

Lydia P. Olander, PhD

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Summary of Professional Experience

Lydia Olander directs the Ecosystem Services Program at the Nicholas Institute for Environmental Policy Solutions at Duke University. The Institute is a think and do tank focused on helping decision makers create timely, effective, and practical solutions to the World's critical environmental challenges. Lydia leads the National Ecosystem Services Partnership, supporting efforts to integrate ecosystem services into decision making, studies environmental markets and mitigation, and sustainable infrastructure, and is working to expand engaged interdisciplinary sustainability science in academia. She serves on the Army Science Board's (ASB) Environmental Advisory Sub-Committee and the Secretariat of The Bridge Collaborative. She has published in a wide range of professional journals including *Integrated Environmental Assessment and Management*, *Ecosystems*, *Biogeochemistry*, *Soil Biology and Biochemistry*, *Forest Ecology and Management*, *Earth Interactions*, and *Environmental Research Letters*, *Global Environmental Politics*, *Environmental Management*, *The Environmental Law Reporter*, *Current Opinion in Environmental Sustainability*, *Advances in Agronomy*, *Global Change Biology*, *Frontiers in Ecology and the Environment*, *Ecosystem Services*, *Ecological Indicators*, *Nature Sustainability*, *Forests*, and *BioScience*.

Prior to joining the Nicholas Institute, she spent a year as an AAAS Congressional Science and Technology Fellow working with Senator Joseph Lieberman on environmental and energy issues. Before that she was a researcher with the Carnegie Institution of Washington's Department of Global Ecology, where she studied the biogeochemical impacts of logging in the Brazilian Amazon and utilized remote sensing to extrapolate regional impacts. She received her PhD from Stanford University, where she studied nutrient cycling in tropical forests, and earned a master's degree in forest science from Yale University.

Education

2002 Doctor of Philosophy, Biogeochemistry, Stanford University
1995 Masters of Forest Science, Yale School of Forestry and Environmental Studies
1992 Bachelor of Arts, Environmental Science and Policy (College Scholar Program, summa cum laude), Cornell University

Continuing Education

2020-2021 Duke Leadership Academy
Fall 2019 Training in Program Evaluation at Duke University
Spring 2018 Training in Planning and Facilitating Collaborative Meetings from NOAA

Professional Experience

2005 - present Nicholas Institute for Environmental Policy Solutions, Duke University, Durham, NC
Director of Ecosystem Services Program (2010-present)
Coordinate the Institute's work on ecosystem services, which includes a variety of initiatives such as the National Ecosystem Services Partnership and The Bridge

Collaborative. Direct the new Environmental Impact Fellows leadership training program for doctoral students.

Senior Associate Director for Ecosystem Services (2006-2010)

Developed the Institute's expanding initiative on ecosystem services and coordinated and provided policy and technical assessment on design of offsets for national climate policy and the burgeoning multinational effort on REDD to incorporate avoided deforestation into future international climate agreements.

Associate Director of Projects (2005-2006)

Helped to create and develop the Institute from its inception in September 2005, participating in the research, organizational, and administrative tasks involved with launching the Institute. Areas of research included national energy policy; the nexus between transportation technology and climate change science and policy; oil and energy security; and water issues for a rapidly developing North Carolina.

2012 - present Nicholas School for the Environment, Duke University, Durham NC

Adjunct Professor (2020 -)

Adjunct Associate Professor (2015- present)

Adjunct Assistant Professor (2012-2020)

Teach two courses (environmental markets and ecosystem services methods), provide research opportunities for students and advise student projects, and collaborate on research.

2009 - 2010 IPA (intergovernmental personnel) with US EPA, Ecosystem Services Research Program Durham, NC

Coordinated ecosystem services research to inventory federal agency activities and conducted interagency exchanges on ecosystem services for career staff.

2004 - 2005 Office of Senator Lieberman, Washington, D.C.

AAAS Congressional Fellow

Provided legislative support on environment and energy issues for Senator Lieberman, including aspects of climate change, energy, water, national parks, sudden oak death syndrome, and invasive species. Drafted legislation, statements, and sections of speeches; worked on media campaigns and press events; coordinated briefings and letter writing; and collaborated with numerous organizations and government agencies, including constituent groups and state government.

2003 - 2004 Carnegie Institution of Washington, Department of Global Ecology, Stanford, CA

NSF Research Fellow

Conducted research on how selective logging impacts nutrient cycling in Amazonia in collaboration with Brazilian scientists. Tested and assisted in the development of new remote sensing methods to quantify selective logging and its impacts. Manuscripts with collaborators include these studies as well as a global assessment of livestock grazing and global change.

1995 – 1996 USDA Forest Service, International Institute of Tropical Forestry, Puerto Rico

Research Volunteer

Conducted an 8-month field campaign with the U.S. Forest Service to assess their restoration efforts and explored ways to improve restoration and limit invasive species in

high-elevation cloud forests. A report and publication on the lessons learned for restoration were produced.

External Grants & Contracts

- (Proposed) NOAA Restore Science Program planning grant “Integrating Socioeconomic Impacts into Fisheries Restoration Decisions (PI) 2021-2022 (\$200,000)
- Windward Fund grant “Resilience Roadmap Project” 2021 (\$72,200)
- Packard Foundation grant for Bridge Collaborative, subaward from PATH to support Bridge and build and test training materials (Sub-Award PI) 2020-2022 (\$60,000)
- Pew Foundation grant for a Living Shoreline case study for military bases (Sub to Duke Marine Lab) 2020-2021 (\$13,000)
- NOAA Cooperative Agreement for design and development of ecosystem services training (PI) 2020-2021 (\$39,999)
- The Nature Conservancy subcontracts from Packard Foundation to support Duke Universities contribution to Systematic Review on cross sector solutions 2020-2021 (\$45,000)
- US Climate Alliance (through American Forests) award “Prioritizing coastal habitats for carbon sequestration and resilience benefits” (PI) 2019-2020 (\$114,180)
- The Nature Conservancy subcontract to support Duke University’s engagement and leadership of the Bridge Spark program of the Bridge Collaborative (Sub-award PI) 2019-2020 (\$30,000); 2021 (\$20,000)
- Rockefeller Foundation grant on “Cultured Proteins” Sub-award from PATH to assess carbon offsets opportunity (Sub-Award PI) 2018-2020 (\$68,000)
- U.S. Forest Service Joint Venture Contract “Ecosystem Service Model Application to U.S. Forest Service Management. (PI) 2018-2019 (\$70,000) and 2020-2022 (\$35,000)
- National Academies Keck Futures Initiative “Institutionalizing Interdisciplinarity: A cross-institutional network to synthesize what is working (and not) in the pursuit of transformative sustainability science” (Sub-Award PI) 2019-2020 (\$50,000)
- National Estuarine Research Reserve System Science Collaborative- 2018 Collaborative Science Catalyst Grant Program “Exploring applications of ecosystem services conceptual models for coastal habitats” (PI w support from S Mason) 2018-2019 (\$113,300)
- Strategic Environmental Research and Development Program “Assessing Ecosystem Service Benefits from Military Installations” (Sub-Award PI) 2018-2019 (\$200,000)
- USDA Office of Environmental Markets cooperative agreement “Clarifying opportunities for private investment on public lands” (PI) 2018-2019 (\$40,000).
- National Academies Gulf Research Program “Standard logical models and metrics for Gulf restoration: Linking project outcomes to economic, health, and wellbeing benefits for people.” (PI) Dec 2017-May 2021 (\$1,335,800)
- Southeast Climate Science Center North Carolina State University supported by the U.S. Geological Survey – (Sub-Award PI) 2017-2022 (\$420,000)
- The Nature Conservancy subcontract to support Duke University’s engagement and leadership of the Bridge Collaborative (Sub-Award PI). 2016-2017 (\$171,677) and 2017-2019 (\$230,000)
- USGS Cooperative Agreement “Evidence Based Ecosystem Services Research, Example Applications, and Best Practices: A Collaboration between NESP and Federal Partners” (PI) 2016-2019 (2016: \$100,000)
- David and Lucille Packard Foundation grant to support “Using science to develop strong federal guidance on ecosystem services” (PI) 2016-2017 (\$50,000)
- The Nature Conservancy subcontract to support participation in a series of workshops and papers on Incorporating Ecosystem services into Evidence Chains for Decision Makers. (Sub-Award PI) 2016. (\$39,000)
- US Forest Service grant for a workshop on engaging large private landowner in large scale coordinated conservation activities. (PI) 2016. (\$26,000)

USDA Office of Environmental Markets cooperative agreement to support development of two reports – A review of early action mechanisms and an assessment of how landscape scale planning affects the generation of credits and use of markets. The grant also supports creating a printable version of the NESP guidebook. (PI) 2015-2016 (\$65,000)

4R Nutrient Stewardship Research Fund grant to support A Meta-analysis of nitrogen losses under 4R Nutrient Management in U.S. Corn-Based Systems. (Co-PI) 2014-2015 (\$70,000)

USDA Office of Environmental Markets cooperative agreement “Facilitating Environmental Market Development: Legal and Financial Considerations.” to support development of three reports – A review of liability and risk potential across US environmental markets, an assessment of multiple markets for animal manure digester technology, and a review of accounting methods for US environmental markets. (PI) 2014-2015 (\$140,986)

North Carolina Department of Environment and Natural Resources, Ecosystem Enhancement Program “Improving River Basin Prioritization Products”. (Sub Award PI) 2014-2015 (\$118,000)

Gulf Coast Ozark and Plains Landscape Conservation Cooperative grant on “Assessment of ecosystem service value and program delivery options: Establishment of a scalable model for understanding landowner engagement opportunities” (Sub-Award PI) 2014-2015 (\$83,478)

Gordon and Betty Moore Foundation grant for the development of a robust ecosystem services assessment and evaluation framework within US federal agency planning and management processes to improve natural resource decision making and optimize social, environmental and economic outcomes (PI) 2013-2015 (\$486,010)

National Center for Ecological Analysis and Synthesis support for a working group on a standard assessment framework for ecosystem services (PI) 2013-2014.

Socio Environmental Synthesis Center support for a working group on incorporating values and assessing social and environmental trade-offs in managing for ecosystem services (PI) 2013-2014.

USDA Office of Environmental Markets cooperative agreement “Livestock Ecosystem Services Evaluation and Assessment of Existing Water Quality Metrics, Tools, and Methods.” (PI) 2012-2013 (\$109,940)

David and Lucille Packard Foundation grant “Informing Agricultural Greenhouse Gas Mitigation Strategy for California” to support the California Air Resources Board in development of its Climate Change Scoping Report on agriculture and emission reduction (PI) 2012-2013 (\$210,840)

Gordon and Betty Moore Foundation gift for the development of a partnership with federal agencies on ecosystem services in natural resource management and the organization of related sessions for the ACES meetings. 2012 (\$40,000)

National Academies Keck Futures Initiative seed grant “Ecosystem services as an alternative foundation for development, urban planning, and water infrastructure in the U.S..” for a series of workshops and concept papers on incorporating ecosystem services concepts and approaches into urban planning and land use policy (PI) 2012-2013 (\$100,000)

International Center for Research in Agroforestry (ICRAF) & Climate Change Agriculture and Food Security (CCAFS) grant to “Quantify Agricultural Greenhouse Gases in Developing Countries” for coordination of a workshop and special issue journal (PI) 2011-2012 (\$156,961)

David and Lucille Packard Foundation grant for Technical Working Group on Agricultural Greenhouse Gases project “Greenhouse Gas Management Strategies for Livestock in the United States” (PI) 2011-2012 (\$65,000)

David and Lucille Packard Foundation grant titled “Agricultural Greenhouse Gas Management Methodologies” for the Technical Working Group on Agricultural Greenhouse Gases (PI) 2009-2011 (\$628,263)

Organization for Tropical Studies (David and Lucille Packard Foundation and Gordon and Betty Moore Foundation) grant for International Forest Carbon Series for U.S. Decision Makers, (Sub-PI) 2009-2010

World Wildlife Foundation grant for NI papers on REDD, 2009

David and Lucille Packard Foundation grant for White Papers on REDD – Preparation, 2008-2010

Resources for the Future grant for Outreach to Decision Makers on REDD, 2008-2010

Linden Trust for Conservation grant “Mitigation Beyond the Cap” for Finding Solutions for Effective Offsets Policy, (PI) 2008-2010 (\$502,504)

Fellowships and Honors

AAAS Congressional Fellowship, 2004–2005
NSF Post-doctoral Research Fellowship in Biological Informatics, 2003–2004
NASA Earth System Science Fellowship, 1999–2002
National Science Foundation, Dissertation Improvement Grant, 1999–2001
Excellence in Teaching Award for work as a teaching assistant, Stanford University, 1997
Tropical Resource Institute grant for masters research, Yale University, 1994
Forestry School Scholarship, Yale University, 1993–1995
Cornell University, Golden Key Honor Society, 1992

Professional Memberships

Ecological Society of America (ESA)
American Association for the Advancement of Science (AAAS)

Teaching

Science to Policy Pathways short course for Environmental Impact Fellows. Spring 2021.
Bass connections Team course “How External Financing Influences National Commitments to Biodiversity Conservation” in partnership with the Conservation Measures Partnership (Moore Foundation and Wildlife Conservation Society). spring 2020.
Ecosystem Services Markets course, Nicholas School of the Environment, Duke University, 2007, 2012, 2013, 2014, 2015, 2016, 2018, 2021.
Ecosystem Services Methods course, Nicholas School of the Environment, Duke University 2017, 2019.
Co-teaching course for doctoral students on Science and Policy and Writing Policy Briefs, 2010
Coordinated and taught in DEL course on Ecosystem services Dec 2007

Service

Served on North Carolina Natural and Working Lands Work Group 2019-present
Steering Committee for ACES (A Community on Ecosystem Services) 2014, 2016, 2018, 2020 Conferences.
Member Army Science Board’s (ASB) Environmental Advisory Sub-Committee, 2019 - 2021
Member US Army Corps of Engineers Environmental Advisory Board, 2015 - 2019.
AAAS Nominating committee section O (Agriculture Food & Renewable Resources) 2017-2019
Advising Nicholas and Sanford School Master’s students, Duke University, 2008 to present
Reader for AAAS Science and Technology fellowship applications, 2006-2010, 2013, 2015
Guest Editor of Focus Issue of Environmental Research Letters Journal “Focus on Improving Quantification of Agricultural Greenhouse Gases” 2013-2014
Serving on EPA Science Advisory Group on Biogenic Carbon Emissions 2011-2012
Serve on steering group for the Ecosystem Commons web portal 2011-2012
Member of RAE Blue Ribbon Panel on Wetlands and Climate Change, 2010
Reviewer for WWF Kathryn Fuller Fellowships, 2010
External Review Panel for US Forest Service Research and Development, Water Air and Soil Strategic Program Area, 2008
Co-organized and coordinated the inaugural seminar series for the Department of Global Ecology, Carnegie Institution of Washington, 2003–2004

Co-organized, developed, and coordinated the first Biogeochemistry seminar series, an interdepartmental initiative, Stanford University, 1997–1998

Conference organizing committee, “Local Heritage in the Changing Tropics,” a 3-day conference with 13 speakers and 150 participants from around the world, Yale University, 1995

Reviewer for Biogeochemistry (1999), Society for Conservation Biology conference submissions (2003), Plant and Soil (2003), Biotropica (2004), NSF Ecosystems proposals (2004), Ecosystems (2004, 2007), Environmental Science and Policy (2004), Soil Biology and Biochemistry (2004, 2005), Earth Interactions (2005), Forest Ecology and Management (x2) (2008), Carbon Balance and Management (2009), Climate Policy (2010), Science (2010, 2019), Greenhouse Gas Measurement and Management (2011), Journal of Applied Ecology (2011), Bioscience (2011), Environmental Research Letters (2012, 2013), IPBES Catalogue on policy support tools and methodologies (2014), PLOS (2015, 2016, 2017), TREE (2016), Ecosystem Services (2017, 2018), Nature and People (2018), Conservation Science and Practice (2019), Environmental Management (2019) Journal of Water Resources Planning and Management (2020), Nature Sustainability (2020), One Earth (2020)

Peer-Reviewed Publications

J.B. Ruhl, J. Salzman, C. A. Arnold, R. Craig, K. Hirokawa, **L. Olander**, M. Palmer, and T. H. Ricketts. In press. Connection Ecosystem Services Science and Policy in the Field. *Frontiers of Ecology and the Environment*

L. Olander, K. Warnell, T. Warziniak, Z. Ghali, C. Miller, and C. Neelan. 2021. Exploring the Use of Ecosystem Services Conceptual Models to Account for the Benefits of Public Lands: An Example from National Forest Planning in the United States. *Forests* 12(3): <https://doi.org/10.3390/f12030267>

Mason, S., **L. Olander**, C. Galik, R. Grala, and J. Gordon. 2020. A Practice-Oriented Approach to Foster Private Landowner Participation at a Landscape Scale. *Ecosystem Services* 46 <https://doi.org/10.1016/j.ecoser.2020.101203>

Calder, Ryan S.D., A. Alatoree, R.S. Marx, V. Mallampalli, S.A. Mason, **L.P. Olander**, M. Jeuland, M.E. Borsuk. 2020. Graphical Models and the Challenge of Evidence-Based Practice in Development and Sustainability. *Environmental Modeling & Software* 130. <https://doi.org/10.1016/j.envsoft.2020.104734>

K. J. D. Warnell, M. Russell, C. Rhodes, K. J. Bagstad, **L.P. Olander**, D. J. Nowak, R. Poudel, P. D. Glynn, J. L. Hass, S. Hirabayashi, J. C. Ingram, J. Matuszak, K. L.L. Oleson, S. M. Posner, and F. Villa. 2020. Testing ecosystem accounting in the United States: A case study for the Southeast. *Ecosystem Services*- special issue. *Ecosystem Services* 43. <https://doi.org/10.1016/j.ecoser.2020.101099>

Calder, Ryan S.D., Congjie Shi, Sara Mason, **Lydia P. Olander**, and Mark E. Borsuk. 2019. Forecasting Ecosystem Services to Guide Coastal Wetland Rehabilitation Decisions. *Ecosystem Services*. 39. <https://doi.org/10.1016/j.ecoser.2019.101007>

Tallis, H., K. Kries, **L. Olander**, C. Ringler, D. Ameyaw, et al. 2019. Aligning evidence generation and use across health, development, and environment. *Current Opinion in Environmental Sustainability*. 39:81-93.

Game, E.T., H. Tallis, **L. Olander**, S. M. Alexander, J. Busch, N. Cartwright, E.L. Kalies, Y.J. Masuda, A.C. Mupepele, J. Qiu, A. Rooney, E. Sills, and W. J. Sutherland. 2018. Cross-discipline evidence principles for sustainability policy. *Nature Sustainability* 1:452-454

Lovett, J.P., J. M. Duncan, L.S. Smart, J.P. Fay, **L.P. Olander**, D.L. Urban, N. Daly, J. Blackwell, A. B. Hoos, A.M. Garcia, and L.E. Band. 2018. Leveraging Big Data Towards Functionally-Based, Catchment Scale Restoration Prioritization. *Environmental Management* 62(6):1007-1024.

BenDor, T.K., V. Shandas, B. Miles, K. Belt, and **L. Olander**. 2018. Ecosystem services and U.S. stormwater planning: An approach for improving urban stormwater decisions. *Environmental Science & Policy* 88:92-103. <https://doi.org/10.1016/j.envsci.2018.06.006>

Sharon, O. S.N. Fishman, J.B. Ruhl, **L. Olander** and S. E. Roady. 2018. Ecosystem services and judge-made law: A review of legal cases in common law countries. *Ecosystem Services* 32A: 9-21. <https://doi.org/10.1016/j.ecoser.2018.05.010>

Qiu, J., E.T. Game, H. Tallis, **L.P. Olander**, L. Glew, J.S. Kagan, E.L. Kalies, D. Michanowicz, J. Phelan, S. Polasky, J. Reed, E. O. Sills, D. Urban, and S.K. Weaver. 2018. Evidence-based causal chains for linking health, development and conservation action. *BioScience* 68(3):182-193. <https://doi.org/10.1093/biosci/bix167>

Olander, L.P., R. J. Johnston, H. Tallis, J. S. Kagan, L. Maguire, S. Polasky, D. Urban, J. Boyd, L. Wainger, and M. Palmer. 2018. Benefit Relevant Indicators: Ecosystem services measures that link ecological and social outcomes. *Ecological Indicators* 85:1262-1272. <https://doi.org/10.1016/j.ecolind.2017.12.001>

Galik, C. and **L. Olander**. 2018. Facilitating Markets and Mitigation: A systematic Review of Early-Action Incentives in the U.S. *Land Use Policy* 72:1-11.

Eagle, A.J., **L.P. Olander**, K.L. Locklier, J.B. Heffernan, and E.S. Bernhardt. 2017. Fertilizer Management and Environmental Factors Drive N₂O and NO₃ Losses in Corn: A Meta-Analysis. *Soil Science Society of America Journal* 81(5)1191-1202.

Olander, L., S. Polasky, J. Kagan, R. Johnston, L. Wainger, D. Saah, L. Maguire, J. Boyd, and D. Yoskowitz. 2017. So you want your research to be relevant? Building the bridge between ecosystem services research and practice. *Ecosystem Services* 26A:170-182. doi.org/10.1016/j.ecoser.2017.06.003

Keeler, B.L., R. Chaplin-Kramer, A. D. Guerry, P.F.E. Addison, C. Bettigole, I.C. Burke, B. Gentry, L. Chambliss, C. Young, A.J. Travis, C.T. Darimont, D.R. Gordon, J. Hellmann, P. Kareiva, S. Monfort, **L. Olander**, T. Profeta, H.P. Possingham, C. Slotterback, E. Sterling, T. Ticktin, and B. Vira. 2017. Society is Ready for a New Kind of Science – Is Academia? *Bioscience*. <https://doi.org/10.1093/biosci/bix051>

BenDor, T.K., D. Spurlock, S. C. Woodruff, and **L. Olander**. 2016. A Research Agenda for Ecosystem Services in American Environmental and Land Use Planning. 2016. *Cities* 60:260-271. <http://www.sciencedirect.com/science/article/pii/S0264275116302049>

Van Wensem, J., P. Calow, A. Dollacker, L. Maltby, **L. Olander**, M. Tuvendal, and G. Van Houtven. 2016. Identifying and assessing the application of ecosystem services approaches in environmental policy and decision-making. *Integrated Environmental Assessment and Management*. 13(1): 41-51 <http://onlinelibrary.wiley.com/doi/10.1002/ieam.1836/epdf>

Naeem, S., J. C. Ingram, A. Varga, T. Agardy, P. Barten, G. Bennett, E. Bloomgarden, L. L. Bremer, P. Burkill, M. Cattau, C. Ching, M. Colby, D. C. Cook, R. Costanza, F. DeClerck, C. Freund, T. Gartner, R. Goldman-Benner, J. Gunderson, D. Jarrett, A. P. Kinzig, A. Kiss, A. Koontz, P. Kumar, J. R. Lasky, M. Masozera, D. Meyers, F. Milano, L. Naughton-Treves, E. Nichols, **L. Olander**, P. Olmsted, E. Perge, C. Perrings, S. Polasky, J. Potent, C. Prager, F. Quétier, K. Redford, K. Saterson, G. Thoumi, M. T. Vargas, S. Vickerman, W. Weisser, D. Wilkie, S. Wunder. 2015. Get the Science Right When Paying for Nature's Services. *Science* 347(6227): 1206-1207. [DOI: 10.1126/science.aaa1403](https://doi.org/10.1126/science.aaa1403)

Lydia Olander and Lorraine Maltby. 2014. Mainstreaming Ecosystem Services into Decision Making. (Editorial). *Frontiers in Ecology and the Environment*. 12: 539–539. <http://dx.doi.org/10.1890/1540-9295-12.10.539>

Heather Tallis, Jane Lubchenco and 238 co-signatories (including **L. Olander**). 2014. A Call for inclusive conservation. *Comment in Nature*. 515: 27-28.

Lydia P. Olander, Eva Wollenberg, Francesco N. Tubiello, and Martin Herold. 2014. Synthesis and Review: Advancing Agricultural Greenhouse Gas Quantification. *Environmental Research Letters* 9 075003 [doi:10.1088/1748-9326/9/7/075003](https://doi.org/10.1088/1748-9326/9/7/075003)

James Salzman, Craig Anthony (Tony) Arnold, Robert Garcia, Keith H. Hirokawa, Kay Jowers, Jeffrey LeJava, and **Lydia P. Olander**. 2014. The Most Important Current Research Questions in Urban Ecosystem Services. *Duke Environmental Law & Policy Forum*. XXV:1-47.

Ogle, S.M., **L. Olander**, L. Wollenberg, T. Rosenstock, F. Tubiello, K. Paustian, L. Buendia, A. Nihart, and P. Smith. 2013. Reducing greenhouse gas emissions and adapting agricultural management for climate change in developing countries: providing the basis for action. *Global Change Biology*. DOI: 10.1111/gcb.12361

Olander, L.P., E. Wollenberg, F. Tubiello, and M. Herold. 2013. Advancing agricultural greenhouse gas quantification. Perspectives piece in *Environmental Research Letters* focus issue. [doi:10.1088/1748-9326/8/1/011002](https://doi.org/10.1088/1748-9326/8/1/011002)

Olander, L.P., C.S. Galik, and G. A. Kissinger. 2012. Operationalizing REDD+: scope of reduced emissions from deforestation and forest degradation. *Current Opinion in Environmental Sustainability*. 4(6): 661-669.

O'Shea, T., J.S. Golden, and **L. Olander**. 2012. Sustainability and Earth Resources: Life Cycle Assessment Modeling. *Business Strategy and the Environment* doi: 10.1002/bse.1745

Eagle, A. J., and **L.P. Olander**. 2012. Chapter Three – Greenhouse Gas Mitigation with Agricultural Land Management Activities in the United States – A side-by-side Comparison of Biophysical Potential. *Advances in Agronomy* 115: 79-179.

Cooley, D. and **L.P Olander** (equal authorship). February 2012. Stacking Ecosystem Services Payments: Risks and Solutions. *Environmental Law Reporter News & Analysis*. 42 ELR 10150

Olander, L.P., D. Cooley, and C. Galik. 2012. The Potential Role for Management of Public Lands in Greenhouse Gas Mitigation and Climate Policy. *Environmental Management*. 49(3):523-33 doi 10.1007/s00267-011-9806-1

Lawlor, K., E. Weinthal, and **L.P. Olander**. February 2010. Institutions and Policies to Protect Rural Livelihoods in REDD+ Regimes. *Global Environmental Politics*. November 2010.

Olander, L.P., H.K. Gibbs, M. Steininger, J.J. Swenson, and B.C. Murray. June 2008. Reference Scenarios for Deforestation and Forest Degradation in Support of REDD: A Review of Data and Methods. *Environmental Research Letters* 3:025011

Olander L.P., M.M. Bustamante, G.P. Asner, E. Telles, Z. Prado, and P. Camargo. 2005. Surface Soil Changes Following Selective Logging in an Eastern Amazon Forest. *Earth Interactions* 9, no. 5:1–19.

Asner, G.P., D.E. Knapp, A.N. Cooper, M.M.C. Bustamante, and **L.P. Olander**. 2005. Ecosystem Structure throughout the Brazilian Amazon from Landsat Observations and Automated Spectral Unmixing. *Earth Interactions* 9, no. 1:1–31.

Olander, L.P. and P.M. Vitousek. 2005. Short-term controls over inorganic phosphorus during soil and ecosystem development. *Soil Biology and Biochemistry* 37:651–659.

Asner, G.P., A. Elmore, **L. Olander**, R. Martin, and T. Harris. 2005. Grazing systems and global change. *Annual Review of Environment and Resources* 29:261–299.

Olander, L.P. and P.M. Vitousek. 2004. Biological and geochemical sinks for phosphorus in soil from a wet tropical forest. *Ecosystems* 7:404–419.

Asner, G.P., A.R. Townsend., M.M.C. Bustamante, G.B. Nardoto, and **L.P. Olander**. 2004. Pasture degradation in the central Amazon: Linking changes in carbon and nutrient cycling with remote sensing. *Global Change Biology* 10, no. 5:844–862.

Vitousek, P.M., S. Hattenschwiler, **L. Olander**, and S. Allison. 2002. Nitrogen and nature. *Ambio* 31, no. 2:97–101.

Olander, L.P. and P. M. Vitousek. 2000. Regulation of soil phosphatase and chitinase activity by N and P availability. *Biogeochemistry* 49:175–190.

Olander, L.P., F.N. Scatena, and W.L. Silver. 1998. Impacts of disturbance initiated by road construction in a subtropical cloud forest in the Luquillo Experimental Forest, Puerto Rico. *Forest Ecology and Management* 109:33–49.

Ashton, P.M.S., **L.P. Olander**, G.P. Berlyn, R. Thadani, and I.R. Cameron. 1998. Changes in leaf structure in relation to crown position and tree size of *Betula papyrifera* within fire-origin stands of interior cedar-hemlock. *Canadian Journal of Botany* 76, no. 7:1180–1187.

Palmiotto, Peter, Kristiina Vogt, and **Lydia Olander**. 1995. Nutrient cycling, ecophysiology and habitat heterogeneity. *Inside CTFS* (Center for Tropical Forest Science).

Olander, Lydia. 1995. The role of nutrient dynamics in maintaining tree species diversity at Lambir Hills National Park, Sarawak, Malaysia. *TRI News: Journal of the Tropical Resources Institute, Yale School of Forestry and Environmental Studies* 14, no. 1:23–26.

Pimentel, David, M. Herdendorf, S. Eisenfeld, **L. Olander**, M. Carroquino, C. Corson, J. McDade, Y. Chung, W. Cannon, J. Roberts, L. Bluman, and J. Gregg. 1993. Achieving a secure energy future: environmental and economic issues. *Ecological Economics* 9:201–219.

Book Chapters

Olander, L.P., S. Mason, H. Tallis, J. Lamb, Y. Masuda, and R. Kramer. In Press. Climate Change, Ecosystem Services, and Human Health. In *Global Climate Change and Human Health. Second Edition*, edited by Jay Lemery and George Luber.

Profeta, T.P. and **L.P. Olander**. 2012. The Nicholas Institute: Bringing Academia into a Leadership Position for Environmental Policy. In *Environmental Leadership: A Reference Handbook*, edited by Deborah Rigling Gallagher

Olander, L.P. 2011. Using Biogeochemical Process Models to Quantify Greenhouse Gas Mitigation from Agricultural Management. Chapter 20 in *Climate Change Mitigation and Agriculture*. Edited by Eva Wollenberg, Maja-Liisa Tapio-Bistrom, Maryanne Grieg-Gran, Alison Nihart. Published by Routledge – 456 pages.

Online and Other Policy Papers

Lydia Olander and Elizabeth Losos writing team for steering committee. April 2021. Resilience Roadmap: The Urgent Need for Climate Resilience Action. Nicholas Institute, Duke University.

<https://nicholasinstitute.duke.edu/sites/default/files/publications/resilience-roadmap-urgent-need-climate-resilience-action.pdf>

Pradnya Bhandari, Sara Mason, and **Lydia Olander**. March 2021. Life Cycle Assessment and Carbon Offset Potential for Cultured Milk Protein. I WP 21-01. Durham, NC: Duke University.

<https://nicholasinstitute.duke.edu/sites/default/files/publications/Life-Cycle-Assessment-and-Carbon-Offset-Potential-for-Cultured-Milk-Protein.pdf>

Katie Warnell and **Lydia Olander**. June 2020. Natural and Working Lands in North Carolina to enhance community resilience and achieve greenhouse gas emissions goals. GIS Story Map

<https://storymaps.arcgis.com/collections/2154ab2816674f7d8c7429fe87f48830>

Katie Warnell, **Lydia Olander**, Taylor Minich, Allison Killea, and Fizzy Fan. April 2020. USFS Predictive Model Library: Fire and Timber Management. NI R 20-04. Durham NC: Duke University.

<https://nicholasinstitute.duke.edu/sites/default/files/publications/Predictive-Model-Library-Fire-and-Timber-Management.pdf>

Martin Doyle, **Lydia Olander**, Ori Sharon, Sara Mason, and Todd K. Bendor. February 2020. Compensatory Mitigation on Federal Lands. NI R 20-02 Durham NC: Duke University.

https://nicholasinstitute.duke.edu/sites/default/files/publications/Compensatory-Mitigation-on-Federal-Lands_0.pdf

Lydia Olander, Christine Shepard, Heather Tallis, David Yoskowitz, Kara Coffey, Chris Hale, Rachel Karasik, Sara Mason, Katie Warnell, Lauren Williams, Katya Wowk. February 2020. GEMS Phase I Report: Oyster Reef Restoration. NI R 20-01. Durham, NC: Duke University.

<https://nicholasinstitute.duke.edu/sites/default/files/publications/GEMS-Phase-I-Report-Oyster-Reef-Restoration.pdf>

Goldstein J, Tallis H, Linou N, Small R, Huikuri S, Kreis K, **Olander L**, Ringler C, Jacobs C, Kelso M, Mason S, Zobrist S. 2019. Bigger Change Faster: Integrated Development, Health, and Environment Actions for a Sustainable Future. The Bridge Collaborative and UNDP. http://bridgecollaborativeglobal.org/wp-content/uploads/2019/09/Bigger-Change-Faster_FINAL_Web.pdf

J. Kagan, M. Borsuk, R. Calder, M. Creutzburg, S. Mason, **L. Olander**, A. Plantinga, and C. Robinson. June 2019. Assessing Ecosystem Service Benefits from Military Installations. Final Project Report. SERDP Project Number: RC18-1604. <https://nicholasinstitute.duke.edu/publications/assessing-ecosystem-service-benefits-military-installations>

Erika Zambello, **Lydia Olander**, Emma Glidden-Lyon, Emily Meza, and Jessica Wilkinson. 2019. Trends in Measuring Biodiversity and Ecosystem Function in Mitigation Quantification Methodologies. NI-WP 19-01. Durham, NC: Duke University, Nicholas Institute for Environmental Policy Solutions.

https://nicholasinstitute.duke.edu/sites/default/files/publications/trends_in_measuring_biodiversity_and_ecosystem_function_in_mitigation_quantification_methodologies.pdf

Vincent Gauthier, **Lydia Olander**, and Deborah Gallagher. 2019. Are There Benefits to Integrating Corporate Health and Environmental Strategies? An Exploration of the Food/Agriculture and Textile Sectors. NI R 19-02 Durham, NC: Duke University, Nicholas Institute for Environmental Policy Solutions.

https://nicholasinstitute.duke.edu/sites/default/files/publications/are_there_benefits_to_integrating_corporate_health_and_environmental_strategies_an_exploration_of_the_foodagriculture_and_textile_sectors_print2.pdf

Sara Mason, Rachel Karasik, and Lydia Olander. 2019. Workshop Guide: Using Facilitation Techniques to Integrate Ecosystem Services into Coastal Management Decisions. Guidebook. Durham, NC: Duke University, Nicholas Institute for Environmental Policy Solutions.

<https://nicholasinstitute.duke.edu/sites/default/files/publications/Workshop-Guide-Facilitation-Techniques.pdf>

Elizabeth Losos, Alexander Pfaff, **Lydia Olander**, Sara Mason, and Seth Morgan. 2019. Reducing Environmental Risks from Belt and Road Initiative Investments in Transportation Infrastructure. Policy Research Working Paper. no. WPS 8718. Washington, D.C.. World Bank Group.

<http://documents.worldbank.org/curated/en/700631548446492003/Reducing-Environmental-Risks-from-Belt-and-Road-Initiative-Investments-in-Transportation-Infrastructure>

Lydia Olander, Sara Mason, Katie Warnell, and Heather Tallis. 2018. Building Ecosystem Services Conceptual Models. National Ecosystem Services Partnership Conceptual Model Series, No. 1. Durham, NC: Duke University, Nicholas Institute for Environmental Policy Solutions.

<https://nicholasinstitute.duke.edu/conceptual-model-series>

Warnell, Katie, **Lydia Olander**, and Sara Mason 2018. Ecosystem Services Conceptual Model Application: Bureau of Land Management Solar Energy Development. National Ecosystem Services Partnership Conceptual Model Series No.2. Durham, NC: Duke University, Nicholas Institute for Environmental Policy Solutions. <https://nicholasinstitute.duke.edu/conceptual-model-series>

Mason, Sara, **Lydia Olander**, and Katie Warnell. 2018. Ecosystem Services Conceptual Model Application: NOAA and NERRS Salt Marsh Habitat Restoration. National Ecosystem Services Partnership Conceptual Model Series No.3. Durham, NC: Duke University, Nicholas Institute for Environmental Policy Solutions.

<https://nicholasinstitute.duke.edu/conceptual-model-series>

Mason, Sara, and **Lydia Olander**. 2018. Ecosystem Services Conceptual Model Application: Testing General Model Adaptability. National Ecosystem Services Partnership Conceptual Model Series No.4. Durham, NC: Duke University, Nicholas Institute for Environmental Policy Solutions.

<https://nicholasinstitute.duke.edu/conceptual-model-series>

Heather Tallis, Barbara J. Merz, Cindy Huang, Katherine Kreis, **Lydia Olander**, and Claudia Ringler (coordinating lead authors). 2017. "A Call to Action for Health, Environment, and Development Leaders." A Report by the Bridge Collaborative. Washington DC: The Nature Conservancy.

<http://bridgecollaborativeglobal.org/wp-content/uploads/2017/10/Bridge-Collaborative-Call-to-Action-2017.pdf>

Heather Tallis, Katherine Kreis, **Lydia Olander**, and Claudia Ringler (coordinating lead authors). 2017.

"Bridge Collaborative Practitioner's Guide. Principles and Guidance for Cross-sector Action Planning and Evidence Evaluation." Washington DC: The Nature Conservancy. <http://bridgecollaborativeglobal.org/wp-content/uploads/2017/10/Bridge-Collaborative-Principles-and-Guidance-2017.pdf>

John Burrows, Tim Hipp, and **Lydia Olander**. 2017. "Increasing the Engagement of Large Private Forestland Owners in Conservation Management" NI WP 17-07. Durham, NC: Duke University.

https://nicholasinstitute.duke.edu/sites/default/files/publications/ni_wp_17-07.pdf

Lydia Olander, Ken Bagstad, Gregory W. Characklis, Patrick Comer, Micah Efron, John Gunn, Tom Holmes, Robert Johnston, James Kagan, William Lehman, John Loomis, Timon McPhearson, Anne Neale, Lauren

Patterson, Leslie Richardson, Martin Ross, David Saah, Samantha Sifleet, Keith Stockmann, Dean Urban, Lisa Wainger, Robert Winthrop, and David Yoskowitz. 2017. "Data and Modeling Infrastructure for National Integration of Ecosystem Services into Decision Making: Expert Summaries." Expanded version. NESP WP 16-02. Durham: National Ecosystem Services Partnership. www.nicholasinstitute.duke.edu/publication

Olander, Lydia, Sara Mason, Katie Locklier, Dean Urban, Christy Ihlo and Christopher Galik. 2016. "Mapping Ecosystem Services for the Gulf Coastal Plains & Ozarks Landscape Conservation Cooperative: A Method for Targeting Opportunities." A report by the Nicholas Institute for Environmental Policy Solutions for the Gulf Coast Ozark Plains LCC.

https://nicholasinstitute.duke.edu/sites/default/files/GCPO_Ecosystem_Service_Mapping.pdf

Young, Ben, **Lydia Olander**, and Amy Pickle. 2016. "Use of Preservation in North Carolina Wetland and Stream Mitigation." NI WP 17-04. Durham, NC: Duke University.

<http://nicholasinstitute.duke.edu/publications>.

Olander, Lydia P., and Ben L. Young. 2016. "Integrating Large-Scale Planning into Environmental Markets and Related Programs: Status and Trends." NI WP 17-03. Durham, NC: Duke University.

<http://nicholasinstitute.duke.edu/publications>.

Olander, Lydia P., Dean Urban, Robert J. Johnston, George Van Houtven, and James Kagan. 2016. "Proposal for Increasing Consistency When Incorporating Ecosystem Services into Decision Making." National Ecosystem Services Partnership Policy Brief 16-01. Durham, NC: Duke University,

www.nicholasinstitute.duke.edu/publications

Galik, C. and **L. Olander**. 2016. "A Review of the Use of Early-Action Incentives in U.S. Environmental Markets." Nicholas Institute Working Paper.

https://nicholasinstitute.duke.edu/sites/default/files/publications/ni_wp_16-09_final.pdf

Smith, E., **L. Olander**, P. Trianosky, and A. Bedell-Loucks. 2016. "Engaging Large Forest Owners in All-Lands Conservation: All-Lands and Large Ownerships – A Conversation to Advance Engagement. Workshop Proceedings." Workshop held March 8, 2016, Washington DC

https://nicholasinstitute.duke.edu/sites/default/files/publications/ni_p_16-02_full_pdf_0.pdf

Report on Incorporating Ecosystem Services into Communication, Collaboration, and Decision Making within the US Army Corps. To Lieutenant General Thomas P. Bostick, Commanding General and Chief of Engineers April 19, 2016. **Lydia Olander**, Fred Sklar, Charles Simenstad, and Melinda Daniels.

http://www.usace.army.mil/Portals/2/docs/Environmental/EAB/ecosystem_svc_rep_19apr2016.pdf

Baldino, Chelsea, **Lydia Olander**, and Christopher Galik. 2016. "Assessing County and Regional Habitat Conservation Plan Creation: What Contributes to Success?" Nicholas Institute Working Paper.

https://nicholasinstitute.duke.edu/sites/default/files/publications/ni_wp_16-05_final_0.pdf

Olander, Lydia. February 2016. "Managing Risk in Environmental Markets." Nicholas Institute Working Paper. NIWP 16-02. Durham, NC: Duke University.

https://nicholasinstitute.duke.edu/sites/default/files/publications/ni_wp_16-02.pdf

Olander, Lydia, Robert J. Johnston, Heather Tallis, Jimmy Kagan, Lynn Maguire, Steve Polasky, Dean Urban, James Boyd, Lisa Wainger and Margaret Palmer. July 2015. "Best Practices for Integrating Ecosystem Services into Decision Making." Nicholas Institute Working Paper.

https://nicholasinstitute.duke.edu/sites/default/files/publications/es_best_practices_fullpdf_0.pdf

Olander, Lydia. 2014. "Federal Resource Management and Ecosystem Services Guidebook." Durham: National Ecosystem Services Partnership, Duke University, <https://nespguidebook.com>.

Olander, Lydia, Todd Walter, Peter Vadas, Jim Heffernan, Ermias Kebreab, Thomas Harter, and Chelsea Morris. 2014. "Refining Models for quantifying the Water Quality Benefits of Improved Animal Management for Use in Water Quality Trading." NI R 14-03. Durham, NC: Duke University.
<https://nicholasinstitute.duke.edu/ecosystem/publications/refining-models-quantifying-water-quality-benefits-improved-animal-management-use-water>

Vegh, T., **L. Olander**, and B. Murray. 2014. "Greenhouse Gas Mitigation Opportunities in California Agriculture: Science and Economics Summary." NI GGMOCA R 1. Durham, NC: Duke University
<https://nicholasinstitute.duke.edu/ecosystem/publications/greenhouse-gas-mitigation-opportunities-california-agriculture-science-and-economics>

Archibeque, S. K. Haugen-Kozyra, K. Johnson, E. Kebreab, W. Powers-Schilling, **L.P. Olander**, and A. Van de Bogert. July 2012. "Greenhouse Gas Mitigation Opportunities for Livestock Management in the United States." Nicholas Institute Policy Brief. <http://nicholasinstitute.duke.edu/ecosystem/land/greenhouse-gas-mitigation-opportunities-for-livestock-management-in-the-united-states>

Archibeque, S. K. Haugen-Kozyra, K. Johnson, E. Kebreab, W. Powers-Schilling, **L.P. Olander**, and A. Van de Bogert. July 2012. "Near-Term Options for Reducing Greenhouse Gas Emissions from Livestock Systems in the United States: Beef, Dairy, and Swine Production Systems." Nicholas Institute Report.
<http://nicholasinstitute.duke.edu/ecosystem/land/near-term-options-for-reducing-greenhouse-gas-emissions-from-livestock-systems-in-the-united-states>

Eagle, A.J., **Lydia Olander**, Lucy Henry, Karen Haugen-Kozyra, Neville Millar, and G. Philip Robertson. January 2012. "Greenhouse Gas Mitigation Potential of Agriculture Land Management in the United States: A Synthesis of the Literature (Third edition)." Nicholas Institute Report.
<http://nicholasinstitute.duke.edu/ecosystem/land/TAGGLitRev>

Olander, L.P. and Alison J. Eagle. October 2011. "Greenhouse Gas Mitigation Opportunities for Agricultural Land Management in the United States." Nicholas Institute Policy Brief.
<http://nicholasinstitute.duke.edu/ecosystem/t-agg/greenhouse-gas-mitigation-opportunities-for-agricultural-land-management-in-the-united-states>

Olander, L.P., Alison J. Eagle, Justin S. Baker, Karen Haugen-Kozyra, Brian C. Murray, Alexandra Kravchenko, Lucy R. Henry, and Robert B. Jackson. October 2011. "Assessing Greenhouse Gas Mitigation Opportunities and Implementation Strategies for Agricultural Land Management in the United States. Nicholas Institute Report." <http://nicholasinstitute.duke.edu/ecosystem/t-agg/assessing-greenhouse-gas-mitigation-opportunities-and-implementation-strategies-for-agricultural-land-management-in-the-united-states>

Olander, L.P. and David Cooley. September 2011. "Stacking Ecosystem Services Payments: Risks and Solutions". Nicholas Institute Report. <http://nicholasinstitute.duke.edu/ecosystem/land/stacking-ecosystem-services-payments>

Olander, L. P., Debbie Reed, Daniella Malin, and Karen Haugen-Kozyra. July 2011. "C-AGG, T-AGG, and M-AGG: A model for building collaborative actions and common understanding on agricultural GHG mitigation." Climate Change Agriculture and Food Security working paper.
http://ccafs.cgiar.org/sites/default/files/assets/docs/ccafs-wp-03-c-agg_t-agg_m-agg.pdf

Eagle, A.J., Lucy Henry, **Lydia Olander**, Karen Haugen-Kozyra, Neville Millar, and G. Philip Robertson. March 2011. "Greenhouse Gas Mitigation Potential of Agriculture Land Management in the United States: A Synthesis of the Literature (Second edition)." Nicholas Institute Report.
<http://nicholasinstitute.duke.edu/ecosystem/land/TAGGLitRev>

Olander, L.P. and Karen Haugen-Kozyra with contributions from Stephen Del Grosso, Cesar Izaurralde, Daniella Malin, Keith Paustian, and William Salas. March 2011. "Using Biogeochemical Process Models to Quantify Greenhouse Gas Mitigation from Agricultural Management Projects." Nicholas Institute Report. <http://nicholasinstitute.duke.edu/ecosystem/t-agg/using-biogeochemical-process>

Olander, L.P., D. Cooley, and C. Galik. July 2010. "The Potential Role for Management of Public Lands in Greenhouse Gas Mitigation and Climate Policy." Nicholas Institute Report. <http://nicholasinstitute.duke.edu/mitigationbeyondcap/potential-role-public-lands>

Lawlor, K., A. Jenkins, **L. P. Olander**, and B.C. Murray. Feb 2010. "Expanding the Scope of International Terrestrial Carbon Options: Implications of REDD+ and Beyond." Nicholas Institute Report http://www.nicholas.duke.edu/institute/Implications_of_REDD.12.09.pdf

Olander, L.P., T. Profeta, and C. Galik. Jan 2010. "Sticking Points in Offsets Policy." Nicholas Institute Discussion Memo. <http://www.nicholas.duke.edu/institute/offsets.memo.01.07.10.pdf>

Olander, L.P., D. Cooley, and B. Murray. Jan 2010. "Policy Options for Transitioning from Voluntary to Federal Offsets Markets." Nicholas Institute Discussion Brief on H.R. 2454, S. 1733, and S.27291 <http://www.nicholas.duke.edu/institute/offsets.01.06.10.pdf>

Murray, B.C., **L.P. Olander**, and D.P. Kanak. 2009. "Forging a Path for High Quality Compliance REDD Credits." Nicholas Institute Report NI R 09-06. http://www.nicholas.duke.edu/institute/Compliance_REDD_Credits.12.09.pdf

Jenkins, A., **L.P. Olander**, and B.C. Murray. April 2009. "Addressing Leakage in a Greenhouse Gas Mitigation Offsets Program for Forestry and Agriculture." Policy Brief - Nicholas Institute for Environmental Policy Solutions, Duke University. <http://nicholas.duke.edu/institute/offsetseries4.pdf>

Olander, L.P. and C.S. Galik. July 2009 "Greenhouse Gas Offsets for a Federal Cap-and-Trade Policy: FAQs." Nicholas Institute for Environmental Policy Solutions, Duke University. <http://www.nicholas.duke.edu/institute/offsetfaq.html>

Olander, L.P., Boyd, W., Lawlor, K., Madeira, E.M., and J.O. Niles. June 2009 "International Forest Carbon and the Climate Change Challenge: Issues and Options" Nicholas Institute Report NI-R-09-04. Nicholas Institute for Environmental Policy Solutions, Duke University. <http://www.nicholas.duke.edu/institute/carbon.issues.06.09.pdf>

Lawlor, K., **L.P. Olander**, and E. Weinthal. June 2009 "Sustaining Livelihoods while Reducing Emissions from Deforestation: Options for Policymakers." Working Paper NI-WP-09-02. Nicholas Institute for Environmental Policy Solutions, Duke University. <http://www.nicholas.duke.edu/institute/ni.wp.09.02.pdf>

Myers Madeira, Erin., **Lydia Olander**, William Boyd, Kathleen Lawlor, and John O. Niles. March 2009 "Forests and Climate: The Crucial Role of Forest Carbon in Combating Climate Change" Draft Policy Brief NI-PB-09-01, Nicholas Institute for Environmental Policy Solutions, Duke University. http://www.env.duke.edu/institute/policy_brief.09.01.pdf

Galik, C.S., D.deB. Richter, M.L. Mobley, **L.P. Olander**, and B.C. Murray. 2008. "A critical comparison and virtual "field test" of forest management carbon offset protocols." Climate Change Policy Partnership, Duke University, Durham, NC. 46p. <http://www.nicholas.duke.edu/institute/ccppoffsets.pdf>

Government Accountability Office (GAO). 2008. INTERNATIONAL CLIMATE CHANGE PROGRAMS: Lessons Learned from the European Union's Emissions Trading Scheme and the Kyoto Protocol's Clean Development Mechanism. GAO Report GAO-09-151, Washington, D.C. 65 pp. <http://www.gao.gov/cgi-bin/getrpt?GAO-09-151>. (Murray, B.C., Olander, L.P. Expert panelists)

Olander, L.P. and B.C. Murray 2008. "Offsets: An Important Piece of the Climate Policy Puzzle." Policy Brief NI PB 08-01A Nicholas Institute for Environmental Policy Solutions, Duke University. <http://www.nicholas.duke.edu/institute/offsetseries1.pdf>

Olander, L.P. and B.C. Murray. 2008. "Treatment of Early Actors in a Federal Cap-and-Trade Program." Policy Brief — Nicholas Institute for Environmental Policy Solutions, Duke University. <http://www.nicholas.duke.edu/institute/offsetseries2.pdf>.

Murray, B.C. and **L.P. Olander**. 2008. "Addressing Impermanence Risk and Liability in Agriculture, Land Use Change, and Forest Carbon Projects." Policy Brief — Nicholas Institute for Environmental Policy Solutions, Duke University. <http://www.nicholas.duke.edu/institute/offsetseries3.pdf>.

Olander, L. May 2008. "Designing Offsets Policy for the U.S.: Principles, Challenges, and Options for Encouraging Domestic and International Emissions Reductions and Sequestration from Uncapped Entities as Part of a Federal Cap-and-Trade for Greenhouse Gases." Nicholas Institute Report. <http://www.nicholas.duke.edu/institute/offsetspolicy.pdf>.

Murray, B.C. and **L. Olander**. May 2008. "A Core Participation Requirement for Creation of a REDD Market." Nicholas Institute Short Policy Brief. <http://www.nicholas.duke.edu/institute/pb-redd.pdf>.

Olander, L.P., B.C. Murray. July 2007. "A New Opportunity to Help Mitigate Climate Change, Save Forests, and Reach Development Goals." Prepared for the United Nations Foundation. <http://www.env.duke.edu/institute/unopportunity.pdf>

Olander, L., R. Jackson, G. Hegerl, and N. St. Clair. March 2007. "Climate change science: What we know. Nicholas Institute Science Brief." <http://www.nicholas.duke.edu/institute/climatchangesummary.pdf>.

Olander, L., E. Weinthal, and G. Binder, eds. March 2007. "For Security's Sake: Can the United States help petroleum rich nations avoid the resource curse?" Nicholas Institute Policy Report on round table hosted by the Nicholas Institute, Washington, D.C., September 2006. http://www.nicholas.duke.edu/institute/security_report.pdf.

Polk, E., L. Kleczek, **L. Olander**, and B. Holman. March 2007. "The Future of Water in North Carolina: Strategies for Sustaining Clean and Abundant Water." Nicholas Institute Working Paper for the Future of Water conference, Raleigh, North Carolina, March 2007. <http://www.nicholas.duke.edu/ncwater/preconfpaper.pdf>.

Olander, L.P., B.C. Murray, M. Steininger, and H. Gibbs. December 2006. "Establishing Credible Baselines for Quantifying Avoided Carbon Emissions from Reduced Deforestation and Forest Degradation." Commissioned by Coalition for Rainforest Nations, UNFCCC SBSTA Meeting, Rome, Italy, Aug. 30–Sept. 1, 2006. <http://www.nicholas.duke.edu/institute/baselines-draft.pdf>.

Olander, L. November 2006. "Robertson Scholar Program buses: A cost-benefit analysis of existing technology and fuel options to reduce greenhouse gas emissions." Produced for Robertson Scholar Program. <http://www.nicholas.duke.edu/institute/bestbusreport.pdf>

Olander, L. April 2006. “Do Recent Scientific Findings Undermine the Climate Benefits of Carbon Sequestration in Forests? An Expert Review of Recent Studies on Methane Emissions and Water Tradeoffs.” Nicholas Institute Consensus Report.
<http://www.nicholas.duke.edu/institute/methanewater.pdf>.

News, Commentary, Blogs

Vincent Gauthier and **Lydia Olander**. May 2019. The drive to embed ‘planetary health’ impacts within corporate sustainability strategy. GreenBiz Blog <https://www.greenbiz.com/article/drive-embed-planetary-health-impacts-within-corporate-sustainability-strategy>

Elizabeth Losos, Alexander Pfaff, and **Lydia Olander**. January 2018. The deforestation risk of China’s Belt and Road Initiative. Brookings Future Development Blog <https://www.brookings.edu/blog/future-development/2019/01/28/the-deforestation-risks-of-chinas-belt-and-road-initiative/>

Elizabeth Losos, Alexander Pfaff, **Lydia Olander**, Sara Mason, and Seth Morgan. Is a green Belt and Road feasible? How to mitigate the environmental risk of BRI infrastructure projects. World Bank Blog. <https://blogs.worldbank.org/trade/green-belt-and-road-feasible-how-mitigate-environmental-risk-bri-infrastructure-project>

Heather Tallis, **Lydia Olander**, Katherine Kreis, and Claudia Ringler. March 2017. Bridging Gaps: Cross-sector Collaboration is the Future of Sustainable Business. Business Fights Poverty Blog. <http://community.businessfightspoverty.org/profiles/blogs/heather-tallis-lydia-olander-katherine-kreis-and-claudia-ringler->

Tallis, H. and **L. Olander**. October 13, 2015. US Federal Government Sends Agencies to Bat- For Nature and People. Cool Green Science, the Science Blog of The Nature Conservancy. <http://blog.nature.org/science/2015/10/13/us-government-agencies-bat-nature-people-wildfire-fire/>

Olander, L. and H. Tallis. July 21, 2015. “Nature and People: How can the US Federal Government put them together?” Cool Green Science, the Science Blog of The Nature Conservancy. <http://blog.nature.org/science/2015/07/21/nature-people-federal-government-ecosystem-services/>

Olander, L.P. August 11, 2011. “When does stacking ecosystem services payments add ecological value?” Soapbox on Ecosystem Commons website. <http://www.ecosystemcommons.org/soapbox/when-does-stacking-ecosystem-services-payments-add-ecological-value>

Olander, L.P. July 20, 2011. “Gearing up for Ecosystem Services Stacking: Are We Ready?” News Article: Ecosystem Marketplace Website. <http://www.ecosystemmarketplace.com>

Engaged Scholarship

Nicholas Institute

The mission of the [Nicholas Institute](#) is to help decision makers create timely, effective, and economically practical solutions to the world's critical environmental challenges. As a program director at the Institute, I work with government officials, international negotiators, numerous non-governmental organizations, critical stakeholder groups (e.g., commodity groups, businesses, financial institutions, etc), and scientific experts around the world. Through the Ecosystem Services program I develop partnerships and collaborations, host meeting and dialogs, conduct policy analysis, and develop technical syntheses and translation to help inform decisions at many levels of governance and management. Our work is

communicated to policy makers and stakeholders, and made widely available in policy reports or other products and is often published in the peer reviewed literature.

National Ecosystem Services Partnership

I lead the [National Ecosystem Services Partnership](#) which enhances collaboration within the ecosystem services community and to strengthen coordination of policy, market implementation, and research at the national level. It has been active since 2012. We host a [newsletter](#) (over 1500 members), an [online guidebook](#), a website, and a [webinar series](#), as well as working to support federal agencies (NOAA, USFS, USDA, USGS, BLM, USACE, DOD) and others in their implementation of ecosystem services. In this role, I have linked academic and federal agency experts with federal agency implementation in numerous ways. We have produced over a dozen products targeted to resource managers and policy makers and over a dozen peer reviewed papers. We have hosted numerous trainings and workshops and are currently designing a training that will be run by NOAA. This work has led to a number of related projects focused on implementation in different contexts. Here are a few recent examples:

GEMS Project

I lead the multi-institution [Gulf of Mexico Ecosystem Services Logic Models & Socio-economic Indicators project](#) focused on linking restoration impacts to economic, health, and wellbeing benefits for people, in partnership with TNC and the HRI at Texas A&M. Billions of dollars are being spent on Gulf coast restoration, yet there is no shared platform for assessing and reporting on restoration progress and effectiveness for the social and economic goals shared by the many institutions working in the region. This project lays groundwork for such a shared platform for restoration program managers and funders in the Gulf. We developed standardized metrics and monitoring protocols with input from stakeholders, relevant federal agencies, and technical experts from the five Gulf States providing a suite of tools that enable the identification and assessment of social and economic outcomes and linked metrics relevant for over 20 types of projects in the Gulf of Mexico.

Integrating Ecosystem Services into Forest Planning

My team is working with the US Forest Service to pilot test the use of ecosystem services conceptual models and standard socio-economic metrics for use in [Forest Planning](#), and to lay the foundation for predictive modeling of ecosystem services.

Partnership with Southeast Climate Adaptation Science Center

Through my work with the [Southeast Climate Adaptation Science Center](#) my team has been mapping ecosystem services in the Southeastern US. This led to the development of pilot ecosystem natural capital accounts for the region in support of a multi-agency effort to pilot natural capital accounts for the U.S.. Building on this work we also supported North Carolina's effort to develop a climate and resilience plan, by mapping natural and working land climate and resilience opportunities working with agency, NGO and academic experts. To support implementation of this action plan, I serve on a number of subcommittees for North Carolina's Natural and Working Lands Work Group. Given interest, from other states, we have expanded our mapping of coastal protection services, coastal habitat change under sea level rise, and coastal blue carbon to 6 other states on the eastern seaboard, and are working to add Georgia and South Carolina.

Bridge Collaborative

I serve on the secretariat for the [Bridge Collaborative](#), a partnership between The Nature Conservancy, PATH, the International Food Policy Research Institute (IFPRI), and Duke University built on a shared commitment to the health, development, and environment communities jointly solving today's complex, interconnected challenges. We engage funders, international institutions, practitioners, and academic in

cross sector dialogs. We also conduct a number of cross sector projects and ran a cross sector fund for other practitioners. Using the materials developed for the fund, we are designing a cross sector training course.

U.S. Army Corps of Engineers Environmental Advisory Board

Since 2015 I have served on the [Environmental Advisory Board](#) (a subcommittee of the Army Science Board) to support the Chief of the US Army Corps of Engineers on issues related to the environment. I have led the development of 2 reports to the chief on accounting for environmental benefits and supported a handful of others.

Environmental Market Design

I worked with the USDA Office of Environmental Markets from 2012-2020 to provide analysis in support of the design of environmental markets. This work resulted in a series of technical reports and a few peer reviewed publications.

Nature Based Solutions to Climate Change

- Between 2019-2021 My team has been working with [North Carolina](#) and other [eastern states](#) to map their terrestrial and coastal carbon potential to inform management and policy goals.
- Between 2009-2012 I led the [Technical Working Group on Agricultural Greenhouse Gases](#); a project designed to provide a review of agricultural greenhouse gas mitigation practices and potential across the US in support of a coalition of agricultural stakeholders. The project brought together technical experts from agencies, consultants, NGOs, and academia, and conducted a large literature review.
- Between 2006-2010 co-led a series of projects on the design and development of terrestrial carbon offsets programs focused on forests and agriculture in the U.S. and [Reduced Emissions from Deforestation and Degradation \(REDD\)](#) in tropical forest countries.
- All of these projects resulted in policy briefs, technical reports, and peer reviewed publications and numerous briefings for policy audiences.

Recent Workshops, webinar series, professional trainings from 2012 to present

(no individual webinars or presentations included)

Organize and host National Ecosystem Services Partnership Community of Practice Webinar series and newsletters – 2014-present

Developing and conducting training on using Ecosystem Services Conceptual Models for Resource Management for NOAA’s Office of Coastal Management. Spring 2021

Hosting NC Forest Carbon Community of Interest in support of State’s National and Working Lands Climate Action Plan. Spring 2021

Coordinating and hosting a Beyond the Academy network workshop on “Building effective strategies for co-production of sustainability science” at Duke University. Durham, NC. September 2019

ACES Conference half day training “Methods for Incorporating Ecosystem Services into Decision Making: Conceptual Models and Benefit Relevant Indicators” Washington DC. December 2, 2018.

Gulf of Mexico coastal restoration ecosystem services workshops (for the GEMS project) for experts and practitioners across the Gulf States, New Orleans LA, Biloxi MS, Mobile Bay, AL, Charlotte Harbor FL, Galveston and Huston TX. Fall 2018.

Sustainable Infrastructure workshop “Developing Spatial Solutions to Environmental Impacts of Infrastructure Development” Duke-Kunshan University, Kunshan China. October 15-17, 2018.

NAEP Conference half day training “Methods for Incorporating Ecosystem Services into Decision Making”, Durham, NC, March 27, 2017.

ACES Conference all day training “Workshop on Methods for Incorporating Ecosystem Services into Decision Making: From Benefit Relevant Indicators to Monetary Values”, Jacksonville FL, Dec 5, 2016. (100 participants)

Co-hosted “A Roundtable on Strategic Opportunities for Ecosystem Services in Decision Making” with the Woodrow Wilson Center and COMPASS in Washington, D.C., on March 11, 2016.

Organized and co-hosted “All Lands and Large Ownerships” workshop with the U.S. Forest Service and the Sustainable Forestry Initiative in Washington, D.C., on March 8, 2016.

Organized and co-hosted a Socio-Environmental Synthesis Center (SESYNC) workshop “Developing Interdisciplinary best practices for the practical use of ecosystem services methods in federal agency decision making” in Annapolis MD, April 2015.

Coordinate and lead Federal Resource Management and Ecosystem Services Project meetings in Washington DC. July 2014

Organized and hosted Federal Resource Management and Ecosystem Services Community of Practice Webinar series – 2013-2014

Co-hosted the third NAKFI (National Academies Keck Futures Initiative) workshop, “Law, policy and institutions: Incorporating ecosystem services into urban planning and policy. December 12–13, 2013.

Coordinated and lead Federal Resource Management and Ecosystem Services Project meetings in Washington DC. September 2013

Co-lead NCEAS workshop “A Standard Assessment Framework for Ecosystem Services” a National Center for Ecological Analysis and Synthesis working group with experts from academia and federal agencies. Santa Barbara, CA. August 20-22, 2013.

Co-lead of NAKFI funded workshop #2, “Incorporating Ecosystem Services to Improve Urban Planning and Policy”. April 10-12, 2013. Chapel Hill, NC.

Hosted and moderator for “Information Support for Agricultural Greenhouse Gas Reduction Strategy for California” workshop and webcast. April 30, 2013. Sacramento, CA

Co-lead SESYNC workshop: Incorporating Values and Assessing Social and Environmental Trade-offs in Managing for Ecosystem Services, Annapolis, MD. 3/11-3/15, 2013. 23 attendees

Co-lead NCEAS workshop: Standard Assessment Framework for Ecosystem Services, Santa Barbara, CA. 2/25-3/1,2013

Organized and co-hosted National Ecosystem Services Partnership (NESP) workshop with A Community on Ecosystem Services (ACES) “Advancing Ecosystem Services in Federal Resource Management Decisions” in Washington DC May 2012.

Individual presentations and webinars (for Jan 2020-April 2021)

Olander presented “The GEMS project: linking restoration project impacts to economic, health, and wellbeing benefits for people.” Social Coast Forum, Charleston SC, February 5, 2020 (80 attendees).

Olander presented “Social and Economic Outcomes from Oyster Reef Restoration in the Gulf of Mexico: Applying the GEMS Model to the Greater Pensacola Bay System” to the Greater Pensacola Bay System Working Group, April 9, 2020. (50 attendees)

Katie Warnell and **Olander** presented “Mapping Natural and Working Land Opportunities and Benefits in North Carolina.” Special Webinar for NC State agencies and partners. May 11, 2020. (100 attendees)

Olander presented “Social and Economic Outcomes from Oyster Reef Restoration in the Gulf of Mexico: Applying the GEMS Model to the Tampa Bay System” to the Tampa Bay Estuary Program. June 17, 2020

Olander with Sara Mason and Katie Warnell. “Ecosystem Services Toolkit for Natural Resource Managers” National Ecosystem Services Partnership Webinar. July 8, 2020. (65 attendees)

Olander presented “Social and Economic Outcomes from Coastal Restoration in the Gulf of Mexico: Applying the GEMS Model to CHNEP” to the Charlotte Harbor National Estuary Program. August 10, 2020

Olander, Warnell, Mason, and Karasik. “Logic models and socio-economic metrics for restoration project and program monitoring and assessment in the Gulf of Mexico.” Tooltime webinar for Gulf of Mexico Alliance. September 15, 2020.

Olander participated in the Gulf Research Program’s webinar “Planning and Decision-Making Frameworks for Ecosystem Restoration, October, 29, 2020

Warnell and **Olander** presented “Coastal protection and blue carbon mapping” for a Restore America’s Estuaries – Blue Carbon Inventory and Mapping webinar, November 19, 2020.

Warnell and **Olander** presented “NC Land & Water Fund Case Study: Natural and Working Land and Ecosystem Services Priority Overlays” to the Land and Water Fund leadership and Steering Committee December 14, 2020.

Warnell, Krejsa, and **Olander** presented “Coastal protection and blue carbon mapping” for the Southeast Regional Partnership for Planning and Sustainability, December, 14, 2020.

Olander presented “Linking People and Nature: The Story of the National Ecosystem Services Partnership” for the University Of Tennessee EEB Seminar, January 39, 2021. (80 attendees)

Olander presented “Incorporating the Value of Ecosystem Services into Natural Resource Decision Making” at the Valuation of the Great Lakes Fisheries and Ecosystem Services Workshop, April 12, 2021. (60 attendees)

Olander presented “How could sea level rise change blue carbon?” for the Blue Pioneers Program International Symposium for Duke Kunshan University practitioner training in China. April 29, 2021.