



Cary Institute
of Ecosystem Studies

GARY M. LOVETT

Cary Institute of Ecosystem Studies
2801 Sharon Turnpike; PO Box AB
Millbrook NY 12545-0129
Telephone: (845) 677-7600 ext 132 FAX: (845) 677-5976
E-mail: LovettG@caryinstitute.org

Education:

B.S. Biology, Union College, 1975
Ph.D. Dartmouth College, Biology/Plant Ecology, 1981

Professional Positions:

Senior Scientist, Cary Institute of Ecosystem Studies, 2004-present
Adjunct Professor, The University at Albany, 2004-present
Graduate Faculty in Ecology, Rutgers University, 1989-present
Scientist, Institute of Ecosystem Studies, 1995-2004
Associate Scientist, Institute of Ecosystem Studies, 1989-1995
Assistant Scientist, Institute of Ecosystem Studies, 1985-1989
Research Associate, University of Tennessee, 1983-1985
Postgraduate Research Fellow, Oak Ridge National Lab., 1981-1983

Recent Professional Activities:

Director, Catskill Science Collaborative (2018-present)
Lead Principal Investigator, Hubbard Brook Long Term Ecological Research Program (2015-present)
Chair, Steering Committee, Northeastern Ecosystem Research Cooperative (2000-2015)
Scientific Coordinating Committee, Hubbard Brook Ecosystem Study
Fellow, American Association for the Advancement of Science
Fellow, Ecological Society of America
Editorial Boards:

Ecosystems, 2009-2016
Biogeochemistry, 2007-2011
Ecological Applications, 1995-1998
Tree Physiology, 1992-1995

Research Interests and Activities:

My research interests primarily involve forest ecology, biogeochemistry, and the effects of various stressors on forest ecosystems. At present, my principal research projects focus on

the effects of introduced pests, air pollution and climate change on forests, and the role of tree species in influencing forest ecosystem processes. I am also involved in efforts to change federal policies to limit the importation of forest pests and diseases into the country.

Recent Publications:

- Stevens, C., N. Bell, P. Brimblecombe, C. Clark, N. Dise, D. Fowler, G. Lovett, and P. Wolsley. 2020. The impact of air pollution on terrestrial managed and natural habitats. *Proceedings of the Royal Society A* (in press).
- Miniat, C.F., J.M. Fraterrigo, J., S.T. Brantley, M.A. Callahan, Jr., S. Cordell, J.S. Dukes, C.P. Giadina, S. Jose, and G.M. Lovett. 2020. Impacts of invasive species on forest and grassland ecosystem processes in the United States. Chapter 3 in: Poland, T.M., Patel-Weynand, T., Finch, D., Miniat, C. F., and Lopez, V. (Eds), *Invasive Species in Forests and Grasslands of the United States: A Comprehensive Science Synthesis for the United States Forest Sector*. Springer Verlag. New York.
- Darby, B.A., C. L. Goodale, N.A. Chin, C. Fuss, A. Lang, S. Ollinger and G. M. Lovett. 2020. Depth patterns and connections between gross nitrogen cycling and exoenzyme activity across soil depths in three northern hardwood forests. *Soil Biology and Biochemistry*. Volume 147.
<https://doi.org/10.1016/j.soilbio.2020.107836>
- Kelly, V. R., S. E. Findlay, S. K. Hamilton, G. M. Lovett, and K. C. Weathers. 2019. Seasonal and long-term dynamics in stream water sodium chloride concentrations and the effectiveness of road salt best management practices. *Water Air and Soil Pollution* **230**. DOI: 10.1007/s11270-018-4060-2
- Sebestyen, S. D., D. S. Ross, J. B. Shanley, E. M. Elliott, C. Kendall, J. L. Campbell, D. B. Dail, I. J. Fernandez, C. L. Goodale, G. B. Lawrence, G. M. Lovett, P. J. McHale, M. J. Mitchell, S. J. Nelson, M. D. Shattuck, T. R. Wickman, R. T. Barnes, J. T. Bostic, A. R. Buda, D. A. Burns, K. N. Eshleman, J. C. Finlay, D. M. Nelson, N. Ohte, L. H. Pardo, L. A. Rose, R. D. Sabo, S. L. Schiff, J. Spoelstra, and K. W. J. Williard. 2019. Unprocessed atmospheric nitrate in waters of the Northern Forest Region in the US and Canada. *Environmental Science & Technology* **53**:3620-3633.
- Fuss, C.B., G.M. Lovett, C. L. Goodale, S.V. Ollinger, A.K. Lang, and A.P. Ouimette. 2019. Retention of nitrate-N in mineral soil organic matter in different forest age classes. *Ecosystems*. DOI: 10.1007/s10021-018-0328-z
- Gilliam, F., D.A. Burns, C.T. Driscoll, S. Frey, G.M. Lovett, and S. Watmough. 2019. Responses of forest ecosystems of eastern North America to decreased nitrogen deposition. *Environmental Pollution*. 244:560-574
- Groffman, P.M., C.T. Driscoll, J. Durán, J.L. Campbell, L.M. Christenson, T.J. Fahey, M.C. Fisk, C. Fuss, G.E. Likens, G. Lovett, L. Rustad, and P.H. Templer. 2018. Nitrogen oligotrophication in northern hardwood forests. *Biogeochemistry* 141:523-539.

- Lovett, G.M., C.L. Goodale, S.V. Ollinger, C.B. Fuss, A.P. Ouimette, and G.E. Likens. 2018. Nutrient retention during ecosystem succession: a revised conceptual model. *Frontiers in Ecology and the Environment* 16:532-538.
- Sullivan, T.J., C.T. Driscoll, C.M. Beier, D. Burtraw, I.J. Fernandez, J.N. Galloway, D.A. Gay, C.L. Goodale, G.E. Likens, G.M. Lovett, and S.A. Watmough. 2018. Air pollution success stories in the United States: the value of long-term observations. *Environmental Science & Policy* 84:69-73.
- Crowley, K.F., and G.M. Lovett. 2017. Effects of nitrogen deposition on nitrate leaching from northeastern U.S. forests will change with tree species composition. *Canadian Journal of Forest Research* 47:997-1009.
- Arthur, M.A., K.C. Weathers, G.M. Lovett, M.P. Weand, and W.C. Eddy. 2017. A beech bark disease induced change in tree species composition influences forest floor acid-base chemistry. *Canadian Journal of Forest Research* 47:875-882.
- Lovett, G.M., M.A. Arthur, and K.F. Crowley. 2016. Effects of calcium on the rate and extent of litter decomposition in a Northern Hardwood forest. *Ecosystems* 18:87-97.
- Lovett, G.M., M. Weiss, A. Liebhold, T.P. Holmes, B. Leung, K.F. Lambert, D.A. Orwig, F. T. Campbell, J. Rosenthal, D.G. McCullough, R. Wildova, M.P. Ayres, C.D. Canham, S.L. LaDeau, and T. Weldy. 2016. Non-native forest insects and pathogens: impacts and policy options. *Ecological Applications* 26:1437-1455.
- Crowley, K.F., G.M. Lovett, M.A. Arthur, and K.C. Weathers. 2016. Long-term effects of pest-induced tree species change on carbon and nitrogen cycling in northeastern U.S. forests: a modeling analysis. *Forest Ecology and Management* 372:269-290.
- Morillas, L., J. Duran, A. Rodriguez, J. Roales, A. Gallardo, G.M. Lovett, and P.M. Groffman. 2015. Nitrogen supply modulates the effect of changes in drying-rewetting frequency on soil C and N cycling and on greenhouse gas exchange. *Global Change Biology* 21:3854-3863.
- Rodriguez, A., G.M. Lovett, K.C. Weathers, M.A. Arthur, P.H. Templer, C.L. Goodale, and L.M. Christenson. 2014. Lability of C in temperate forest soils: assessing the role of nitrogen addition and tree species composition. *Soil Biology & Biochemistry* 77:129-140.
- Christenson, L.M., M.J. Mitchell, P.M. Groffman, and G.M. Lovett. 2014. Cascading effects of climate change on forest ecosystems: biogeochemical links between trees and moose in the Northeast USA. *Ecosystems* 17:442-457.
- Lovett, G.M., M.A. Arthur, K. C. Weathers and J.M. Griffin. 2013. Effects of introduced insects and diseases on forest ecosystems in the Catskill Mountains of New York. *Annals of the NY Academy of Sciences* 1298:66-77.
- Lovett, G.M., M.A. Arthur, K.C. Weathers, R.D. Fitzhugh, and P.M. Templer. 2013. Nitrogen addition increases carbon storage in soils, but not in trees, in an eastern U.S. deciduous forest. *Ecosystems* 16:980-1001.

- Lovett, G.M. 2013. When do Peepers peep? Climate and the date of first calling in the Spring Peeper (*Pseudacris crucifer*) in southeastern New York State, USA. *Northeastern Naturalist* 20:333-340
- Pace, M.L., and G.M. Lovett. 2013. Primary production: The foundation of ecosystems. Pp. 27-51 In: *Fundamentals of Ecosystem Science*. K.C. Weathers, D.L. Strayer, and G.E. Likens (eds). Academic Press. ISBN 978-0-12-088774-3.
- Smithwick, E.A.H., D.M. Eissenstat, G.M. Lovett, R.D. Bowden, L.E. Rustad, and C.T. Driscoll. 2013. Root stress and nitrogen deposition: consequences and research priorities. *New Phytologist* 197:712-719.
- Lovett, G.M. 2013. Critical issues for critical loads. *Proceedings of the National Academy of Sciences* 110:808-809.
- Crowley, K.F., B.E. McNeil, G.M. Lovett, C.D. Canham, C.T. Driscoll, L.E. Rustad, E. Denny, R.A. Hallett, M.A. Arthur, J.L. Boggs, C.L. Goodale, J.S. Kahl, S.G. McNulty, S.V. Ollinger, L.H. Pardo, P.G. Schaberg, J.L. Stoddard, M.P. Weand, and K.C. Weathers. 2012. Do nutrient limitation patterns shift from nitrogen toward phosphorus with increasing nitrogen deposition across the northeastern United States? *Ecosystems* 15:940-957.
- Tang, M.H., S. Porder, and G.M. Lovett. 2012. Species differences in nitrate reductase activity are unaffected by nitrogen enrichment in northeastern US forests. *Forest Ecology and Management* 275:52-59.
- Svensson, T., G. Lovett, and G. Likens. 2012. Is chloride a conservative ion in forest ecosystems? *Biogeochemistry* 107:125-134.
- Kelly, V.R., K.C. Weathers, G.M. Lovett, and G.E. Likens. 2012. A comparison of two collectors for monitoring precipitation chemistry. *Water Air and Soil Pollution* 223:951-954.
- Fenn, M.E., K.F. Lambert, T.F. Blett, D.A. Burns, L.H. Pardo, G.M. Lovett, R.A. Haeuber, D.C. Evers, C.T. Driscoll, and D.S. Jeffries. 2011. Setting limits: using air pollution thresholds to protect and restore U.S. ecosystems. *Issues in Ecology* 14. Ecological Society of America, Washington, D.C.
- Lovett, G.M. and C.L. Goodale. 2011. A new conceptual model of nitrogen saturation based on experimental nitrogen addition to an oak forest. *Ecosystems* 14:615-631.
- Mitchell, M., G. Lovett, S. Bailey, F. Beall, D. Burns, D. Buso, T. Clair, F. Courchesne, L. Duchesne, C. Eimers, I. Fernandez, D. Houle, D. Jeffries, G. Likens, M. Moran, C. Rogers, D. Schwede, J. Shanley, K. Weathers, and R. Vet. 2011. Comparisons of watershed sulfur budgets in southeast Canada and northeast US: new approaches and implications. *Biogeochemistry* 103:181-207.
- Pouyat, R.V., K.C. Weathers, R. Hauber, G.M. Lovett, A. Bartuska, L. Christenson, J.L.D. Davis, S.E.G. Findlay, H. Menninger, E. Rosi-Marshall, P. Stine, and N. Lynn. 2010. The role of federal agencies in the application of scientific knowledge. *Frontiers in Ecology and the Environment* 8:322-328.

- Weand, M.P., M.A. Arthur, G.M. Lovett, R.L. McCulley, and K.C. Weathers. 2010. Effects of tree species and N additions on forest floor microbial communities and extracellular enzyme activities. *Soil Biology & Biochemistry* 42:2161-2173.
- Christenson, L.M., M.J. Mitchell, P.M. Groffman and G.M. Lovett. 2010. Winter climate change implications for decomposition in Northeastern forests: comparisons of sugar maple litter to herbivore fecal inputs. *Global Change Biology* 16:2589-2601.
- Lovett, G.M., M.A. Arthur, K.C. Weathers and J.M. Griffin. 2010. Long-term changes in forest carbon and nitrogen cycling caused by an introduced pest/pathogen complex. *Ecosystems* 13:1188-1200.
- Katz, D.S.W., G.M. Lovett, C.D. Canham, and C.M. O'Reilly. 2010. Legacies of land-use history diminish over 22 years in a forest in southeastern New York. *J. Torrey Botanical Society* 137:236-251.
- Weand, M.P., M.A. Arthur, G.M. Lovett, F. Sikora, and K.C. Weathers. 2010. The phosphorus status of northern hardwoods differs by species but is unaffected by nitrogen fertilization. *Biogeochemistry* 97:159-181.
- Peltzer, D.A., R.B. Allen, G.M. Lovett, D. Whitehead and D.A. Wardle. 2010. Effects of biological invasions on forest carbon sequestration. *Global Change Biology* 16:732-746.
- Lovett, G.M., T. H. Tear, D.C. Evers, S.E.G. Findlay, B.J. Cosby, J.K. Dunscomb, C.T. Driscoll and K.C. Weathers. 2009. Effects of air pollution on ecosystems and biological diversity in the eastern United States. *The Year in Ecology and Conservation Biology, 2009: Ann. N.Y. Acad. Sci.* 1162:99-135.
- Kelly, V.R., K.C. Weathers, G.M. Lovett, and G.E. Likens. 2009. Effect of climate change between 1984 and 2007 on precipitation chemistry at a site in northeastern USA. *Environmental Science & Technology* 43:3461-3466.
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- Evans, C., C. Goodale, S. Caporn, N. Dise, B. Emmett, I. Fernandez, C. Field, S. Findlay, G. Lovett, H. Meesenburg, F. Moldan, and L. Sheppard. 2008. Does elevated nitrogen deposition or ecosystem recovery from acidification drive increased dissolved organic carbon loss from upland soil? A review of evidence from field nitrogen addition experiments. *Biogeochemistry* 91:13-35.
- Hancock, J.E., M.A. Arthur, K.C. Weathers, and G.M. Lovett. 2008. Carbon cycling along a gradient of beech bark disease impact in the Catskill Mountains, New York. *Canadian Journal of Forest Research* 38:1267-1274.
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& *Technology* 42:410-415.

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- Lovett, G.M., D.A. Burns, C.T. Driscoll, J.C. Jenkins, M.J. Mitchell, L. Rustad, J.B. Shanley, G.E. Likens, and R. Haeuber. 2007. Who needs environmental monitoring? *Frontiers in Ecology and Environment* 5:253-260.
- Wallace, Z.P., G.M. Lovett, J.E. Hart, and B. Machona. 2007. Effects of nitrogen saturation on tree growth and death in a mixed-oak forest. *Forest Ecology and Management* 243:210-218.
- Lovett, G.M., C.D. Canham, M.A. Arthur, K.C. Weathers, and R.D. Fitzhugh. 2006. Forest ecosystem responses to exotic pests and pathogens in eastern North America. *Bioscience* 56:395-405.
- Lovett, G.M., J.J. Cole, and M.L. Pace. 2006. Is net ecosystem production equal to ecosystem carbon accumulation? *Ecosystems* 9:152-155.
- Chapin, F.S., G.M. Woodwell, J.T. Randerson, E.B. Rastetter, G.M. Lovett, D.D. Baldocchi, D.A. Clark, M.E. Harmon, D.S. Schimel, R. Valentini, C. Wirth, J.D. Aber, J.J. Cole, M.L. Goulden, J.W. Harden, M. Heimann, R.W. Howarth, P.A. Matson, A.D. McGuire, J.M. Melillo, H.A. Mooney, J.C. Neff, R.A. Houghton, M.L. Pace, M.G. Ryan, S.W. Running, O. E. Sala, W.H. Schlesinger, and E.D. Schulze. 2006. Reconciling carbon-cycle concepts, terminology, and methods. *Ecosystems* 9:1041-1050.
- Pardo, L.H., P.H. Templer, C.L. Goodale, S. Duke, P.M. Groffman, M.B. Adams, P. Boeckx, J. Boggs, J. Campbell, B. Colman, J. Compton, B. Emmett, P. Gundersen, J. Kjonaas, G. Lovett, M. Mack, A. Magill, M. Mbila, M.J. Mitchell, G. McGee, S. McNulty, K. Nadelhoffer, S. Ollinger, D. Ross, H. Rueth, L. Rustad, P. Schaberg, S. Schiff, P. Schleppei, J. Spoelstra, and W. Wessel. 2006. Regional assessment of N saturation using foliar and root delta N-15. *Biogeochemistry* 80:143-171.
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- Kelly, V.R., G.M. Lovett, K.C. Weathers, and G.E. Likens. 2005. Trends in atmospheric ammonium concentrations in relation to atmospheric sulfate and local agriculture. *Environmental Pollution* 135:363-369.
- Lovett, G.M., C.G. Jones, M.G. Turner, and K.C. Weathers. Ecosystem function in heterogeneous landscapes. 2005. Pp 1-4 In: Lovett, G.M., C.G. Jones, M.G. Turner, and K.C. Weathers (eds.). *Ecosystem Function in Heterogeneous Landscapes*. Springer-Verlag, NY.

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- Templer, P.H., G.M. Lovett, K.C. Weathers, S.E.G. Findlay, and T.E. Dawson. 2005. Influence of tree species on forest nitrogen retention in the Catskill Mountains, New York, USA. *Ecosystems* 8:1-16.