

# CURRICULUM VITAE

University of Idaho

**NAME:** Laurel M. Lynch

**DATE:** 01/21/2021

**RANK OR TITLE:** Assistant Professor

**DEPARTMENT:** Soil & Water Systems

**OFFICE LOCATION AND CAMPUS ZIP:**

Ag Science, Room 118  
Department of Soil and Water Systems  
University of Idaho  
875 Perimeter Drive MS 2340  
Moscow, ID 83844-2340

**OFFICE PHONE:** 208-885-4661

**FAX:**

**EMAIL:** llynch@uidaho.edu

**WEB:**

**DATE OF FIRST EMPLOYMENT AT UI:** August 15, 2020

**DATE OF TENURE:** Untenured

**DATE OF PRESENT RANK OR TITLE:** August 15, 2020

**EDUCATION BEYOND HIGH SCHOOL:**

- 2012—2017    **PhD:** Ecology, Colorado State University, Fort Collins, CO  
**Advisors:** Matthew Wallenstein, Francesca Cotrufo, Claudia Boot, Timothy Covino  
**Foci:** ecosystem ecology, carbon dynamics, biogeochemical cycling, metabolomics, landscape connectivity, climate change  
**Dissertation:** *Tracing carbon flows through Arctic and alpine watersheds*
- 2008—2012    **BA:** Biology with distinction, St. Olaf College, Northfield, MN  
**Advisors:** John Schade, Stephanie Schmidt  
**Foci:** biogeochemistry, plant-soil-microbe interactions  
**Thesis:** *Seasonal patterns of soil extracellular enzyme activity and biogeochemical cycling in two restored prairies*

**EXPERIENCE:**

**Teaching, Extension and Research Appointments:**

- 2020—        Assistant Professor, Department of Soil & Water Systems, University of Idaho, Moscow, ID  
2020—        Affiliate Faculty, Environmental Sciences Program, University of Idaho, Moscow, ID  
2020—        Affiliate Faculty, Water Resources, University of Idaho, Moscow, ID  
2018—2020    Postdoctoral Research Fellow, Soil and Crop Sciences, Cornell University, Ithaca, NY  
Fall 2017     Department of Energy Graduate Intern, Pacific Northwest National Laboratory, Richland, WA  
2015—2017    Graduate Research Assistant, Natural Resource Ecology Laboratory, Colorado State University, Fort Collins, CO  
2012—2015    National Science Foundation IGERT Fellow, Colorado State University, Fort Collins, CO  
Summer 2012   National Science Foundation Polaris Project Research Fellow, Cherskiy, Siberia (Russia)

**TEACHING ACCOMPLISHMENTS:** (Academic and Extension teaching)

**Areas of Specialization:**

Ecosystem ecology, biogeochemistry

**Courses Taught:**

ESS660: Biogeochemical cycling in ecosystems, Spring 2016 (3 cr.) (co-instructor, Colorado State University)

**Students Advised:**

Undergraduate Students (research):

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Graduate Students:

*Current*

Christine Whitehorse, PhD student, University of Idaho, major advisor, 2020—current

Ellen Incelli, MS student, University of Idaho, major advisor, 2020—current

Heather Neace, MS student, University of Idaho, major advisor, 2021—current

Bronte Solenn, PhD student, University of Idaho, committee member, 2020—current

Daniel Du, PhD student, University of Idaho, committee member, 2020—current

**Materials Developed:**

SWS 502 01: Terrestrial Ecosystem Ecology

SWS 502 02: Biogeochemical Cycling

**Courses Developed:**

ESS660: Biogeochemical cycling in ecosystems, Spring 2016 (3 cr.) (co-instructor, Colorado State University)

**Non-credit Classes, Workshops, Seminars, Invited Lectures, etc.:**

*Invited lecture*, University of Idaho, January 2021, 'Evaluating how disturbance events influence carbon cycling at a watershed scale', Forest, Rangeland and Fire Sciences Department Seminar Series.

*Invited lecture*, University of Idaho, October 2020, 'Ecosystem Ecology and Research Tips', Agricultural Systems Management 112.

*Invited speaker*, University of Idaho, September 2020, 'Landscape complexity influences carbon flows in managed watersheds', Hydrology 501 WR/IWRI seminar series.

*Invited lecture*, University of Idaho, March 2020, 'Nutrient cycling in terrestrial ecosystems', FOR529

*Invited lecture*, Cornell University, November 2019, 'Soil fertility management', CSS372

*Invited lecture*, Cornell University, April 2018, 'Nutrient management' PLSC3210

*Invited lecture*, Colorado State University, 'Using stable isotopes in terrestrial ecosystems', SOCR670

**Honors and Awards:**

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**SCHOLARSHIP ACCOMPLISHMENTS:** (Including scholarship of teaching and learning, artistic creativity, discovery, and application/integration)

**Publications, Exhibitions, Performances, Recitals:**

**Refereed/Adjudicated:** (i.e. books, book chaps., journals, proc., abstr., etc.)

2017 Wallenstein, M, A. Carlson, L. Deanna, E. Tschieder, **L. Lynch**. Soil Biogeochemistry. In: *Oxford Bibliographies in Ecology*. Ed. David Gibson. New York: Oxford University Press.

**Peer Reviewed/Evaluated:** (i.e. journals, articles, proceedings, abstracts, etc.)

2020 Shao, P., **L. Lynch**, H. Xie, X. Bao, & C. Liang. (2020). Tradeoffs among microbial life history strategies influence the fate of microbial residues in subtropical forest soils. *Soil Biology and Biochemistry*, 108112.

2020 Shabtai, I., **L. Lynch**, Y. Mishael. Designing clay-polymer nanocomposite sorbents for water treatment: A review and meta-analysis of the past decade. *Water Research*, Accepted.

2019 **Lynch, L.**, N. Sutfin, T. Fegel, T. Covino, C. Boot, M. Wallenstein. River channel connectivity shifts metabolite composition and dissolved organic matter chemistry. *Nature Communications*, 10:459, 1-11.

2019 **Lynch, L.**, C.M. Boot, T. Covino, M. Machmuller, M.F. Cotrufo, C. Rithner, M.D. Wallenstein. Dissolved organic matter chemistry and transport along an Arctic landscape gradient. *Global Biogeochemical Cycles*, 33, 47-62.

- 2019 Shao, P., C. Liang, **L. Lynch**, H. Xie, X. Bao. Forest restoration accelerates soil organic carbon accumulation: Evidence from microbial biomarkers. *Soil Biology and Biochemistry*, 131, 182-190.
- 2018 **Lynch, L.**, M. Machmuller, E. Paul, F. Cotrufo, M. Wallenstein. Tracking the fate of fresh carbon in the Arctic tundra: will shrub expansion induce soil priming? *Soil Biology and Biochemistry*, 120, 134-144.
- 2017 Ernakovich, J., **L. Lynch**, P. Brewer, F. Calderon, M. Wallenstein. Redox and temperature-sensitive changes in microbial communities and soil chemistry dictate greenhouse gas loss from thawed permafrost. *Biogeochemistry*, 134, 183-200.

**Other:** (reports, proceedings, papers, citations and references, performances)

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**Refereed/Adjudicated (currently scheduled or submitted):** (provide citations)

**Peer Reviewed/Evaluated (currently scheduled or submitted):**

- 2021 Webster, T., R. Wilhelm, **L. Lynch**, T. Inagaki, S. Schweizer, M. Tfaily, R. Kukkadapu, C. Hoeschen, D. Buckley, J. Lehmann. Persistence of microbially-processed carbon in soils from contrasting ends of a precipitation gradient. *Soil Biology and Biochemistry*, In Review.
- 2021 Sutfin, N., E. Wohl, T. Feghel, **L. Lynch**. Logjams and channel morphology influence sediment storage, transformation of organic matter, and carbon storage within mountain stream corridors. *Water Resources Research*, In Review.

**Presentations and Other Creative Activities:** (i.e. slide sets, web pages, video productions, etc., provide date and location)

**Professional Meeting Papers, Workshops, Showings, Recitals:** (provide date and location)

First-author presentations / posters:

- 2019 **Lynch, L.M.**, M. Tfaily, M. Machmuller, F. Cotrufo, C. Liang, R. Chu, C. Boot, M. Wallenstein, J. Lehmann, 2019. Moving beyond stoichiometry: Simple substrates do not adequately capture complex pathways of root exudate decomposition. European Geophysical Union, Vienna, Austria.
- 2018 **Lynch, L.M.** (*Invited speaker*), 2018. *Carbon flows in Arctic and alpine watersheds*. Cornell University Biogeochemistry, Environmental Science, and Sustainability Seminar Series, Ithaca, NY.
- 2018 **Lynch, L.M.**, R. Chu, M. Tfaily, 2018. *Using ultrahigh resolution FT-ICR-MS to model complex pathways of root exudate decomposition*. Environmental Molecular Sciences Laboratory, Pacific Northwest National Laboratory, Richland, WA.
- 2017 **Lynch, L.M.** (*Invited speaker*), C. Boot, T. Covino, M. Machmuller, C. Rithner, F. Cotrufo, M. Wallenstein, 2017. *From roots to rivers: Tracking the fate of dissolved organic matter through Arctic tundra soils*. Department of Energy Principal Investigators Meeting, Washington, DC.
- 2015 **Lynch, L.M.**, M. Machmuller, M.F. Cotrufo, M. Wallenstein, 2015. *Will Arctic shrub expansion result in a loss or gain of soil carbon?* Ecological Societies of America Meeting, Baltimore, MD.
- 2015 **Lynch, L.M.**, M. Machmuller, M.F. Cotrufo, E.A. Paul, M. Wallenstein, 2015. *Will Arctic shrub expansion result in a loss or gain of soil carbon?* Soil Ecology Society Meeting, Colorado Springs, CO.
- 2015 **Lynch, L., M.**, Machmuller, F. Cotrufo, E. Paul, M. Wallenstein. *Tracking the fate of Arctic carbon: Will Arctic shrub expansion result in a loss or gain of soil carbon?* Department of Energy, PI Meeting, Washington, DC.
- 2014 **Lynch, L., M.**, Machmuller, F. Cotrufo, E. Paul, M. Wallenstein. *Tracking the fate of Arctic carbon: Will Arctic shrub expansion result in a loss or gain of soil carbon?* Arctic LTER Meeting, Woods Hole, MA.
- 2011 **Lynch, L.M.**, D.E. Hernandez, J.D. Schade. *Extracellular enzyme activity and biogeochemical cycling in restored prairie soils*, Ecological Societies of America Meeting, Austin, TX.

- 2011 **Lynch, L.M.**, D.E. Hernandez, J.D. Schade. *Extracellular enzyme activity and biogeochemical cycling in restored prairie soils*, American Geophysical Union Meeting 2011, San Francisco, CA.

Collaborator & student presentations / posters (\*indicates mentored student):

- 2020 LaCroix, R., **L.M. Lynch**, I. Shabtai, J. Lehmann. *Molecular diversity of soil organic matter*. Soil Science Society of America, Virtual Meeting.
- 2020 Sutfin, N., E. Wohl, T. Fegel, **L.M. Lynch**. *How might logjams reduce floodplain fine sediment aggradation and organic carbon storage in mountain streams?* Geological Society of America, Virtual Meeting.
- 2018 Covino, T. (*Invited speaker*), T. Weiss, T. Fegel, **L.M. Lynch**, A. Brooks, C. Rhoades, E. Wohl, C. Boot, E. Hall, 2018. *Linking hillslopes to river corridors to understand dissolved organic matter export at the watershed scale*. American Geophysical Union Meeting, Washington D.C.
- 2017 Sutfin, N.A., E. Wohl, T. Fegel, **L. Lynch**, Decreased floodplain sediment retention and organic carbon storage along complex channel segments with abundant logjams. American Geophysical Union, Washington, DC.
- 2016 Sutfin N.A., **L. Lynch**, T. Fegel, E.E. Wohl. *Sediment traps in fluvial plumbing: Riparian retention and transformation or riverine carbon*. The Association for the Sciences of Limnology and Oceanography, Santa Fe, NM.
- 2016 Machmuller, M., F. Calderon, MF Cotrufo, **L.M. Lynch**, EA Paul, MD Wallenstein. *Arctic Tundra Soils: A Microbial Feast That Shrubs Will Cease*. American Geophysical Union Meeting, New Orleans, LA.
- 2014 Zhu, X., J. Tang, W. Riley, M. Wallenstein, F. Cotrufo, M. Machmuller, **L. Lynch**. *Evaluation of a thermodynamically based soil microbial decomposition model based on a<sup>13</sup>C tracer study in Arctic tundra soils*. American Geophysical Union Meeting, San Francisco, CA.
- 2014 Ernakovich, J., **L. Lynch**, F. Calderon, P. Brewer, M. Wallenstein. *Unraveling the complex drivers of CO<sub>2</sub> and CH<sub>4</sub> flux in permafrost soils*. American Geophysical Union Meeting, San Francisco, CA.
- 2013 Ernakovich, J.G., **L.M. Lynch**, M.D. Wallenstein. *The temperature sensitivity of microbial respiration after permafrost thaw under oxic and anoxic conditions*, American Geophysical Union Meeting, San Francisco, CA.
- 2013 Van Winden, E., C.J. Sapart, T. Roekmann, J. Vonk, C. van der Veen, J.D. Schade, **L.M. Lynch**, N. Zimov, 2013: *Constraining methane formation/removal pathways with stable isotopes in different aquatic environments throughout the summer season in the Kolyma Region, North-East Siberia*, American Geophysical Union Meeting 2013, San Francisco, CA.
- 2013 Carlson, E., D. Harrison-Atlas, **L. Lynch**, I. Medina, D. Martin, A. Maas, G. Lloyd-Miner, J. Sholtes, N. Sutfin. *Freshwater management: Integrating biophysical and social sciences*. National Science Foundation, Integrated Graduate Education and Research Traineeship 2013 Video and Poster Competition.
- 2011 Rhoades, E.R., **L.M. Lynch**, R.M. Holmes, P.J. Mann, J.E. Vonk, J.D. Schade. *Microbial activity and biogeochemical cycling in first-order Russian Arctic streams*, American Geophysical Union Meeting, San Francisco, CA.

**Patents:** (provide title/description, patent number and date):

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**Grants and Contracts Awarded:** (provide principal and co investigators, title, sponsor, funding dates, amount)

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| 2020—2021   | PI: Maas, Co-PI: Lynch. Presidential Initiative on Water and Sustainability. \$6,000             |
| 2020—2021   | PI: Lynch. Cornell Atkinson Center for Sustainability. \$8,000                                   |
| 2019—2020   | PI: Lehmann, Woolf, Co-PI: Laurel Lynch. Cornell Institute of Biotechnology Seed Award. \$10,000 |
| 2017 Fall   | PI: Lynch. DOE Graduate Student Research Fellowship. \$11,000                                    |
| 2012—2015   | PI: Lynch. NSF IGERT Fellow. \$80,000  |
| 2011 Summer | PI: Lynch. Woods Hole Polaris Project Fellow. \$6,000  |

**Honors and Awards:**

- 2017 Visiting Graduate Student Scholar at the Pacific Northwest National Laboratory  
 2017 Awarded student travel grant to attend ESA conference

**SERVICE:****Major Committee Assignments:****University, departmental, and college:****National:**

- 2020 NSF GRFP Ecology 3 Panel Review (25 applications)  
 2020 NSF DEB Ecosystems (ad hoc panel review)  
 2019 NSF DEB Ecosystems (ad hoc panel review)  
 2019 Reviewer for Intergovernmental Panel on Climate Change (IPCC, Chapter 5)

**Professional and Scholarly Organizations** (including memberships, committee assignments, editorial services, offices held and dates)

## Editorial services:

- 2021 Review Editor on the Editorial Board of Soil Biogeochemistry & Nutrient Cycling (specialty section of *Frontiers in Soil Science*)

## Memberships:

- 2011 Ecological Society of America  
 2011 American Geophysical Union  
 2016 Permafrost Young Researchers Network  
 2018 European Geophysical Union

## Peer Reviewer for:

Nature Geosciences, Nature Communications, Global Change Biology, Soil Biology and Biochemistry, Biogeochemistry, Journal of Hydrology, AGU: Biogeosciences, Pedobiologia, Geoderma, Ecosystems, Royal Society of Chemistry: Analyst

**Outreach Service:**

- 2019 Co-organizer for earth keeping garden fair (biochar and soil microbes), Tompkins County, NY  
 2019 Co-organizer for public carbon-farming forum in Tompkins County, NY  
 2015 Co-organizer for front range student ecology symposium, Colorado State University

**Interviews & Popular Press:**

- NSF Science 360 (2015). Video interview for Science Nation. 'Arctic soils key to future climate' ([www.nsf.gov/news/mmg/mmg\\_disp.jsp?med\\_id=185798](http://www.nsf.gov/news/mmg/mmg_disp.jsp?med_id=185798))  
 Heck, C. (2015). Video Interview for Live Science's Expert Voices: Op-Ed & Insights. 'Will warming surge as Arctic microbes feast on defrosting carbon?' ([www.livescience.com/49431-impact-from-arctic-microbes-feasting-on-thawing-tundra.html](http://www.livescience.com/49431-impact-from-arctic-microbes-feasting-on-thawing-tundra.html))  
 O'Brien, M. (2015). Video interview for PBS NewsHour. 'How soil and squirrels offer cues on Alaska climate change'. ([www.pbs.org/newshour/show/alaska](http://www.pbs.org/newshour/show/alaska))

**Community Service:**

- 2018—2019 Elected Member of the Tompkins County Environmental Management Council, NY

**Honors and Awards:**

- 2019 Nominated for 'Achievement Award for Excellence in Mentoring' by Johannes Lehmann, Cornell

University

**PROFESSIONAL DEVELOPMENT:** (workshops and seminars attended)

**Teaching:**

2018 Inclusive Teaching Institute for graduate students and postdocs, Cornell University Center for Integration of Research, Teaching, and Learning, Cornell University, Ithaca, NY

**Scholarship:**

2020 AISES (American Indian Science and Engineering Society) National Conference (virtual meeting)

2020 Rangeland Fall Forum, University of Idaho (virtual meeting)

2020 Environmental and Molecular Sciences Laboratory Summer School Institute (virtual)

2017 DOE Graduate Research Fellow. Mentored by Drs. Malak Tfaily, Rosalie Chu, and David Hoyt on applying 21T FT-ICR-MS and <sup>1</sup>H-NMR spectroscopy to analyze environmental samples, Pacific Northwest National Laboratory, Richland, WA

2017 Environmental Policy Workshop, School of Global Environmental Sustainability, Colorado State University, Fort Collins, CO

2013 LTER DOM Workshop: Linking aquatic and soil organic matter across ecosystems through characterization of optical properties & Fluorescence/PARAFAC, Institute of Arctic and Alpine Research, University of Colorado at Boulder, Boulder, CO

**Outreach:**

**Administration/Management:**

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