

CURRICULUM VITAE (ABBREVIATED)

**LARS O. HEDIN**  
Professor

Department of Ecology and Evolutionary Biology, and  
Princeton Environmental Institute, Princeton University  
Princeton, NJ 08544-1003

telephone: (609) 258-7325  
Fax: (609) 258-7892  
email: lhedin@princeton.edu

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**General Interests:**

Biogeochemistry of land ecosystems, with emphasis on plant-nutrient dynamics, evolutionary and ecological dynamics, and the global carbon-climate system.

**Education:**

Ph.D., Biogeochemistry and Ecosystem Studies, Yale University, New Haven, CT, 1989.  
M.S., Biogeochemistry and Ecosystem Studies, Yale University, New Haven, CT, 1986.  
B.S., Ecology and Evolutionary Biology, Cornell University, Ithaca, NY, 1983.  
*Ph.D. Advisor:* Gene E. Likens.

**Professional Experience:**

*Chair*, Dept. of Ecology and Evolutionary Biology, Princeton University, 2014-current.  
*George M. Moffett Professor of Biology*, Princeton University, 2016-current.  
*Professor*, Dept. of Ecology and Evolutionary Biology and Princeton Environmental Institute, Princeton University, 2001-current.  
*Director*, Program in Environmental Studies, Princeton University, 2010-2014.  
*Acting Director*, Princeton Environmental Institute, Princeton University, 2011-2012.  
*Associate Professor*, Dept. of Ecology and Evolutionary Biology, Cornell University, 1997-2001.  
*Assistant Professor*, Dept. of Ecology and Evolutionary Biology, Cornell University, 1994-1997.  
*Assistant Professor*, W. K. Kellogg Biological Station and Department of Zoology, Michigan State University, 1990-1994.  
*Adjunct Professor*, Department of Geological Sciences, Michigan State University, 1992-1994.  
*Research Associate*, Institute of Ecosystem Studies, The New York Botanical Garden, 1988-1990.

**Honors and Awards:**

*Elizabeth Sulzman Award*, the Ecological Society of America (for Batterman, Hedin, et al. 2013. *Nature* **502**:224-227), 2014.  
*Best Paper in Theoretical Ecology Award*, the Ecological Society of America (for Menge, Hedin, et al. 2012. *PLoS ONE* **7**:e42045), 2013.  
*August T Larsson Visiting Professorship*, Swedish University of Agricultural Sciences (SLU), Uppsala, Sweden, 2012-2015.  
*Thompson Reuters Person with Highest Percent Citation Increase* in the field of Environment and Ecology, 2009.  
*Elizabeth Sulzman Award*, Ecological Society of America (for Menge, Hedin, et al. 2008. *Proceedings of the National Academy of Sciences* **105**:1573-8), 2009.

*Allan Cox Visiting Fellow*, School of Earth Sciences, Stanford University, and Department of Global Ecology of Carnegie Institution, 2007.  
*Gene Likens Award*, Ecological Society of America (for Houlton, Hedin, *et. al.* 2006. *Proceedings of the National Academy of Sciences* **103**:8745-8750), 2007.  
*Murray F. Buell Award* from the Ecological Society of America (for Perakis, Compton, and Hedin. 2005. *Ecology* **86**:96-105), 1998.  
*George Mercer Award*, for “Outstanding Paper in the Science of Ecology” (Hedin et al. 1995. *Ecology* **76**:493-509), Ecological Society of America, 1996.

### **Activities and Service:**

*Chair*, Dept. Ecology and Evolutionary Biology, Princeton University, 2014-current.  
*Member*, Dean of Faculty’s Working Group on Environmental Studies, 2016-current.  
*Executive Committee*, Princeton Environmental Institute, 2008-current.  
*Faculty Associate*, Princeton Environmental Institute, 2004-current.  
*Advisory Board*, Princeton-Mellon Initiative in Architecture, Urbanism and the Humanities, Princeton University, 2013-current.  
*President’s Advisory Board*, Cary Institute of Ecosystem Studies, 2012-current.  
*Executive Committee*, Program in Environmental Engineering and Water Resources, 2010-current.  
*Faculty Associate*, Department of Civil and Environmental Engineering, 2008-current.  
*Faculty Fellows Program*, Varsity Ice Hockey Team, Princeton University, 2006-current.  
*Chair and Lead Author*, Presidential Task Force on the Future of the Natural Sciences, Princeton University, 2014-2016.  
*Invited Member*, Department of Energy Review Panel, Washington, DC, 2016.  
*Member*, Faculty Search Committee, Dept. Ecology & Evolutionary Biology, Princeton University, 2015.  
*Director*, Program in Environmental Studies, Princeton University, 2010-2015.  
*Faculty Fellows Program*, Butler College, Princeton University, 2011-2015.  
*Member*, Search Committee for the Thomas A. and Currie C. Barron Family Professorship in Humanities and the Environment, Princeton University, 2013-14.  
*Co-Organizer* (with William Gleason, Dept. English), Princeton University Environmental Humanities Initiative, Princeton University, 2010-2014.  
*Co-Chair* (with B. Bassler, Dept. Molecular Biology), Joint Search Committee for Faculty Position in Ecology, Evolutionary Biology, and Molecular Biology, 2014.  
*Lead Organizer*, Symposium on “Nurturing Ideas and Scientists in Ecology: A Tribute to Bill Robertson”, Ecological Society of America, 2014.  
*Organizer*, Ecology and Evolutionary Biology Colloquium, 2013-14.  
*Co-Organizer* (with Simon Levin), Festschrift for Dan Rubenstein, 2014.  
*Founder and Contributing Member*, Biogeosciences Section, the Ecological Society of America, 2012-14.  
*Colloquium organizer*, Dept. Ecology and Evolutionary Biology, Princeton University, 2013-14.  
*Lead Architect*, Curriculum Revision for Certificate Program in Environmental Studies, Princeton University, 2011-2013.  
*Invited Member*, National Science Foundation Review Panel, Washington, DC, 2013.  
*Invited Participant*, Committee on Critical Research Needs in Tropical Ecology, US Department of Energy, Washington, D.C., 2012.  
*Member of Editorial Board*, Annual Review of Ecology, Evolution and Systematics, 2005-2012.  
*Lead Author*, Curriculum development grant on “A Real World Teaching Model”, Princeton University, 2010-12.

*Colloquium organizer*, Dept. Ecology and Evolutionary Biology, Princeton University, 2010-11.

*Chair*, Faculty Search Committees, Department of Ecology and Evolutionary Biology, 2010-2011.

*Chair of Committee*, External Review of the Dept. Environmental Science, Policy and Management, University of California Berkley, 2011.

*Department Representative for Undergraduate Students*, Dept. Ecology and Evolutionary Biology, Princeton University, 2008-10.

*Member*, Evaluation Committee for Grand Challenges Proposals, Princeton Environmental Institute, 2010.

*Interdepartmental Committee*, Program in Environmental Engineering and Water Resources, Princeton University, 2010.

*Member*, Committee on the Course of Study. Princeton University, 2008-10.

*Invited Member*, National Oceanographic and Atmospheric Administration Review Panel, Washington, D.C., 2009.

*External Advisor and Reviewer*, Search for Professor in Environmental Biology, Uppsala University SLU, Sweden, 2008.

*Member of Editorial Board*, Faculty 1000, 2005-07.

*Faculty Representative*, University Priorities Committee, 2005-06.

*Affiliated Faculty*, Program in Science, Technology and Environmental Policy, Princeton University, 2006.

*Lecturer*, Freshman Parents Weekend, Princeton University, 2006.

*Organizer*, Symposium on Multiple Resource Limitation in Terrestrial and Aquatic Ecosystems, Annual Meeting of the Ecological Society of America, Memphis, TN, 2006.

*Reviewer*, Hank Dobin Prize in Community-Based Independent Work, Princeton University, 2006.

*Invited Member*, Governing Council of the Ecological Society of America, 2004-06.

*Chair*, Graduate Education, Princeton Environmental Institute, 2002-06.

*Lead Author*, Development Grant on “A Novel Living Laboratory Teaching Model”, Princeton University, 2004.

*Co-organizer*, international conference on “Resiliency and Change in Ecological Systems,” Santa Fe Institute, Santa Fe, New Mexico, 2003.

*Invited Participant*, Conference on Ecosystems and Evolution, Stockholm, Sweden, July 2003.

*Invited Participant*, Biocomplexity in the Environment Awardees Meeting, the National Science Foundation, Washington, DC, 2003.

*Invited Participant*, Annual Collaborators’ Meeting for Hawaii Ecosystem Research Project, Hawaii, 2003.

*Invited Participant*, Conference on “Role of Interdisciplinary Studies in the Academy of the 21<sup>st</sup> Century,” National Science Foundation, Washington, D.C., 2003.

*Invited Participant*, Annual Collaborators’ Meeting for NASA Amazon Forest Research Project, Bloomington, IN, 2003.

*Invited Participant*, Annual Collaborators’ Meeting for Hawaii Ecosystem Research Project, Hawaii, June 2002.

*Invited Participant*, Santa Fe Institute Science Board Meeting, Santa Fe, NM, 2002.

*Chair and Lead Author*, “Linking Ecological Biology and Geoscience: Challenges for Terrestrial Environmental Science,” White Paper Report Invited by the National Science Foundation. (resulting in the establishment of a new funding program in “Biogeosciences”), 2002.

*Invited Member of High Panel*, The Stockholm Water Symposium, Stockholm, Sweden, 2002.

*Panel Member*, the National Science Foundation, Biocomplexity Program Evaluation Panel, Washington DC, 2002.

*Testified* to National Research Council/National Academy of Sciences Panel on the Geologic Record of Biosphere Dynamics Committee, Washington, DC, 2002.

*Invited Participant*, North American Carbon Program Methane Workshop, University of New Hampshire, Durham, NH, 2002.

*Lead Organizer and Chair*, Workshop sponsored by the National Science Foundation, Division of Earth Sciences, on "Linking Ecological Biology and Geosciences," Madison, WI, 2001.

*Invited Plenary Speaker*, Gordon Conference on Modern Developments in Thermodynamics, Ventura, CA, 2001.

*Chair and Lead Author*, Report to the Provost on the Future of Environmental Biology at Cornell University, Ithaca, NY. (Based on this report, Cornell University established a new initiative in "Biogeochemistry and Biocomplexity" with four new faculty lines and \$3 million in university support.), 2001.

*Invited Participant*, North American Carbon Program Workshop, Boulder, CO, 2001.

*Panel Member*, National Science Foundation, Biocomplexity Evaluation Panel, Division of Earth Sciences, Washington, D.C., 2001.

*International Field Course Taught*, Tropical Ecosystems in the Hawaiian Islands (15 international students), 2001.

*Co-Principal Investigator*, Center for Biocomplexity, Princeton Environmental Institute, 2002-03.

*Chair and Lead Author*, Provost Committee on Basic Environmental Science, Cornell University, 2001.

*Member*, Steering Committee for the Program in Biogeochemistry and Environmental Change, Cornell University, 1997-2001.

*Member*, Environmental and Natural Resources Planning Council, Cornell University, 2000-2001.

*Chair*, Search Committee for Plant Physiological Ecologist, Dept. Ecology and Evolutionary Biology, Cornell University, 2001.

*Member and Co-founder*, Cornell University Stable Isotope Laboratory, Cornell University, 1998-2001.

*Member*, Steering Committee of the Science of Earth Systems Program, Cornell University, 1999-2001.

*Invited Participant and Co-author of Final Report*, National Science Foundation Workshop on the Terrestrial Carbon Cycle, Washington, D.C., 2000.

*Invited Plenary Speaker*, 2nd Chapman Conference on Global Biogeochemistry and the Gaia Hypothesis, Valencia, Spain, 2000.

*Participant*, Strategic Planning Groups in Biogeochemistry and Environmental Change, Cornell University, 1999.

*Invited Plenary Speaker*, Gordon Conference on "Ten Years of Catchment Science", New Hampshire, 1999.

*Invited Keynote Speaker*, 7th Stockholm Water Symposium, Stockholm, Sweden, 1997.

*Invited Representative* to planning group on "Enhancing Integrated Science", Ecological Society of America, Geological Society of America, and United States Geological Survey, 1997-98.

*Invited Representative*, White House sponsored conference on "Evaluating the Health of our Nation's Environmental Resources", US National Science and Technology Council, Washington, D.C., 1996.

*Invited Participant*, International Scientific Committee on Problems of the Environment (SCOPE) meeting on "Comparative Analysis of Nitrogen Cycling in the Temperate and Tropical Americas," Chile, 1996.

### **Invited Talks and Seminars, 2002-Present:**

- Invited Speaker*, Annual Graduate Student Invited Lecture, Duke University, 2016.
- Invited Speaker*, Chinese Academy of Sciences, Beijing, October 2015.
- Invited Speaker*, University of Peking, Beijing, October 2015.
- Invited Speaker*, Xishuangbanna Tropical Botanical Garden, Beijing, November 2015.
- Invited Speaker*, Annual *Tupper Seminar*, Smithsonian Tropical Research Institute, Panama City, Panama, May, 2015.
- Invited Keynote Speaker*, Kruger National Park Conference, South Africa, March 2015.
- Invited Speaker*, Dept. Molecular Biology, Princeton University, Princeton, NJ, September 2014.
- Invited Speaker*, SLU University of Uppsala, Uppsala, Sweden, August 2014.
- Invited Speaker*, Kruger National Park Annual Meeting, South Africa, March 2014.
- Invited Speaker*, W.K. Kellogg Biological Station, Michigan State University, Hickory Corners, MI, April 2013.
- Invited Speaker*, Hubbard Brook Ecosystem Study, All-investigator Meeting, Campton, NH, July 2013.
- Invited Speaker*, Lafayette College, Easton, PA, June 2013.
- Invited Speaker*, Kruger National Park Annual Meeting, South Africa, March 2013.
- Invited Speaker*, University of Georgia, Georgia, December 2012.
- Invited Speaker*, University of Cape Town, South Africa, November 2012.
- Invited Speaker*, The Institute for Limnology, Uppsala University, Uppsala, Sweden, June 2012.
- Invited Speaker*, Dept. of Ecology, SLU Uppsala University, Uppsala, Sweden, May 2012.
- Invited Speaker*, Kruger National Park Annual Meeting, South Africa, March 2012.
- Invited Speaker*, Columbia University, New York, NY, February 2012.
- Invited Speaker*, Harvard University, Cambridge, MA, November 2011.
- Invited Speaker*, College of New York at Stony Brook, NY, October 2011.
- Invited Speaker*, Rutgers University, NJ, February 2011.
- Invited Speaker*, *Tupper Seminar*, Smithsonian Tropical Research Institute, Panama, June 2010.
- Invited Speaker*, EGGGS seminar, Dept of Geosciences, Princeton University, Princeton, NJ, March 2010.
- Invited Speaker*, Geophysical Fluid Dynamics Laboratory, National Oceanographic and Atmospheric Administration Climate Program, Princeton, NJ, February 2010.
- Invited Speaker*, Dept. of Civil and Environmental Engineering, Princeton University, November 2009.
- Invited Speaker*, Agouon Institute Meeting on Global Nitrogen Cycle, AZ, October 2009.
- Invited Speaker*, Cornell University, Ithaca, NY, April 2009.
- Invited Speaker*, Brown University, Providence, RI, November 2008.
- Invited Speaker*, Stroud Water Research Center, Avondale, PA, April 2007.
- Invited Speaker*, Dept. of Biology, Virginia Polytechnic Institute, Blacksburg, VA, January 2007.
- Invited Speaker*, Center on Global Change and Nicholas School of the Environment, Duke University, Durham, NC, December 2006.
- Invited Speaker*, Department of Botany, University of Cape Town, South Africa, August 2006.
- Invited Speaker*, Symposium on Multiple Resource Limitation in Terrestrial and Aquatic Ecosystems, 91<sup>st</sup> Annual Meeting of the Ecological Society of America, Memphis, TN, August 2006.
- Invited Speaker and Opponent Ph.D. thesis defense*, Department of Ecology and Environmental Research, Swedish University of Agricultural Sciences. Uppsala, Sweden, April 2006.
- Invited Speaker*, Institute of Ecosystem Studies, Millbrook, NY, April 2006.
- Invited Speaker*, Department of Geophysical Sciences, University of Chicago, IL, April 2006.

*Invited Speaker*, Centre for Population Ecology, Silwood Park, Imperial College, England, January 2006.

*Invited Speaker*, Forest Science Department, Oregon State University, OR, May 2005.

*Invited Speaker*, Department of Global Ecology, Stanford University, CA, April 2005.

*Invited Speaker*, Symposium on Biogeochemistry: Nitrogen Dynamic, 90<sup>th</sup> Annual meeting of the Ecological Society of America, Montreal, Canada, August 2005.

*Invited Keynote Speaker*, International Workshop: Dissolved Organic Matter and the Cycling of Carbon, Nutrients and Metals, University of Bayreuth, Germany, September 2005.

*Invited Participant*, NEON Biogeochemistry Workshop, American Institute of Biological Science, Boulder CO, July 2004.

*Invited Participant*, Annual Collaborators' Meeting for Hawaii Ecosystem Research Project, Hawaii, June 2004.

*Invited Speaker*, 89<sup>th</sup> Ecological Society of America Meeting, Portland, Oregon, August 2004.

*Invited Speaker*, Gordon Research Conference on "The Metabolic Basis of Ecology," Lewiston, Maine, 2004.

*Invited Speaker*, Department of Ecology and Evolutionary Biology, University of California, Irvine, California, March 2004.

*Invited Speaker*, Department of Biological Sciences. University of Calgary, Alberta, Canada, February 2004.

*Invited Speaker*, Smithsonian Environmental Research Center, Edgewater, MD, October 2003.

*Symposium Organizer and Speaker*, Symposium on "Future Developments in Biogeosciences," Annual meeting of the Ecological Society of America, Savannah, Georgia, August 2003.

*Invited Speaker*, 40<sup>th</sup> Anniversary Meeting of the Hubbard Brook Ecosystem Study, Plymouth, New Hampshire, July 2003.

*Invited Speaker*, Department of Biology, University of New Mexico, Albuquerque, NM, April 2003.

*Invited Speaker*, Graduate Program in Ecology, Duke University, Durham, NC, March 2003.

*Invited Speaker*, Ecology and Evolution Graduate Program, Rutgers University, NJ, January 2003.

*Invited Speaker*, Symposium on "Stoichiometry in Ecological Systems," Annual Meeting of the Ecology Society of America, Tucson, AZ, August 2002.

*Invited Speaker*, 4<sup>th</sup> Trilateral Meeting on "Biodiversity Across Scales," Hokkaido, Japan, July 2002.

*Invited Speaker*, The Marine Biological Laboratory at Woods Hole, The Ecosystem Center, Woods Hole, MA, February 2002.

### **Other Professional Activities:**

*Interviews and Press Coverage:* National Public Radio "All Things Considered" and "Morning Edition", the New York Times, the Washington Post, Time Magazine, the Christian Science Monitor, U.S. TV, Swedish TV, Swedish Radio, ScienceNOW, Science Magazine, Science Update in Nature, World Watch Magazine, BBC Worldwide News, Equinox Magazine, Science News, Svenska Dagbladet (Swedish daily newspaper), and several U.S. daily newspapers.

*Grant Reviewer:* National Science Foundation, US Department of Energy, US Department of Agriculture, US Environmental Protection Agency, Cottrell College Science Grants Program - Research Corporation, U.S. Forest Service.

*Manuscript Reviewer:* Nature, Science, Proceedings of the National Academy of Sciences, Nature Geoscience, Nature Climate Change, Nature Plants, Global Change Biology, Ecology, Biogeochemistry, BioScience, Canadian Journal of Forest Research, Ecology, Canadian Journal of Fisheries and Aquatic Science, Ecological Applications, Ecological

Monographs, Ecosystems, Encyclopedia of Earth System Science, Environmental Science and Technology, Freshwater Biology, Global Biogeochemical Cycles, Holarctic Ecology, Hydrobiologia, Journal of the North American Benthological Association, Limnology and Oceanography, Oikos, Tellus, Water, Air and Soil Pollution, among others.

**Graduate Students and Postdoctoral Scholars:**

Wenyang Liao	Current Ph.D.	Expected graduation, 2019.
Patricia Brandt	Current Ph.D.	Expected graduation, 2018.
Mingzhen Lu	Current Ph.D.	Expected graduation, 2016.
Cleo Chou	Current Postdoc	
Cleo Chou	Ph.D. 2016	Postdoctoral Research Associate, Princeton U.
Adam Pellegrini	Ph.D. 2016	Postdoctoral Research Associate, Stanford.
Annette Trierweiler	Ph.D. 2015	Postdoctoral Researcher, Notre Dame.
Sarah Batterman	Ph.D. 2013	Assistant Professor, University of Leeds, United Kingdom.
Carla Staver	Ph.D. 2012	Assistant Professor, Yale Univ., CT.
Daniel Stanton	Ph.D. 2011	Research Specialist, Univ. of Minnesota, MN.
Jeanne DeNoyer	Ph.D. 2011	Ecologist, United States Geological Survey.
Jennifer Keisman	Ph.D. 2009	Biologist, U.S. Geological Survey, MD.
Duncan Menge	Ph.D. 2008	Assistant Professor, Columbia Univ., NY.
Alex Barron	Ph.D. 2007	Deputy Associate Administrator for Office of Policy, Environmental Protection Agency, Washington, DC.
Ben Houlton	Ph.D. 2005	Associate Professor, UCLA Davis, CA.
Joseph von Fischer	Ph.D. 2002	Associate Professor, Colorado State University, CO.
Steven Perakis	Ph.D. 2001	Supervisory Research Ecologist, USGS.
Jennifer Levy	Postdoc 2012-15	Research Scientist, NJ DEP.
Sarah Batterman	Postdoc 2013-15	Assistant Professor, University of Leeds, United Kingdom.
Efrat Sheffer	Postdoc 2013-15	Assistant Professor, The Hebrew University of Jerusalem, Israel.
Cristian Gudasz	Postdoc 2013-15	Postdoctoral Scientist, University of Uppsala, Sweden.
Leigh-Ann Woolley	Postdoc 2011-15	Research Associate, Charles Darwin University, Australia.
Sonja Keel	Postdoc 2010-13	Postdoctoral Research Associate, Univ. of Basel.
Silvia Newell	Postdoc 2009-11	Assistant Professor, Wright State Univ., Ohio.
Stefan Gerber	Postdoc 2007-10	Assistant Professor, Univ. of Florida, FL.
Nina Wurzbarger	Postdoc 2007-10	Assistant Professor, Odum School, Univ. Georgia, GA.
Jack Brookshire	Postdoc 2007-09	Associate Professor, Montana State, MT.
Susana Bernal	Postdoc 2006-09	Research Scientist, Juan de la Cierva, Spain.
Ford Ballantyne	Postdoc 2007-08	Assistant Professor, Univ. of Georgia, GA.
Tanguy Daufresne	Postdoc 2003-05	Faculty, Institute for Agricultural Research, France.
Megan McGroddy	Postdoc 2003-05	Visiting Scientist, University of Virginia, VA.
Melanie Vile	Postdoc 2001-03	Director Grant Development, Villanova Univ., PA.
Elizabeth Boyer	Postdoc 1999-02	Professor, Penn State Univ., PA.
M. Todd Walter	Postdoc 1999-02	Professor and Director of the Weather Resources Institute, Cornell Univ.
Martin Kennedy	Postdoc 1999-01	Professor, Univ. of Adelaide, Australia.

Cecilia Perez      Postdoc 1998-00    Professor, Univ. of Chile.

### Teaching (1990-Present):

*Princeton University:* EEB417 Ecosystems and Global Change (2002-2016); EEB/ENV302, Advanced Analysis of Environmental Systems, (2011-2015); ENV201, Fundamentals of Environmental Studies: Population, Land Use, Biodiversity, and Energy (2002-2010); EEB533 (graduate seminar), Modeling Land Nutrient Cycles (2012); EEB533 (graduate seminar), Nutrient Limitation, (2011); EEB533 (graduate seminar), Nitrogen and Phosphorus in Complex Ecological Systems; EEB504 (graduate seminar), Fundamental Concepts in Ecology and Evolutionary Biology (2009-10 and 2013-14); ENV202, Fundamentals of Environmental Studies: Climate, Air Pollution, Toxics, and Water; EEB Junior Tutorial (ecology section leader); EEB522 Fall semester colloquium (with M. Hau); EEB522 Spring semester colloquium (with M. Hau); ENV/GEO524 Environmental Seminar on “Population and the Environment”; ENV/GEO524 Environmental Seminar on “Media and the Environment”.

*Cornell University:* Ecosystem Biology (BioES 478; 4 credits); Principles of Biogeochemistry (BioES 668; 4 credits); Ecology and the Environment (BioES 261; 4 credits); Special Topics in Evolution and Ecology: Dynamics of Forest Ecosystems (BioES 760; 1 credit); Special Topics in Evolution and Ecology: Workshop in Biogeochemistry (BioES 760; 1 credit).

### Peer-reviewed Publications:

87. Pellegrini, A.F., R.M. Pringle, N. Govender, and **L.O. Hedin**. 2016. Woody plant biomass and carbon exchange depend on elephant-fire interactions across a productivity gradient in African savanna. *Journal of Ecology* **105**(1):111-121. [Editor’s choice award]
86. Pellegrini, A.F., Staver, A.C., **Hedin, L.O.**, Charles-Dominique, T., and Tourgee, A. 2016. Aridity, not fire, favors nitrogen-fixing plants across tropical savanna and forest biomes. *Ecology* **97**(9):2177-2183.
85. Wurzburger, N. and **Hedin, L.O.** 2016 Corrigendum for Wurzburger and Hedin. *Ecology Letters* **19**(5):587-90.
84. Wurzburger, N. and **Hedin, L.O.** 2016. Taxonomic identity determines N<sub>2</sub> fixation by canopy trees across lowland tropical forests. *Ecology Letters* **19**: 62–70.
83. Sheffer, E., Batterman, S.A., Levin, S.A., and **L.O. Hedin**. 2015. Biome-scale nitrogen fixation strategies selected by climatic constraints on nitrogen cycle. *Nature Plants* **1**: Article number: 15182; doi:10.1038/nplants.2015.1. [Covered in *Nature Plants News & Views*].
82. **Hedin, L.O.** 2015. Signs of saturation in the tropical carbon sink. *Nature* **519**: 295-296.
81. Pellegrini, A.F.A., **Hedin, L.O.**, Staver, A.C., and N. Govender. 2015. Fire alters ecosystem carbon and nutrients but not plant nutrient stoichiometry or composition in tropical savanna. *Ecology* **96**(5): 1275-1285.
80. Stackhouse, B.T., Vishnivetskaya, T.A., Layton, A., Chauhan, A., Pfiffner, S., Mykutczuk, N.C., Sanders, R., Whyte, L.G., **Hedin, L.O.**, Saad, N, Myneni, S., and T.C. Onstott. 2015. Effects of simulated spring thaw of permafrost from mineral cryosol on CO<sub>2</sub> emissions and atmospheric CH<sub>4</sub> uptake. *Journal of Geophysical Research* **120**: 1764–1784.

79. Stanton, D.E., Huallpa-Chavez, J., Villegas, L., Villasante, F., Armesto, J., **Hedin, L.O.**, and H. Horn. 2014. Epiphytes improve host plant water use by microenvironment modification. *Functional Ecology* **28**(5): 1274-1283. [Covered in News section of *Science*]
78. Stanton, D.E., Armesto, J.J., and **L.O. Hedin**. 2014. Ecosystem properties self-organize in response to a directional fog-vegetation interaction. *Ecology* **95**(5): 1203-1212.
77. Likens, G.E., and **L.O. Hedin**. 2014. F. Herbert Bormann 1922-2012: A Biographical Memoir. *National Academy of Sciences Biographical Memoir*, 13pp.
76. Batterman, S.A., **Hedin L.O.**, van Breugel, M., Ransijn, J., and J.S. Hall. 2013. Key role of symbiotic dinitrogen fixation in tropical forest secondary succession. *Nature* **502**(7470): 224-7. [Received the 2014 Elizabeth Sulzman Award from the Ecological Society of America; Covered in *Christian Science Monitor*, *the Washington Post*, and elsewhere]
75. Gerber, S., **Hedin, L.O.**, Keel, S.G., Pacala, S.W., and E. Shevliakova. 2013. Land use change and nitrogen feedbacks constrain the trajectory of the land carbon sink. *Geophysical Research Letters* **40**(19): 5218-5222.
74. Batterman, S.A., Wurzburger, N., and **L.O. Hedin**. 2013. Nitrogen and phosphorus interact to control tropical symbiotic N<sub>2</sub> fixation: A test in *Inga punctata*. *Journal of Ecology* **101**(6): 1400-1407.
73. Stanton, D.E., B.S. Negret, J.J Armesto, and **L.O. Hedin**. 2013. Forest patch symmetry depends on direction of limiting resource delivery. *Ecosphere* **4**(5): article UNSP65. <http://dx.doi.org/10.1890/ES13-00064.1>
72. **Hedin, L.O.** 2012. Retrospective: F. Herbert Bormann (1922-2012). *Science* **337**: 534-534.
71. Menge, D.N.L., **Hedin, L.O.**, and S.W. Pacala. 2012. Nitrogen and phosphorus limitation over long-term ecosystem development in terrestrial ecosystems. *PLoS ONE* **7**(8): e42045. [Received the 2013 Best Paper in Theoretical Ecology Award, Ecological Society of America]
70. Wurzburger, N., Bellenger, J.P, Kraepiel, A.M.L., and **L.O. Hedin**. 2012. Molybdenum and phosphorus interact to constrain asymbiotic nitrogen fixation in tropical forests. *PLoS ONE* **7**(3): e33710.
69. Brookshire, E.N.J., **Hedin, L.O.**, Newbold, J.D., Sigman, D.M., and J.K Jackson. 2012. Sustained losses of bioavailable nitrogen from montane tropical forests. *Nature Geoscience* **5**: 123-126.
68. Bernal, S., **Hedin, L.O.**, Likens, G.E., Gerber, S., and D.C. Buso. 2012. Complex response of the forest nitrogen cycle to climate change. *Proceedings of the National Academy of Sciences*: **109** (9): 3406-11. [Highly recommended in *Faculty of 1000*; Covered in *Time Magazine* and elsewhere.]
67. Brookshire, E.N.J., Gerber, S., Menge, D.N.L., and **L.O. Hedin**. 2011. Large losses of inorganic nitrogen from tropical rainforests suggest a lack of nitrogen limitation. *Ecology Letters* **15**(1): 9-16.

66. Wright, S.J., Yavitt., J.B., Wurzbürger, N., Turner, B.L., Tanner, E.V.J., Sayer, E.J., Santiago, L.W., Kaspari, M., **Hedin, L.O.**, Harms, K.E., Garcia, M.N., and M.D. Corre. 2011. Potassium, phosphorus or nitrogen limit root allocation, tree growth and litter production in a lowland tropical forest. *Ecology* **92**: 1616-25.
65. Barron, A.R., Purves, D.W., and **L.O. Hedin**. 2011. Facultative nitrogen fixation by canopy legumes in a lowland tropical forest. *Oecologia*, **165**: 511-520.
64. Gerber, S., **Hedin, L.O.**, Oppenheimer, M., Pacala, S.W., and E. Shevliakova. 2010. Nitrogen cycling and feedbacks in a global dynamic land model. *Global Biogeochemical Cycles* **24**: GB1001.
63. Reich, P.B., Oleksyn, J., Wright, I.J., Niklas, K.J., **Hedin, L.O.**, and J.J. Elser. 2010. Evidence of a general 2/3-power leaf nitrogen to phosphorus scaling among major plant groups and biomes. *Proceedings of the Royal Society B*. **277**: 877-883.
62. **Hedin, L.O.**, Brookshire, E.N.J., Menge, D.N.L., and A.R. Barron. 2009. The nitrogen paradox in tropical forest ecosystems. *Annual Review of Ecology, Evolution and Systematics* **40**: 613-35.
61. Menge, D.N.L., Levin, S.A., and **L.O. Hedin**. 2009. Facultative versus obligate nitrogen fixation strategies and their ecosystem consequences. *American Naturalist* **174**: 465-477.
60. Menge, D.N.L., and **L.O. Hedin**. 2009. Nitrogen fixation in different biogeochemical niches along a 120,000-year chronosequence in New Zealand, *Ecology* **90**(8): 2190-2201.
59. Menge, D.N.L., Pacala, S.W., and **L.O. Hedin**. 2009. Emergence and maintenance of nutrient limitation over multiple timescales in terrestrial ecosystems. *American Naturalist* **173**(2): 164-175.
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#### **Meeting Abstracts (2000 – Present):**

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- Pellegrini, A.F.A., Pringle, R.M., **L.O. Hedin**, and N. Govender. 2015. Long-term interactive effects of elephants, fire, and rainfall determine woody plant biomass and carbon storage in African savanna. Abstract for 2015 Ecological Society of America, Baltimore, MD.
- Trierweiler, A., Quesada, C.A., Lloyd, J., and **L.O. Hedin**. 2015. Biogeochemical controls of Mo and P availability for N<sub>2</sub>-fixing trees across the Amazon Basin. Abstract for 2015 Ecological Society of America, Baltimore, MD.
- Chou, C., **Hedin, L.O.**, and S.W. Pacala. 2015. Individual- and ecosystem-level consequences of competition on tropical forest nutrient cycling. Abstract for 2015 Ecological Society of America, Baltimore, MD.
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- Levy, J. and **L.O. Hedin**. 2014. Tropical forest carbon sink depends on tree functional diversity and competition. Abstract for 2014 meeting of American Geophysical Union, San Francisco, CA.
- Sheffer, E., Batterman, S.A., **Hedin, L.O.** and S. Levin. 2013. The role of life-history and regeneration strategies in the emergence, distribution and timing of nitrogen fixation in tropical vs. temperate forests. Abstract for 2013 meeting of Ecological Society of America, Minneapolis, MN.
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- Medvigy, D., Levy, J., Xu, X., Batterman, S.A. and **L.O. Hedin**. 2013. Novel approaches for considering future vegetation distributions. Abstract for 2013 meeting of American Geophysical Union, San Francisco, CA.
- Levy, J., Medvigy, D., **Hedin, L.O.**, Batterman, S.A. and X. Xu. 2013. Constraining terrestrial ecosystem carbon uptake and storage using models and data. Abstract for 2013 meeting of American Geophysical Union, San Francisco, CA.
- Trierweiler, A., Winter, K., Wright, S. J., Wurzbürger, N. and **L.O. Hedin**. 2013. Will rising CO<sub>2</sub> influence how nutrients interact to control tropical N<sub>2</sub>-fixation? Abstract for 2013 American Geophysical Union, San Francisco, CA.
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- Hedin, L.O.**, McGroddy, M.E., Houlton, B., Moran, E. and M. Battisella. Hydrologic losses from tropical forest soils—patterns and implications. LBA 3rd Scientific Congress. Brasilia, Brazil July 2004.
- Valdivia, M.V., Walter, M.T., Salmon, C.D., **Hedin, L.O.** and M.F. Walter. 2004. Hydrochemical modeling of dissolved organic carbon in a small, undisturbed forested watershed in southern Chile. Abstract for the 2004 meeting of the American Geophysical Union, San Francisco, CA.
- McGroddy, M.E., **Hedin, L.O.**, Moran, E. and M. Batistella. 2003. Regional patterns in inorganic nutrient losses across the central Amazon Basin: preliminary results. Abstract for a poster presentation at the 6th Annual LBA Business Meeting, Fortaleza CE, Brazil.
- Levin, L., Pacala, S.W., Rodriguez-Iturbe, I., Morel, F., **Hedin, L.O.**, Sigman, D., Daufresne, T., Loladze, I., McGroddy, M.E. and R. Robinson-Graham. 2003. Biocomplexity: The emergence of ecosystem patterns. Abstract for the National Science Foundation: Biocomplexity in the Environment Awardees Meeting, Washington DC.

- McGroddy, M.E., **Hedin, L.O.** and T. Daufresne. 2003. Scaling of C:N:P: ratios in forest ecosystems world-wide. Abstract for the 2003 meeting of the Ecological Society of America, Savannah, GA.
- Hedin, L.O.** 2003. Global signatures in plant-nutrient interaction: Implications for terrestrial ecosystems. Abstract for the 2003 meeting of the Ecological Society of America, Savannah, GA.
- Houlton, B.Z., Sigman, D.M. and **L.O. Hedin**. 2003. Stable isotope constraints on internal nitrogen cycles, input-output balances and N fertility of forests. Abstract for the 2003 meeting of the Ecological Society of America, Savannah, GA.
- Vile, M.A., Matson, P.A. and **L.O. Hedin**. 2003. Thermodynamic controls on soil trace gas (CH<sub>4</sub>, CO<sub>2</sub>, N<sub>2</sub>O) fluxes from the Maui rainfall gradient. Abstract for the 2003 meeting of the Ecological Society of America, Savannah, Georgia.
- Hedin, L.O.**, Levin, S.A. and L. Buttel. 2002. Magnification of ecosystem function by Darwinian selection on organism-nutrient interactions. Abstract for the 2002 meeting of the Ecological Society of America, Tucson, AZ.
- Daufresne, T. and **L.O. Hedin**. 2002. Competition theory modified by stoichiometric ecosystem properties. Abstract for the 2002 meeting of the Ecological Society of America, Tucson, AZ.
- von Fischer, J. and **L.O. Hedin**. 2002. Do soil microsites drive methane flux? Abstract for the 2002 meeting of the Ecological Society of America, Tucson, AZ.
- Hedin, L.O.**, Walter, M.T., Weathers, K., Keene, B., and M. Brown. 2002. Watershed-based separation of Atmospheric input vectors from a remote old-growth forest in Chile. Abstract for 2002 meeting of the American Geophysical Union, San Francisco, CA.
- Hedin, L.O.** 2001. Thermodynamics of ecological systems. Invited abstract for Gordon Conference on Modern Developments in Thermodynamics, Ventura, CA.
- Perakis, S.S., Compton, J. and **L.O. Hedin**. 2001. Non-linear nitrogen retention in an unpolluted old-growth temperate forest receiving a geometric range of experimental <sup>15</sup>N additions. Abstract for the 2001 meeting of the Ecological Society of America, Madison, WI.
- Vitousek, P.M., Chadwick, O., Crews, T., Heath, J., **Hedin, L.O.**, Kurtz, A. and P.A. Matson. 2001. Element inputs and outputs across a substrate age gradient in the Hawaiian Islands. Abstract for the 2001 meeting of the Ecological Society of America, Madison, WI.
- Hedin, L.O.**, Vitousek, P.M., Matson, P.A., Buttel, L., Levin, S.A., Pacala, S.W. and R. Durrett. 2001. Stoichiometric equilibration of N and P losses over four million years of tropical forest development. Abstract for the 2001 meeting of the Ecological Society of America, Madison, WI.
- von Fischer, J.C., and **L.O. Hedin**. 2001. Do anaerobic microsites control soil methane flux? Abstract for the 2001 meeting of the American Geophysical Union, San Francisco, CA.
- Walter, M.T., Salmon, C.D., **Hedin, L.O.** and M.G. Brown. 2001. Hydrologic controls of chemical export from an undisturbed old-growth Chilean forest. Abstract for the 2001 meeting of the American Geophysical Union, San Francisco, CA.

**Hedin, L.O.** 2000. The terrestrial nitrogen cycle: Nature of feedbacks and the emergence of macroscopic patterns. Invited abstract for Chapman Conference on the Gaia Hypothesis, University of Valencia, Spain.

Perakis, S.S., and **L.O. Hedin**. 2000. The regulation of nitrate loss from unpolluted, old-growth temperate forests: Region-wide patterns from southern Chile. Abstract for the 2000 meeting of the Ecological Society of America, Snowbird, UT.

**Hedin, L.O.**, Armesto, J.J., Perez, C.A. and S.S. Perakis. 2000. Why does biodiversity not affect nitrogen losses from two unpolluted old-growth forest ecosystems? Abstract for the 2000 meeting of the Ecological Society of America, Snowbird, UT.

von Fischer, J.C., and **L.O. Hedin**. 2000. Application of a new methane pool dilution technique for measuring gross rates of methane production and consumption along rainfall gradients in the Hawaiian Islands. Abstract for the 200 meeting of the American Geophysical Society, San Francisco, CA.

Weathers, K.C., Keene, W.C., Moody, J., Lovett, G.M., Likens, G.E., Caraco, N.F., Galloway, J.N., **Hedin, L.O.** and J.J. Armesto. 2000. Atmospheric flux of organic and inorganic nitrogen to a remote, coastal forest in southern Chile. Abstract for the 2000 meeting of the American Geophysical Society, San Francisco, CA.

#### **Grants and External Funding (1990-Present):**

2016-18 National Oceanic and Atmospheric Administration: “The Land Phosphorus Cycle: Interactions with Carbon and Nitrogen Across Neotropical Ecosystems” (Hedin PI, \$200,000, 2 years).

2013-17 University of Georgia: “Controls Regulating Biological Nitrogen Fixation in Longleaf Pine Ecosystems: The Role of Fire and Military Training” (Hedin, PI, \$88,088, 4 years).

2012-15 The Andrew W. Mellon Foundation: “Interactions of Nutrients, Rainfall and Grazing in Savanna Ecosystems: A Large-scale Experiment in Kruger National Park.” (Hedin, PI, \$250,000, 4 years).

2011-14 USDA-NiFA: “Understanding Coupling Between Biogeochemical Cycling and Climate Change in Northern Ecosystems: Historical Analysis and Future Projections with the GFDL Earth System Model.” (Hedin, PI, \$900,000, 3 years).

2011-13 Carbon Mitigation Initiative, Princeton Environmental Institute: “Coordinated Biological, Chemical, and Atmospheric Investigations of the Amazon as a Carbon Sink” (Hedin co-PI; \$200,000, 2 years).

2010-12 Grand Challenges Program, Princeton University: “Climate and Tropical Ecosystems: Bridging Molecular Biology and Functional Biogeochemistry” (Hedin PI; \$200,000, 2 years).

2009-11 National Science Foundation (DEB-0989984): “Morphology and plant-soil feedbacks in foggy environments” (Hedin PI, \$14,124)

2008-11 The A.W. Mellon Foundation: “Interactions of Nutrients, Rainfall and Grazing in Savanna Ecosystems: a large-scale experiment in Kruger National Park”. (Hedin PI, \$285,741).

- 2008-11 National Oceanic and Atmospheric Administration: “Improving climate predictions by reducing uncertainties in CO<sub>2</sub> fertilization of the terrestrial biosphere”. (Hedin PI, \$413,833).
- 2008-11 National Oceanic and Atmospheric Administration: “Modeling Nutrient Controls in the Terrestrial Biosphere”. (Hedin PI, \$213,000).
- 2006-10 National Science Foundation (DEB-0614116): “Biogeochemical Controls on Nitrogen Fixation in a Diverse Tropical Forest” (Hedin PI, \$445,000, 3 years).
- 2006-09 National Science Foundation (DEB-0608267) Linking Theory and Mechanistic Experiments in Explaining How Nitrogen Fixation Strategies Influence Ecosystem Nitrogen Fertility (Hedin PI, \$11,990)
- 2006-08 The A. W. Mellon Foundation: “Influence of Invasive Acacias on Nitrogen and Molybdenum Cycling in the South African Fynbos” (Hedin PI, \$15,859, 2 years).
- 2006-08 National Science Foundation (DEB-0608267): “Linking Theory and Mechanistic Experiments in Explaining How Nitrogen Fixation Strategies Influence Ecosystem Nitrogen Fertility” (Hedin PI with S.A. Levin, \$11,990, 2 years).
- 2004-07 Princeton University Sophomore Initiative Grant: “Developing a Novel Living Laboratory Teaching Model” (Hedin PI with E. Zerba, \$ 105,945, 4 years).
- 2003-09 National Oceanic & Atmospheric Administration: “Modeling Terrestrial Nutrient Cycling.” (Hedin, PI, \$307,310).
- 2003-06 National Aeronautics and Space Administration: “Implications of Nitrogen and Phosphorus Losses Across Broad Geographic Variations in Ecosystem State Factors.” (Hedin PI, \$50,000, 2 years).
- 2001-02 National Science Foundation (EAR-0129162): “Workshop on Linking Ecological Biology and Geosciences.” (Hedin PI, \$83,081, 1 year).
- 2001-04 Environmental Protection Agency Star Graduate Fellowship (EPA graduate fellowship grant U-91595601-3, \$68,000, 3 years).
- 2001-13 BP International: “Coordinated Biological, Chemical, and Atmospheric Investigations of the Amazon as Carbon Sink.” (Hedin, PI, \$100,000)
- 2000-06 National Science Foundation (DEB-0083566): “Biocomplexity: The Emergence of Ecosystem Pattern” (Hedin Co-PI with S.A. Levin and others at Cornell, MIT, and University of Washington, \$2,999,766, 5 years).
- 2000-05 The A.W. Mellon Foundation: “Thermodynamic Controls on Nitrogen Cycling and Trace Gas Emissions from Tropical Soils” (Hedin PI, \$462,000, 3 years; additional support through a separate award to Pamela Matson at Stanford).
- 1999-02 National Aeronautics and Space Administration (NASA NGT5-30210): “Have We Grossly Underestimated Methane Production and Consumption? Application of A New Stable Isotope Technique to Measure Methane” (with Joseph von Fischer, \$66,000, 3 years).
- 1996-01 National Science Foundation (BIR-9602261): “Research Training in Biogeochemistry and Environmental Change” (with R.W. Howarth [PI], \$1,667,728; 5 years).

- 1996-00 The A.W. Mellon Foundation: “Biogeochemistry of Undisturbed Forest Ecosystems: Controls on Ecosystem-level Function” (Hedin PI, \$361,000, 4 years).
- 1996-00 National Science Foundation (DEB-9630531): “Mechanisms of Base Cation Cycling in Forest Biogeochemical Systems: Application of a New Tool” (Hedin PI, with L.A. Derry [Co-PI], \$255,000, 4 years).
- 1996-99 National Aeronautics and Space Administration (NASA ESF/96-0091): “The Internal Nitrogen Cycle of Temperate Forests: Patterns and Mechanisms in the Absence of Human Disturbance” (with Steven S. Perakis, \$66,000, 3 years).
- 1996-99 National Science Foundation (BIR-9512240): “Acquisition of Mass Spectrometers for the Cornell Laboratory for Natural Abundance Isotope Analysis” (Hedin Co-PI, with R.W. Howarth [PI], T.E. Dawson, and J.T. Brenna, \$1,064,170, 3 years).
- 1996-99 The A.W. Mellon Foundation: “Cornell Laboratory for Isotope Analyses” (Hedin Co-PI, with T.E. Dawson and R.W. Howarth, \$700,000, 5 years).
- 1996-99 The A.W. Mellon Foundation: “Pathways, Mechanisms and Implications of Nutrient Loss During Development of Unpolluted Tropical Montane Rain Forests in Hawaii” (Hedin PI, \$141,000, 3 years; additional support by separate awards to Peter Vitousek and Pamela Matson at Stanford).
- 1993-96 The A.W. Mellon Foundation: “Nutrient Cycles in Undisturbed Temperate Forest Ecosystems” (Hedin PI, \$323,563, 3 years).
- 1993-98 National Science Foundation, LTER: “Organisms in the Agricultural Landscape” (Hedin Co-investigator with G.P. Robertson [PI] and others). Funds supported soil-chemistry sampling at the Kellogg Biological Station LTER site.
- 1992-95 USDA Competitive Grants Program (USDA NRICGP 92-37102-74): “Speciation of Soil Solution Nitrogen Losses from Agricultural and Forested Landscapes” (Hedin PI, with G.P. Robertson [Co-PI], \$174,010, 3 years).
- 1992-95 National Science Foundation (DEB92-08394): “Soil-stream Interfaces as Control Points for Speciation and Transformations of Nitrogen in a Heterogeneous Landscape” (Hedin PI, with N. Ostrom and G.P. Robertson [Co-PI's], \$98,179, 3 years).
- 1992-94 Department of Energy: “Trace Gas Fluxes in the U.S. Midwest: Temporal Dynamics and Biospheric Feedbacks in Agricultural Ecosystems” (Hedin one of 2 Co-PI's, with G.P. Robertson [PI], \$120,000, 2 years).
- 1991-96 National Science Foundation (DIR-9113598): “Research-based Training Group: Linking Levels of Ecological Organization” (Hedin one of 5 Co-PI's, with G.G. Mittelbach [PI], \$1,513,000, 5 years).
- 1991-94 The A.W. Mellon Foundation: “Linking Streams and Watersheds: Comparative Studies of Nitrogen Dynamics” (Hedin PI, \$120,000, 3 years).
- 1991-92 The Upjohn Company: “Remediation Properties of the Upjohn Groundwater Recharge Pond” (Hedin one of 9 Co-PI's, with M. Klug [PI], \$35,385 awarded to Hedin, 1 year).