

January, 2016

**Rebecca A. Montgomery**  
Associate Professor  
Department of Forest Resources  
College of Food, Agricultural and Natural Resource Sciences  
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### **Research and teaching interests**

Plant ecophysiology and forest ecology focusing on mechanisms of plant response to global change, the role of resource heterogeneity in forest regeneration and dynamics and the role of biotic interactions in plant community dynamics and ecosystem function. Research spans temperate and tropical forests, managed and unmanaged ecosystems.

### **Education**

Ph.D. 1999. University of Connecticut. Ecology. Dissertation title: Seedling performance in heterogeneous light environments: A multi-scale approach  
A.B. 1994. Occidental College. Biology, Magna Cum Laude

### **Professional Experience**

Associate Professor, Forest Resources, University of Minnesota, August 31, 2011-present. 50% teaching, 50% research appointment. *Responsibilities:* Undergraduate and graduate teaching, research and outreach in the area of forest ecology and tree ecophysiology.  
Assistant Professor, Forest Resources, University of Minnesota, July 1, 2004-August 30, 2011. 50% teaching, 50% research appointment. *Responsibilities:* Undergraduate and graduate teaching, research and outreach in the area of forest ecology and tree ecophysiology.  
Research Associate, Forest Resources, University of Minnesota, March 2003-June 2004. *Responsibilities:* Research in the area of forest ecology and tree ecophysiology.  
Instructor, Forest Resources, University of Minnesota, January 2003- May 2004  
*Responsibilities:* Undergraduate and graduate teaching in the area of forest ecology and tree ecophysiology.  
Research Associate, Botany, University of Wisconsin-Madison, January 2000-March 2003  
*Responsibilities:* Lead research and project management of an NSF supported grant in the area of plant ecophysiology.

### **Awards and Distinctions**

2012 Resident Fellow, University of Minnesota Institute on the Environment  
2010 Newman Art of Teaching Award

- 2010 College of Food, Agricultural and Natural Resources Sciences Distinguished Teaching Award (non-tenured faculty)
- 2001 Selected to participate in an elite seminar in Advanced Comparative Tropical Ecology sponsored by Organization for Tropical Studies, Smithsonian Tropical Research Institute and the Mellon Foundation
- 1996 Outstanding Scholar Award, University of Connecticut Graduate School
- 1994 elected Phi Beta Kappa
- 1993 Raymond Selle Award for Excellence in the Occidental Biology Department
- 1993 elected to Mortarboard Honor Society

## Publications

- Xiaorong Wei, Kerrie M. Sendall, Artur Stefanski, Changming Zhao, Jihua Hou, Roy L. Rich, **Rebecca A. Montgomery**, Peter B. Reich; Consistent leaf respiratory response to experimental warming of three North American deciduous trees: a comparison across seasons, years, habitats and sites. *Tree Physiol* 2016 1-16. doi: 10.1093/treephys/tpw112
- Fernandez, C. W., Nguyen, N. H., Stefanski, A., Han, Y., Hobbie, S. E., **Montgomery, R. A.**, Reich, P. B. and Kennedy, P. G. 2016. Ectomycorrhizal fungal response to warming is linked to poor host performance at the boreal-temperate ecotone. *Global Change Biology*. doi:10.1111/gcb.13510
- Reich, P.B., K.M. Sendall, A. Stefanski, X.R. Wei, R. L. Rich, **R. A. Montgomery**. 2016. Boreal and temperate trees show strong acclimation of respiration to warming. *Nature* 531:633-634. Doi: 10.1038/nature17142
- McColloh, K.A., J. Petitmermet, A. Stefanski, K.E. Rice, R. L. Rich, **R.A. Montgomery** and P.B. Reich 2016. Is it getting hot in here? Adjustment of hydraulic parameters in six boreal and temperate tree species after 5 years of warming. *Global Change Biology* 22: 4124-4133. Doi:10.1111/gcb13323
- Wang, R., J.A. Gamon, **R.A. Montgomery**, P.A. Townsend, A.I. Zyguelbaum, K. Bitan, D. Tilman, J. Cavender-Bares. 2016. Seasonal variation in the NDVI-species richness relationship in a prairie grassland experiment (Cedar Creek). *Remote Sensing* 8: 128 doi:10.3390/rs8020128
- Pike, C.C., J. C. Warren, **R.A. Montgomery**. 2016. Allometry of early growth in selected and wild sources of white spruce, *Picea glauca* (Moench) Voss *New Forests* 47: 131-141. doi 10.1007/s11056-015-9498-0.
- Borer, E.T., E.M. Lind, E.J. Ogdahl, E.W. Seabloom, D. Tilman, **R.A. Montgomery**, L.L. Kinkel. 2015. Food web composition and plant diversity control foliar nutrient content and stoichiometry. *Journal of Ecology* 103: 1432-1441. doi: 10.1111/1365-2745.12461.
- Jacques, Marie-Hélène, L. Lapointe, K. Rice, **R. A. Montgomery**, A. Stefanski and P. Reich. 2015. Responses of two understory herbs, *Maianthemum canadense* (Liliaceae) and *Eurybia macrophylla* (Asteraceae), to experimental forest warming: early emergence is the key to enhanced reproductive output. *American Journal of Botany* 102: 1610-1624. doi: 10.3732/ajb.1500046
- Scoffoni, C. J. Kunkle, J. Pasquet-Kok, C. Vuong, A. Patel, **R. A. Montgomery**, T. Givnish and L. Sack. 2015. Light-induced plasticity in leaf hydraulics, venation,

- anatomy and gas exchange in ecologically diverse Hawaiian lobeliads. *New Phytologist* 207:43-58. doi 10.1111/nph.13346
- Reich, PB, KM Sendall, K Rice, RL Rich, A Stefanski, SE Hobbie, **RA Montgomery**. 2015. Geographic range predicts photosynthetic and growth response to warming in co-occurring tree species. *Nature Climate Change* 5: 148-152. doi 10.1038/nclimate2497
- Rich, RL, Stefanski, A; **Montgomery, RA**; Hobbie, SE; Reich, PB. 2015. Design and performance of B4WarmED, an aboveground and belowground free-air warming experiment at the temperate-boreal forest ecotone. *Global Change Biology* 21: 2334-2348. doi: 10.1111/gcb.12855
- Sendall, K.M., P.B. Reich, C. Zhao, H. Jihua, X. Wei, A. Stefanski, K. Rice, R.L. Rich and **R.A. Montgomery**. 2015. Acclimation of photosynthetic temperature optima of temperate and boreal tree species in response to experimental forest warming. *Global Change Biology* 21: 1342-1357. doi 10.1111/gcb.12781
- Whitfeld, T. J. S., Lasky, J. R., Damas, K., Sosanika, G., Molem, K. and **Montgomery, R. A.** 2014. Species Richness, Forest Structure, and Functional Diversity During Succession in the New Guinea Lowlands. *Biotropica*, 46: 538–548. doi: 10.1111/btp.12136
- Way, DA and **RA Montgomery**. 2014. Photoperiod constraints on tree phenology, performance and migration in a warming world. *Plant, Cell and Environment* 38: 1725-1736. doi: 10.1111/pce.12431.
- Palik B.J., **R. A. Montgomery**, P.B. Reich, S.B. Boyden. 2014. Biomass growth response to spatial pattern of variable retention harvesting in a northern Minnesota pine ecosystem. *Ecological Applications* 24: 2078-2088.
- Schwartzberg, E.G., M.A. Jamieson, K.F. Raffa, P.B. Reich, R. A. Montgomery and R.L. Lindroth. 2014. Simulated climate warming alters phenological synchrony between an outbreak insect herbivore and host trees. *Oecologia* 175: 1041-1049.
- Givnish, T. J. and **R. A. Montgomery**. 2014. Common-garden studies of adaptive radiation of photosynthetic physiology among Hawaiian lobeliads. *Proc. R. Soc. B* 2014 281, 20132944.
- Kern, C.C., **R.A. Montgomery**, P.B. Reich, T.F. Strong. 2013. Harvest-created canopy gaps increase species and functional trait diversity of the ground-layer community. *Forest Science*. Doi: <http://dx.doi.org/10.5849/forsci.13-015>
- Montgomery, R. A.**, B. J. Palik, S. B. Boyden, P. B. Reich. 2013. New cohort growth and survival in variable retention harvests of a pine ecosystem in Minnesota, USA. *Forest Ecology and Management* 310:327-335.
- Boyden, S. B., **R. A. Montgomery**, P.B. Reich, B. J. Palik. 2012. Seeing the forest for the heterogeneous trees: stand-scale resource distributions emerge from tree-scale structure. *Ecological Applications* 22: 1578-1588.
- Kern, C.C., **R.A. Montgomery**, P.B. Reich, T.F. Strong. 2012. Canopy gap size influences niche partitioning of the ground-layer plant community in a northern temperate forest. *Journal of Plant Ecology*. Doi:10.1093/jpe/rts016
- Kern, C.C., P.B. Reich, **R.A. Montgomery**, T.F. Strong. 2012. Do deer and shrubs override canopy gap size effects on growth and survival of yellow birch, northern red oak, eastern white pine, and eastern hemlock seedlings? *Forest Ecology and Management* 267: 134–143.

- Salk, T.T., L.E. Frelich, S. Sugita, R. Calcote, J.B. Ferrari, **R. A. Montgomery**. 2011. Poor recruitment is changing the structure and species composition of an old-growth hemlock-hardwood forest. *Forest Ecology & Management* 261: 1998-2006. doi: 10.1016/j.foreco.2011.02.026
- Pelc, B. D., **R. A. Montgomery** and P.B. Reich. 2011. Frequency and timing of stem removal influence *Corylus americana* resprout vigor in oak woodland. *Forest Ecology and Management* 261: 136-142. doi: 10.1016/j.foreco.2010.09.043
- Montgomery, R. A.**, P.B. Reich and B. J. Palik. 2010. Untangling positive and negative biotic interactions: views from above and below ground in a forest ecosystem. *Ecology* 91: 3651-3655. doi: 10.1890/09-1663.1
- Peters, E. B., J. P. McFadden, and **R. A. Montgomery** 2010. Biological and environmental controls on tree transpiration in a suburban landscape. *Journal of Geophysical Research - Biogeosciences*. 115, G04006, doi:10.1029/2009JG001266.
- Powers, J.S., **R. A. Montgomery**, E.C.Adair, F.Q. Brearley, S.J. DeWalt, C.T. Castanho, J. Chave, E. Deinert, J.U. Ganzhorn, M.E. Gilbert, J. Antonio-Gonzalez, S. Bunyavejchewin, H.R. Grau, K.E. Harms, A. Hiremath, S. Iriarte-Vivar, E. Manzano, A.A. de Oliveira, L. Poorter, J.B. Ramanamanjato, C. Salk, A.Varela, G.D. Weiblen and M.T. Lerdau. 2009. Decomposition in tropical forests: a pan-tropical study of the effects of litter type, litter placement and faunal exclusion across a precipitation gradient. *Journal of Ecology*: 97:801-811. <http://10.1111/j.1365-2745.2009.01515.x>
- O. R. Lopez, K. Farris-Lopez, **R. A. Montgomery**, T. J. Givnish. 2008. Leaf phenology in relation to canopy closure as a determinant of shade tolerance in southern Appalachian trees. *American Journal of Botany* 95: 1395-1407.
- Montgomery, R. A.**, G. Goldstein, T. J. Givnish 2008. Photoprotection of PSII in Hawaiian lobeliads from diverse light environments *Functional Plant Biology* 35: 595-605.
- Lusk, C.H., P. B. Reich, **R. A. Montgomery**, D. A. Ackerly, J. C. Cavender-Bares 2008. Why are evergreen leaves so contrary about shade? *Trends in Ecology and Evolution* 23: 299-303.
- Montgomery, R. A.** and T. J. Givnish. 2008. Adaptive radiation of photosynthetic physiology in the Hawaiian lobeliads: dynamic photosynthetic responses. *Oecologia* 155: 455-467. <http://dx.doi.org/10.1007/s00442-007-0936-3>
- Dickie, I. A., **R. A. Montgomery**, P. B. Reich and S. A. Schnitzer. 2007. Physiological and phenological responses of oak seedlings to oak forest soil in the absence of trees. *Tree Physiology* 27: 133-140.
- Montgomery, R. A.** 2004. Effects of understory vegetation on patterns of light attenuation near the forest floor. *Biotropica* 36: 33-39.
- Harms, K. E., J. S. Powers, **R. A. Montgomery**. 2004. Variation in small sapling density, understory cover and resource availability in four Neotropical forests. *Biotropica* 36: 40-51.
- Givnish T.J., **R.A. Montgomery** and G. Goldstein. 2004. Adaptive radiation of photosynthetic physiology in the Hawaiian lobeliads: light regimes, static light

responses, and whole-plant compensation points. *American Journal of Botany* 91: 228-246.

**Montgomery, R. A.** 2004. Relative importance of photosynthetic physiology and biomass allocation for tree seedling growth across a broad light gradient *Tree Physiology* 24:155–167.

Nicotra, A. B., R. L. Chazdon & **R. A. Montgomery**. 2003. Sexes show contrasting patterns of leaf and crown carbon gain in a dioecious rainforest shrub. *American Journal of Botany* 90:347-355.

Cabin, R. J., S. G. Weller, D. H. Lorence, S. Cordell, L. J. Hadway, **R. Montgomery**, D. Goo, and A. Urakami. 2002. Effects of light availability, alien grass, and native species additions on Hawaiian dry forest restoration. *Ecological Applications* 12:1595-1610.

**Montgomery, R. A.** and R. L. Chazdon. 2002. Light gradient partitioning by tropical tree seedlings in the absence of canopy gaps. *Oecologia* 131:165-174.

**Montgomery, R. A.** and R. L. Chazdon. 2001. Forest structure, canopy architecture and light transmittance in old-growth and second-growth stands of lowland rainforest in NE Costa Rica. *Ecology* 82: 2707-2718.

### *Reports*

Handler, Stephen; Duveneck, Matthew J.; Iverson, Louis; Peters, Emily; Scheller, Robert M.; Wythers, Kirk R.; Brandt, Leslie; Butler, Patricia; Janowiak, Maria; Shannon, P. Danielle; Swanston, Chris; Barrett, Kelly; Kolka, Randy; McQuiston, Casey; Palik, Brian; Reich, Peter B.; Turner, Clarence; White, Mark; Adams, Cheryl; D'Amato, Anthony; Hagell, Suzanne; Johnson, Patricia; Johnson, Rosemary; Larson, Mike; Matthews, Stephen; **Montgomery, Rebecca**; Olson, Steve; Peters, Matthew; Prasad, Anantha; Rajala, Jack; Daley, Jad; Davenport, Mae; Emery, Marla R.; Fehring, David; Hoving, Christopher L.; Johnson, Gary; Johnson, Lucinda; Neitzel, David; Rissman, Adena; Rittenhouse, Chadwick; Ziel, Robert. 2014. Minnesota forest ecosystem vulnerability assessment and synthesis: a report from the Northwoods Climate Change Response framework project. Gen. Tech. Rep. NRS-133. Newtown Square, PA; U.S. Department of Agriculture, Forest Service, Northern Research Station. 228 p.

### *Book chapters*

**Montgomery, R. A.** and L. E. Frelich. 2015. Ch 10: Forest succession and gap dynamics. In *Routledge Handbook of Forest Ecology* K.S.H. Peh, R.T. Corlett and Y. Bergeron, Eds. Routledge, New York, NY.

Frelich, L. E., **R. A. Montgomery** and J. Oleksyn. 2015. Ch 3: Temperate forest. In *Routledge Handbook of Forest Ecology* K.S.H. Peh, R.T. Corlett and Y. Bergeron, Eds. Routledge, New York, NY.

Cheeseman J. M. and **R. A. Montgomery**. 2012. Ecophysiology of photosynthesis in the tropics. In: J. Flexas, F. Loreto and H. Medrano (Eds.) *Terrestrial photosynthesis in a changing environment: The molecular, physiological and ecological bases of photosynthesis driving its response to environmental change*. Cambridge University Press.

Chazdon, R. L., and **R. A. Montgomery**. 2001. La adquisición de carbono en las plantas. In: M. R. Guariguata and G. H. Kattan (Eds.) *Ecología y Conservación de Bosques Neotropicales*. Editorial Libro Universitario Regional, Costa Rica.

#### *Artistic products*

Multiple contributors. 2016. Surrender: What are we willing to lose? Northern Spark, Minneapolis, MN – Collaboration with UMN students addressing the festival theme “Climate Chaos/Climate Rising”

Baeumler, C. and R.A. Montgomery. 2016 *Backyard Phenology: Tracking Nature’s Cycles and Seasons in Changing Climate*. Northern Spark, Minneapolis, MN.

#### **Grant and Fellowship Awards**

##### *Grants since 2002*

Protection of biodiversity and ecosystems services through early detection of tree disease using hyperspectral remote sensing co-Pis J. Cavender-Bares, J. Juzwik and R.A.

Montgomery. Grand Challenges Research Grant. Office of the Executive Vice President and Provost, University of Minnesota. \$60,000.

Backyard Phenology: Integrating Citizen Science and Public Art to Build Collective Agency on Climate Change. Co-Pis C. Baeumler, M. Davenport, N. Jordan, R. Montgomery. Grand Challenges Research Grant. Office of the Executive Vice President and Provost, University of Minnesota. \$250,000.

Backyard Phenology: Tracking Nature’s Cycles and Seasons in a Changing Climate. NorthernLights.mn (private arts organization) \$10,000.

Using plant phenology as an indicator of forest community resilience and adaptive capacity. PI: Dean Fellman. Co-PI R.A. Montgomery. USDA-NIFA Tribal Colleges Research Grants Program. \$200,000. \$60,000 to UMN.

Prescribed burning to improve management for brushland-dependent species. PI: R.A. Montgomery. co-PIs L. Frelich, C. Roy, L. Shartell. Legislative Citizen Commission on Minnesota Resources. \$267,000.

Controlling Reed Canary Grass to Regenerate Floodplain Forest. PI: Tim Schlagenhaft. Co-PIs R.A. Montgomery, M.T. Thomsen. \$218,000

Assessing species vulnerability to climate change using phenology. PI: RA Montgomery. Legislative Citizen Commission on Minnesota Resources. \$175,000.

Collaborative Research: Dimensions: Linking remotely sensed optical diversity to genetic, phylogenetic and functional diversity to predict ecosystem processes. NSF Dimensions of Biodiversity. PI: J. Cavender-Bares, Co-PIs R. Montgomery, S. Hobbie, \$855,314. (5/1/2014-4/30/2019)

LTER: Biodiversity, Multiple Drivers of Environmental Change and Ecosystem Functioning at the Prairie Forest Border Tilman (PI), D., P. Reich, S. Hobbie, E. Seabloom, E. Borer, J.

Cavender-Bares, L. Kinkel, J. Knops, R. Montgomery, B. Sterner. NSF LTER Program. \$5,879,701; Duration: January 2013 – December 2018.

Mining the herbarium record for change in Minnesota forest phenology and distribution. GD Weiblen (PI), RA Montgomery. Minnesota Agricultural Experiment Station, \$60,000. (October 1, 2013-September 30, 2015).

Digital technologies to improve experiential learning in the Forest and Natural Resource Management Undergraduate Program. R.A. Montgomery (PI) University of Minnesota, Provost's Office, \$69,783 July, 1 2013-June 30, 2015

High impact experiential learning in the Forest Resources major. RA Montgomery and M Davenport (PIs). College of Food, Agricultural and Natural Resource Sciences. \$59,663 Duration: September 2012-September 2014.

A Citizen Phenology Network to Inform Management of Urban Water Quality. Resident Fellow Grant. RA Montgomery, SE Hobbie, J Finlay (PIs) University of Minnesota Institute on the Environment, \$10,000. March 2013-April 2014.

Minnesota Phenology Network: developing a citizen observer network for Minnesota. RA Montgomery. University of Minnesota Institute on the Environment, \$10,000. July 2012-ongoing.

Training volunteer observers in web-based reporting of the timing of biological events as key indicators of climate variability. S. Carlson (PI), RA Montgomery, E. Sagor. USDA-RREA, \$40,000. July 2012-June 2014

Agroforestry Systems for Biomass Production and Ecosystem Services. D. Zamora (PI) RA Montgomery, A D'Amato USDA-RREA. \$45,000. July 2012 - June 2014.

Collaborative Research: The complexity of global change - Interactive effects of warming, water availability, CO<sub>2</sub> and N on grassland ecosystem function. Reich P. (PI), R. Montgomery, R. Rich, S. Hobbie, T. Lee (co-PIs) NSF DEB-1120064 \$854,283 Duration: September 2011-August 2014

Renewal: Warming-induced biome change at the temperate-boreal ecotone: An experimental test of key regeneration processes. DOE Program on Ecological Research Grant No. N/A. \$2,528,252 (.5 mo) (Aug. 2011 – July 2015).

Institute on the Environment. Phenology: the Pulse of the Planet. \$2,500. R.A. Montgomery (PI) March 15, 2011-March 15, 2012.

US Department of Energy Program on Ecological Research. Advanced measurements of temperature elevation treatments. Supplement to 'Warming-induced biome change at the temperate-boreal ecotone: An experimental test of key regeneration processes.' \$279,737. P.B. Reich (PI), S. Hobbie, R.A. Montgomery, R.L. Rich and J. Oleksyn. January 1, 2010 – July, 31, 2011.

US Department of the Interior, National Park Service. Evaluation and ecological assessment of riparian forest at Knife River Indian Villages NHS. \$42,510. R.A. Montgomery (PI). July 1, 2009 – September 30, 2012.

US Department of Energy, National Institute on Climate Change Research. Experimental warming effects on soil organic matter dynamics at the temperate-boreal forest ecotone. \$117,500. S. Hobbie (PI), R.A. Montgomery, and P.B. Reich. April, 1 2009 – March 31, 2010.

College of Biological Sciences. Ecology, evolution and ecosystem implications of plant traits: a collaborative framework for improving graduate student recruitment and training.

\$20,000. J.S. Powers (PI), J. Cavender-Bares, S. Hobbie, R.A. Montgomery P.B. Reich, I. Schmitt, P. Tiffin and G.D. Weiblen. January 2009 – August 2010.

Minnesota Department of Natural Resources. Evaluation of phenotypic and physiologic characteristics of genetically improved white cedar. \$20,000. R.A. Montgomery (PI) and C. Pike. July 1, 2008 – June 30, 2010.

Minnesota Forest Resources Council. Impacts of woody biomass harvesting on saproxylic communities, nutrient availability, and productivity in aspen ecosystems. \$294,000. A.W. D’Amato (PI), C. Blinn, J. Bradford, S. Fraver, R. Kolka, K. Kozak, R.A. Montgomery, M. Ostry, B.J. Palik, and D. Zamora. July 1, 2008 – June 30, 2011.

US Department of Energy Program on Ecological Research. Warming-induced biome change at the temperate-boreal ecotone: An experimental test of key regeneration processes. \$1,806,655. P.B. Reich (PI), S. Hobbie, R.A. Montgomery, R.L. Rich and J. Oleksyn. August 1, 2007 – July, 31, 2011.

University of Minnesota, College of Food, Agricultural and Natural Resources Sciences. An integrated initiative on climate change in northern forests. \$200,000. P.B. Reich (PI), S. Hobbie, R.A. Montgomery, R.L. Rich and J. Oleksyn. July 1, 2007 – June, 30, 2009

National Science Foundation Division of Integrative Organismal Biology. Synergistic effects of light and water on physiological diversification in the Hawaiian lobeliads. \$230,000. R.A. Montgomery (PI), L. Sack & T.J. Givnish. July 1, 2006 – June 30, 2010.

US Department of Agriculture National Resources Initiative, Managing complex structure and wood productivity in Great Lakes pine ecosystems. \$400,000; UMN subcontract \$179,525. B.J. Palik (PI), R.A. Montgomery and P.B. Reich. September 1, 2006-August 31, 2010.

US National Science Foundation Long Term Ecological Research. Biodiversity, environmental change and ecosystem function at the prairie-forest border. \$4,920,000; \$30,000 per year to RA Montgomery) G. David Tilman (PI) P.B. Reich, S. Hobbie, J. Cavender-Bares, J. King, L. Kinkel, J. Knops, R.A. Montgomery, H. Muller-Landau, S. Polasky and J.S. Powers. January 1, 2006 – December 31, 2012.

University of Minnesota Grant-in-aid of Research, Scholarship and Artistry. Tree physiological response to climate across a latitudinal gradient. \$34,438. RA Montgomery (PI). January 1, 2005 – June 30, 2006.

Andrew Mellon Foundation, Leaf phenology and hydraulic conductivity as determinants of shade tolerance in S. Appalachian trees. \$370,000. Tom Givnish (PI) and R.A. Montgomery January 2001 – June 2005

Smithsonian Tropical Research Institute/Organization for Tropical Studies Comparative Ecology Grant. The joint influences of climate, litter quality, and soil fauna in regulating the decomposition of leaf and root litter: a pan-tropical study. \$6000. JS Powers and RA Montgomery January 2002 – December 2003

*Grants and fellowships prior to 2002*

2001	Davis Fund, Department of Botany, University of Wisconsin-Madison (\$1000)
1999	Ronald Bamford Endowment, Department of Ecology and Evolutionary Biology, University of Connecticut (\$800)
1998-1999	NSF Biodiversity Graduate Research Traineeship (Tuition waiver and stipend)
1998	Organization for Tropical Studies Fellowship (\$3,000)



- 1997-1998 NSF Dissertation Improvement Grant (\$10,000)  
 1997 Ronald Bamford Endowment, Department of Ecology and Evolutionary Ecology, University of Connecticut (\$500)  
 1996-1997 NSF Biodiversity Graduate Research Traineeship (Tuition waiver and stipend)  
 1993 Ford Foundation/Hughes Fellowship (\$3,000, declined)  
 1993 Council for Undergraduate Research Fellowship (\$3,000)  
 1992 Richter Fellowship (\$4,000)

## Presentations

### *Invited Seminars, Symposia and Workshops*

- 2016 Some like it hot, some like it cold: tree response to warming at the temperate-boreal forest ecotone. Department of Forestry and Natural Resources, Purdue University, West Lafayette, IN.  
 Nature's calendar: climate change and changing seasons. Department of Geography, University of Minnesota, Minneapolis, MN.  
 Nature's calendar: How climate change is altering plant and animal phenology. Friends of the St. Croix Watershed Research Station, Marine-on-St. Croix, MN.  
 Nature's calendar: How climate change is altering plant and animal phenology. Minnesota Pollution Control Agency Lake Monitoring Volunteer Appreciation Luncheon, Brainerd, MN.
- 2015 Driven to Discover Phase II: Citizen Science Education for Teachers. Led weeklong workshops on phenology.  
 Signs of the seasons: how climate change is altering plant and animal phenology. Conservation Biology Program, University of Minnesota, St. Paul, MN.
- 2014 What to plant? Forest health for the future (panelist). Sustainable Forests Education Cooperative. University of Minnesota, Cloquet, MN  
 B4WarmED: a climate change experiment at the temperate-boreal ecotone. Hawkesbury Institute for the Environment, Richmond, NSW, Australia.  
 Pushing the limits: experimental warming at the temperate-boreal ecotone in North America. Australian National University, Canberra, ACT, Australia.  
 Strategies for addressing climate change impacts on Minnesota forests. Second conference on climate change: building Minnesota's capacity for climate adaptation. Minneapolis, MN. (co-presented by P.B. Reich)  
 What to plant? Forest health for the future. Panel discussion for Sustainable Forests Education Cooperative. University of Minnesota, Cloquet, MN (panel discussion with Pike, C.C., Klevorn, R.).

- 2013 Range limits and climate change: experimental warming at the temperate-boreal forest ecotone in North America. Universidad de los Andes, Departamento de Ciencias Biológicas, Bogota, Colombia
- 2012 Effects of experimental warming on tree regeneration at the temperate-boreal ecotone; University of St. Katherine, Department of Biology, St. Paul, MN  
 Signs of the seasons: the timing of biological activity under climate change. Summer Institute for Climate Change Education, Will Steger Foundation, Apple Valley, MN  
 Plant phenological responses to experimental warming at the temperate-boreal ecotone. Botanical Society of America Annual Meeting, Columbus, OH  
 Citizen Science for Educators, University of Minnesota, short course for K-12 teachers, I gave a talk and led a small group in a phenology research project  
 Phenology: tracking Minnesota's ever changing forests, My Minnesota Woods, webinar
- 2011 How many and where: An ecologist's perspective on planting trees in the city, Minnesota Shade Tree Short Course, St. Paul, MN  
 Effects of experimental warming on tree regeneration at the temperate-boreal ecotone; Carleton College, Department of Biology, Northfield, MN  
 Phenology & climate change: How timing of biological activity affects forests now and in the future, Sustainable Forests Education Cooperative, Webinar  
 Variable retention harvesting in Great Lakes red pine forests: effects on resource availability, sapling growth and plant-plant interactions; University of Wisconsin, Department of Forest and Wildlife Ecology, Madison, WI  
 Effects of experimental warming on tree regeneration at the temperate-boreal ecotone; Rocky Mountain Biological Lab, Gothic, CO
- 2010 Competitive interactions in heterogeneous forests: a large scale manipulation of a red pine ecosystem, University of Minnesota; Dept. of Ecology, Evolution and Behavior; St. Paul, MN  
 Whole forest leaf biomass and leaf area in old- and second-growth tropical lowland Papua New Guinea. *In* Symposium entitled "Understanding the dynamics of tropical secondary forests." Association for Tropical Biology and Conservation, Bali, Indonesia.  
 Putting the "adaptive" into "adaptive radiation": diversification of ecophysiology in the Hawaiian Campanulaceae. University of St. Thomas, Dept. of Biology, St. Paul, MN  
 Phenology matters: linking citizen science and the academy to understand our changing planet. Northwoods Phenologist's Meeting, Wolf Ridge Environmental Learning Center  
 Mechanisms of competition between shrubs and tree seedlings in managed red pine. Sustainable Forests Education Cooperative. Annual Research symposium, Cloquet, MN
- 2009 B4WARMED: Boreal Forest Warming at an Ecotone in Danger. MN Native Plant Society Monthly Meeting, St. Paul, MN  
 Is it roots or is it shoots? Insights into mechanisms of plant-plant interactions in red pine ecosystems. University of Toronto, Department of Forestry.

- Roots or shoots? mechanisms of plant-plant interactions in red pine ecosystems. Harvard Forest Seminar Series, Petersham, MA.
- 2008 Adaptive radiation of photosynthetic physiology in the Hawaiian Campanulaceae, University of Wisconsin, Dept. of Botany, Madison, WI
- Trees, shrubs, sedges and hog peanuts: towards a mechanistic understanding of species interactions above- and belowground, University of Wisconsin, Dept. of Biology, Eau Claire, WI
- 2007 Ecophysiological diversification in the Hawaiian Campanulaceae: evidence for adaptive radiation in Hawaii's largest flowering plant family, University of Minnesota, Dept. of Plant Biology, St. Paul, MN
- Dynamic photosynthetic responses and light gradient partitioning. Symposium on the Functional Ecology of Tropical Trees. Association for Tropical Biology and Conservation, Morelia, Mexico
- Adaptive radiation of photosynthetic physiology in the Hawaiian Campanulaceae. US-Japan Workshop on Photosynthetic Plasticity and Global Change, Nikko, Japan
- 2006 Overstory and understory effects on tree regeneration: towards a mechanistic understanding of species interactions above- and belowground Michigan State University, Dept. of Forestry, East Lansing, MI
- Red pine retention project research field tour for Chippewa National Forest staff and Northern Research Station staff. Tamarack Point, Chippewa National Forest, MN.
- 2005 Adaptive radiation of photosynthetic physiology in the Hawaiian lobeliads (Campanulaceae), University of Minnesota, Dept. of Ecology, Evolution and Behavior, St. Paul, MN
- Adaptive radiation of photosynthetic physiology of the Hawaiian lobeliads, Grinnell College, Dept of Biology, Grinnell IA.
- 2004 Adaptive radiation of photosynthesis and life history traits in the Hawaiian lobeliads. Association for Tropical Biology and Conservation, Miami, FL
- 2002 Putting the "adaptive" into "adaptive radiation": divergence in light regime and photosynthetic adaptations in the Hawaiian lobeliads. University of British Columbia, Vancouver, BC
- The role of leaf and whole plant carbon gain for growth of woody tropical seedlings across light gradients. Association for Tropical Biology, Panama City, Panama.
- 2001 Plant performance in heterogeneous light environments: evolutionary and ecological perspectives from Costa Rica and Hawaii. University of Hawaii, Honolulu, HI.
- Ecology and evolution of the Hawaiian lobeliads. USDA Forest Service, Pacific Islands Institute of Forestry, Hilo, HI.
- Phylogenetic history of the Hawaiian lobeliads: potential relationships with the evolution of Hawaiian Drosophilidae. Pacific Entomological Society, Hilo, HI.
- 1999 Gap dynamics and tree diversity in neotropical forests. Mesa State College, Grand Junction, CO.

*Contributed presentations (\* indicates presenter)*

- 2016 Carlson, S. P.,\* R.A. Montgomery and C. Buyarski. Using Local Phenology to Understand Climate Variability. North American Association for Environmental Education. Madison, WI.
- Montgomery, R.A., KE Rice\*, SP Carlson and C Buyarski. Using phenology to assess species vulnerability for climate adaptation planning. Climate Adaptation Conferences, Water Resources Center, University of Minnesota, St. Paul, MN. January 2016.
- Montgomery, R.A.\*, KE Rice, BJ Palik and D Kastendick. Plant community assessment. SPRUCE All-Hands Meeting, St. Paul, MN
- McPartland, M.\*, M. J. Falkowski, E.S. Kane and R.A. Montgomery. Canopy level spectral reflectance as a function of community composition, biomass and ecosystem productivity in a boreal rich fen. American Geophysical Union, San Francisco, CA.
- 2015 McPartland, M.\*, E.S. Kane, M. R. Turetsky, T. Douglass, M. J. Falkowski, R.A. Montgomery and J. Edwards. Red-edge spectral reflectance as an indicator of ecosystem productivity in Alaskan peatland. American Geophysical Union, San Francisco, CA.
- Montgomery R. A.\*, Carlson, S.\*, & Buyarski, C. Signs of the Seasons. What's happening in Phenology in Minnesota. MN Master Naturalist Association Annual Conference, Grand Rapids, MN.
- R. A. Montgomery\*, P. B. Reich, K. Sendall, K. Rice, R.L. Rich & A. Stefanski. Photosynthetic, phenological and growth responses to warming in co-occurring species at the temperate-boreal ecotone in North America. North American Forest Ecology Workshop, Vera Cruz, Mexico.
- R. A. Montgomery\*, P. B. Reich, K. Sendall, K. Rice, R.L. Rich & A. Stefanski. JuInterannual variation in the response of tree phenology to warming at the boreal-temperate ecotone in North America. International Conference on Phenology 2015, Kuşadası, Turkey.
- Montgomery R.A., Carlson, S.\*, & Buyarski, C. Looking for a few good citizen scientists: Phenology brings climate change to your backyard! Poster for Extension's 2015 Annual conference. <http://hdl.handle.net/11299/175137>
- Montgomery R.A.\*, Carlson, S.\*, & Buyarski, C. Our Changing Seasons: A Citizen Science Phenology Project for Minnesota; Gathering Partners of Natural Resources Conference; Grand Rapids, MN.
- Montgomery RA\*, Carlson, S\*. Minnesota Phenology Network Fall Phenology workshop. Minnesota Landscape Arboretum, Chaska, MN

Montgomery RA\*, Carlson, S\*. Our changing seasons: A Phenology project for Minnesota; Minnesota Naturalist's Association (MNA) Annual Meeting Long Lake Conservation Center, Palisade, MN.

- 2014 Bolstad, P.B.\*, Montgomery, R. A. and Schneider, I.S. If you build it, will they still come? Shoreview, MN. Minnesota E-Learning Summit.

Buyarski, C.B., R.A. Montgomery, S. Hobbie\*, B. Janke, J. Finlay. Project Tree Watch: citizens monitoring street tree phenology to understand drivers of urban water quality. Sacramento, CA. Annual Meeting of the Ecological Society of America.

Pike, Carrie\*, R. A. Montgomery, J. Warren. Early-season phenology impacts growth patterns in improved and wild sources of white spruce, *Picea glauca* (Moench) Voss. Prague, Czech Republic. IUFRO Forest Tree Breeding meeting.

Pike, Carrie\* and R. A. Montgomery. Phenotypic and genetic correlations among tree volume, wood specific gravity and foliar traits in white spruce, *Picea glauca* (Moench) Voss and implications for selection. Prague, Czech Republic. IUFRO Forest Tree Breeding meeting.

Palik, B.J.\*, A.W. D'Amato, R.A. Montgomery, P.B. Reich, S.B. Boyden, S. Fraver, C.C. Kern, M. Ostry, M. Roberts. Natural models for restorative silviculture in the Great Lakes pine forest: evidence and implementation, SAF National Meeting, Salt Lake City, UT.

Pike, Carrie\*, R. A. Montgomery, J. Warren. Effects of artificial warming during quiescence on bud-break and growth of white spruce, *Picea glauca* (Moench) Voss. Lakehead University, Thunder Bay.

- 2013 Sendall, K.M.\*, R.A. Montgomery, A. Stefanski, K. Rice, J. Hou, X. Wei, P.B. Reich. August 2013. Effects of experimental forest warming on photosynthetic temperature optima of temperate and boreal tree species. Annual Meeting of the Ecological Society of America, Minneapolis, MN.

Montgomery, R.A., R.L. Rich\*, A. Stefanski, K. Rice, S.E. Hobbie, P.B. Reich. August 2013. B4WarmED forest warming experiment: Effects of warming on seedling growth of co-occurring temperate and boreal species. Annual Meeting of the Ecological Society of America, Minneapolis, MN.

Rich, R.L., A. Stefanski\*, R.A. Montgomery, S.E. Hobbie, P.B. Reich. August 2013. B4WarmED forest warming experiment: Design and implementation of four years of concurrent above- and below-ground warming at the temperate-boreal ecotone. Annual Meeting of the Ecological Society of America, Minneapolis, MN.

Montgomery, R.A.\*, P.B. Reich, A. Stefanski, R.L. Rich. August 2013. B4WarmED forest warming experiment: phenological responses of dominant tree species at the temperate-boreal ecotone. Annual Meeting of the Ecological Society of America, Minneapolis, MN.

McClellan, M.L.\*, R.A. Montgomery, J.M. Becknell, J.S. Powers. August 2013. Tree composition differs between public and private tropical secondary forests. Annual Meeting of the Ecological Society of America, Minneapolis, MN.

Buysarski, C.R.\*, R.A. Montgomery, C. Nanninga, A.M. Pretorius. August 2013. The potential for abnormal leafing phenology under climate change: differences in sensitivity of spring budburst to winter chilling in six North America deciduous tree species. Annual Meeting of the Ecological Society of America, Minneapolis, MN.

Pretorius, A.M.\*, R.A. Montgomery. August 2013. Role of phenology in the colonization success of *Rhamnus cathartica* in forested ecosystems. Annual Meeting of the Ecological Society of America, Minneapolis, MN.

Reich, P.B.\*, R.L. Rich, A. Stefanski, K.M. Sendall, R.A. Montgomery, C-M, Zhao, S.E. Hobbie, K. Rice. August 2013. B4WarmED forest warming experiment: Species geographic distributions predict photosynthetic responses of local ecotypes to climate warming. Annual Meeting of the Ecological Society of America, Minneapolis, MN.

Hupperts, S.F.\*, J. Shepard, K.M. Sendall, K. Rice, A. Stefanski, R.L. Rich, R. A. Montgomery, P.B. Reich. August 2013. B4WarmED forest warming experiment: The effects of increased temperature and drought on boreal tree species leaf size and shape. Annual Meeting of the Ecological Society of America, Minneapolis, MN.

Rice, K.\*, R.A. Montgomery, R.L. Rich, N. Fisichelli, M-H Jacques, A. Stefanski, P.B. Reich. August 2013. B4WarmED forest warming experiment: Increased temperature effects on herbaceous plant phenology. Annual Meeting of the Ecological Society of America, Minneapolis, MN.

Palik, B. P.\*, R.A. Montgomery, P.B. Reich, S.B. Boyden. June 2013. Emulating natural fire regimes in red pine ecosystems to enhance structural complexity and promote new cohort development. North American Forest Ecology Workshop. Bloomington, IN.

Klimes, P.\*, R.A. Montgomery, G.D. Weiblen, V. Novotny. August, 2013. Experimental suppression of arboreal ant communities in continuous rainforest plots reveals a low impact of ants on tropical insect herbivore densities and herbivory. INTECOL, London, England.

- 2012 R. A. Montgomery\*, P. B. Reich, Roy L. Rich, A. Stefanski. Plant phenological responses to experimental warming at the temperate-boreal ecotone. Phenology 2012; Biannual International Professional Meeting; 250 participants, Milwaukee, WI
- S. B. Boyden\*, R. A. Montgomery, P.B. Reich, B. J. Palik and C. Canham. Resource gradients affect competitive interactions of tree seedlings under a heterogeneous canopy. Annual meeting of the Ecological Society of America; Portland, OR, USA.
- 2011 R. A. Montgomery\*, P. B. Reich, R. L. Rich, A. Stefanski. Spring temperatures alone cannot explain timing of budburst of boreal-temperate tree species under experimental warming; Annual meeting of the American Geophysical Union, San Francisco, CA.
- 2010 Kala Peebles\* and Rebecca A. Montgomery. Elevated temperature in low light reduces shade tolerance in temperate and boreal tree species through increased respiratory carbon loss. Annual Meeting of the Ecological Society of America, Pittsburgh, PA.

- Rebecca A. Montgomery\*, Suzanne Boyden, Brian Palik and Peter Reich. Comparing resource availability and tree seedling growth in forest stands that differ in spatial heterogeneity of canopy trees: scaling from individuals to stands using neighborhood models. Annual Meeting of the Ecological Society of America, Pittsburgh, PA.
- 2009 Emily Peters\*, Joseph P. McFadden, Rebecca A. Montgomery. December 2009. Environmental and biological controls of urban tree transpiration in the Upper Midwest. Annual Meeting of the American Geophysical Union, San Francisco, CA
- Emily Peters\*, Joseph P. McFadden, Rebecca A. Montgomery. August 2009. Environmental and biological controls of urban tree transpiration: Implications for urban hydrology. Annual Meeting of the Ecological Society of America, Albuquerque, NM
- Rebecca A. Montgomery\*, Suzanne B. Boyden, Peter B. Reich and Brian J. Palik. June 2009. Belowground competition, aboveground competition and aboveground facilitation: complex interactions between canopy trees, tree seedlings and shrubs in red pine ecosystems. North American Forest Ecology Workshop. Logan, UT.
- Palik, B\*, Montgomery, R., Reich, P., Boyden, S., Schulte Moore, L., Atwell, R., Lang, K., Kastendick, D., Powers, M. Variable retention harvesting in Great Lakes red pine forests: responses to spatial pattern of retention. June 2009. North American Forest Ecology Workshop, Logan, UT.
- Emma L Schultz\*, Christel Kern and Rebecca A. Montgomery. March 2009. Understory plant community responses to silvicultural opening size across and between gaps in Wisconsin northern hardwood forests. National Conference of Undergraduate Research, LaCrosse, WI.
- 2008 Rebecca A. Montgomery\*, Suzanne Boyden, Peter Reich and Brian Palik. August 2008. Belowground competition, aboveground competition and aboveground facilitation: complex interactions between canopy trees, tree seedlings and shrubs in red pine ecosystems. Annual Meeting of the Ecological Society of America. Milwaukee, WI.
- Kala Peebles\* and Rebecca A. Montgomery. Local adaptation of tree physiology and phenology in a common garden. Annual Meeting of the Ecological Society of America. Milwaukee, WI.
- Christel Kern\*, Peter Reich, Rebecca Montgomery, and Terry Strong. Canopy gap size influences understory dynamics of shrubs and trees over 12 years. Annual Meeting of the Ecological Society of America. Milwaukee, WI.
- 2007 R. A. Montgomery\* & Thomas J. Givnish. Endangered island floras: fast growth rate and short lifespan create considerable challenges for conservation and restoration of Hawaiian lobeliads. Association for Tropical Biology and Conservation, Morelia, Mexico.
- Rebecca A. Montgomery\* & Thomas J. Givnish. Adaptive radiation of photosynthetic physiology in the Hawaiian Campanulaceae. Annual Meeting of the Society for the Study of Evolution/American Society of Naturalist/Society for the Study of Systematic Biology. Christchurch, New Zealand.

- Brian D. Pelc\*, Peter B. Reich and Rebecca A. Montgomery. Resprouting by American hazel (*Corylus americana*) in response to experimental clipping in a restored oak savanna and adjacent oak woodlands. Annual Meeting of the Ecological Society of America, San Jose, CA, USA
- Emily Peters\*, Rebecca A. Montgomery and Joe McFadden. Contributions of deciduous and evergreen trees to seasonal dynamics of CO<sub>2</sub> and water vapor over developed land in the midcontinental U.S. Annual Meeting of the American Geophysical Union, San Francisco, CA, USA - poster
- 2006 R. A. Montgomery\*, T. J. Givnish & G. Goldstein. Adaptive radiation of photosynthesis and life history traits in the Hawaiian lobeliads. 14th New Phytologist Symposium - New directions in plant ecological development. The Royal Society, London, UK.
- B. Palik\*, Kern, C., Montgomery, R., Reich, P., Schulte, L. Restoring complexity in red pine ecosystems: legacy management as a key ingredient. Society of American Foresters National Convention, Pittsburg PA.
- 2005 Rebecca A. Montgomery\*, Ian Dickie, Stefan Schnitzer & Peter Reich. Belowground factors influence leafing phenology and photosynthesis of pin oak (*Quercus ellipsoidalis*) seedlings growing in an old field. Ecological Society of America, Montreal, Quebec, Canada
- Brian J. Palik\*, Christel C. Kern, Rebecca A. Montgomery, Peter B. Reich. Ecological and operational effects of dispersed versus aggregate tree retention in Great Lakes pine ecosystems 5<sup>th</sup> North American Forest Ecology Workshop
- 2004 Montgomery, Rebecca A. \*, Omar Lopez, Krista Farris Lopez and Thomas J. Givnish. Determinants of shade tolerance and its importance for local species distributions of S. Appalachian trees. Botanical Society of America, Snowbird, UT.
- Morden, C.\* and R.A. Montgomery. Monophyletic origin and adaptive radiation in Hawaiian Chamaesyce (Euphorbiaceae) based on ITS and trnLF sequence variation. Botanical Society of America, Snowbird, UT.
- Lopez, O. R.\*, R. A. Montgomery, K. F. Lopez, and T. J. Givnish. Sapling leaf phenology in relation to canopy closure, stand position, and tree shade tolerance in the southern Appalachians. Ecological Society of America, Portland, OR
- Lopez, K. F.\*, Lopez, O. R., R. A. Montgomery, and T. J. Givnish. Leaf flushing in relation to canopy closure as a determinant of shade tolerance in southern Appalachian trees. Ecological Society of America, Portland, OR.
- 2002 Montgomery, Rebecca A.\* and Thomas J. Givnish. Photoinhibition in the Hawaiian lobeliads across field and greenhouse light gradients. Ecological Society of America, Tuscon, AZ.
- Givnish, T. J., and R. A. Montgomery\*. Common-garden studies of adaptive divergence in photosynthetic traits along a sun-shade gradient in the Hawaiian lobeliads. Ecological Society of America



- 2001 Montgomery, R. A.\*. and T. J. Givnish. Adaptation to different light levels in the Hawaiian lobeliads: dynamic photosynthetic light responses and the outcome of “*in silico*” transplants. Ecological Society of America, Madison, WI.  
Givnish, T. J.\*, R. A. Montgomery, and G. Goldstein. Putting the “adaptive” in adaptive radiation: static photosynthetic light responses in the Hawaiian lobeliads. Ecological Society of America, Madison, WI.
- 2000 Montgomery, Rebecca A.\* Leaf-level and whole-plant assimilation as predictors of tree seedling growth across a broad light gradient. Ecological Society of America, Snowbird, UT.
- 1999 Montgomery, Rebecca A.\* Mortality and growth response of tree seedlings to light heterogeneity in tropical secondary forest and plantations. Ecological Society of America, Spokane, WA.
- 1998 Montgomery, Rebecca. A.\* El ambiente de luz en bosques secundarios y plantaciones de arboles y su efecto sobre el crecimiento y la regeneración de plántulas de especies leñosas. IV Congreso Latinoamericano de Ecología; Arequipa, Perú.  
Montgomery, Rebecca. A.\* Scaling leaf-level to whole-plant assimilation for three tropical tree species across a light gradient. Ecological Society of America Annual Meeting, Baltimore, MD.
- 1997 Montgomery, Rebecca A.\*, Robin L. Chazdon, and Katherine S. Miller. Predicting understory light availability in tropical wet forest from measures of stand structure Association for Tropical Biology Annual Meeting; San Jose, Costa Rica.
- 1994 Montgomery, Rebecca A.\*. and H. Elizabeth Braker. Diet selection in the leaf-cutter ant, *Atta cephalotes* Association for Tropical Biology Annual Meeting; Guadalajara, Mexico.
- 1993 Montgomery, Rebecca A.\* Dark-like fixation in the marine algae, *Ascophyllum nodosum*. International Symposium on Crassulacean Acid Metabolism. Smithsonian Tropical Research Institute. Panama City, Panama.

## Teaching & Learning

### *Courses Designed and Taught*

University of Minnesota curriculum designators:

Forest Resources (FR)

Environmental Sciences, Policy and Management (ESPM)

Ecology, Evolution and Behavior (EEB)

Grand Challenge Curriculum (GCC)

**GCC3013/5013: Making Sense of Climate Change: Science, Art and Agency (3 credits)** In this course we will consider how communities can bring science and art together to face the challenges of climate change. We explore climate-change science, examine the idea of collective agency (communities working together to make change), and consider public art as a tool for building collective agency. We focus on how artistic/humanistic ways of knowing can

enable groups to make sense and meaning in the face of grand challenges. By putting global grand challenges such as climate change into a place-based and agency-focused perspective participants expand their understanding of how humanity might address grand challenges. We bring these ideas together to create a public art piece for the Northern Spark Art Festival, an all night festival in the Twin Cities metro area. Students I have taught this course since Spring 2016. Enrollment = 10-20 undergraduates and 5-10 graduate students.

**FR3104/5104: Forest Ecology (4 credits)** This course provides an introduction to ecology through the lens of forest ecosystems. The course explores interactions between the individual tree and the environment, evolution, biotic interactions, forest biogeochemistry, succession and disturbance. It includes a weekly 4 h field lab. The course is a required course for FR majors and serves students in ESPM and FWCB programs. Graduate students are not required to participate in lab but are required to attend a 1 h per week journal club where we read current literature in ecology. I have taught this course every year since Fall 2004. Enrollment = 35-60 undergraduates and 5-10 graduate students.

**FR2102: Northern Forests Field Ecology (2 credits)** This is a field course based at the Cloquet Forestry Center that provides students with hands-on experience in forest soils, succession, forest dynamics, competition, community ecology, field sampling methods and scientific writing. It runs for three weeks in August and provides opportunity for close contact between faculty and students. It is a required course for FR majors and satisfies the 'experience and training in a field setting' requirement of for ESPM majors. I have taught this course every summer since 2004. Enrollment = 20-30 undergraduates

**August Introductory Field Session in Natural Resources – FR & FWCB** I coordinate the field session at the Cloquet Forestry Center organizing housing and food services, check-in and check out and orientation. I coordinate our activities with CFC staff throughout the session and generally take care of logistics associated with the four courses, ~80 students and 10+ teaching staff in residence at the station.

**ESPM 3108/5108: Ecology of Managed Ecosystems (3 credits)** This is a team taught course that uses a case study approach to explore ecological patterns and processes in managed ecosystems (e.g. agricultural, urban, forest, wetland). It serves ESPM majors as a foundational course in ecological principles. I taught this course for the first time in Fall 2009. Enrollment = 50-60 undergraduates and 5-10 graduate students.

**FR 4118/5118: Ecophysiology of Woody Plants (3 credits)** This course introduces students to plant functional ecology, exploring photosynthesis, water relations, nutrient uptake, anatomy and growth. The student audience is largely urban forestry majors so I focus largely on urban ecosystems. I taught this course in Spring 2003 and Spring 2004. Enrollment = 5-15 undergraduate students

### *Other Teaching Experience*

Plant Functional Traits in Ecology and Evolution team taught by faculty in the Departments of Forest Resources and Ecology, Evolution and Behavior (2007, 2008)

Fundamentals of Tropical Biology, Organization for Tropical Studies, Resource Faculty (2008, 2007, 1998, 1993)

Undergraduate Semester Abroad Program, Organization for Tropical Studies, Resource Faculty (2003)

Current Topics in Ecology and Evolutionary Biology, 1 credit seminar, University of Connecticut (1999)

The Border: Environment, Economy, and Culture, Occidental College, Teaching Staff (1993-1994)

Marine Ecology, Vantuna Research Group, Instructor on board the Research Vessel Vantuna (1990-1994)

## **Mentoring & Advising**

### *Post-doctoral scholars*

Suzanne Boyden (2005-2008) Managing complex structure and wood productivity in Great Lakes pine ecosystems – Dr. Boyden is currently Assistant Professor of Forest Ecology at Clarion University.

Justin Kunkle (2008-2010) Synergistic effects of light and water on physiological diversification in the Hawaiian lobeliads – Dr. Kunkle is currently LTER Science Coordinator for the W.K. Kellogg Biological Station.

### *Graduate program appointments*

Natural Resources Sciences and Management (NRSM)  
Plant Biological Science (PBS)  
Ecology, Evolution and Behavior (EEB)  
Conservation Biology (CB)

### *Graduate student advising*

#### Completed graduate student advisees:

Karen Rice (M.S. 2016, NRSM) Phenological responses of herbaceous plants, shrubs, and tree seedlings to experimental climate change conditions in northern Minnesota

Andrew Pretorius (M.S. 2015, NRSM) Role of leafing phenology in the invasion of forest ecosystems by *Rhamnus cathartica*

Kala Peebles (Ph. D. 2014, NRSM) The Effects of Climate Warming on Tree Seedling Physiology, Growth and Survival in a Temperate-Boreal Forest Ecotone in Minnesota, USA.

Moana McClellan (Ph. D. 2014, PBS) Assessing Forest Structure, Biodiversity, and Ecosystem Functions between Public and Private Tropical Dry Secondary Forests, a case study in Guanacaste, Costa Rica; current position – post doctoral research associate, Institute on the Environment, University of Minnesota

Carrie Pike (Ph. D. 2013, NRSM) Evaluation of phenotypic and physiologic characteristics of selected sources of white spruce, *Picea glauca* (Moench); current position – coordinator, Minnesota Tree Improvement Cooperative

Ted Salk (co-advise w/L. Frelich; M. S. 2013, NRSM) Poor Recruitment is Changing the Structure and Species Composition of an Old-Growth Hemlock–Hardwood Forest

Claudia Nanninga (M.S. 2013, NRSM) An assessment of bottomland hardwood forests at the Knife River Indian Villages National Historic Park; current position – associate research fellow, Department of Forest Resources, University of Minnesota

Chris Pinahs (co-advise w/P. Reich; M.S./J.D. 2011, PBS/UMN Law School) Experimental Warming: How Temperature Affects Germination and Survival of Minnesota Tree Species; current position – law clerk, Minnesota Federal District Court

Christel Kern (co-advise w/P. Reich; Ph. D. 2011, NRSM) The Role of Harvest Gaps in the Plant Diversity of a Northern Hardwood Forest of Northern Wisconsin, USA; current position – ecologist, USDA Forest Service Northern Research Station

Cassie Kurtz (M.S. 2010, NRSM) – Effects of site and climate characteristics on forest invasibility by non-native plants in the Midwest; current position – analyst, USDA Forest Service Forest Inventory and Analysis program

Stacey Olszewski (M.S. 2009, NRSM; co-advise with Eric Zenner) Structural and compositional changes in the terrestrial vegetation of forested riparian areas as a result of a gradient of timber harvesting regimes; current position – research ecologist, Minnesota Department of Natural Resources

Brian Pelc (M.S. 2008, NRSM; co-advise with Peter Reich) American hazel (*Corylus americana*) resprout dynamics and influence on understory community in Midwestern oak savanna; current position – Research ecologist, The Nature Conservancy, Florida

<u>Current graduate student advisees:</u>	<u>Degree</u>	<u>Program</u>
Lori Knosalla	M.S.	NRSM
Maria DeLandreau	M.S.	NRSM
Anna Hawkinson	M.S.	NRSM
Thomas Kenote	M.S.	NRSM (co-advise w/Mike Dockry)
Artur Stefanski	Ph.D.	NRSM (co-advise w/Peter Reich)
Mara McPartland	M.S.	NRSM
Kaitlyn Flick	Ph.D.	NRSM (co-advise w/Mike Dockry)
Claudia Nanninga	Ph.D.	NRSM
Matt Hill	M.S.	NRSM

Other graduate student advising (committee membership):

<u>Name</u>	<u>Degree Objective (M.S. or Ph.D.)</u>	<u>Program</u>
Rachel King	Ph. D.	EEB
Elias Anoszko	Ph. D.	NRSM
Samuel Fahner	Ph. D.	ENT
Amanda Gorton	Ph. D.	EEB
German Vargas	Ph. D.	PBS
Jen Teshera-Levye	Ph. D.	EEB
Shan Kothari	Ph. D.	PBS
Beth Fallon	Ph. D.	PBS
Christina Smith	Ph. D.	PBS
Leland Werden	Ph. D.	PBS
John Berini	Ph. D.	NRSM
David Chaffin	Ph. D.	NRSM
Terry Serres	Ph. D.	NRSM
Karl Sames	M. S.	NRSM
Kristen Becklund	Ph. D. 2016	EEB
Alyson Center	Ph. D. 2015	PBS
Rachel Putnam	Ph. D. 2015	EEB
Bega Inaho	M.S. 2015	PBS
Sarah Appleton	M. S. 2015	Geography
Tricia Markle	Ph. D. 2015	CB
John Vincent	Ph. D. 2014	PBS
Maga Gei	Ph. D. 2014	EEB
Rosaria Healy	Ph. D. 2013	PBS
Amy Dykstra	Ph. D. 2012	PBS
Marta Vargas Timchenko	M. S. 2012	EEB
Justin Becknell	Ph. D. 2012	PBS
Kerrie Sendall	Ph. D. 2012	PBS
Heather Whittington	Ph. D. 2012	PBS
Tim Whitfeld	Ph. D. 2011	PBS
Emily Peters	Ph. D. 2010	EEB
Jessica Savage	Ph. D. 2010	PBS
Alan Flory	M. S. 2009	EEB
Mark Norris	Ph. D. 2008	NRSM
Adam Berland	M. A. 2007	Geography
Leslie Kreller	M. S. 2005	NRSM

*Undergraduate research advising (\*honors project)*

Liam Gilson (2017) Global change impacts on grassland phenology

Theodore Brauer (2017) Seedbanks in northern peatlands under experimental warming

Talia Anderson (2016) \*

Sophia Gutterman (2016) \*

Erik Schilling (2013) Forest compositional response to oak wilt in central Minnesota  
 Laura Nelson (2013) \*  
 Abigail Hanson (2013) \*  
 Lindsay Hastings (2012) Climate drivers of long-term trends in tree phenology in north central Minnesota  
 Gael Zembal (2011) The role of temperature and photoperiod as cues for budbreak of six temperate deciduous tree species\*  
 Emma Schultz (2008) Understory plant community response to silvicultural opening size across and between gaps in Wisconsin northern hardwood forests\* co-advised with Christel Kern  
 Brandon Gallagher (2005) Distribution and habitat characterization for three species of *Goodyera* (Orchidaceae) within the Rainy Lake, Ontario watershed  
 Kathryn Smith (2005-2006) Effects of shrub competition on photosynthetic physiology of six temperate tree species\*  
 Melissa Maxa (2005) Root competition for nitrogen and phosphorus between *Pinus resinosa* seedlings and northern Minnesota forest plants

## Service

### *College and University Committee Service*

2016-2017	Itasca Biological Station Director search committee, College of Biological Sciences
2015-2016	Guillion Chair faculty search committee; Department of Fisheries, Wildlife and Conservation Biology
2016	Itasca Biological Station External Review
2016-present	University Learning and Technology Advisors (ULTA) Committee
2015-present	CFANS e-Learning Advisory Committee
2015-present	Cedar Creek Ecosystem Science Reserve Advisory Board
2015-present	Cedar Creek Ecosystem Science Reserve Land Use Committee
2011- present	Undergraduate Policy Review Committee
2009-present	College of Food, Agricultural and Natural Resource Sciences Safety committee
2012-2013	St. Paul Campus Research Lab Assessment committee
2012	CFANS Research Lab Assessment committee
2011-2013	University Senate
2011-2013	CFANS Curriculum Committee
2011-2012	Global Spotlight Committee
2008	St. Paul Open Spaces for Learning Taskforce
2006-2009	College of Food, Agricultural and Natural Resources Sciences, Honors Committee
2006-2010	College of Food, Agricultural and Natural Resource Sciences Student board (faculty advisor)

- 2006-2007 Atmospheric chemist faculty search committee, Department of Soil, Water and Climate
- 2006-2007 Silviculture faculty search committee, Department of Forest Resources
- 2006 Plant nutrient management faculty search committee, Department of Soil, Water and Climate
- 2005-2006 Graduate Working Group for merger of CNR/COAFES
- 2005-2006 ENR/ES Major Curriculum development
- 2004-2006 College of Natural Resources Student Faculty board

*Departmental Committee Service*

- 2016-present FNRM Curriculum, advising and recruiting committee, chair
- 2016-present FR Tribal Diversity and Inclusion committee
- 2011-present Forest and Natural Resource Management major coordinator
- 2010 Forest Resources undergraduate curriculum revision committee
- 2006-2007 Promotion & Tenure Requirements revision committee
- 2008 Strategic Planning ad hoc committee

*Professional Service*

- 2015-present Associate editor, Plant Ecology
- 2011-2013 MN Science Team for Northwoods Climate Change Response Framework
- 2011-2014 Associate editor, Forest Science

Reviewer for American Journal of Botany, Biotropica, Canadian Journal of Forest Research, Ecology, Forest Science, Functional Ecology, Functional Plant Biology, Journal of Biometeorology, Journal of Ecology, Journal of Forestry, Journal of Geophysical Research-Atmosphere, Journal of Vegetation Science, Journal of Tropical Ecology, New Phytologist, Oecologia, Plant Ecology, Proceedings of the Irish Royal Society, Restoration Ecology, Teaching Issues and Experiments in Ecology, Tree Physiology

Grant reviewer for Graduate Women in Science, INDICASAT Panama, Minnesota Agricultural Experiment Station, Natural Sciences and Engineering Research Council of Canada, USDA National Research Initiative, US National Science Foundation

*Society Membership and Service*

Member of the Ecological Society of America, the Association for Tropical Biology and Conservation, and the Society of American Foresters.

- 2009-present Chair of the C6 Physiology section of the Society of American Foresters

2005, 2010 Billings/New Phytologist Award judge, Best Graduate Student Paper/Poster, Ecophysiological section of the Ecological Society of America

*Public Service*

2009-present Falcon Heights Environment Commission  
2011-2015 Minnesota Department of Natural Resources Commissioner's Advisory Committee

**Specialized Training**

CFANS Leads: Leadership development program for mid-career faculty (2016)  
Next Generation of the Professoriate: Using Technology in Teaching and Learning, UMN Center for Teaching and Learning (2006)  
Bush Faculty Early Career Teaching Program, UMN Center for Teaching and Learning (2004-2005)  
Grant writing seminar: Getting started as a successful grant writer and academician (2004)

**Languages**

Spanish – conversational to fluent