silviculture in a second-growth Douglas-fir forest in the Oregon Coast Range foothills. Western Forestry Graduate Research Symposium, April 21, Oregon State University, Corvallis, OR.
- Taylor, A, Powers, M, Cole, E, and Bailey, J. 2016. Understory vegetation dynamics and midstory development following understory release treatments in thinning Douglas-fir stands. Society of American Foresters National Convention, November 7, Madison, WI.
- Priebe, J, Powers, M, and Cole, E. 2016. Effect of overstory environment, species, and tree size on presence, source, and severity of damage to understory trees in a mature Douglas-fir forest. Western Forestry Graduate Research Symposium, April 22, Oregon State University, Corvallis, OR.
- Taylor, A, Powers, M, Cole, E, and Bailey, J. 2016. Silvicultural development of canopy midstory: W. hemlock release and understory response. Western Forestry Graduate Research Symposium, April 22, Oregon State University, Corvallis, OR.
- Williams, N, and Powers, M. 2016. Multi-objective trade-offs in managing mature west-side forests for structural complexity. Western Forestry Graduate Research Symposium, April 22, Oregon State University, Corvallis, OR.
- Powers, M, and Wessell, S. 2015. Stand-level silviculture to meet stand and landscape-level objectives in > 80 year-old stands. USDA Forest Service/USDI Bureau of Land Management Workshop: Ecological, Economic, and Social Objectives for Managing Stands over 80 Years of Age, June 3, Oregon State University, Corvallis, OR. (*Invited*)
- Priebe, J, Powers, M, and Cole, E. 2015. Thinning and vegetation control impacts on understory dynamics in mature Douglas-fir forests. Poster Presentation. Western Forestry Graduate Research Symposium, April 27, Oregon State University, Corvallis, OR.

- Nagel, LM, Swanston, C, Janowiak, M, and Powers, MD. 2012. Incorporating Climate Change into Adaptive Silviculture Planning. Oral Presentation. Society of American Foresters National Convention, October 24-28, Spokane, WA.
- Nagel, LM, Swanston, C, Janowiak, M, and Powers, MD. 2012. Developing Adaptive Silvicultural Strategies in the Context of Climate Change. College of Engineering, Forestry and Natural Sciences, Northern Arizona University, September 26, Flagstaff, AZ. (*Invited Presentation*)
- Nagel, LM, Swanston, C, Janowiak, M, and Powers, MD. 2012. Silviculture Planning in the Face of Climate Change. Second Annual Bureau of Indian Affairs Midwest Region Partners in Action Conference, June 25-28, Mt. Pleasant, MI. (*Invited Presentation*)
- Powers, MD, Nagel, LM, Swanston, C., and Janowiak, M. 2012. Limiting climate change impacts on forests through adaptive silviculture and carbon management. Oral Presentation. Xi Sigma Pi Annual Symposium, March 29, Houghton, MI. (*Invited Presentation*)
- Nagel, LM, and Powers, MD. 2012. Adaptive silviculture in an uncertain climate future. USDA Forest Service Southern Region (Region 8) Regional Science Committee Vegetation Management Meeting. Web-Conference, January 25. (*Invited*)
- Kolka, R, Powers, M, Bradford, J, Palik, B, and Jurgensen, M. 2011. Effects of red pine thinning and stand age on ecosystem carbon pools and fluxes. Society of American Foresters Annual Convention, Honolulu, HA.
- Powers, M, Palik, B, Bradford, J, Fraver, S, and Webster, C. 2010. Tree mortality in managed red pine over a multi-decadal warming period. Oral Presentation. Proceedings of the Ecological Society of America Meeting. Pittsburgh, PA, August 1-6. (*Invited*)
- Palik, B, Montgomery, R, Reich, P, Boyden, S, Schulte Moore, L, Atwell, R, Lang, K, Kastendick, D, and Powers, M. 2009. Variable retention harvesting in Great Lakes red pine forests: responses to spatial pattern of retention. Oral Presentation, 7th Annual North American Forest Ecology Workshop. Logan, UT, June 22-26.
- Powers, MD, Pregitzer, KS, Palik, BJ, and Webster, CR. 2008. Variable retention harvest treatments alter physiological performance in three pine species. Oral Presentation. Proceedings of the Ecological Society of America Meeting. Milwaukee, WI, August 3-8.
- Powers, MD, Pregitzer, KS, Palik, BJ, and Webster, CR. 2008. Gap partitioning in northern pine forests: applying ecological theory to resource management dilemmas. Poster presentation, Fourth Annual ESC/BRC Graduate Research Forum, Michigan Technological University, Houghton, MI, February 29.
- Powers, MD, Pregitzer, KS, and Palik, BJ. 2007. Comparing differences in water-use efficiency associated with overstory environment in whole tissue and cellulose of three *Pinus* species. Poster presentation, Third Annual ESC/BRC Graduate Research Forum, Michigan Technological University, Houghton, MI, February 23.
- Powers, MD, Pregitzer, KS, and Palik, BJ. 2006. Developing a toolbox for planning ecosystem management treatments. Poster presentation, Second Annual ESC/BRC Graduate Research Forum, Michigan Technological University, Houghton, MI, February 24.

Powers, MD, and Nagel, LM. 2005. Forest management, deer herbivory, and exotic earthworm activity contribute to Pennsylvania sedge mat formation in northern hardwood forests. Oral presentation. Proceedings of the Ecological Society of America Meeting, Montreal, Canada, August 7-12.

Powers, MD, and Nagel, LM. 2005. Forest management, deer herbivory, and exotic earthworm activity contribute to Pennsylvania sedge cover in Wisconsin's northern hardwood forests. Poster presentation, Fourth Annual Western Great Lakes Research Conference, Northern Michigan University, Marquette, MI, March 30-31.

Powers, MD, and Nagel, LM. 2005. Intensive management, deer herbivory, and exotic earthworms contribute to Pennsylvania sedge invasiveness in Wisconsin's northern hardwood forests. Poster presentation, First Annual ESC/BRC Graduate Research Forum, Michigan Technological University, Houghton, MI, February 25.

FUNDING RECEIVED

Warren, D., and Powers, M. Riparian thinning and stream ecosystem structure collaboration: preliminary data collection. 2017. USDA Forest Service. \$29,886. Duration 8/4/17-7/28/19.

Bailey, J., Powers, M., Cole, E., and Powers, M. Growing mature stand structures in Pacific Northwest Douglas-fir forests. 2015. USDI Bureau of Land Management. \$99,998. Duration: 6/19/2015 - 6/30/2017.

Swanston, C (Lead USFS PI), Nagel, L (Lead University PI), Janowiak, M, and Powers, M. National Instruction of Advanced Climate Change Topics. USDA Forest Service Contribution: \$80,000 (Total Project Value: \$122,515). Duration: 8/1/2012 – 7/31/2014.

PENDING GRANT PROPOSALS

Powers, M, Harrington, C, and Robinson, S. Impacts of Variable Density Thinning on the Magnitude & Duration of Drought Response in Overstory & Understory Conifers of the Pacific Northwest. Submitted to USDA NIFA AFRIA. Total funds requested: \$499,700

EXAMPLES OF UNFUNDED PROPOSALS

Powers, M, and Hagar, J. 2019. Assessing Stump Use by Small Mammals and Pollinators Following Even-Aged Regeneration Harvests in Douglas-fir Stands of Western Oregon. Submitted to Oregon State Fish and Wildlife Habitat in Managed Forests Program. Total funds requested: \$96,948.

Robinson, S, Ostroverkhova, O, and Powers, M. 2018. Utilizing fungal-based biopigments to increase the efficiency of solar cells. Submitted to USDA NIFA AFRI. Total funds requested: \$498,152

Hatten, J, Anderson, N, Belart, F, Betts, M, Chung, W, Cushing, T, Gonzalez, C, Gosnell, H, Hall, T, Harrison, R, Huber-Stearns, H, Johnson, J, LeBoldus, J, Latta, G, Littke, K, Lyons, K, Maguire, D, Powers, M, Sessions, J, Shaw, D, Strahm, B, Strimbu, B, Turnblum, E. 2018. Increasing production in Northwest US forests to supply high quality timber for engineered wood buildings. Submitted to USDA NIFA AFRI. Total funds requested: \$10,000,000.

- Powers, M., Williams, N., and Hagar, J. 2017. An analysis of management tradeoffs in mature Douglas-fir forests. Submitted to Oregon State University Fish and Wildlife Habitat in Managed Forests Program. Total funds requested: \$75,531
- Powers, M., Hadley, A., and Puettmann, K. 2016. Effects of Thinning Treatment Timing and Rotation Length on Broadleaf Vegetation and Songbird Communities in Douglas-fir Plantations. Submitted to Oregon State University Fish and Wildlife Habitat in Managed Forests Program. Total funds requested: \$59,342.
- Bladon, K., Powers, M., Olsen, C., Friesen, C., Hagar, J., and Bailey, J. 2015. Evaluating Gap-Based Treatment Impacts on Vegetation-Wildlife Relationships, Snowpack Dynamics, and Public Perceptions of Forest Management Activities on Federal Lands. Submitted to Oregon State University Institute for Working Forest Landscapes. Total funds requested: \$244,500.
- Robinson, S., Powers, M., and Cushing, T. 2015. Understanding spalting potential in Pacific Northwest Forests. Submitted to Oregon State University Institute for Working Forest Landscapes. Total funds requested: \$151,500.
- Hatten, J., Maguire, D., Chung, W., Powers, M., and Gonzalez-Benecke, C. 2015. Elucidating site constraints on effective vegetation management: Adapting the concepts of precision forestry and ecosystem services to sustainable vegetation management in the Pacific Northwest. Submitted to Oregon State University Institute for Working Forest Landscapes. Total funds requested: \$250,000.
- Powers, M., and Hadley, A. (2014). Effects of thinning treatment timing and rotation length on broadleaved vegetation and songbird communities in intensively-managed Douglas-fir plantations. Submitted to Oregon State University Fish and Wildlife Habitat in Managed Forests Program. Total funds requested: \$97,778.
- Powers, M., Nagel, L., Swanston, C., Guldin, J., and Palik, B. 2013. Evaluating an adaptive silviculture for climate change project with a national scope. Submitted to NIFA's Agriculture and Food Research Initiative Program. Total funds requested: \$996,463.
- Bradford, J., D'Amato, A., Finley, A., Cook, B., and Powers, M. 2010. Forest complexity as a management strategy to enhance climate change adaptation and mitigation at multiple spatial scales. Submitted to NASA Roses Program. Total funds requested: \$713,589.
- Pregitzer, K., and Powers, M. 2008. Tree growth and moisture stress during multiyear droughts in pre-settlement and contemporary mixed conifer forests: implications for management under changing climate and structural conditions. Submitted to USDA Forest Service Pacific Southwest Research Station. Total funds requested: \$188,692.

REVIEWER FOR

- Botany
- Catena
- Ecological Applications
- Environmental Research Letters
- Forest Ecology and Management

- Forest Science
- Forestry
- Forests
- Journal of Forestry
- OSU Extension Publications
- PLOS One
- Science of the Total Environment
- Sustainability
- Tree Physiology

GRADUATE STUDENT MENTORSHIP

Served as Major Advisor:

Madelene Elfstrom (M.S.) – Current
 Rebecca Weber (M.F.) – Current
 Elisha Flores (M.F.) – Current
 Carli Morgan (M.S.) – Current
 Alexis Gunsolus (M.F.) – 2018
 Neil Williams (Ph.D.) – 2019
 Sean Marcum (M.S.) – 2019
 Andy Taylor (M.F.) – 2016
 Jim Preibe (M.S.) – 2016

Served as Committee Member:

PhD Students: 4
 M.S. Students: 9
 MF Students: 4
 MNR Students: 1

PROFESSIONAL DEVELOPMENT ACTIVITIES

Writing Intensive Curriculum Faculty Seminar, Oregon State University, Fall 2016

PROFESSIONAL SERVICE ACTIVITIES

- OSU College Forests Advisory Committee, 2016-Present
- FERM Work Experience Practicum, Departmental Designee, 2016-Present
- Western Forestry Graduate Research Symposium, Judge, 2014-Present
- OSU College of Forestry Senior Awards Committee, 2016-2018

AWARDS AND RECOGNITIONS

- Xi Sigma Pi Excellence in Mentoring Award. College of Forestry, Oregon State University, 2017

- High Quality Review Award. *Forestry: An International Journal of Forest Research*. Awarded by the Institute of Chartered Foresters. 2016
- USDA Forest Service Northern Research Station Director's Excellence in Science and Technology, 2013
- ESC/BRC Graduate Research Forum Merit Award, Michigan Technological University, 2007
- Phi Society Membership, Ball State University, 2002
- Dean's List, eight semesters, Ball State University, 1998-2002
- Presidential Scholarship, Ball State University, 1998-2002
- Outstanding Freshman Chemistry Student Award, Ball State University, 2001
- D.J. Angus – Sciencetech Education Foundation Award, Ball State University, 2000
- Honors Undergraduate Research Fellowship, Ball State University, 1998-1999