Curriculum Vitae

(Revised February 2023)

Cory C. Cleveland, Ph.D.

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Professional Preparation

B.A.	University of Colorado, Geography (Environmental Conservation)	1992
M.S.	Cornell University, Natural Resources (Forest Science)	1997
Ph.D.	University of Colorado, Environmental, Population, and Organismic Biology	2001

Professional Experience

2023 – present	**Interim Chair** University of Montana, Department of Ecosystem & Conservation Sciences
2016 – present	**Professor** University of Montana, Department of Ecosystem & Conservation Sciences
2016 – 2019	**Chair** University of Montana, Department of Ecosystem & Conservation Sciences
2013 – present	**Affiliate Faculty** University of Montana, Montana Institute on Ecosystems (IoE)
2012 – 2015	**Associate Professor** University of Montana, Department of Ecosystem & Conservation Sciences
2007 – 2012	**Assistant Professor** University of Montana, Department of Ecosystem & Conservation Sciences
2011 – present	**Charter Faculty Member,** Systems Ecology Graduate Degree Program, University of Montana
2005 – 2007	**Research Affiliate of INSTAAR** University of Colorado, Institute of Arctic & Alpine Research
2005 – 2007	**Research Scientist of INSTAAR** University of Colorado, Institute of Arctic & Alpine Research
2001 – 2005	**Postdoctoral Research Associate** University of Colorado, Institute of Arctic & Alpine Research
1997 – 2001	**Graduate Research Assistant** University of Colorado, Department of Ecology & Evolutionary Biology
1996 – 1997	**Research Associate** Cornell University, Department of Natural Resources

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1995 – 1996	**Graduate Teaching Assistant** Cornell University, Department of Natural Resources
1991 – 1994	**Research Assistant** National Center for Atmospheric Research, Boulder, CO

Professional Awards, Honors, and Distinctions

UM Regents Professor Nomination (2019)
UM Faculty Merit Awards (2009, 2011, 2013, 2014, 2019)
UM Davidson Honors College Special Recognition (2019)
College of Forestry and Conservation Wambach Faculty Service Award (2012, 2019)
Fellow of the Ecological Society of America (2018 - present)
Clarivate Analytics/ISI Highly Cited Researcher (2018)
Faculty of 1000 Faculty of the Month (2019)
Faculty of 1000 (2019 – 2021)
College of Forestry & Conservation Faculty Research Award (2014)
Andrew W. Mellon Foundation Early Career Fellowship ($340,000)
NSF Doctoral Dissertation Improvement Grant (DDIG) ($8,800)
Ecology and Evolutionary Biology Graduate Fellowship, University of Colorado ($10,000)
Ecology & Evolutionary Biology Departmental Research Grant, University of Colorado ($2,500)
Jenny Kate Collins Fellowship, University of Colorado ($500)
Sussman Environmental Fellowship, University of Colorado ($3,000)
NSF Biosphere-Atmosphere Interactions Fellowship, University of Colorado ($60,000)
Andrew W. Mellon Graduate Research Fellowship, Cornell University ($5,000)
Kieckhefer Adirondack Research Fellowship, Cornell University ($2,500)

Research Productivity and Experience

Google Scholar Profile: https://scholar.google.com/citations?user=P6B_FaQAAAAJ&hl=en

Peer-reviewed, published articles: 107; h-index: 67; i10 index: 103; Total citations: 27,043 (2/28/23)

Research Gate Profile: https://www.researchgate.net/profile/Cory_Cleveland

Manuscripts submitted or in preparation

111. Heumann, R.E., Turner, M.G., Cleveland, C.C. Climate controls on cryptic N fixation in postfire lodgepole pine ecosystems in the Greater Yellowstone Ecosystem (in preparation)

110. Reis, C.R.G., Perakis, S.P., Cleveland, C.C. et al. New global estimates of terrestrial nitrogen fixation and its modification by agriculture (In preparation).

109. Turner, M.G., Kiel, N.G., Warren, J.A., Heumann, R.E., Cleveland, C.C. Reburning before recovery: Effects of short-interval fire on subalpine forest nitrogen stocks (in preparation).

108. Hauser, E., Wieder, W., Bonan, G., **Cleveland, C.** 2023. Flexible foliar stoichiometry reduces the magnitude of the land C sink. *Nature Geoscience* (submitted).

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Peer-reviewed publications

2022

107. **Cleveland, C.C.,** K.A. Dynarski, S.A. Batterman, T.E. Crews, M. Gei, M.J. Gundale, D.N.L. Menge, M.B. Peoples, S.C. Reed, C.R.G. Reis, V.G. Salmon, F.M. Soper, B.N. Taylor, M.G. Turner, N. Wurzburger, S.S. Perakis. 2022. Cryptic nitrogen fixers: An important frontier in terrestrial N cycling research. Ecosystems https://doi.org/10.1007/s10021-022-00804-2.

106. Dynarski, K.A., Soper, F.M., Reed, S.C., Wieder, W.W., **Cleveland C.C.** 2022. Patterns and controls of foliar nutrient stoichiometry and flexibility across United States forests. Ecology doi:10.1002/ecy/3909.

105. Sheng, M., Rosche, C., Al-Gharaibeh, M., Bullington, L.S., Callaway, R.M., Clark, T., **Cleveland, C.C.,** Dunan, W., Flory, S.L., Khasa, D.P., McLeod, M., Okada, M., Pal, R.W., Shah, M.A., Lekberg, Y. 2022. Acquisition and evolution of enhanced mutualism promotes invasive plant performance. *ISME J* 16: 2467–2478 https://doi.org/10.1038/s41396-022-01293-w

2021

104. Osborne, B. B., F. M. Soper, M. K. Nasto, D. Bru, S. Hwang, M. B. Machmuller, L. Philippot, B. W. Sullivan, G. P. Asner**, C. C. Cleveland,** A. R. Townsend, S. Porder. 2021. Litter inputs drive patterns of soil nitrogen heterogeneity in a diverse tropical forest: Results from a litter manipulation experiment. Soil Biology & Biochemistry https://doi.org/10.1016/j.soilbio.2021.108247.

103. Luce McLeod, M., Bullington, L., **Cleveland, C.,** Rousk, J., and Lekberg, Y. 2021. Invasive plant-derived dissolved organic matter alters microbial communities and carbon cycling in soils. Soil Biology and Biochemistry https://doi.org/10.1016/j.soilbio.2021.108191.

2020

102. Soper, F.M., B.N. Taylor, J.B. Winbourne, M.Y. Yong, K.A. Dynarski, C.R.G. Reis, M. Peoples, **C.C. Cleveland,** S.C. Reed, D.N.L. Menge, S.S. Perakis. 2020. A roadmap for sampling and scaling nitrogen fixation in terrestrial ecosystems. Methods in Ecology and Evolution DOI: 10.1111/2041-210X.13586.

101. Shaw, A.N., and **Cleveland, C.C.** 2020. The effects of temperature on soil phosphorus availability: a cross-ecosystem study from the tropics to the Arctic. *Biogeochemistry* doi.org/10.1007/s10533-020-00710-6.

100. Osborne, B.B., M. K. Nasto, F.M. Soper, G.P. Asner, C.S. Balzotti, **C.C. Cleveland,** P.G. Taylor, A.R. Townsend, and S. Porder. 2020. Leaf litter inputs reinforce islands of nitrogen fertility in a lowland tropical forest. *Biogeochemistry* doi.org/10.1007/s10533-020-00643-0.

2019

99. Sullivan, B.W., R.L. Nifong, M.K. Nasto, S. Alvarez-Clare, C. Dencker, F.M. Soper, K.T. Shoemaker, F. Yoko Yashida, J. Zaragoza-Castells, E.A. Davidson, **C.C. Cleveland.** 2019. Biogeochemical recuperation in lowland tropical forest during succession. *Ecology* doi.org/10.1002/ecy.2641.

98. Gao, S., T.H. DeLuca, **C.C. Cleveland.** 2019. Biochar additions alter phosphorus and nitrogen availability in agricultural ecosystems: A meta-analysis. *Science of the Total Environment* 654: 463-472.

97. Nasto, M.K. K. Winter, B.L. Turner, **C.C. Cleveland.** 2019. Nutrient acquisition strategies augment growth in tropical N2 fixing trees in nutrient poor soil and under elevated CO_2. *Ecology* doi.org/10.1002/ecy.2646.

96. Taylor, P.G., **C.C. Cleveland,** F.M. Soper, W.R. Wieder, S.Z. Dobrowski, C.E. Doughty, A.R. Townsend. 2019. Greater stem growth, woody allocation, and aboveground biomass in Paleotropical forests than in Neotropical forests. *Ecology* doi.org/10.1002/ecy.2589.

95. Soper, F.M., B.W. Sullivan, B.B. Osborne, A.N. Shaw, L. Philippot, **C. Cleveland.** 2019. Leaf-cutter ants engineer large N_2O hot spots in tropical forests. *Proceedings of the Royal Society of London - B Biology* doi.org/10.1098/rspb.2018.2504.

2018

94. Soper, F., B. Sullivan, M. Nasto, B. Osborne, D. Bru, C. Balzotti, P. Taylor, G. Asner, A. Townsend, L. Philippot, S. Porder, and **C. Cleveland.** 2018. Remotely-sensed canopy nitrogen correlates with nitrous oxide emissions in a lowland tropical rainforest. *Ecology https://doi.org/10.1002/ecy.2434.*

93. Soper, F.M., M.K. Nasto, B.B. Osborne, **C.C. Cleveland**. 2018. Nitrogen fixation and foliar nitrogen do not predict phosphorus acquisition strategies in tropical trees. *Journal of Ecology* doi.org/10.1111/1365-2745.13044.

92. Darcy, J.L., S.K. Schmidt, J.E. Knelman, **C.C. Cleveland,** *S.C. Castle, D.R. Nemergut. 2018. Phosphorus, not nitrogen, limits plants and microbial primary producers following glacial retreat. *Science Advances* DOI: 10.1126/sciadv.aaq0942.

2017

91. Castle, S.C., B.W. Sullivan, J. Knelman, E. Hood, D.R. Nemergut, S.K. Schmidt, **C.C. Cleveland.** 2017. Nutrient limitation of soil microbial activity during the earliest stages of ecosystem development. *Oecologia* DOI 10.1007/s00442-017-3965-6.

90. Soper, F.M., P.G. Taylor, W.R. Wieder, S.R. Weintraub, **C.C. Cleveland,** S. Porder, A.R. Townsend. 2017. Low rates of gaseous nitrogen loss point to conservative nitrogen cycling in a lowland tropical forest watershed. *Ecosystems* DOI: 10.1007/s10021-017-0193-1.

89. Taylor, P.G., **C.C. Cleveland,** W.R. Wieder, B.W. Sullivan, C.E. Doughty, A.R. Townsend. 2017. Temperature and rainfall interact to control carbon cycling in tropical forests. *Ecology Letters* doi: 10.1111/ele.12765.

88. Nasto, M.K., B.B. Osborne, Y. Lekberg, G.P. Asner, C.S. Balzotti, S. Porder, P.G. Taylor, A.R. Townsend and **C.C. Cleveland**. 2017. Nutrient acquisition, soil phosphorus partitioning, and competition among trees in a lowland tropical forest. *New Phytologist* DOI:10.1111/nph.14494.

87. Osborne, B, M. Nasto, G. Asner, C. Balzotti, **C. Cleveland,** B. Sullivan, P. Taylor, A. Townsend, S. Porder. 2017. Climate, topography and organisms are hierarchical controls of soil N cycling in a Neotropical lowland forest. *Ecosystems* DOI: 10.1007/s10021-016-0095-7.

2016

86. Balzotti, C., G.P. Asner, P.G. Taylor, **C.C. Cleveland,** R. Cole, R. Martin, M. Nasto, B.B. Osborne, S. Porder, A.R. Townsend. 2016. Environmental Controls on Canopy Foliar N Distribution in a Neotropical Lowland Forest. *Ecological Applications* DOI: 10.1002/eap.1408.

85. Castle, S.C., Y, Lekberg, D. Affleck, **C. Cleveland.** 2016. Abiotic and biotic controls on plant performance in early ecosystem succession. *Journal of Ecology*, doi: 10.1111/1365-2745.12615.

84. Castle, S.C., D.R. Nemergut, A.S. Grandy, J.W. Leff, E.B. Graham, E. Hood, S.K. Schmidt, K. Wickings, **C.C. Cleveland.** 2016. Plant colonization drives convergence of soil microbial communities. *Soil Biology and Biochemistry*, doi:10.1016/j.soilbio.2016.07.010.

83. Balzotti, C., G. Asner, P. Taylor, R. Cole, B. Osborne, **C. Cleveland,** S. Porder, A. Townsend. 2016. Topographic distributions of emergent trees in tropical forests of the Osa Peninsula, Costa Rica. *Ecography,* doi: 10.1111/ecog.02062.

82. McLeod, M., **C. Cleveland,** Y. Lekberg, J.L. Maron, L. Philippot, D. Bru, R.M. Callaway. 2016. Exotic invasive plants increase productivity, abundance of ammonia-oxidizing bacteria, and nitrogen availability in intermountain grasslands. *Journal of Ecology* doi: 10.1111/1365-2745.12584.

81. Murphy, D., C. Wyborn, L. Yung, D.R. Williams, **C. Cleveland,** L. Eby, S. Dobrowski, E. Towler. 2016. Engaging Communities and Climate Futures with Multi-Scale, Iterative Scenario Building (MISB) in the Western U.S. *Human Org* 75: 33-46.

80. Ganzlin, P., M. Gundale, R. Becknell and **C. Cleveland.** 2016. Forest restoration treatments have subtle long-term impacts on soil C and N cycling in Rocky Mountain conifer forests. *Ecological Applications* doi: 10.1002/15-1100.

2015

79. Smith, W.K., S.C. Reed, **C.C. Cleveland,** A.P. Ballantyne, W.R. Anderegg, W.R. Wieder, Y.Y. Liu, S.W. Running. 2015. Large divergence of satellite and Earth system model estimates of global terrestrial CO_2 fertilization. *Nature Climate Change* DOI: 10.1038/NCLIMATE2879.

78. Wieder, W.R., **C.C. Cleveland,** W. Kolby Smith, K. Todd-Brown. 2015. Reply to 'Land unlikely to become a large carbon source.' *Nature Geoscience* 8: 893-894.

77. Weintraub, S.R., P.G. Taylor, S. Porder, **C.C. Cleveland,** G.P. Asner, A.R. Townsend. 2015. Topographic controls on soil nitrogen availability in a lowland tropical forest. *Ecology* 96: 1561-1574.

76. Wieder, W.R., **C.C. Cleveland,** D.M. Lawrence, G.B. Bonan. 2015. Structural uncertainty related to biological nitrogen fixation increases terrestrial carbon cycle uncertainty. *Environmental Research Letters*, doi:10.1088/1748-9326/10/4/044016.

75. **Cleveland, C.C.,** P. Taylor, K.D. Chadwick, K. Dahlin, C.E. Doughty, Y. Malhi, W.K. Smith, B.W. Sullivan, W.R. Wieder, A.R. Townsend. 2015. A comparison of plot-based, satellite and Earth system model estimates of tropical NPP. Global Biogeochemical Cycles 29, doi:10.1002/2014GB005022.

74. Wieder, W.R., **C.C. Cleveland,** W. Kolby Smith, K. Todd-Brown. 2015. Nutrient availability strongly constrains future terrestrial productivity and carbon storage. *Nature Geoscience* DOI: 10.1038/NGEO2413.

73. Taylor, P.G., W.R. Wieder, S. Weintraub, S. Cohen, **C.C. Cleveland,** A.R. Townsend. 2015. Organic forms dominate hydrologic nitrogen losses from a lowland tropical watershed. *Ecology* 96(5), 2015, pp. 1229–1241.

2014

72. Knelman, J.E., S.K. Schmidt, H.J. Lynch, J.L. Darcy, S.C. Castle, **C.C. Cleveland,** D.R. Nemergut. 2014. Nutrient addition dramatically accelerates microbial community succession. *PLoS ONE* 9(7): e102609. doi:10.1371/journal.pone. 0102609).

71. Nasto, M.K., S. Alvarez-Clare, Y. Lekberg, B.W. Sullivan, A.R. Townsend, **C.C. Cleveland.** 2014. Interactions among nitrogen fixation and soil phosphorus acquisition strategies in lowland tropical rain forests. *Ecology Letters* doi: 10.1111/ele.12335.

70. Sullivan, B.W., W.K. Smith, A.R. Townsend, M.K. Nasto, S.C. Reed, R.L. Chazdon, **C.C. Cleveland.** 2014. A novel approach to quantify biological (N) fixation implies substantial human alteration of the tropical N cycle. *Proceedings of the National Academy of Science of the* USA doi/10.1073/pnas.1320646111.

69. Bowman, W.D., L. Halada, J. Hreško, **C.C. Cleveland,** J.S. Baron, J. Murgel. 2014. *How much is too much? Nitrogen critical loads and eutrophication and acidification in oligotrophic ecosystems*. In: M.A. Sutton, K.E. Mason, L.J. Sheppard, H. Sverdrup, R. Haeuber and W.K. Hicks (Eds). Nitrogen Deposition, Critical Loads and Biodiversity. Springer Dordrecht.

68. Sullivan, B.W., S.C. Castle, S.A. Alvarez Clare, S. Porder, S.C. Reed, L. Schreeg, A.R. Townsend, **C.C. Cleveland.** 2014. Assessing nutrient limitation in complex forested ecosystems: alternatives to large-scale fertilization experiments. *Ecology* 95: 668-681.

67. Taylor, P.,T. Bilinski, H. Fancher, **C. Cleveland,** D. Nemergut, S. Weintraub, W. Wieder, A. Townsend. 2014. Palm oil wastewater methane emissions and bioenergy potential. *Nature Climate Change* 4: 151-152.

66. Graham, E.B., W.R. Wieder, J.W. Leff, S.R. Weintraub, A.R. Townsend, **C.C. Cleveland,** L. Philippot, D.R. Nemergut. 2014. Do we need to understand microbial communities to predict ecosystem function? A comparison of statistical models of nitrogen cycling processes. *Soil Biology and Biochemistry* 68: 279-282.

2013

65. Smith, W.K., **C.C. Cleveland,** S.C. Reed, S.W. Running.2013. Agricultural conversion without external water and nutrient inputs reduces biospheric vegetation productivity. *Geophys. Res. Lett*. 41, doi:10.1002/2013GL058857.

This article was also highlighted in *Nature Geoscience*

64. **Cleveland, C.C.,** S.C. Reed, A.B. Keller, D.R. Nemergut, S.P. O'Neill, R. Ostertag, P.M. Vitousek. 2013. Litter quality versus microbial community controls over decomposition: A quantitative analysis. *Oecologia* 174: 283-294.

63. **Cleveland, C.C.,** B.Z. Houlton, W.K. Smith, A.R. Marklein, S.C. Reed, W. Parton, S. Del Grosso, S.W. Running. 2013. Patterns of new versus recycled primary production in the terrestrial biosphere. *Proceedings of the National Academy of Science of the* USA 110: 12733-12737.

62. Keville, M.P., S.C. Reed, **C.C. Cleveland**. 2013. Nitrogen cycling responses to mountain pine beetle disturbance in a high elevation whitebark pine ecosystem. *PLoS ONE* 8(6): e65004. doi:10.1371/journal.pone.0065004.

61. Vitousek, P.M. D.N.L. Menge, S.C. Reed, **C.C. Cleveland.** 2013. Biological nitrogen fixation: Rates, patterns and ecological controls in terrestrial ecosystems. *Philosophical Transactions of the Royal Society of London B* 368: 20130119.

60. Reed, S.C., A.R. Townsend, **C.C. Cleveland.** 2013. Assessing the relationships among phosphorus, molybdenum and free-living nitrogen fixation in a tropical rain forest: Results from observational and experimental analyses. *Biogeochemistry* DOI 10.1007/s10533-013-9835-3.

59. Ferrenberg, S., S. O'Neill, J. Knelman, B. Todd, S. Duggan, D. Bradley, T. Robinson, S.K. Schmidt, A.R. Townsend, M. Williams, **C.C. Cleveland,** B.A. Melbourne, L. Jiang, D.R. Nemergut. 2013. Changes in assembly processes in soil bacterial communities following a wildfire disturbance. *ISME Journal*. DOI: ISMEJ.2013.11.

2012

58. Weintraub, S.R., W.R. Wieder, **C.C. Cleveland**, A.R. Townsend.2012. Both absolute and relative soil resource availabilities drive exo-enzymatic shifts in a lowland tropical forest. *Biogeochemistry* DOI 10.1007/s10533-012-9812-2.

57. Keller, A.B., S.C. Reed, A.R. Townsend, **C.C. Cleveland.** Effects of canopy tree species on belowground biogeochemistry in a lowland wet tropical forest. *Soil Biology and Biochemistry* 58: 61-69.

56. Wieder, W.K., **C.C. Cleveland,** P.G. Taylor, D.R. Nemergut, E.Hinckley, L. Phillippot et al. Both increases and decreases in organic matter inputs reduce nitrate production and loss in lowland tropical forest. *Biogeochemistry* DOI 10.1007/s10533-012-9793-1.

55. Schmidt, S.K., D.R. Nemergut, B. Todd, R.C. Lynch, J.L. Darcy, **C.C. Cleveland**, A.L. King. 2012. A simple method for determining limiting nutrients for photosynthetic crusts. *Plant Ecology and Diversity* DOI:10.1080/17550874.2012.738714.

54. **Cleveland, C.C.**, B.W. Sullivan. 2012. Drought and tropical soil emissions. *Nature* 489: 211-212.

53. Reed, S.C., A.R. Townsend, E.A. Davidson, **C.C. Cleveland.** 2012. Patterns in foliar nutrient resorption and stoichiometry across multiple scales. *New Phytologist* 196: 173–180.

52. Wickings, K., A.S. Grandy, S.C. Reed, **C.C. Cleveland**. 2012. The origin of litter chemical complexity during decomposition. *Ecology Letters* doi: 10.1111/j.1461-0248.2012.01837.x.

51. Smith, W.K., **C.C. Cleveland,** S.R. Reed, S.W. Running. .2012. Quantification of bioenergy potential for the conterminous United States constrained by satellite observations of productivity. *Environmental Science & Technology* dx.doi.org/10.1021/es203935d.

50. Leff, J.W., W.R. Wieder, P.G. Taylor, A.R. Townsend, D.R. Nemergut, A.S. Grandy, **C.C. Cleveland**. 2012. Experimental litterfall manipulation drives large and rapid changes in soil carbon cycling in a wet tropical forest. *Global Change Biology* doi: 10.1111/j.1365-2486.2012.02749.x (*Biology Faculty of 1000 Selection*)

2011

49. Leff, J.W., D.R. Nemergut, A.S. Grandy, S.P. O'Neill, K. Wickings, A.R. Townsend, **C.C. Cleveland.** 2011. The effects of soil bacterial community structure on decomposition in a tropical rain forest. *Ecosystems* DOI: 10.1007/s10021-011-9510-2.

48. Knelman, J.E., T.M. Legg, S.P. O'Neill, C.L. Washenberger, A. Gonzalez, **C.C. Cleveland,** D.R. Nemergut. 2011. Bacterial community structure and function change in association with colonizer plants during early primary succession in a glacier forefield. *Soil Biology & Biochemistry* 46: 172-180.

47. Reed, S.C., **C.C. Cleveland,** A.R. Townsend. 2011.. Functional ecology of free-living nitrogen fixation: A contemporary perspective. *Annual Review of Ecology, Evolution and Systematics* 42: 489-512.

46. **Cleveland, C.C**. A.R. Townsend, P. Taylor, S. Alvarez-Clare, M.M.C. Bustamante, G. Chuyong, S.Z. Dobrowski, P. Grierson, K.E. Harms, B.Z. Houlton, A. Marklein, W. Parton, S. Porder, S.C. Reed, C.A. Sierra, W.L. Silver, E.V.J. Tanner, W.R. Wieder. 2011. Relationships among net primary productivity, nutrients and climate in tropical rain forest: A pan-tropical analysis. *Ecology Letters* 14: 939-947.

45. Wieder, W.R., **C.C. Cleveland**, A.R. Townsend.2011. Throughfall exclusion and leaf litter manipulation drive higher rates of soil N_2O emissions from a lowland wet tropical forest. *Global Change Biology* 17: 3195-3207.

44. Schmidt, S.K., **C.C. Cleveland,** D.R. Nemergut, S.C. Reed, A.J. King, P. Sowell. 2011. Estimating phosphorus availability for microbial growth in an emerging landscape. *Geoderma* 163: 135-140.

43. Reed, S.C., P.M. Vitousek, **C.C. Cleveland.** 2011. Are patterns of nutrient limitation belowground consistent with those aboveground?: Results from a 4-million-year chronosequence. *Biogeochemistry* 106: 323-336.

42. Wickings, K, A.S. Grandy, S.C. Reed, **C.C. Cleveland.** 2011. Management intensity effects on the biological and biochemical pathways of litter decomposition. *Biogeochemistry* 104: 365-379.

2010

41. Townsend, A.R., **C.C. Cleveland**, B.Z. Houlton, C.B. Alden, J.W.C. White. 2010. Multi-element regulation of the tropical forest carbon cycle. *Frontiers in Ecology and the Environment* 9: 9-17.

40. Reed, S.C., A.R. Townsend, P.G. Taylor, **C.C. Cleveland.** 2010. Phosphorus Cycling in Tropical Forests Growing on Highly Weathered Soils. pp. 339-369 In: E Buenemann, A Oberson and E Frossard (Eds). Soil Biology 26: Phosphorus In Action – Biological Processes in Soil Phosphorus Cycling: Springer, Berlin.

39. Maron, J., M. Marler, J. Klironomos, **C. Cleveland.** 2010. Soil pathogens contribute to the positive plant diversity-productivity relationship. *Ecology Letters* 14: 36-41.

38. Nemergut, D.R., **C.C. Cleveland,** W.R. Wieder, C.L. Washenberger, A.R. Townsend. 2010. Plot-scale manipulations of organic matter inputs to soils correlate with shifts in microbial community composition in a lowland tropical rain forest. *Soil Biology & Biochemistry* 42: 2153-2160.

37. Reed, S.C., A.R. Townsend, **C.C. Cleveland**, D.R. Nemergut. 2010. Microbial community shifts influence patterns in tropical forest nitrogen fixation. *Oecologia* 164: 521-531.

36. Nemergut, D.R., E.K. Costello, M. Hamady, C. Lozupone, L. Jiang, S.K. Schmidt, N. Fierer, A.R. Townsend, **C.C. Cleveland,** L. Stanish, R. Knight. 2010. Global patterns in the biogeography of bacterial taxa. *Environmental Microbiology* 13: 135-144.

35. **Cleveland, C.C.,** W.R. Wieder, S.C. Reed, A.R. Townsend. 2010. Experimental drought in a tropical rain forest increases soil carbon dioxide losses to the atmosphere. *Ecology* 91: 2313-2323.

34. Johnson, P.J. T., A.R. Townsend, **C.C. Cleveland,** P. M. Gilbert, R. W. Howarth, V. J. McKenzie, E. Reimankova, M. H. Ward. 2010. Linking environmental nutrient enrichment and disease emergence in humans and wildlife. *Ecological Applications* 20: 16-29.

33. Wieder, W.R., **C.C. Cleveland**, A.R. Townsend. 2010. Controls over leaf litter decomposition in wet tropical forests. *Ecology* 90:3333-3341.

2009

32. **Cleveland, C.C**., B.Z. Houlton, C. Neill, S.C. Reed, A.R. Townsend, Y. Wang. 2009. Using indirect methods to constrain symbiotic nitrogen fixation rates: A case study from an Amazonian rain forest. *Biogeochemistry* 99: 1-13.

31. Fierer, N., M.S. Strickland, D. Liptzin, M.A. Bradford, **C.C. Cleveland.** 2009. Global patterns in belowground communities. *Ecology Letters* 12:1-12.

30. Sattin, S., **C.C. Cleveland,** E. Hood, S.C. Reed, A.J. King, S.K. Schmidt, M.S. Robeson, N. Ascarrunz, D.R. Nemergut. 2009. Functional shifts in unvegetated, perhumid, recently-deglaciated soils do not correlate with shifts in soil bacterial community composition. *The Journal of Microbiology* 47: 673-681.

2008

29. Bowman, W.D., **C.C. Cleveland,** L. Halada, J. Hreško, J.S. Baron. Negative impact of nitrogen deposition on soil buffering capacity. 2008. *Nature Geoscience* doi:10.1038/ngeo339.

28. Townsend, A.R., G.P. Asner, **C.C. Cleveland**. 2008. The biogeochemical heterogeneity of tropical forests. *Trends in Ecology & Evolution* 23: 424-431.

27. Wieder, W.R., **C.C. Cleveland**, A. R. Townsend. 2008. Tropical tree species composition affects the oxidation of organic matter from litter. *Biogeochemistry* 88: 127-138.

26. Reed, S.C., **C.C. Cleveland,** A.R. Townsend. 2008. Tree species control rates of free-living nitrogen fixation in a tropical rain forest. *Ecology* 89: 2924-2934.

25. Schmidt, S.K., S.C. Reed, D.R. Nemergut, S. Grandy, **C.C. Cleveland,** M.N. Weintraub, A.W. Hill, E.K. Costello, A.F. Meyer, A.M. Martin, J. Neff. 2008. The earliest stages of microbial and ecosystem succession in high-elevation, recently deglaciated soils. *Proceedings of the Royal Society of London Series B:* doi:10.1098/rspb.2008.0808.

2007

24. **Cleveland, C.C.**, D. Liptzin. 2007. C:N:P stoichiometry in soil: Is there a "Redfield ratio" for the microbial biomass? *Biogeochemistry* 85: 235-252 / DOI 10.1007/s10533-007-9132-0.

23. Nemergut, D.R. S.P. Anderson, **C.C. Cleveland**, A.P. Martin, A.E. Miller, A. Seimon, S.K. Schmidt. 2007. Microbial community succession in unvegetated, recently-deglaciated soils. *Microbial Ecology* 53: 110-122.

22. Townsend, A.R., **C.C. Cleveland**, G.P. Asner, M.M.C. Bustamante. 2007. Controls over foliar N:P ratios in tropical rain forests. *Ecology* 88: 107-118.

21. Reed, S.C., **C.C. Cleveland,** A.R. Townsend. 2007. Controls over leaf litter and soil nitrogen fixation in two lowland tropical rain forests. *Biotropica* 39:585-592.

20. Schmidt, S.K., Costello, E.K., Nemergut, D.R., **Cleveland, C.C.,** Reed, S.C., Weintraub, M.N., Meyer, A. F., Martin, A.M. 2007. Microbial turnover and seasonal succession drive biogeochemical cycles in the alpine. *Ecology* 88: 1379-1385.

2006

19. **Cleveland, C.C.**, A.R. Townsend. 2006. Nitrogen and phosphorus additions cause substantial losses of soil carbon from a lowland tropical rain forest. Proceedings of the National Academy of Sciences of the USA 103: 10316-10321.

18. **Cleveland, C.C.,** D.R. Nemergut, S.K. Schmidt, A.R. Townsend. 2006. Increases in soil respiration following labile carbon additions linked to rapid shifts in soil microbial community composition. *Biogeochemistry* DOI 10.1007/s10533-006-9065-z.

17. **Cleveland, C.C.,** A.R. Townsend, S.C. Reed. 2006. Nutrient regulation of organic matter decomposition in a tropical rain forest. *Ecology* 87:492-503.

2004-2005

16. **Cleveland, C.C.,** D.M. McKnight, A.R. Townsend. 2005. Trophic interactions: Links between the carbon and hydrologic cycles in terrestrial ecosystems. Pp. 1557-1574 in: M. G. Anderson and J. J. McDonnell (Eds). The Encyclopedia of Hydrological Sciences, Volume 3: John Wiley & Sons, West Sussex, UK (Invited contributor).

15. Galloway, J.N., G. Asner, E.W. Boyer, D.G. Capone, **C.C. Cleveland**, F.J. Dentener, P. Greene, E. Holland, R.W. Howarth, D.M. Karl, A.F. Michaels, S.P. Seitzinger, A.R. Townsend, C. Vorosmarty. 2004. Global and regional nitrogen cycles: Past, present and future. *Biogeochemistry* 70: 153-226.

14. **Cleveland, C.C.,** A.R. Townsend, B. C. Constance, R. E. Ley, S. K. Schmidt. 2004. Soil microbial dynamics in Costa Rica: Seasonal and biogeochemical constraints. *Biotropica* 36: 184-195.

13. Boyer, E.W., R.W. Howarth, J.N. Galloway, F.J. Dentener, P. Green, C. Vorosmarty, **C.C. Cleveland**, G.P. Asner. 2004. Nitrogen inputs to world regions. In A. R. Mosier, K. Syers and J. R. Freney (Eds.), Agriculture and the nitrogen cycle: assessing the impact of fertilizer use on food production and the environment. Washington, D.C., Island Press.

12. **Cleveland, C.C.,** J.C. Neff, A.R. Townsend, E. Hood. 2004. Composition, dynamics and fate of leached dissolved organic matter in terrestrial ecosystems: Results of a decomposition experiment. *Ecosystems* 7: 275-285.

11. Bowman, W.D., H. Steltzer, T.N. Rosenstiel, **C.C. Cleveland**, C.L. Meier. 2004. Litter effects of two co-occurring alpine species on plant growth, microbial activity and immobilization of nitrogen. *Oikos* 104: 336-344.

1997-2003

10. Townsend, A.R., R.W. Howarth, F.A. Bazzaz, M.S. Booth, **C.C. Cleveland,** S.K. Collinge, A.P. Dobson, P.R. Epstein, E.A. Holland, D.R. Keeney, M.A. Malin, C.A. Rogers, P. Wayne, A.H. Wolfe. 2003. Human health effects of a changing global nitrogen cycle. *Frontiers in Ecology and the Environment* 1: 240-246.

9. **Cleveland, C.C.,** A.R. Townsend, B.C. Constance, S.K. Schmidt. 2002. Soil microbial dynamics and biogeochemical cycling in lowland tropical rain forests and pastures of southwestern Costa Rica. *Ecological Applications* 13: 314-326.

8. **Cleveland, C.C.,** A.R. Townsend, S.K. Schmidt. 2002. Phosphorus limitation of microbial processes in moist tropical forests. *Ecosystems* 5: 680-691.

7. Townsend, A.R., G.P. Asner, **C.C. Cleveland,** M.E. Lefer, M.M.C. Bustamante. 2002. Unexpected changes in soil phosphorus dynamics following tropical deforestation to cattle pasture. *Journal of Geophysical Research* 107 (D20), 8067, doi: 10.1029/2001 JD000650, 2002.

6. Vitousek, P.M., K. Cassman, **C.C. Cleveland,** T. Crews, C.B. Field, N.B. Grimm, R.W. Howarth, R. Marino, L. Martinelli, E.B. Rastetter, J.I. Sprent. 2002. Towards an ecological understanding of biological nitrogen fixation. *Biogeochemistry* 57/58: 1-45.

5. Asner, G.P., A.R. Townsend, W. Riley, P.A. Matson, J.C. Neff, **C.C. Cleveland.** 2001. Physical and biogeochemical controls of terrestrial ecosystem responses to nitrogen deposition. *Biogeochemistry* 54: 1-39.

4. **Cleveland, C.C**., A.R. Townsend, D.S. Schimel, H. Fisher, R.W. Howarth, L.O. Hedin, S.S. Perakis, E.F. Latty, J.C. Von Fischer, A. Elseroad, M.F. Wasson. 1999. Global patterns of terrestrial biological nitrogen (N2) fixation in natural ecosystems. *Global Biogeochemical Cycles* 13: 623-645.

3. Fahey, T.J., C.J. Williams, J.N. Rooney-Varga, **C.C. Cleveland,** K.M. Postek, S.D. Smith, D.R. Bouldin. 1999. Nitrogen deposition in and around an intensive agricultural district in Central New York. *Journal of Environmental Quality* 28: 1585-1600.

2. **Cleveland, C.C.**, J.B. Yavitt. 1998. Microbial consumption of atmospheric isoprene in a temperate forest soil. *Applied and Environmental Microbiology* 64: 172-177.

1. **Cleveland, C.C.**, J.B. Yavitt. 1997. Consumption of atmospheric isoprene in soil. *Geophysical Research Letters* 24: 2379-2382.

Funded Research (External) ($5,006,766 total to UM)

Collaborative research: Nitrogen recovery in postfire lodgepole pine forests: cryptic sources, uncertain futures. NSF ($466,397, 5 years, PI).

New paradigms for understanding ecosystem nutrient limitations. New Phytologist Trust ($16,000, 1 year, Co-PI).

Novel multi-scale synthesis of nitrogen fixation rates and drivers across the terrestrial biosphere. USGS Powell Center for Analysis and Synthesis ($153,734, 3 years, Co-PI).

RCN: INCyTE: Investigating Nutrient Cycles in Terrestrial Ecosystems: Integrating Observations, Experiments, and Models. NSF ($499,355 total, $499,355, 5 years, PI and INCyTE project lead).

Collaborative Research: Bioavailability of soil phosphorus in tropical forest soils: Is slowly cycling P accessible to plants and soil biota? NSF ($399,759, 3 years, PI).

Patterns and controls of tree regeneration and composition following forest restoration treatments in low elevation ponderosa pine (*Pinus ponderosa*) forests of western Montana. USDA Forest Service, Macintire-Stennis Research Program ($23,327, 3 years, PI).

UGP 2020: Exploring the effects of rock nitrogen on ecosystem processes. University of Montana ($5000, 2 years, PI).

UGP 2018: Nitrogen (N) dynamics in a post-fire landscape: A search for the missing N source. University of Montana ($5000, 2 years, PI).

Collaborative Research: Geomorphic Control of the Lowland Tropical Nitrogen Cycle. NSF ($271,506 to UM, 4 years [2014-2018], PI)

Dissertation Research: Interactions among nitrogen and phosphorus through plant-microbial mutualisms in tropical rain forests. NSF ($18,850, 3 years, PI; Megan Nasto PhD Co-PI).

The long-term effects of alternative fuel treatments on ecosystem properties and processes: The Lubrecht Forest Fire and Fire Surrogates Study revisited. USDA Forest Service, Macintire-Stennis Research Program ($98,859, 3 years [2011-2014], PI)

A spatially explicit evaluation of the bioenergy potential of the Southwestern United States. USGS ($42,625, 3 years [2013-2016]; Co-PI)

Revisiting nutrient limitation in tropical forest: Synthesis and emerging ideas. National Center for Ecological Analysis and Synthesis ($87,000; 5 years [2008-2013], PI)

Collaborative Research: Controls over nitrogen loss from very wet tropical forests. NSF ($170,802, 3 years [2012-2015], PI)

MSB: Collaborative Research: Links between soil biogeochemistry and microbial community dynamics along recently deglaciated chronosequences. NSF ($176,433, 4 years [2010-2014], PI)

Exploring nutrient limitation in tropical forests. Andrew W. Mellon Foundation ($325,000, 5 years [2009-2014], PI)

Late-seral woody riparian plants and their environment along the upper Missouri River, Montana. US Bureau of Land Management ($66,796, 2 years, Co-PI)

Climate change vulnerability and adaptive capacity in Montana: Using dynamic scenario-building and network analysis to investigate community decision-making under uncertainty. Montana EPScOR ($50,000, 1 year, Co-PI)

Coupled climatic limitations on the regeneration niche: Implications for modeling climate change impacts across time and space. Montana EPScOR/IoE ($15,866, 1 year, Co-PI)

Ecological and social dynamics of mountain pine beetle outbreaks in western Montana. USDA Forest Service, Macintire-Stennis Research Program ($62,251, 2 years, Co-PI)

Causes and consequences of climate change-driven outbreaks of mountain pine beetle in western subalpine ecosystems. USFS ($75,717, 2 years, Co-PI)

Graduate Training in Multi-Scale Analysis of Forest Disturbance Ecology. USDA ($235,991, 3 years, Co-PI)

Prying Open the Black Box: Does microbial community composition regulate respiration in tropical rain forest soil? NSF ($499,998, 3 years, PI)

Interactions between rainfall, nutrient cycles and decomposition in a lowland tropical rain forest. NSF ($680,000, 3 years, Co-PI)

Phosphorus regulation of decomposition, microbial dynamics, and foliar chemistry in moist tropical forests. NSF ($570,000, 3 years, Co-PI)

Invited Oral Presentations

2020

Invited presentation: Nitrogen fixation data synthesis: Historical perspectives and future directions. USGS Powell Center, Ft. Collins, Colorado, January 26, 2020.

2019

Invited presentation: Nutrient Constraints on Future Productivity and Carbon Storage in Terrestrial Ecosystems, Hawkesbury Institute for the Environment, Sydney, Australia, August 29, 2019.

Invited presentation: A new view on terrestrial nutrient limitation, University of Western Australia, September 6, 2019.

Invited presentation: Nutrient constraints on the global carbon cycle, Montana State University, November 4, 2019.

2018

Invited presentation: Nutrient Constraints on Future Productivity and Carbon Storage in Terrestrial Ecosystems, California Institute of Technology/Jet Propulsion Laboratory, Pasadena, CA, October 18, 2018.

Invited presentation: Overcoming Nutrient Limitation: Will Phosphorus Availability Constrain Global Plant Production Under Elevated CO_2? American Geophysical Union, Washington, DC, December 2019.

2017

Invited Presentation: How do diverse ecosystems overcome low soil phosphorus: Mechanism, implication, and meditations. Annual Meeting of the Ecological Society of America, August, 2017, Portland, OR.

2016

Invited Presentation: Nutrient Limitation in Tropical Forests: Evidence and Implications. Smithsonian Tropical Research Institute, Balboa, Panama.

Invited Presentation: Bioavailability of phosphorus in tropical forest soils: Is slowly cycling P accessible to plants and soil biota? Phosphorus Cycling in Terrestrial Ecosystems: Advancing our fundamental understanding through a model-data connection, Townsend, TN

2013

Invited Presentation: The Paradox(es) of Nitrogen Fixation in Tropical Forests. University of Texas, November 6 – 8, 2013.

Invited Presentation: Bioavailability of phosphorus in tropical forest soils: Is slowly cycling P accessible to plants and soil biota? Phosphorus Cycling in Terrestrial Ecosystems: Taking a New Approach to Advancing our Fundamental Understanding Through a Model-Data Connection. Joint NSF/DOE Workshop, Townsend, TN, June 22-25, 2016.

Invited Presentation: Patterns of new versus recycled primary production in the terrestrial biosphere, Annual Meeting of the American Geophysical Union, San Francisco, CA.

2011

Invited Presentation: *Nutrient Limitation in Terrestrial Ecosystems: Observational Insights*. How Do We Improve Earth System Models? Integrating Earth System Models, Ecosystem Models, Experiments and Long-Term Data, INTERFACE Workshop, Captiva Island, FL, February 29 – March 3, 2011. http://www.bio.purdue.edu/INTERFACE/index.php.

Invited Presentation: *Climate and nutrient regulation of the tropical forest C cycle.* Organized Oral Session: From leaf to biosphere: the effects of a warming climate on tropical rain forests. Ecological Society of America 96th Annual Meeting, Austin, TX, August 7 – 12, 2011.

Invited Presentation: *Stoichiometric controls on terrestrial biological nitrogen fixation.* 27th New Phytologist Symposium: Stoichiometric flexibility in terrestrial ecosystems under global change, Oracle, AZ, September 25-28, 2011.

2010

Invited Presentation: *Multi-element regulation of the tropical forests carbon cycle.* University of Minnesota, Minneapolis, MN, September 29, 2010.

2009

Invited Presentation: *Too Much of a Good Thing: N Deposition and Ecosystem Processes in Mountain Soils.* Department of Ecology, Montana State University, March 12, 2009

Invited Presentation: *The Future of the Global P Cycle: Nutrient Limitation, Soils, and Biofuel Production in the Tropics*. Aspen Global Change Institute, Aspen, CO, October 1, 2009.

Invited Presentation: *Hot and Getting Hotter: Global Environmental Change Accelerates Greenhouse Gas Emissions From Tropical Forests to the Atmosphere.* College of Forestry and Conservation Graduate Seminar, University of Montana, Missoula, MT, November 20, 2009.

2008

Invited Presentation: *Too Much of a Good Thing: N Deposition and Ecosystem Processes in Mountain Soils*. Department of Geosciences, University of Montana, November 9, 2008.

Invited Presentation: *Ecosystem Processes, Tropical Forests and Global Change*. University of Montana International Education Week. International Lecture Series: *Human and Ecological Dimensions of Global Change: From Problems to Solutions*, UC Theater, November 17, 2008.

2007

Element stoichiometry in terrestrial ecosystems: How do nutrient ratios inform our understanding of ecosystem function? Natural Resources Ecology Laboratory (NREL) Ecology Seminar, Colorado State University, April 6, 2007.

Element stoichiometry in terrestrial ecosystems: How do nutrient ratios inform our understanding of ecosystem function? Biogeochemistry Seminar Series, Cornell University, April 13, 2007

Invited Presentation: *Global organization of C:N:P ratios in plants and soils: Implications of terrestrial Redfield-type ratios*, DBS/OBE Noon Seminar. University of Montana, August 25, 2007.

Invited Presentation: Element stoichiometry in terrestrial ecosystems: How do nutrient ratios inform our understanding of ecosystem function? Natural Resources Ecology Laboratory (NREL) Ecology Seminar, Colorado State University, April 6, 2007

Invited Presentation: Element stoichiometry in terrestrial ecosystems: How do nutrient ratios inform our understanding of ecosystem function. Biogeochemistry Seminar Series, Cornell University, April 13, 2007

Teaching Experience

Introduction to Biogeochemistry (EBIO 4160; U Colorado)

Introductory Soils (FOR 210/ENSC 245; U Montana)

Soils, Water and Climate (NRSM 210N; U Montana)
Environmental Soil Science (ENSC 415; U Montana)
Terrestrial Ecosystem Ecology (BIOE 447; U Montana)
Fundamentals of Ecosystem Science (BIOS 532; U Montana)
Global Biogeochemical Cycles (FOR 495; U Montana)
Global Cycles and Climate (NRSM 408; U Montana)
Tropical Biology: An Ecological Approach (OTS Field Course, Costa Rica)
Forest Ecology Seminar (FOR 595; U Montana)
Advanced Topics in Biogeochemistry (FOR 595; U Montana)
Fundamentals of Ecosystem Science (BIOS 532; U Montana)
Emerging Topics in Ecosystem Science (NRSM 595; U Montana)

Synergistic Activities

2020	Co-chair, Strategic Planning Committee, W.A. Franke College of Forestry and Conservation
2019 – 2021	Associate Editor, *Faculty Opinions*
2020	Reviewer and Panelist, Ford Foundation, Washington DC, March 2020
2020 – present	*Skype a Scientist* participant
2020 – present	Co-organizer, *Novel multi-scale synthesis of nitrogen fixation rates and drivers across the terrestrial biosphere*, Ft. Collins, CO, January 26 – 30, 2020.
2019	Co-Organizer: *Elucidating Coupled Biogeochemical Cycles in Terrestrial Ecosystems: Integrating Theory, Observations, Experiments, and Models*, AGU Annual Meeting, San Francisco, CA, December 2019
2019	Co-organizer, *New Paradigms for Understanding Nutrient Limitation*, New Phytologist Workshop, Perth, Australia, September 6 – 10, 2019
2019	Reviewer and Panelist, Ford Foundation, Irvine, CA, March 2019
2019 – 2020	*Faculty of 1000* faculty member
2018 – present	Project Director, INCyTE Research Coordination Network (NSF)
2012 – 2016	Associate Editor, *Ecological Applications*
2012	Scientific Reviewer and Panelist, US Department of Energy Terrestrial Ecosystem Sciences Program, Washington DC, April 26, 2012
2012	Session Co-organizer. *New strategies for defining planetary boundaries,* Planet Under Pressure, London, England, March 24 – 29, 2012 (http://www.planetunderpressure2012.net/index.asp)
2011	Session Co-organizer (Invited): *Phosphorus limitations to plant growth and microbial processes, CLIMMANI/INTERFACE joint workshop: Nutrient constraints on the net carbon balance*, June 15-17, 2011, Keflavik, Iceland

2011	Invited Participant, INTERFACE, *How Do We Improve Earth System Models? Integrating Earth System Models, Ecosystem Models, Experiments and Long-Term Data*, INTERFACE Workshop, Captiva Island, FL, February 29 – March 3, 2011.
2010 – 2016	Associate Editor, *Biogeochemistry* (Synthesis & Emerging Ideas)
2010	NSF Panelist, Division of Environmental Biology, Ecosystems Sciences
2010	Invited Participant, Department of Energy Office (DOE) of Biological and Environmental Research (BER) Climate Change Research Road Mapping Workshop, Arlington, VA
2010	Writing Team Member, Terrestrial Carbon Cycling, Department of Energy Office (DOE) of Biological and Environmental Research (BER) Climate Change Research Road Mapping Workshop, Arlington, VA
2009	Invited Instructor, Forest Nutrient Cycling, University of Montana, College of Forestry & Conservation Mini-College, November 2009
2009	Invited Resource Faculty, *Tropical Biology: An Ecological Approach,* Organization for Tropical Studies (OTS), Costa Rica, July 4-11, 2009
2009	Invited Participant, State of the Global Phosphorus Cycle, Aspen Global Change Institute, Aspen, CO September 30 – October 5, 2009
2009 – 2010	Associate Editor, *Biogeochemistry*
2009	NSF Panelist, Office of Polar Programs, Antarctic Organisms & Ecosystems
2008 – 2014	Workshop Organizer and Co-chair, *Revisiting nutrient limitation in tropical forests*, National Center for Ecological Analysis and Synthesis, Santa Barbara, CA
2007	Workshop Organizer, *Nitrogen fixation in natural and agricultural ecosystems*, Nitrogen 2007, Bahia du Sauipe, Brazil, October 2007
2003	Rapporteur (invited), *Science Plan for Integrated Studies of Coupled Biosphere-Atmosphere Carbon and Nitrogen Cycles, The impact of nitrogen deposition on soil microbial processes*, Boulder, CO, March 2003
2002 – 2003	Invited Contributor, International SCOPE Nitrogen Project, *Nitrogen and Human Health*
1998 – 2000	Invited Contributor, *International SCOPE Nitrogen Project, Nitrogen Transport and Transformations: A Regional and Global Analysis*, Working Group IV: *Unifying Models of Nitrogen Fixation*
1998 – present	Reviewer for *Biogeochemistry, Biotropica, Canadian Journal of Forest Research, Ecological Applications, Ecological Monographs, Ecology, Ecology Letters, Environmental Research Letters, Ecosystems, Functional Ecology, Geoderma, Global Biogeochemical Cycles, Global Change Biology, Global Ecology and Biogeography, Journal of Ecology, Limnology and Oceanography, JGR-Biogeosciences, Environmental Science and Technology, Journal of Environmental Quality, Nature, Nature Communications, Nature Geoscience, New Phytologist, Oecologia, PLOS-Biology, PNAS, Science, Science Advances, Soil Use and Management, Soil Biology and Biochemistry*.

Curriculum Vitae

(Revised February 2023)

Professional Affiliations

American Geophysical Union
American Association for the Advancement of Science
Ecological Society of America (Lifetime member since 2007, fellow since 2018)
Soil Ecology Society

Academic Advisors

M.S.	Dr. Joseph Yavitt (Cornell University)
Ph.D.	Dr. Alan Townsend (University of Colorado)
Postdoctoral	Dr. Alan Townsend (University of Colorado)

Postdoctoral Advisees

Dr. Sasha Reed (2008-2010)
Dr. Benjamin Sullivan (2012 – 2015)
Dr. Silvia Alvarez-Clare (2012 – 2015)
Dr. William Kolby Smith (2013 – 2015)
Dr. Alison Marklein (2015 – 2016)
Dr. Fiona Soper (2016 – 2018)
Dr. Katherine Dynarski (2020 – 2021)
Dr. Emma Hauser (2021 – present)

Graduate Advisees

Heath Carey (U Montana, M.S. 2010)
Jonathan Leff (U Montana, M.S. 2011)
Megan Keville (U Montana, M.S. 2011)
Adrienne Keller (U Montana, M.S. 2011)
Kali Pennick (U Montana, M.S. 2012)
Sasha Reed (U Colorado, Ph.D. 2008)
Nataly Ascarrunz (U Colorado, Ph.D. 2010)
Will Wieder (U Colorado, Ph.D. 2011)
Philip Taylor (U Colorado, Ph.D 2012)
Peter Ganzlin (U Montana, M.S. 2013 – 2015)
Sarah Castle (U Montana, Ph.D. 2010 – 2015)
Megan Nasto (U Montana, Ph.D., 2012 – 2017)
Alanna Shaw (U Montana, Ph.D. 2016 – present)
Robert Heumann (U Montana, Ph.D. 2021 – present)

Undergraduate Advisees (Honors)

Lindsay Myers (2007 – 2009)
Erika Foster (2011 – 2012)

Undergraduate Advisees (Research)

Jonathan Orndoff (2007-2008)
Toren Johnson (2007 – 2008)
Patrick Funk (2009 – 2011)
James Dyke Jr. (2010 – 2012)
Erika Foster (2010 – 2012)
Molly Garcia (2011 – 2012)
Rachel Becknell (2013 – Summer REU Program Advisee)
Alexandra Ginter (2012 – 2015)
Natasha Boote (2012 – 2013)
Emily Prag (2012 – 2015)
Stacia Hill (2015 – 2016)
Leone Claire (2016 – 2017)
Haley Hodge (2016 – 2018)
Corey Leach (2018 – 2019)
Kian Speck (2021- 2022)
Rowan Grassi (2022)

Laboratory Technicians (Supervised)

Jonathan Leff (U Montana, 2008 – 2009)
Tell Dietzler (2009 – 2010)
Jason Aylward (2009 – 2011)