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## Education

Ph.D. Environmental, Population, and Organismal Biology, University of Colorado, 1995  
B.S. Natural Resources (with honors), Cornell University, 1988

## Professional Experience

Miami University Department of Biology, Professor 2014 - present  
Miami University Department of Zoology, Associate Professor 2011 - 2014  
Miami University Department of Zoology, Assistant Professor 2007 – 2011  
Appalachian State University Department of Biology, Assistant Professor 2001-2007  
Cornell University Department of Natural Resources, Research Associate 1998- 2001  
Cornell University Department of Natural Resources, Visiting Research Fellow 1997 – 1998  
University of Michigan School of Natural Resources and Environment, Postdoctoral Research Associate 1995 – 1997

## Publications

- Sorensen PO, Templer PH, Christenson LM, Duran J, Fahey TJ, Fisk MC, Groffman PM, Morse JL, Finzi AC. 2017. Reduced snow cover alters root-microbe interactions and decreases nitrification rates in a northern hardwood forest. *Ecology* 97: 3359–3368.
- Fuss CB, Driscoll CT, Groffman PM, Campbell JL, Christenson LM, Fahey TJ, Fisk MC, Mitchell MJ, Templer PH, Duran J, Morse JL. 2017. Nitrate and dissolved organic carbon mobilization in response to soil freezing variability. *Biogeochemistry* 131:35-47.
- Fahey TJ, Heinz AK, Battles JJ, Fisk MC, Driscoll CT, Blum JD, Johnson CE. 2016. Fine root biomass declined in response to restoration of soil calcium in a northern hardwood forest. *Canadian Journal of Forest Research* 46: 738-744.
- Kang H, Fahey TJ, Bae K, Fisk MC, Sherman RE, Yanai RD, See C. 2016. Response of forest soil respiration to nutrient addition depends on site fertility. *Biogeochemistry* 127:113-124.
- Ratliff TJ, Fisk MC. 2016. Phosphatase activity is related to N availability but not P availability across hardwood forests in the northeastern United States. *Soil Biology and Biochemistry* 94:61-69.
- See CR, Yanai RD, Fisk MC, Vadeboncoeur MA, Quintero BA, Fahey TJ. 2015. Soil nitrogen affects phosphorus recycling: foliar resorption and plant-soil feedbacks in a northern hardwood forest. *Ecology* 96: 2488-2498.

- Bae B, Fahey TJ, Yanai RD, Fisk MC. 2015. Soil nitrogen availability affects belowground carbon allocation and soil respiration in northern hardwood forests of New Hampshire. *Ecosystems* 18:1179-1191.
- Groffman PM, Fahey TJ, Fisk MC, Yavitt JB, Sherman RE, Bohlen PJ, Maerz JC. 2015. Earthworms increase soil microbial biomass carrying capacity and nitrogen retention in northern hardwood forests. *Soil Biology and Biochemistry* 87: 51-58.
- Li A., Fahey TJ, Pawlowska TE, Fisk MC, Burtis J. 2015. Fine root decomposition, nutrient mobilization and fungal communities in a pine forest ecosystem. *Soil Biology and Biochemistry* 83: 76-83.
- Fisk MC, Santangelo S, Minick KJ. 2015. Carbon mineralization is promoted by phosphorus and reduced by nitrogen addition in the organic horizon of northern hardwood forests. *Soil Biology and Biochemistry* 81: 212-218.
- Balaria A, Johnson CE, Groffman PM, Fisk MC. 2014. Effects of calcium silicate treatment on the composition of forest floor organic matter in a northern hardwood forest stand. *Biogeochemistry* 122: 313-326.
- Ewing HA, Tuininga AR, Groffman PM, Weathers KC, Fahey TJ, Fisk MC, Bohlen PJ, Suarez E. 2014. Earthworms reduce biotic 15-nitrogen retention in northern hardwood forests. *Ecosystems* 18: 328-342.
- Fisk MC, Ratliff TJ, Goswami S, Yanai RD. 2014. Synergistic soil response to nitrogen plus phosphorus fertilization in hardwood forests. *Biogeochemistry* 118:195-204.
- Durán J, Morse J, Groffman P, Campbell J, Christenson L, Driscoll C, Fahey T, Fisk M, Mitchell M, Templer P. 2014. Winter climate change affects growing-season soil microbial biomass and activity in northern hardwood forests. *Global Change Biology* 20: 3568-3577.
- Williams RS, Marbert BS, Fisk MC, Hanson PJ. 2014. Ground-dwelling beetle responses to long-term precipitation alterations in a hardwood forest. *Southeastern Naturalist* 13: 138-155.
- Dempsey MA, Fisk MC, Fahey TJ, Yavitt JB, and Balser TC. 2013. Exotic earthworms alter soil microbial community composition and function. *Soil Biology and Biochemistry* 67:263-270.
- Fahey TJ, Yavitt JB, Sherman RE, Maerz JC, Groffman PM, Fisk MC, Bohlen PJ. 2013. Earthworms, litter and soil carbon in a northern hardwood forest. *Biogeochemistry* 114: 269-280.
- Rastetter EB, Yanai RD, Thomas RQ, Vadeboncoeur MA, Fahey TJ, Fisk MC, Kwiatkowski BL, Hamburg SP. 2013. Recovery from disturbance requires resynchronization of ecosystem nutrient cycles. *Ecological Applications* 23:621-642.
- Fahey TJ, Yavitt JB, Sherman RE, Maerz JC, Groffman PM, Fisk MC, Bohlen PJ. 2013. Earthworm effects on the incorporation of litter C and N into soil organic matter in a sugar maple forest. *Ecological Applications* 23:1185-1201.
- Groffman, PM, Rustadt LE, Templer PH, Campbell JL, Christenson LM, Lany NK, Soggi AM, Vadeboncoeur MA, Schaberg PG, Wilson GF, Driscoll CT, Fahey TJ, Fisk MC, Goodale CL,

- Green MB, Hamburg SP, Johnson CE, Mitchell MJ, Morse JL, Pardo LH, Rodenhouse NL. 2012. Long-term integrated studies show that climate change effects are manifest in complex and surprising ways in the northern hardwood forest. *BioScience* 62: 1056-1066.
- Fisk MC, Sobieraj JH, Fahey TJ, Costello AM, Crist TO. 2011. Rhizosphere disturbance influences fungal colonization and community development on dead fine roots. *Plant and Soil* 341: 279-293.
- Dempsey MA, Fisk MC, Fahey TJ. 2011. Earthworms increase the ratio of bacteria to fungi in northern hardwood forest soils, primarily by eliminating the organic horizon. *Soil Biology and Biochemistry* 43: 2135-2141.
- Groffman PM, Fisk MC. 2011. Calcium constrains plant control over forest ecosystem nitrogen cycling. *Ecology* 92: 2035-2042.
- Minick KJ, Fisk MC, Groffman PM. 2011. Calcium and phosphorus interact to reduce mid-growing season net nitrogen mineralization potential in organic horizons in a northern hardwood forest. *Soil Biology and Biochemistry* 42: 271-279.
- Groffman PM, Fisk MC. 2011. Phosphate additions have no effect on microbial biomass and activity in a northern hardwood forest. *Soil Biology and Biochemistry* 44: 2441-2449.
- Fahey TJ, Yavitt JB, Sherman RE, Groffman PM, Fisk MC, Maerz JC. 2011. Transport of carbon and nitrogen between litter and soil organic matter in a northern hardwood forest. *Ecosystems* 14: 326-340.
- Burke JL, Maerz JC, Milanovich JR, Fisk MC, Gandhi KJK. 2011. Invasion by exotic earthworms alters biodiversity and communities of litter- and soil-dwelling microarthropods. *Diversity* 3: 155-175.
- Groffman PM, Hardy JP, Fashu-Kanu S, Driscoll CT, Cleavitt NL, Fahey TJ, Fisk MC. 2011. Snow depth, soil freezing and nitrogen cycling in a northern hardwood forest landscape. *Biogeochemistry* 102: 223-238.
- Fisk MC, Fahey TJ, Groffman PM. 2010. Carbon resources, soil organisms, and nitrogen availability: landscape patterns in a northern hardwood forest. *Forest Ecology and Management* 260: 1175-1183.
- Fisk MC, Yanai RD, Fierer N. 2010. A molecular approach to quantify root community composition in a northern hardwood forest: testing effects of root species, relative abundance, and diameter. *Canadian Journal of Forest Research* 40: 836-841.
- Naples BK, Fisk MC. 2010. Belowground insights into nutrient limitation in northern hardwood forests. *Biogeochemistry* 97:109-121.
- Groffman PM, Hardy JP, Fisk MC, Fahey TJ, Driscoll CT. 2009. Climate variation and soil carbon and nitrogen cycling processes in a northern hardwood forest. *Ecosystems* 12: 927-943.
- Yanai RD, Fisk MC, Fahey TJ, Cleavitt N, Park BB. 2008. Identifying roots of northern hardwood species: patterns with diameter and depth. *Canadian Journal of Forest Research* 38: 2862-2869.

- Steinweg JM, Fisk MC, McAlexander B, Groffman PM, Hardy JP. 2008. Experimental snowpack reduction alters organic matter and net N mineralization potential of soil macroaggregates in a northern hardwood forest. *Biology and Fertility of Soils* 45: 1-10.
- Euliss AE, Fisk MC, McCleneghan SC, Neufeld HS. 2007. Allocation and morphological responses to resource manipulations are unlikely to mitigate shade intolerance in *Houstonia montana*, a rare southern Appalachian herb. *Canadian Journal of Botany* 85: 976-985.
- Euliss AE, Fisk MC, McCleneghan SC, Neufeld HS. 2007. Growth of the rare southern Appalachian endemic plant, *Houstonia montana*, in contrasting habitat types. *Journal of the Torrey Botanical Society* 134: 177-187.
- Dumas S, Neufeld HS, Fisk MC. 2007. Fire in a thermic oak-pine forest: importance of the shrub layer to short-term response and recovery. *Castanea* 72: 92-104.
- Fisk MC, Kessler WR, Goodale A, Fahey TJ, Groffman PM, Driscoll CT. 2006. Landscape variation in microarthropod response to calcium addition in a northern hardwood forest ecosystem. *Pedobiologia* 50: 69-78.
- Groffman PM, Fisk MC, Driscoll CT, Likens GE, Fahey TJ, Eager CE, Pardo LH. 2006. Calcium additions reduce nitrogen cycling in a northern hardwood forest. *Ecosystems* 9:1289-1305.
- Fahey TJ, Siccama TG, Driscoll CT, Likens GE, Campbell J, Johnson CE, Battles JJ, Aber JD, Cole JJ, Fisk MC, Groffman PM, Hamburg SP, Holmes RT, Schwarz PA, Yanai RD. 2005. The biogeochemistry of carbon at Hubbard Brook. *Biogeochemistry* 75: 109-176.
- Fisk MC, Fahey TJ, Groffman PM, Bohlen PJ. 2004. Earthworm invasion, fine root distributions and soil respiration in north temperate forests. *Ecosystems* 7:55-62.
- Bohlen PJ, Groffman PM, Fahey TJ, Fisk MC, Suárez ER, Pelletier DM, Fahey RT. 2004. Ecosystem consequences of exotic earthworm invasion of north temperate forests. *Ecosystems* 7: 1-12.
- Bohlen PJ, Pelletier DM, Groffman PM, Fahey TJ, Fisk MC. 2004. Influence of earthworm invasion on redistribution and retention of soil carbon and nitrogen in north temperate forests. *Ecosystems* 7: 13-27.
- Groffman PM, Bohlen PJ, Fisk MC, Fahey TJ. 2004. Exotic earthworm invasion and microbial biomass in temperate forest soils. *Ecosystems* 7: 45-54.
- Suárez ER, Pelletier DM, Fahey TJ, Groffman PM, Bohlen PJ, Fisk MC. 2004. Effects of exotic earthworms on soil phosphorus in two north temperate forests. *Ecosystems* 7: 28-44.
- Schmidt SK, Lipson DA, Ley RE, Fisk MC, West AE. 2004. Impacts of chronic nitrogen additions vary seasonally and by microbial functional group in tundra soil. *Biogeochemistry* 69: 1-17.
- Fisk MC, Ruether KF, Yavitt JB. 2003. Microbial activity and functional composition among northern peatland ecosystems. *Soil Biology and Biochemistry* 35: 591-692

- Lawrence B, Fisk MC, Fahey TJ, Suárez ER. 2003. Influence of non-native earthworms on mycorrhizal colonization of sugar maple (*Acer saccharum* Marsh). *New Phytologist* 157: 145-153.
- Li X, Fisk MC, Fahey TJ, Bohlen PJ. 2002. Influence of earthworm invasion on soil microbial biomass and activity in a northern hardwood forest. *Soil Biology and Biochemistry* 34:1929-1937.
- Fisk MC, Zak DR, Crow TR. 2002. Nitrogen cycling and retention in old- and second-growth northern hardwood forests. *Ecology* 83: 73-87.
- Fisk MC, Fahey TJ. 2001. Microbial biomass and nitrogen cycling response to fertilization and litter removal in young northern hardwood forests. *Biogeochemistry* 53: 201 – 223.
- Fisk MC, Brooks PD, Schmidt SK. 2001. Nitrogen cycling. *In* *Alpine Dynamics: The Structure and Function of an Alpine Ecosystem, Niwot Ridge, Colorado*. (W.D. Bowman and T.R. Seastedt, eds.). pp 237-253, Oxford University Press.
- Bowman WD, Fisk MC. 2001. Net primary productivity. *In* *Alpine Dynamics: The Structure and Function of an Alpine Ecosystem, Niwot Ridge, Colorado*. (W.D. Bowman and T.R. Seastedt, eds.). pp 177-197, Oxford University Press.
- Schmidt SK, West AE, Brooks PD, Smith LK, Jaeger CH III, Fisk MC, Holland EA. 2001. Soil-atmosphere gas exchange. *In* *Alpine Dynamics: The Structure and Function of an Alpine Ecosystem, Niwot Ridge, Colorado*. (W.D. Bowman and T.R. Seastedt, eds.). pp 254-265, Oxford University Press.
- Jaeger CH III, Monson RK, Fisk MC, Schmidt SK. 1999. Seasonal partitioning of nitrogen between plants and soil microorganisms in an alpine ecosystem. *Ecology* 80: 1883-1891.
- West AE, Brooks PD, Fisk MC, Smith LK, Holland EA, Jaeger CH III, Babcock S, Ley R, Schmidt SK. 1999. Landscape patterns of CH<sub>4</sub> fluxes in an alpine tundra ecosystem. *Biogeochemistry* 45: 243-264.
- Fisk MC, Schmidt SK, Seastedt TR. 1998. Topographic patterns of above- and belowground production and nitrogen cycling in alpine tundra. *Ecology* 79: 2253-2267.
- Colores GM, Schmidt SK, Fisk MC. 1996. Estimating the biomass of microbial functional groups using rates of growth-related soil respiration. *Soil Biology and Biochemistry* 28:1569-1577.
- Fisk MC, Schmidt SK. 1996. Microbial responses to excess nitrogen in alpine tundra soils. *Soil Biology and Biochemistry* 28: 751-755.
- Fisk MC, Schmidt SK. 1995. Nitrogen mineralization and microbial nitrogen dynamics in three alpine tundra communities. *Soil Science Society of America Journal* 59: 1036-1043.
- Bowman WD, Theodose TA Fisk MC. 1995. Physiological and production responses of plant growth forms to increases in limiting resources in alpine tundra: implications for differential community response to environmental change. *Oecologia* 101: 217-227.
- Neff JC, Bowman WD, Holland EA, Fisk MC Schmidt SK. 1994. Nitrous oxide and methane fluxes from nitrogen-amended soils in the Colorado alpine. *Biogeochemistry* 27: 23-33.

Fisk, MC, Fahey TJ. 1990. Nitrification potentials in organic horizons following clearfelling of northern hardwood forests. *Soil Biology and Biochemistry* 22: 277-279.

### **External Grants Funded**

National Science Foundation (Co-PI). Long term ecological research at the Hubbard Brook Experimental Forest. \$240,000, 2011-2016.

National Science Foundation (PI), Research Experience for Undergraduates (REU) supplement, Collaborative Research: Nutrient co-limitation in young and mature northern hardwood forests. \$7200, 2016.

National Science Foundation (PI), Collaborative Research: Nutrient co-limitation in young and mature northern hardwood forests. \$156,388, 2010-2015.

National Science Foundation (PI), Research Experience for Undergraduates (REU) supplement, Collaborative Research: Winter climate change in a northern hardwood forest. \$7500, 2014.

National Science Foundation (PI), REU supplement, Collaborative Research: Nutrient co-limitation in young and mature northern hardwood forests. \$7500, 2014.

National Science Foundation (PI), Collaborative Research: Winter climate change in a northern hardwood forest. \$161,674, 2010-2013.

National Science Foundation (PI), Research Experience for Teachers (RET) supplement, Collaborative Research: Nutrient co-limitation in young and mature northern hardwood forests. \$15,000, 2013.

National Science Foundation (PI), Research Experience for Undergraduates (REU) supplement, Collaborative Research: Winter climate change in a northern hardwood forest. \$7500, 2012.

National Science Foundation (PI), REU supplement, Collaborative Research: Nutrient co-limitation in young and mature northern hardwood forests. \$7500, 2012.

National Science Foundation (PI), Collaborative Research: Invasion of north temperate forest soils by exotic earthworms. \$140,000, 2006-2010.

National Science Foundation (Co-PI). Long term Ecological Research at the Hubbard Brook Experimental Forest. \$237,622, 2004-2010.

USDA-NRI (Co-PI), Microbial carbon and nitrogen cycle response to calcium additions in a northern hardwood forest. \$96,111, 2005-2009.

National Science Foundation (PI), REU supplement, Collaborative Research: Invasion of north temperate forest soils by exotic earthworms. \$6500, 2008.

USDA-NRI (PI), Fungal biology of fine root decomposition. \$251,000, 2001–2004.

USDA-NRI (PI), Microbial functional group response to resource manipulation in northern hardwood forests. \$82,000, 1996-1998.

### **Teaching Experience**

Communities and Ecosystems (lecture and laboratory)

Environmental Biology

Environmental Microbiology

Environmental Science

Fundamentals of Ecology  
Global and Ecosystem Ecology  
Introductory Biology Laboratory  
Introduction to the Life Sciences  
Microbiology (lecture and laboratory)  
Soils: formation and function (lecture and laboratory)  
Soil Ecology and Sustainable Use