

# Curriculum Vitae

WILLIAM S. CURRIE

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## Professional Experience

- 2016-present *Professor*, SEAS, University of Michigan. Since 2018, *Professor*, Program in the Environment, joint between SEAS and the College of Literature, Science, and the Arts.
- 2010-2012 *Associate Dean*, SNRE<sup>1</sup>, University of Michigan
- 2006-2015 *Associate Professor*, SNRE, University of Michigan
- 2003-2005 *Assistant Professor*, SNRE, University of Michigan
- 2003-2018 *Faculty Associate*, Program in the Environment, University of Michigan
- 2005-present *Faculty Associate*, Applied Physics Program, University of Michigan
- 1997-2003 *Assistant Professor*, University of Maryland Center for Environmental Science, Appalachian Laboratory, Frostburg, MD
- 1995-1997 *Visiting Postdoctoral Scholar*, The Ecosystems Center, Marine Biological Laboratory, Woods Hole, MA
- 1984-1986 *Senior Scientist II*, Booz, Allen & Hamilton, Applied Sciences Center, Bethesda, MD
- 1983-1984 *Systems Engineer*, Rockwell International, Space Shuttle Orbiter Division, Downey, CA

## Research Interests

Dr. Currie's research program focuses on bringing a systems and synthesis perspective to understand ecosystem function in the context of landscapes and regions, including the effects of human activities on ecosystems. He develops and applies computer models of ecosystem function, collaborating with field ecologists, geographers, remote sensing scientists, hydrologists, and land management professionals. He has expertise in biogeochemistry, energy flows, nutrient cycling and carbon storage in the landscape, as well as watershed science and terrestrial-aquatic interactions. With collaborators he studies social-ecological processes that relate to land use including forest use and forest fragmentation, agriculture and biofuels, the effects of urban sprawl, regional conservation planning, and vulnerability and change in coastal wetlands. He is interested in furthering systems and synthesis approaches, including dynamic modeling, in the developing field of sustainability science and interested in the growing field of 'convergence' research in which investigators across disciplines work together to address intellectual challenges, opportunities, and pressing societal problems.

## Education

- 1995 Ph.D., Natural Resources, Institute for the Study of Earth, Oceans and Space, University of New Hampshire.
- 1992 M.S., Environmental Sciences, University of Virginia.

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<sup>1</sup> Prior to 2017, SEAS was named SNRE (School of Natural Resources and Environment)

1983 B.S., *magna cum laude with honors thesis*, Physics, Brown University.

## Affiliations and Awards

Ecological Society of America (ESA)

American Association for the Advancement of Science (AAAS)

American Geophysical Union (AGU)

US chapter of the International Association of Landscape Ecologists (US-IALE)

Stockholm University – University of Michigan Faculty Exchange Award, 2010

Stockholm Water Symposium Best Poster Award, 2001 (coauthor)

Sigma Xi Dissertation Research Award, 1995

NASA Training Grant Fellowship, 1991 – 1995

## Research Grants

Quantifying how Global Change and Land Use Legacies Affect Ecosystem Processes at the Land Water Interface Across the Great Lakes Basin. NASA IDS Program. 8/1/17 – 7/31/20. \$1,500,000. *Co-Principal Investigator.*

Modeling socio-ecological adaptation to climate change in temperate forests. Graham Sustainability Institute Catalyst Grant Program. 3/1/17 - 2/28/18. \$10,000. *Co-principal Investigator.*

Human adaptation to climate change and effects on Upper Midwest forests. U.S.D.A. McIntire-Stennis Program. \$146,265. 10/1/16 – 9/30/18. *Co-Principal Investigator.*

Supporting conservation and decision-making in the Northwoods: Mapping forest values, services, and threats. Department of Interior, U.S. Fish & Wildlife Service. \$19,574. 7/5/16 – 7/5/17. *Principal Investigator.*

Factors in forest management to protect carbon sinks on private forestland in the Great Lakes region. UM Energy Institute Beyond Carbon Neutral Seed Funding Program. 7/1/17 – 6/30/18. \$20,000. *Co-Principal Investigator.*

Assessing the potential to protect and enhance carbon sinks on nonindustrial private forest land in the northern Great Lakes region. UM Energy Institute Beyond Carbon Neutral Seed Funding Program. 7/1/16 – 6/30/17. \$20,000. *Co-Principal Investigator.*

Implementing Adaptive Management and Monitoring for Restoration of Wetlands invaded by *Phragmites*. EPA Great Lakes Restoration Initiative Program. \$648,799. 4/1/16 – 9/30/18. *Co-Principal Investigator.*

Comprehensive Invasive *Phragmites* Management Planning. Michigan Invasive Species Grants Program, Michigan Dept. of Natural Resources. \$203,000. 2/1/16 – 1/31/18. *Co-Principal Investigator.*

Climate Change Mitigation: Moving Beyond Carbon Neutral. University of Michigan Office of Research 2016 Distinguished Faculty / Graduate Student Seminar program. \$12,600. 7/1/16 – 6/30/17. *Co-Principal Investigator.*

Investigating social-ecological metrics of forest landscape characteristics across scales: A regional gradient study in northern Michigan. U.S.D.A. McIntire-Stennis Program. \$68,946. 10/1/14 – 9/30/17. *Principal Investigator.*

Assessing Ecosystem Services Provided by Restored Wetlands Under Current and Future Climate and Land-Use Scenarios. University of Michigan Water Center. \$50,000. 9/1/13 – 8/31/14. *Co-Principal Investigator*.

Modeling social-ecological interactions driving land-atmosphere exchanges in forested landscapes. UM Provost's M-Cubed Program. \$60,000. 5/1/13 – 11/10/14. *Lead Principal Investigator*.

Spatial Land-Use Change and Ecological Effects: Interactions of Exurban Land Management and Carbon Dynamics. NSF Coupled Natural-Human Systems Program. \$1,500,000. 3/1/08 – 9/30/14. *Co-Principal Investigator*.

Evidence-based future scenarios for Great Lakes forested landscapes: Development of a new framework. U.S.D.A. McIntire-Stennis Program. \$60,000. 10/1/12 – 9/30/14. *Principal Investigator*.

SNRE Envoys Diversity Initiative. Faculty Allies for Diversity Grant Program, University of Michigan Rackham Graduate School. \$100,000. 9/1/11–8/31/13. *Co-Principal Investigator, Founding Co-Director*.

Linking Remote Sensing and Process-Based Models to Better Understand the Influence of Land Use and Climate Changes on Great Lakes Coastal Wetlands. NASA Interdisciplinary Research in Earth Science Program. \$1,500,000. 1/1/10 – 12/31/14. *Co-Principal Investigator*.

Incorporating ecosystem processes controlling landscape carbon balance into models of coupled human-natural systems. U.S.D.A. McIntire-Stennis Program. \$67,260. 10/1/10 – 9/30/13. *Principal Investigator*.

Atmospheric N Deposition and C Storage in Northern Temperate Forests: Testing and Scaling up with an Enhanced Ecosystem Process Model. U.S.D.A. McIntire-Stennis program. \$60,000. 10/1/08 – 9/30/10. *Principal Investigator*.

Modeling linkages among forest ecology, management, and biogeochemistry in Great Lakes forests. U.S.D.A. McIntire-Stennis Program. \$60,000. 10/1/06 – 9/30/08. *Principal Investigator*.

Alcoa Foundation Conservation and Sustainability Fellowship Program: Enabling Technology for a Sustainable Energy Future Through Interdisciplinary Research and Training. Alcoa Foundation. \$844,000. 11/1/05-10/31/10. *Co-Principal Investigator*.

Modeling the trajectories of forest carbon storage in the Great Lakes region based on interactions among global change, forest history, and management. U.S.D.A. McIntire-Stennis Program. \$59,928. 10/1/04 – 9/30/06. *Principal Investigator*.

Collaborative Research: Effects of elevated CO<sub>2</sub> on forest N cycling: Assessment with large-scale <sup>15</sup>N tracers and modeling. National Science Foundation, Ecosystems Program. \$790,000. 1/1/03-2/28/07. *Co-Principal Investigator*.

Effects of N deposition on forest C balance: long-term responses at stand and regional scales. National Science Foundation, Ecosystems Program. \$639,999. 1999-2003. *Co-Principal Investigator*.

Predicting the influence of N deposition on temperate forest carbon uptake and storage using <sup>15</sup>N tracers and modeling (1). U.S.D.A. Forest Service NERC Program. \$71,818. 2001-2004. *Principal Investigator.*

Predicting the influence of N deposition on temperate forest carbon uptake and storage using <sup>15</sup>N tracers and modeling (2). U.S.D.A. Forest Service NERC Program. \$33,200 subcontract from Marine Biological Laboratory. 2002-2004. *Principal Investigator on subcontract.*

The role of forest-floor nitrogen leaching in ecosystem N retention. U. S. Department of Agriculture, National Research Initiative Competitive Grants Program. \$80,000. 1995-1997. *Principal Investigator.*

Research Opportunities and Collaboration in the Appalachians. Andrew W. Mellon Foundation. \$414,000. 1999-2001. *Senior Personnel.*

Research Opportunities and Collaboration in the Appalachians, Renewal. Andrew W. Mellon Foundation. \$431,751. 2001-2003. *Senior Personnel.*

Assessment of forest disturbance in the Mid-Atlantic region: A multi-scale linkage between terrestrial and aquatic ecosystems. Environmental Protection Agency, NCERQA. \$697,834. 1998-1999. *Senior Personnel.*

A general framework for debiting / crediting carbon sequestration in natural resource industries. Environmental Protection Agency. \$100,000. 1998-1999. *Senior Personnel.*

## Papers in revision or review

**Currie, William S.** and Stephanie Hart. Climatic gradients and human development pressure determine spatial patterns of forest fragmentation across the Great Lakes basin, USA. *In revision for re-submission to Landscape Ecology.*

## Peer-Reviewed Publications

Xu, Hui, Daniel G. Brown, Michael R. Moore, and **William S. Currie.** 2018. Optimizing spatial land management to balance water quality and economic returns in a Lake Erie watershed. *Ecological Economics* 145:104-114.

Graham, John B., Joan I. Nassauer, **William S. Currie,** Herbert Ssegane, and M. Cristina Negri. Assessing wild bee abundance in perennial bioenergy landscapes: Effects of bioenergy crop composition, landscape configuration, and bioenergy crop area. 2017. *Landscape Ecology* 32:1023-1037.

Goldberg, Deborah E., Jason P. Martina, Kenneth J. Elgersma, and **William S. Currie.** 2017. Plant size and competitive dynamics along nutrient gradients. *American Naturalist* 190(2): 229-243. doi:10.1086/692438

Elgersma, Kenneth J., Jason P. Martina, Deborah E. Goldberg, and **William S. Currie.** 2017. Effectiveness of cattail (*Typha* spp.) management techniques depends on exogenous nitrogen inputs. *Elementa, Science of the Anthropocene* 5:19. DOI: <http://doi.org/10.1525/elementa.147>

- Martina, Jason P., **William S. Currie**, Deborah E. Goldberg and Kenneth J. Elgersma. 2016. Nitrogen loading leads to increased carbon accretion in both invaded and uninvaded coastal wetlands. *Ecosphere* 7(9): e01459.
- Currie William S.**, Sarah Kiger, Joan I. Nassauer, Meghan Hutchins, Lauren L. Marshall, Daniel G. Brown, Rick L. Riolo, Derek T. Robinson, and Stephanie K. Hart. 2016. Multi-scale heterogeneity in vegetation and soil carbon in exurban residential land of Southeastern MI. *Ecological Applications* 26(5): 1421-1436.
- Brunner, Anna, **William S. Currie**, and Shelie Miller. 2015. Cellulosic ethanol production: Landscape scale net carbon strongly affected by forest decision making. *Biomass and Bioenergy* 83:32-41.
- Elgersma, K.J., R. Wildova, J.P. Martina, **W.S. Currie**, and D.E. Goldberg. 2015. Does clonal resource translocation relate to invasiveness of *Typha* taxa? Results from a common garden experiment. *Aquatic Botany* 126 (October 2015):48-53.
- Fouladbash, Lisa and **William S. Currie**. 2015. Agroforestry in Liberia: Household Practices, Perceptions and Livelihood Benefits. *Agroforestry Systems* 89(2):247-266.
- Currie, William S.**, Deborah E. Goldberg, Jason Martina, Radka Wildova, Emily Farrer, and Kenneth Elgersma. 2014. Emergence of nutrient-cycling feedbacks related to plant size and invasion success in a wetland community-ecosystem model. *Ecological Modelling* 282: 69-82.
- Visscher, Rachel S., Joan I Nassauer, Daniel G. Brown, **William S. Currie**, and Dawn C. Parker. 2014. Exurban residential household behaviors and values: Influence of parcel size and neighbors on carbon storage potential. *Landscape and Urban Planning* 132:37-46.
- Kahan, Ari, **William S. Currie**, and Daniel G. Brown. 2014. Nitrogen and Carbon Biogeochemistry in Forest Sites Along an Indirect Urban-Rural Gradient in Southeastern Michigan. *Forests* 5:643-655.
- Nassauer, J.I., Cooper, D.A., Marshall, L.L., **Currie, William S.**, Hutchins, M., Brown, D.G. 2014. Parcel size related to household behaviors affecting carbon storage in exurban residential landscapes. *Landscape and Urban Planning* 129:55-64.
- Robinson, Derek T., Shipeng Sun, Meghan Hutchins, Rick L. Riolo, Daniel G. Brown, Dawn C. Parker, Tatiana Filatova, **William S. Currie**, and Sarah Kiger. 2013. Effects of land markets and land management on ecosystem function: A framework for modeling exurban land-change. *Environmental Modeling and Software* 45:129-140.
- Templer, PH, MC Mack, FS Chapin III, LM Christenson, JE Compton, HD Crook, **WS Currie**, C Curtis, B Dail, CM D'Antonio, BA Emmett, H Epstein, CL Goodale, P Gundersen, SE Hobbie, K Holland, DU Hooper, BA Hungate, S Lamontagne, KJ Nadelhoffer, CW Osenberg, SS Perakis, P Schleppi, J Schimel, IK Schmidt, M Sommerkorn, J Spoelstra, A Tietema, WW Wessel and DR Zak. 2012. Sinks for Nitrogen Inputs in Terrestrial Ecosystems: A Meta-Analysis of <sup>15</sup>N Tracer Field Studies. *Ecology* 93(8): 1816–1829.
- Whittinghill, Kyle A., **William S. Currie**, Donald R. Zak, Andrew J. Burton and Kurt S. Pregitzer. 2012. Anthropogenic N deposition increases soil C storage by decreasing the extent of litter decay: analysis of field observations with an ecosystem model. *Ecosystems* 15(3): 450-461.

- Krause Kim, Isabelle Providoli, **William S. Currie**, Harald Bugmann, Patrick Schleppei. 2012. Long-term tracing of whole catchment <sup>15</sup>N additions in a mountain spruce forest: measurements and simulations with the TRACE model. *Trees - Structure and Function* 26:1683-1702.
- Currie, William S.** 2012. Energy Flow. In *Oxford Bibliographies Online: Ecology*. Ed. David Gibson. New York: Oxford University Press. <http://oxfordbibliographiesonline.com> DOI: 10.1093/OBO/9780199830060-0047.
- Currie, William S.** 2011. Units of nature or processes across scales? The ecosystem concept at age 75. (Invited *Tansley Review*.) *New Phytologist* 190:21-34.
- Hofmockel, Kirsten, Anne Gallet-Budynek, Heather McCarthy, **William S. Currie**, Robert B Jackson, and Adrien C Finzi. 2011. Sources of increased N uptake in forest trees growing under elevated CO<sub>2</sub>: Results of a large-scale <sup>15</sup>N tracer study. *Global Change Biology* 17: 3338–3350.
- Currie, William S.**, Harmon, M.E., Burke, I.C., Hart, S.C., Parton, W.J., and Silver, W.L. 2010. Cross-biome transplants of plant litter show decomposition models extend to a broader climatic range but lose predictability at the decadal time scale. *Global Change Biology* 16: 1744-1761.
- Robinson. D.T., Brown, D.G., and **W.S. Currie**. 2009. Modelling carbon storage in highly fragmented and human-dominated landscapes: linking land-cover patterns and ecosystem models. *Ecological Modelling* 220:1325-1338.
- Harmon, M. E., W. L. Silver, B. Fasth, H. Chen, I. C. Burke, W. J. Parton, S. C. Hart, and **W. S. Currie**. 2009. Long-term patterns of mass loss during the decomposition of leaf and fine root litter: an intersite comparison. *Global Change Biology* 15:1320-1338.
- Simmons, J. A., **W. S. Currie**, K. N. Eshleman, K. Kuers, S. Monteleone, T. L. Negley, B. R. Pohlrad, and C. L. Thomas. 2008. Forest to reclaimed mine land use change leads to altered ecosystem structure and function. *Ecological Applications* 18:104-118.
- Currie, William S.**, and Kathleen M. Bergen. 2008. Temperate Forest. Pages 3494-3503 in S. E. Jorgensen and B. D. Fath, Editors-in-chief, *Ecosystems*, vol. 5 of *Encyclopedia of Ecology*, 5 vols. Elsevier B. V., Oxford.
- Currie, William S.** 2007. Modeling the dynamics of stable-isotope ratios for ecosystem biogeochemistry. Pp 450-479 In Lajtha, K. and Michener, R., Eds, *Stable Isotope Ratios in Ecology and Environmental Science*, 2nd Edition. Blackwell.
- Parton, William, Whendee L. Silver, Ingrid Burke, Leo Grassens, Mark E. Harmon, **William S. Currie**, Jennifer King, E. Carol Adair, Leslie Brandt, Steve Hart, and Becky Fasth. 2007. Global-Scale Similarities In Nitrogen Release Patterns During Long-Term Decomposition. *Science* 315: 361-364.
- Seidl, R., W. Rammer, D. Jäger, **W. S. Currie** and M. J. Lexer. 2007. Assessing trade-offs between carbon sequestration and timber production within a framework of multi-purpose forestry in Austria. *Forest Ecology and Management* 248:64-69.
- Castro, Mark S., Keith N. Eshleman, Louis F. Pitelka, Geoff Frech, Molly Ramsey, **William S. Currie**, Karen Kuers, Jeffrey A. Simmons, Bob R. Pohlrad, Carolyn L. Thomas, and David M. Johnson. 2007.

- Symptoms of nitrogen saturation in an aggrading forested watershed in western Maryland. *Biogeochemistry* 84:333-348.
- Chastain, Robert A. Jr., **William S. Currie**, and Philip A. Townsend. 2006. Carbon Sequestration and Nutrient Cycling Implications of the Evergreen Understory Layer in Appalachian Forests. *Forest Ecology and Management* 231: 63-77.
- Johnston, C. A., P. Groffman, D. D. Breshears, Z. G. Cardon, **William S. Currie**, W. R. Emanuel, J. B. Gaudinski, R. B. Jackson, K. Lajtha, K. Nadelhoffer, D. W. Nelson, W. M. Post, G. J. Retallack, and L. Wielpolski. 2004. The frontier below: Carbon cycling in soil. *Frontiers in Ecology and the Environment* 10:522-528.
- Currie, William S.**, Knute J. Nadelhoffer, and John D. Aber. 2004. Redistributions of  $^{15}\text{N}$  highlight turnover and replenishment of mineral soil organic N as a long-term control on forest C balance. *Forest Ecology and Management*, 196:109-127.
- Nadelhoffer, Knute J., Benjamin P. Colman, **William S. Currie**, Alison Magill, and John D. Aber. 2004. Decadal-scale fates of  $^{15}\text{N}$  tracers added to oak and pine stands under ambient and elevated N inputs at the Harvard Forest (USA). *Forest Ecology and Management*, 196:89-107.
- Magill, Alison H., John D. Aber, **William S. Currie**, Knute J. Nadelhoffer, Mary Martin, William H. McDowell, Jerry M. Melillo, and Paul Steudler. 2004. Ecosystem response to 15 years of chronic nitrogen additions at the Harvard Forest LTER, Massachusetts, USA. *Forest Ecology and Management* 196:7-28.
- Luo, Y., B. Su, **William S. Currie**, J. S. Dukes, A. Finzi, U. Hartwig, B. Hungate, R. McMurtrie, R. Oren, W. J. Parton, D. Pataki, R. Shaw, D. R. Zak, and C. Field. 2004. Progressive nitrogen limitation of ecosystem responses to rising atmospheric carbon dioxide. *BioScience* 54:731-739.
- Aber, John D., Alison Magill, Knute J. Nadelhoffer, Jerry Melillo, Paul Steudler, Patricia Micks, Joseph Hendricks, Richard Bowden, **William S. Currie**, William H. McDowell, and Greg Berntson. 2004. Exploring the process of nitrogen saturation. Pages 259-279 in D. Foster and J. D. Aber, editors. Forests in Time: The Environmental Consequences of 1,000 Years of Change in New England. New Haven: Yale University Press, p. 259-279.
- Aber, John D., **William S. Currie**, Mark Castro, Mary Martin, and Scott Ollinger. 2004. Synthesis and Extrapolation: Models, Remote Sensing and Regional Analysis. Chapter 17 In: Foster, D., and J. Aber (eds.) Forests in Time: The Environmental Consequences of 1,000 Years of Change in New England. New Haven: Yale University Press, p. 338-362.
- Yanai, Ruth D., **William S. Currie**, and Christine L. Goodale. 2003. Soil carbon dynamics following forest harvest: an ecosystem paradigm reconsidered. *Ecosystems* 6:197-212.
- Currie, William S.** 2003. Relationships between carbon turnover and bioavailable energy fluxes in two temperate forest soils. *Global Change Biology* 9(6):919-930.
- Townsend, Philip A., Jane R. Foster, Robert A. Chastain, Jr., and **William S. Currie**. 2003. Application of imaging spectroscopy to mapping canopy nitrogen in forests of the Central Appalachian Mountains using Hyperion and AVIRIS. *IEEE Transactions on Geosciences and Remote Sensing* 41(6):1347-1354.

- Currie, William S.**, Ruth D. Yanai, Kathryn B. Piatek, Cynthia E. Prescott and Christine L. Goodale. 2003. Processes affecting carbon storage in the forest floor and in downed woody debris. Chapter 9 In Kimble, J. M. et al., Eds., The Potential for U.S. Forest Soils to Sequester Carbon and Mitigate the Greenhouse Effect. Lewis Publishers, Boca Raton, FL.
- Currie, William S.** and Knute J. Nadelhoffer. 2002. The imprint of land use history: Patterns of carbon and nitrogen in downed woody debris at the Harvard Forest. *Ecosystems* 5(5):446-460.
- Currie, William S.**, Knute J. Nadelhoffer and Benjamin Colman. 2002. Long-term movement of <sup>15</sup>N tracers into fine woody debris under chronically elevated N inputs. *Plant and Soil* 238:313-323.
- Wullschlegel, S. D., R. B. Jackson, **William S. Currie**, A. D. Friend, Y. Luo, F. Mouillot, Y. Pan, and G. Shao. 2001. Below-ground processes in gap models for simulating forest responses to global change. *Climatic Change* 51:449-473.
- Ramsey, Molly, **William S. Currie**, and Madhura V. Kulkarni. 2001. Contrasting pattern and process in natural and rehabilitated ecosystems: The role of microtopography. *Recent Research Developments in Ecology* 1:129-144. Trivandrum, India: Transworld Research Network.
- Currie, William S.** and Knute J. Nadelhoffer. 1999. Dynamic redistribution of isotopically labelled cohorts of nitrogen inputs in two temperate forests. *Ecosystems* 2:4-18.
- Currie, William S.** 1999. The responsive C and N biogeochemistry of the temperate forest floor. *Trends in Ecology and Evolution* 14:316-320.
- Currie, William S.**, Knute J. Nadelhoffer, and John D. Aber. 1999. Soil detrital processes controlling the movement of <sup>15</sup>N tracers to forest vegetation. *Ecological Applications* 9:87-102.
- Currie, William S.**, John D. Aber, and Charles T. Driscoll. 1999. Leaching of nutrient cations from the forest floor: Effects of nitrogen saturation in two long-term manipulations. *Canadian Journal of Forest Research* 29:609-620.
- Moorhead, Darryl, **William S. Currie**, Edward Rastetter, William Parton, and Mark Harmon. 1999. Climate and litter quality controls on decomposition: An analysis of modeling approaches. *Global Biogeochemical Cycles* 13:575-589.
- Aber, John D., William H. McDowell, Knute J. Nadelhoffer, Alison Magill, Greg Berntson, Mark Kamakea, Steven G. McNulty, **William S. Currie**, Lindsey Rustad, and Ivan Fernandez. 1998. Nitrogen saturation in temperate forest ecosystems: Hypotheses revisited. *BioScience* 48:921-934.
- McDowell, William H., **William S. Currie**, John D. Aber, and Yuriko Yano. 1998. Effects of chronic nitrogen amendment on production of dissolved organic carbon and nitrogen in forest soils. *Water, Air and Soil Pollution* 105:175-182.
- Currie, William S.** and John D. Aber. 1997. Modeling leaching as a decomposition process in humid montane forests. *Ecology* 78:1844-1860.
- Hadjimichael, E., **William S. Currie**, and Stavros Fallieros. 1997. The Thomas-Reiche-Kuhn sum rule and the rigid rotator. *American Journal of Physics* 65:335-341.



**Currie, William S.**, John D. Aber, William H. McDowell, Richard D. Boone, and Alison H. Magill. 1996. Vertical transport of dissolved organic C and N under long-term N amendments in pine and hardwood forests. *Biogeochemistry* 35:471-505.

**Currie, William S.**, James N. Galloway, and Herman H. Shugart. 1996. Watershed base-cation cycle dynamics modeled over forest regrowth in a Central Appalachian ecosystem. *Water, Air and Soil Pollution* 89:1-22.

Merriam, Jeffrey, William H. McDowell, and **William S. Currie**. 1996. A high-temperature catalytic oxidation technique for determining total dissolved nitrogen. *Soil Science Society of America Journal* 60:1050-1055.

## Other Publications

Gundersen, P., B. Berg, **W. S. Currie**, N. B. Dise, B. A. Emmett, V. Gauci, M. Holmberg, O. J. Kjønnaas, J. Mol-Dijkstra, C. van der Salm, I. K. Schmidt, A. Tietema, W. W. Wessel, L. S. Vestgarden, C. Akselsson, W. De Vries, M. Forsius, H. Kros, E. Matzner, F. Moldan, K. J. Nadelhoffer, L.-O. Nilsson, G. J. Reinds, U. Rosengren, A. O. Stuanes and R. F. Wright. 2006. Carbon-Nitrogen Interactions in Forest Ecosystems – Final Report. Forest & Landscape Working Papers no. 17-2006, Danish Center for Forest, Landscape and Planning, Hørsholm, Denmark. 62 p.

Simmons, Jeffrey A. and **William S. Currie**. 2005. Alteration of soil phosphorus pools from coal mining and reclamation. *Annual Proceedings of the West Virginia Academy of Science*, 77(2):31-41 (2005).

Providoli, Isabel, Harald Bugmann, **William S. Currie** and Patrick Schleppei. 2005. A model-based evaluation of nitrogen cycling in a Norway spruce mountain forest. Chapter 5, p. 83-106 in Providoli, I., Pathways of atmospherically deposited nitrogen in two ecosystems in central Switzerland: An experimental and model-based study using the <sup>15</sup>N isotope. PhD Dissertation ETH No. 15887, Swiss Federal Institute of Technology Zurich.

**Currie, William S.** 2000. Modeling Nutrient Cycling and Decomposition Processes in Forest Vegetation and Soils. In Nolan, R. S. (Ed.), *Electric Biology: Ecosystems*. Published on CD-ROM by Digital Studios, 209 Santa Clara Avenue, Aptos CA 95003.

**Currie, William S.** 2000. Definitions of the 'Ecosystem' Concept. In Nolan, R. S. (Ed.), *Electric Biology: Ecosystems*. Published on CD-ROM by Digital Studios, 209 Santa Clara Avenue, Aptos CA 95003.

**Currie, William S.** 1996. Book review of *Fundamentals of Soil Ecology*, by D. C. Coleman and D. A. Crossley. *Trends in Ecology and Evolution* 11(9):390-391

## Other Scholarly Products

**Currie, William S.** 2008-2018. MONDRIAN community-ecosystem model (Modes of Nonlinear Dynamics, Resource Interactions And Nutrient cycling), version 4.1. Computer model code in Visual Basic 2017.

**Currie, William S.**, Jason Martina, and Kenneth Elgersma. A User Guide for the MONDRIAN model, version 4.1. 2018. 70 pp.

**Currie, William S.** and David Helmers. 2004. A User Guide for the TRACE Model, version 4.2.0 update 1. 70 pp.

**Currie, William S.** 1997-2004. Tracer Redistributions Among Compartments in Ecosystems (TRACE), Ecosystem model, version 4.2.0. Computer model code in Visual Basic 6.0.

## Synergistic Research Activities (selected)

U-M Distinguished Faculty & Graduate Student Seminar Series titled “Climate Change Mitigation: Moving Beyond Carbon Neutral.” PI and Co-organizer of this funded (\$12,600) 2016-2017 seminar series, sponsored by the UM Office of Research and co-hosted by the School of Natural Resources and Environment, the Energy Institute and the Erb Institute.

Upper Midwest and Great Lakes Landscape Conservation Cooperative (UMGL LCC). Member of Northern Forests working group, 2015-present. Workshop participant, Regional Forest Management Workshops, Rhinelander, WI, May 21, 2014, and Sault Ste. Marie, MI, June 27-29, 2016.

Spatial Land Use Change and Ecological Effects: Land Markets, Land Management, and Land Carbon in Exurban Environments. Co-organizer of this NSF-sponsored workshop, May 19-20, 2014, Ann Arbor, MI.

SESYNC (National Socio-Environmental Synthesis Center) Theme Meeting Workshop, Ann Arbor, MI, May 3-4, 2012. Workshop participant.

Stockholm University – University of Michigan Faculty Exchange Award: collaborative research in residence at the Stockholm Resilience Centre, Stockholm, Sweden, 2010. Project title: Designing ecosystem models for sustainability science.

NCEAS (National Center for Ecological Analysis and Synthesis) working group on meta-analyses and modeling for cross-site comparison of large-scale <sup>15</sup>N studies in forest ecosystems, 2005 - 2006. (Publication, Templer et al. 2012). Working group on progressive N limitation under elevated CO<sub>2</sub>, 2001 – 2002. (Publication, Luo et al. 2004.)

LIDET project (LTER Intersite Decomposition Experiment Team); NCEAS working group to analyze 10-year dataset, 2004. Team member and workshop participant 1993, 1996, 2002, 2004 (Publications, Moorhead et al. 1999, Parton et al. 2007, Harmon et al. 2009, Currie et al. 2010).

Organizer or Co-organizer of two international workshops on synthesis and modeling of forest carbon-nitrogen interactions under elevated N deposition: Workshop at the University of Michigan Biological Station, 2003 (Organizer), and in Woods Hole MA, 2002 (Co-organizer).

CNTER (Carbon and Nitrogen Interactions; a US – European collaborative project sponsored by the European Union); member of scientific team and modeler of C, N, and <sup>15</sup>N across US and European forest sites, 2001 – 2005.

ROCA (Research Opportunities for Collaboration in the Appalachians), project co-organizer, collaborator, and workshop co-organizer, “Watershed Research Workshop,” Appalachian Laboratory, June 1999, 2000, 2001, 2002, 2003.

## University Service

Chair, Provost's Faculty Transition Team for planning a new School for Environment and Sustainability at the University of Michigan, 2016-2017.

Promotion and Tenure Committee, SNRE, 2016-2017, 2018-2019.

Faculty Parliamentarian, SNRE, 2015-2016.

MiWorkspace Leadership Committee, SNRE, 2015. Centrally-organized university effort to restructure computing and software delivery for staff, faculty, and research and teaching needs.

Associate Dean for Academic Affairs, School of Natural Resources and Environment (SNRE), 2010-2012.

Member, Executive Committee, SNRE (*Ex officio*), 2010-2012.

Chair, Scholarship Committee, SNRE, 2010-2012.

Chair, PhD Committee, SNRE, 2010-2012; member, 2004-2006.

Chair, Field of Study Coordinating Committee, SNRE, 2010-2012.

Chair, Properties Committee, SNRE, 2010-2012; member, 2009. Oversight and management of University properties including Stinchfield Woods, Newcomb Tract, and Saginaw Forest.

Chair, Ad hoc Committee to prepare SNRE response to Program in the Environment Internal Review, 2012

Executive Advisory Board (*ex officio*), Erb Institute for Sustainable Enterprise, University of Michigan, 2010-2012.

Member, UM Vice Provosts and Associate Deans Group (VPADG), 2010-2012.

Founding Co-Director, Envoys Diversity Program, 2011-2012; Chair, task force for diversity program development, 2011.

Faculty Search Committees, University of Michigan: Spatial Science of Coupled Human-Natural Systems, SEAS, 2018; Economics of Climate Change, SNRE, 2015-2016; Environmental Informatics, SNRE, 2013 and 2016; Sustainable Food Systems, SNRE, 2012; Sustainable Food Systems, Department of Ecology and Evolutionary Biology, 2012; Aquatic Conservation Ecology, SNRE, 2009; Terrestrial Conservation Ecology, SNRE, 2009; Ecologist, Department of Ecology and Evolutionary Biology, 2004-2005. At University of Maryland: Environmental Educator, 2000; Landscape Ecologist, 1998.

CRLT (Center for Research on Learning and Teaching at UM) faculty Special Interest Group on Instructional Technology in Learning and Teaching, 2013

UM Ginsberg Center External Review, 2012.

Curriculum Committee, University of Michigan Biological Station, 2010-2011.

UM Senate Assembly, elected representative from SNRE, 2006 – 2009.

Field of Study Coordinator, SNRE, Environmental Informatics 2005-2009, 2015-2016, and 2018-2019; Terrestrial Ecosystems 2008.

Graduate Student Instructor Selection Committee, Program in the Environment, University of Michigan 2006, 2008.

Steering Committee, SNRE Interdisciplinary Seminar and Workshop Series, 2005.

Faculty Advisory Committee, Program in The Environment, University of Michigan 2004 - 2005.

Doris Duke Fellowship Selection Committee (ad hoc), SNRE, 2004.

Faculty Senator, University of Maryland, 2000 - 2003.

Co-chair, Ecology Area of Specialization in the MEES graduate program (Marine, Estuarine, and Environmental Sciences), University of Maryland, 2000 - 2003.

Graduate Council, University of Maryland Center for Environmental Science (UMCES), 2001 – 2003.

Chair, Graduate Education Committee, UMCES Appalachian Laboratory, 2001 – 2003.

Chair, Committee to develop a permanent research station in Maryland, UMCES, 2001.

Other committee membership at UMCES, 1997-2003: Computer Committee, Library Committee, Colloquium Committee, Faculty Forum Committee, Faculty Convocation Committee, Space Allocation Committee.

Organizer of the Ecosystems Center Seminar Series, Marine Biological Laboratory, 1996.  
President, Graduate Student Organization, University of New Hampshire, 1994-1995.  
Graduate Council, graduate student representative, University of New Hampshire, 1994-1995.  
University President's Cabinet, graduate student representative, University of New Hampshire, 1994-1995.

## Professional service and outreach

*Subject-Matter Editor*, Ecological Applications, 2013 – present.  
*Collaborator*, Saginaw Bay CISMA (Cooperative Invasive Species Management Area), 2016 – present.  
*Panelist*, National Academies of Science, Engineering, and Medicine, Gulf Research Program, Research and Development Panel, Washington DC, 2017.  
*Chair*, review of Editor-In-Chief for Ecological Issues, for the Ecological Society of America, 2015  
*Participant*, Great Lakes Wetland Mapping Workshop, The Nature Conservancy, Grand Rapids, MI, 2015  
*Panelist*, National Science Foundation Ecosystem Studies Program, 2004, 2006, 2007, 2008, 2013.  
*Panelist*, EPA STAR Grants Program, 2000, 2006, 2013.  
*Instructor*, Michigan Math and Science Scholars, a summer program exposing advanced high school students to college-level mathematics and science courses at the University of Michigan; taught a 2-week full-day course in 2006, 2007, 2008, 2009, 2010.  
*Co-organizer and Moderator*, Symposium, “Advances in Modeling Coupled Human-Natural Systems for Sustainability,” at the 2007 AAAS (American Association for the Advancement of Science) Annual Meeting, 15-19 February 2007, San Francisco, CA.  
*Associate Editor*, Biogeochemistry, 2002 – 2006.  
*Session Presider*, “Forest Ecology III, historical and environmental changes”, at the 91<sup>st</sup> Annual Meeting of the Ecological Society of America, Memphis TN, August 2006.  
*Panelist*, MISTRA Scientific Review Panel to assess LUSTRA Program (Land Use Strategies to Reduce Greenhouse Gas Emissions). MISTRA Foundation for Strategic Environmental Research, Stockholm, Sweden, 2002.  
*SEEDS Diversity Program field trip participant and presenter*, UM Biological Station, 2005; *SEEDS Diversity Mentor* at the Annual Meeting of the Ecological Society of America, 2002.  
*Member*, Finance and Investment Committee, Ecological Society of America, 2001 – 2005.  
*Session Chair*, “Ecosystem Ecology,” 87<sup>th</sup> Ann. Meeting of the Ecological Society of America, 2002.  
*Session leader*, “Facilitating the input of data into models and model-data comparisons,” Cary Conference IX, “The Use of Models in Ecosystem Science,” Institute for Ecosystem Studies, Millbrook, NY, 2001.  
*Symposium Organizer and Chair*, “Modeling soil N turnover and the availability of inorganic and organic N to forest trees”, for combined annual meeting of the International Society for Ecological Modeling and the Ecological Society of America, August 1999.  
*Session Chair*, “Nitrogen cycling,” 83<sup>rd</sup> Ann. Meeting of the Ecological Society of America, 1998.  
*Session Chair*, “Biogeochemistry of the Forest Floor,” 81<sup>st</sup> Ann. Meeting of the Ecological Society of America, 1996.  
*Organizer*, “Science Safari,” bringing local teachers to the Ecosystems Center at the Marine Biological Laboratory, 1997.  
*Peer reviewer* (past 10 years):  
*Biogeochemistry, Ecology, Ecological Applications, Ecological Modelling, Ecosystems, Forest Ecology and Management, Journal of Ecology, Journal of Mountain Science, Nature Climate Change, Oecologia, Global Change Biology, Austrian Science Fund, U.S. Environmental Protection Agency Western Ecology Division, US EPA STAR Grants Program, Great Lakes*

Integrated Sciences and Assessments (GLISA), NSF Division of Environmental Biology, NSF EPSCoR, NSF Integrative Research Challenges, NSF RUI (Research at Undergraduate Institutions), NSF RIA (Research Initiation Awards), NSF LTREB (Long-Term Research in Environmental Biology), NSF Atmospheric Chemistry, NSF Physical Oceanography, USDA National Research Initiative Competitive Grants Program, Netherlands Organization for Scientific Research, W. H. Freeman, Pearson, Oxford University Press, Elsevier, Cengage Learning.

## Courses taught

### **Major courses**

“Sustainability Issues in the Great Lakes Region” (Environ 305, 3 cr), fall 2018.

“Ecological Issues” (Environ 201, 4 cr), an undergraduate introductory course in the Program in the Environment (PitE), lectures and 6 discussion sections, winter 2015, 2016.

“Applied Ecosystem Modeling” (NRE 501, 2 cr), graduate interactive-learning course, winter 2014, 2015, 2016, 2017.

“Landscape Ecology” (NRE 501, 2 cr), graduate lecture course, fall 2014, 2015, winter 2017.

“Ecology: Science of Context and Interaction” (NRE 509, 4 cr), graduate lecture course with 7 lab sections, SNRE, each year fall 2009 through 2013.

“Biofuels and Sustainability” (NRE 501, 3 cr), graduate lecture course, SNRE, winter 2013.

“Bio-based Carbon Mitigation and Biofuels” (NRE 501, 3 cr), graduate lecture course, SNRE, winter 2009.

“Modeling Coupled Human-Natural Systems” (Environ 401, 3 cr), interactive lecture & laboratory course, Program in the Environment, fall 2007, 2008, 2009, winter 2011.

“Ecosystem Modeling and Synthesis” (NRE 501, 3-4 cr), graduate lecture & laboratory course, SNRE, fall 2004, 2005, winter 2008.

“Introduction to Environmental Analysis” (Environ / NRE 239, 4 cr), undergraduate introductory course, lectures and 6 lab sections, Program in the Environment, winter 2004, 2005, 2006.

“Land Margin Interactions”, 4-cr graduate course, including two overnight field trips, University of Maryland Center for Environmental Science (UMCES), 2001, 2002.

“Energetics,” 3-cr graduate course, University of Maryland Center for Environmental Science (UMCES), 1999.

### **Seminar and laboratory courses**

Ecology and Management of Great Lakes Coastal Wetlands (EAS 639, 1 cr), graduate seminar course, SEAS, fall 2017.

Future scenarios of global food security (NRE 639, 1 cr), graduate seminar course, SNRE, winter 2013, 2014.

Modeling dynamic ecological systems in Stella (NRE 507, 1 cr), graduate computer laboratory course, SNRE, fall 2011, 2012, 2013.

Resilience Thinking: Reading case studies of sustainability analysis in human-natural systems (NRE 639, 1 cr), graduate seminar course, SNRE, winter 2008.

Forest history, disturbance, and management in the Great Lakes region (NRE 639, 1 cr), SNRE, winter 2006.

Ecosystem Models as Tools for Research and Decision Making (NRE 639, 1 cr), graduate seminar course, SNRE, fall 2003.

Advanced Ecosystem Modeling (NRE 639, 1 cr) graduate computer laboratory course, SNRE, winter 2005.

Graduate thesis and proposal writing (1 cr), graduate seminar course, University of Maryland Center for Environmental Sciences (UMCES), 2001.

Biogeochemical and Hydrogeochemical Recovery of Disturbed Watersheds (1 cr), graduate seminar course (co-taught), UMCES, 1999.

Nutrient Dynamics at Landscape Scales (1 cr), graduate seminar course (co-taught), UMCES, 1998.

## Students advised

### ***Postdoctoral fellows advised:***

#### University of Michigan

Sean Sharp, 2018

Preeti Rao (co-advised), 2016-2017

Zhiyuan Song (co-advised), 2013-2014

Jason Martina (co-advised), 2012-2014

Kyle Whittinghill (co-advised), 2010-2011

Willem W. Wessel, 2005-2006

### ***PhD student committees chaired:***

#### University of Michigan

Liza Jenkins, 2011-present

Sarah Kiger, 2009-present

Kristine Crous, 2005-2007

Shanna Shaked, 2004-2005

Tao Zhang, 2003-2005

### ***PhD student committee membership:***

#### University of Michigan

Benjamin Lee, 2014-

Arthur Endsley, 2014-

John Graham, 2013-2016

Susan Cheng, 2012-2016

Hui Xu, 2012-2016

Elizabeth Entwistle, 2011-2012

Lauren Cline, 2010-2011

Jasmine Crumsey-2007-2014

Derek Robinson, 2006-2009

John Hassett, 2006-2009

Irem Daloglu, 2007-2008

Jason Taylor, 2006-2008

Yuka Makino, 2005-2008

Amy Burnicki, 2004-2008

Nathan Bosch, 2004-2007

Dan Rucinski, 2007-2008

Deborah Hudleston, 2006-2007

Haejin (Jinny) Han, 2005-2006

#### Swiss Federal Institute for Forest, Snow and Landscape Research, Switzerland

Kim Krause, 2008-2012 (listed as co-supervisor in the Swiss system)

#### University of Maryland

Chris Welcker, 1999-2002

University of New Hampshire

Mark Kamakea, 1996-1998

***Masters theses chaired:***

University of Michigan

Rong Xu, 2017-

Erin Barton, 2016-

Lisa Fouladbash, 2011-2013

Anna Brunner, 2009-2012

Meghan Hutchins, 2007-2009

Nicolas Enstice, 2005-2007

Ari Kahan, 2005-2007

Alicia Lindauer-Thompson, 2005-2007

University of Maryland

Cynthia Giffen (co-advised), 2001-2003

Madhura Kulkarni, 2001-2003

Molly McFarland Ramsey, 1999-2002

***Masters projects and practica advised:***

University of Michigan

Kate Keeley, 2016-2017

Elliot Kurtz, 2016-2017

Luxian Li, 2016-2017

Ed Waisanen, 2016-2017

Yu Xin, 2016-2017

Fan Zhang, 2016-2017

Christina Carlson, 2016-2017

Sarah Turner, 2016-2017

Alex Clayton, 2016-2017

Flora Yifan He, 2016-2017

Joshua Flickinger, 2016-2017

Haosong Jiao, 2012-2014

Nancy Gephart, 2012-2013

Hannah Erickson, 2012-2013

Sam Stevenson, 2012-2013

Abby Goldstein, 2012-2013

Karly Zimmerman (co-advised), 2011-2013

Nathan Springer, 2010-2011

Brian Hartmann, 2010-2011

Mike Kasameyer, 2010-2011

Russell Martin, 2009-2010

***Masters students advised (non-thesis):***

University of Michigan

Charlotte Weinstein, 2016-

Alice Elliot, 2016-

Tonghui Ming, 2015-2017

Fan Zhang, 2015-2017

Wanqi Ouyang, 2015-2017

Meghan Bogaerts, 2014-2017

Stephanie Miller, 2014-2017

Bo Li, 2014-2016

Jiawei Huang, 2014-2016

Zu Dienle Tan, 2014-2016

Gwen Oster, 2013-2015

Meghan Hemken, 2013-2015

Fumi Kikuyama, 2012-2014

Seta Chorbajian, 2012-2013

Xu Xin, 2012-2014

Evan Crane, 2011-2013

Melody Lopez (co-advised), 2011-2013

Justin D'Atri, 2011-2012

Zane Hadzick, 2010-2012

Kailai Zhang, 2009-2010

Zachary Brym, 2009

Katie Pethan, 2008-2011

Kevin Brown, 2008-2009

William Walters, 2007-2008

Peter Gamberg, 2008-2009

Sharon Gourджи, 2003-2005

***Masters students thesis committee membership or reader:***

University of Michigan

Teegan McClung, 2016

Benjamin Connor Barrie, 2011-2013

Joshua Sims, 2011-2013

Karyl Wentzloff, 2011

Justin Heslinga, 2009

Lauren Lesch, 2009-2010

University of Maryland

Timothy Negley, 1999-2001

## Presentations (selected)

**William S. Currie**, Jason Martina, and Kenneth Elgersma. The Mondrian model: Introduction of an interactive web-based tool for Great Lakes coastal wetland management and restoration. Presentation given at Michigan Tech Research Institute, Ann Arbor, MI, June 5, 2018.

**William S. Currie**, Preeti Rao, and Stephanie Hart. Forest fragmentation and carbon storage along a regional social-ecological gradient. Poster presentation given at the US-IALE annual conference (US Regional Association of the International Association for Landscape Ecology), Chicago, IL, April 9, 2018.

**William S. Currie**. A sustainability science perspective on the regional scale gradient in forest cover in the Upper Midwest and Great Lakes basin. Invited joint seminar given to the Departments of Ecology and Evolutionary Biology and Ecosystem Science and Management, Texas A&M University, College Station, Texas, Feb 26, 2018.

Laura Bourgeau-Chavez, Phyllis Higman, and **William S. Currie**. Sharing insights on invasive Phragmites management. Oral presentation and discussion, The Science, Practice & Art of Restoring Native Ecosystems 2018. East Lansing, MI, January 12-13, 2018.

**William S. Currie**, Kenneth J. Elgersma, Jason P. Martina, and Laura Bourgeau-Chavez. The Mondrian model: a tool to develop an adaptive management framework to restore invaded wetlands. Oral presentation, International Association of Great Lakes Researchers (IAGLR), Detroit, MI, May 15-19, 2017.

Paige Fischer, **William S. Currie**, Michal Russo. Assessing Potential To Protect and Enhance Carbon Sinks on Private Forests in the Northern Great Lakes Region. Oral presentation, Beyond Carbon Neutral annual meeting, University of Michigan, April 27, 2017.

Edward Waisanen, Kathryn Keeley, Elliot Kurtz, Luxian Li, Yu Xin, Fan Zhang, Douglas Pearsall, and **William S. Currie**. Supporting Conservation and Decision-Making in the Northwoods: Mapping Values, Services, and Threats. Oral presentation, International Association of Great Lakes Researchers (IAGLR), Detroit, MI, May 15-19, 2017.

Keely, Kathryn, Elliot Kurtz, Edward Waisanen, Luxian Li, Fan Zhang, Yu Xin, and **William S. Currie**. Supporting conservation and decision-making in the Northwoods: Mapping forest values, services, and threats. Webinar given to Upper Midwest and Great Lakes Landscape Conservation Cooperative (UMGL LCC), Northwoods Working Group, April 11, 2016.

**William S. Currie**, The Mondrian model role in the Saginaw Bay Cisma wetland restoration initiative. Phragmites Adaptive Management Webinar, Saginaw Bay Cisma, 20 October 2016.

**Currie, William S.** Modeling nutrient inflows and invasive plants in Great Lakes coastal wetlands. Great Lakes Wetland Mapping Workshop organized by The Nature Conservancy, Grand Rapids, MI, Nov. 17, 2015.











