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# Curriculum Vitae

Kurt A. Smemo

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## **EDUCATION**

- Ph.D. 2003 Cornell University, Ithaca, NY- *Natural Resources*  
M.S. 1998 University of Illinois at Urbana-Champaign, Urbana, IL- *Environmental Science*  
B.S. 1993 University of Montana, Missoula, MT- *Forestry*

## **APPOINTMENTS**

- 8/06-present Soil Biogeochemist, The Holden Arboretum, Kirtland, OH  
8/06-present Holden Assistant Professor of Biology, Case Western Reserve University, Cleveland, OH  
4/07-present Adjunct Assistant Professor, W.K. Kellogg Biological Station, Michigan State University, Hickory Corners, MI  
1/06-8/06 Research Associate, W.K. Kellogg Biological Station, Michigan State University, Hickory Corners, MI  
8/05-12/05 Lecturer (soil ecology), School of Natural Resources and Environment, The University of Michigan, Ann Arbor, MI

## **PROFESSIONAL PREPARATION**

- 9/03-9/05 Postdoctoral Research Fellow, School of Natural Resources and Environment, The University of Michigan, Ann Arbor, MI  
6/03-12/05 Visiting Scientist, W.K. Kellogg Biological Station, Michigan State University, Hickory Corners, MI  
1/03-5/03 Graduate Research Assistant, Department of Natural Resources, Cornell University, Ithaca, NY  
8/02-12/02 Graduate Teaching Assistant, Department of Natural Resources, Cornell University, Ithaca, NY  
5/99-8/02 Graduate Fellow, Program in Biogeochemistry and Environmental Change (NSF), Cornell University, Ithaca, NY  
1/98-5/99 Graduate Teaching Assistant, Department of Natural Resources, Cornell University, Ithaca, NY  
8/97-12/97 Graduate Research Assistant, Department of Natural Resources, Cornell University, Ithaca, NY  
8/95-8/97 Graduate Research Assistant, Department of Natural Resources and Environmental Sciences, University of Illinois at Urbana-Champaign  
5/94-8/95 Forest Ecologist/Silviculturist, U.S. Forest Service- Powell, ID  
8/93-12/93 Teaching Assistant, School of Forestry, University of Montana, Missoula, MT  
7/92-7/93 Forest Engineer/Soil Scientist, Ston Forestal S.A., San Jose, Costa Rica

### ***SOCIETY MEMBERSHIPS***

Ecological Society of America  
American Geophysical Union  
Soil Science Society of America  
Society of Wetland Scientists

### ***AWARDS PENDING***

DeForest, J.L., **Smemo**, K.A. and D.J. Burke. What lies beneath: P limitation and soil microbial community composition in hardwood forests. NSF (\$490,000).

**Smemo**, K.A. Burke, D.J. and W.M. Mahaney. Altered Winter Precipitation Patterns and Forest Ecosystem Function in the Great Lakes Region. NSF (\$536,000).

### ***GRANTS, HONORS AND AWARDS***

- 2008 Michigan State University Biogeochemistry and Environmental Research Initiative (BERI) Ecosystem Sensor Development Grant (\$10,000)
- 2005 Best presented paper in the Forest, Range, and Wildland Soils (S7) section at the Soil Science Society of America annual conference. Salt Lake City, UT. November 5-8, 2005.
- 2002 Research grant from the Cornell University RTG Program in Biogeochemistry and Environmental Change (\$3,000)
- 2001 Visiting Scientist, Tema-Vatten i Natur och Samhälle, Linköping University, Linköping, Sweden.
- 2001 National Science Foundation Doctoral Dissertation Improvement Grant (\$10,000)
- 2001 Research grant from the Cornell University RTG Program in Biogeochemistry and Environmental Change (\$3,000)
- 2001 Margaret E. Werly Graduate Fellowship (1 year).
- 2000 Department of Education Foreign Language Area Studies (FLAS) fellowship (1 year).
- 1999 National Science Foundation RTG fellowship in Biogeochemistry and Environmental Change (2 years)
- 1999 Research grant from the Cornell University (NSF-RTG) Program in Biogeochemistry and Environmental Change (\$2,500)
- 1999 Andrew W. Mellon Foundation Student Research Grant (\$1,000)

### ***PUBLICATIONS***

Mahaney, W., **Smemo**, K., and K. Gross. 2008. Decadal scale impacts of C4 grass reintroductions on soil carbon and nitrogen cycling in successional ecosystems. Oecologia 157:295–305.

**Smemo**, K.A. and J.B. Yavitt. 2007. Evidence for anaerobic methane oxidation in freshwater peatland ecosystems. Geomicrobiology Journal, 24(7):1-15.

**Smemo**, K.A., D.R. Zak, K.S. Pregitzer and A.J. Burton. 2007. Qualitative characteristics of DOC exports from Northern Hardwood Forests in response to Chronic experimental NO<sub>3</sub><sup>-</sup> deposition. Ecosystems, 10(3): 369-379.

Mahaney, W.M., K.A. **Smemo** and J.B. Yavitt. 2006. Impacts of *Lythrum salicaria* invasion on plant community and soil properties in two wetlands in Central New York, USA. Canadian Journal of Botany 84:1-8.

**Smemo**, K.A., D.R. Zak and K.S. Pregitzer. 2006. Chronic NO<sub>3</sub><sup>-</sup> deposition reduces the retention of fresh leaf litter-derived DOC in Northern Hardwood Forest soils. Soil Biology and Biochemistry 38:1340-1347.

**Smemo**, K.A. and J.B. Yavitt. 2006. A Multi-year perspective on CH<sub>4</sub> cycling in a shallow peat fen in Central New York State, USA. Wetlands 26(1):20-29.

China, J.D., K.A. **Smemo**, and B.A. Endress. 1997. Forest cover changes in Champaign County, 1930-1993. Illinois GIS & Mapnotes 14:27-29.

#### **MANUSCRIPTS IN REVIEW**

DeForest, J.D., K.A. **Smemo**, D.R. Zak. *Submitted to*, Soil Biology and Biochemistry. Effects of Chronic NO<sub>3</sub><sup>-</sup> deposition on leaf litter decomposition and soil organic matter formation in northern hardwood forest ecosystems.

**Smemo**, K.A. *Submitted to*, Earth Science Reviews. "Fresh" perspectives on anaerobic methane oxidation: Ecosystem implications of a poorly understood process.

Burke, D.J., J.C. López-Gutiérrez, K.A. **Smemo**, and C. Chan. *Submitted to*, New Phytologist, The influence of soil environment and vegetation on ectomycorrhizal diversity in a mature beech-maple forest

#### **INVITED SEMINARS**

Smemo, K.A. Belowground responses to global change in hardwood forest ecosystems: Linking pattern and process. University of Maryland Center for Environmental Science, Frostburg, MD. April 30, 2008.

Smemo, K.A. Belowground responses to Acid deposition in Northern Hardwood Forests. Cleveland State University, Cleveland, OH. March 31, 2008.

Smemo, K.A. Belowground responses to Acid deposition in Northern Hardwood Forests. University of Akron. Akron, OH. November 29, 2007.

Smemo, K.A. and J.B. Yavitt. Evidence for anaerobic methane oxidation in freshwater peatland ecosystems. Paper presented at the 10th International Symposium on Wetland Biogeochemistry. Annapolis, MD. April 1-4, 2007.

Smemo, K.A. Belowground responses to experimental NO<sub>3</sub><sup>-</sup> deposition in Northern Hardwood Forests: Linking patterns to mechanisms. Ohio University. Athens, OH. February 16, 2007.

Smemo, K.A., D.R. Zak and K.S. Pregitzer. You win some you lose some: a tale of increased carbon loss and storage in northern hardwood forests receiving chronic nitrogen deposition. Fall SNRE Faculty Seminar Series. The University of Michigan. Ann Arbor, MI. September 17, 2004.

Smemo, K.A. Methane Dynamics in Peatland Ecosystems: Reassessing Patterns and Processes. W.K. Kellogg Biological Station Fall 2003 Seminar Series, Michigan State University. Hickory Corners, MI October 12, 2003.

Smemo, K.A. Anaerobic methane oxidation as a constraint on peatland methane dynamics. Department of Forest Ecology at the Swedish Agricultural University. Umeå, Sweden. September 26, 2001.

Smemo, K.A. Microbial controls on peatland methane dynamics. Department of Water and Environmental Science at Linköping University. Linköping, Sweden. September 14, 2001.

#### **PAPERS AND POSTERS PRESENTED (First authored)**

Smemo KA, Burke DJ, López-Gutiérrez JC & Chan CR. Seasonal patterns and environmental controls on extracellular enzyme activity in a northern hardwood forest soil. Paper presented at the Ecological Society of America annual meeting, Milwaukee, Wisconsin, August 3-8, 2008.

Smemo K.A., W.M. Mahaney and J.B. Yavitt. Spatial and temporal dynamics of *Lythrum salicaria* invasion in a peat-forming sedge fen. Paper presented at The Thirty-fourth annual Natural Areas Conference, Cleveland, OH, October 9-12.

Smemo, K.A., D. R. Zak and C. B. Blackwood. A litter manipulation study to address mechanisms of northern

hardwood forest soil C flux in response to chronic NO<sub>3</sub><sup>-</sup> deposition. Paper presented at the Ecological Society of America annual meeting. San Jose, CA. August 5-11, 2007.

Smemo, K.A., D. R. Zak and C. B. Blackwood. Chronic Nitrate Deposition, Litter Biochemistry, and Microbial Community Effects on Litter Decomposition and C Flux in a Northern Hardwood Forest Soil Paper presented at the American Geophysical Union Fall Meeting. San Francisco, CA. December 11-15, 2006.

Smemo, K.A., G. P. Robertson, N. E. Ostrom, M. Opdyke, S. Bohm, and P. H. Ostrom. Development of an automated chamber system for temporally integrated estimates of nitrous oxide flux from soil. Poster presented at the LTER-All Scientists Meeting. Estes Park, CO. September 19-23, 2006.

Smemo, K.A., D.R. Zak, K.S. Pregitzer and A.J. Burton. Qualitative characteristics of DOC exports from Northern Hardwood Forests in response to Chronic experimental NO<sub>3</sub><sup>-</sup> deposition. Paper presented at the Soil Science Society of America annual conference. Salt Lake City, UT. November 5-8, 2005. Awarded Best Paper in Soil Ecology Section.

Smemo, K.A. and D.R. Zak. Chronic N Deposition Decreases The Microbial Decomposition Of Fresh Litter In Northern Hardwood Forests? Paper presented at the Ecological Society of America annual meeting. Portland, OR. August 1-6, 2004.

Smemo, K.A. and D.R. Zak. Identifying sources and controls of dissolved organic carbon losses in northern hardwood forest ecosystems under elevated nitrogen deposition. Paper presented at the American Geophysical Union Joint Assembly. Montreal, Quebec. May 17-21, 2004.

Smemo, K.A. Methane Dynamics in Peatland Ecosystems: Reassessing Patterns and Processes. Poster presented at the Soil Science Society of America annual conference. Indianapolis, IN. November 10-14, 2002.

Smemo, K.A. Fresh perspectives on the biogeochemical cycle of methane. Paper Presented at the Natural Resources Research Seminar Series, Cornell University. Ithaca, NY. March 28, 2002.

Smemo, K.A. and J.B. Yavitt. Decadal scale changes in the production and emission of methane from two Appalachian peatlands. Paper presented at the Ecological Society of America annual meeting. Madison, WI. August 5-10, 2001.

Smemo, K.A. and J.B. Yavitt. Evidence for anaerobic methane oxidation in freshwater peatlands. Poster presented at the American Geophysical Union winter meeting. San Francisco, CA. December 15-19, 2000.

Smemo, K.A. and J.B. Yavitt. Temporal patterns in the dynamics of carbon dioxide and methane in a wetland complex in central New York State. Paper presented at the Ecological Society of America annual meeting. Spokane, WA. August 8-12, 1999.

Smemo, K.A. and J.B. Yavitt. The spatial nature of atmospheric trace gas dynamics in a freshwater, peat-forming wetland in central New York State. Paper presented at the Ecological Society of America annual meeting. Baltimore, MD. August 2-6, 1998.

Smemo, K.A. and J.D. China. Factors controlling presettlement vegetation patterns in Champaign County, Illinois. Poster presented at the United States Regional Association for Landscape Ecology annual conference. East Lansing, MI March 17-21, 1998.

### ***EXAMPLES OF SYNERGISTIC ACTIVITIES***

- I facilitated the formation of a new research consortium for soil ecologists in the state of Ohio. The Ohio Soil Ecology Collaboratory ([www.ohiosoilecology.org](http://www.ohiosoilecology.org)) is focused on the sharing of effort, resources, instrumentation, and findings such that the quality and progress of research is optimized and

every member receives benefits greater than their laboratory would alone. I hope to use this cooperation to train graduate students via lab rotations and annual meetings.

- I served as a faculty mentor for a freshman undergraduate student from Singapore who participated in the University of Michigan Undergraduate Research Opportunities Program (UROP). This student worked closely with me in the lab and developed her own research project within the framework of my own. Results from that project are included in a manuscript published in *Ecosystems*.
- I worked with a fellow graduate student at Cornell to develop an isotopic method for separating gross and net production of methane in peat and forest soils. Our collaboration let us expand the use of the method to both oxic and anoxic environments, and provided *in-situ* and *in-vitro* applications that are currently being published and applied in other studies.
- I collaborated with Swedish scientists for part of my dissertation work as a means to test spatial hypotheses related to my overall objectives. The collaboration provided new insights into the processes controlling methane dynamics in arctic peatlands and has developed into a long-term collaborative relationship between the Yavitt lab at Cornell and the Svensson lab in Linköping.
- As a doctoral student, I was the chair of the Biogeochemistry seminar committee. The seminar series was funded by the Biogeochemistry and Environmental Change RTG grant, and funds were used to bring prestigious speakers from renowned national and international institutions. As committee chair, I coordinated speaker invitations and hosted several speakers each semester. During my tenure the Biogeochemistry seminar series became one of the most attended weekly series on the Cornell campus.

#### ***JOURNALS REFEREED***

- Biogeochemistry
- Ecological Applications
- Ecology
- Wetlands
- Soil Science Society of America Journal
- Canadian Journal of Forest Research
- Global Change Biology
- Soil Science
- Oikos

#### ***PROFESSIONAL SERVICE***

Proposal reviewer for the Soil Processes division of the USDA-NRI Competitive Grants Program (NRCGP).

#### ***COLLABORATORS***

C.B. **Blackwood**, Kent State University; S. **Bohm**, Michigan State University; D.J. **Burke**, Case Western Reserve University; A.J. **Burton**, Michigan Technological University; J.L. **DeForest**, Ohio University; P. **Drewa**, Case Western Reserve University; T.J. **Fahey**, Cornell University; S. **Findley**, Institute of Ecosystem Studies; P. **Groffman**, Institute of Ecosystem Studies; K.L. **Gross**, Michigan State University; J.C. **Lopez Gutierrez**, The Holden Arboretum; M.W. **Kershner**, Kent State University; W.M. **Mahaney**, Michigan State University; M. **Oppdyke**, Michigan State University; N. **Ostrom**, Michigan State University; P. **Ostrom**, Michigan State University; K.S. **Pregitzer**, Michigan Technological University; G.P. **Robertson**, Michigan State University; M. **Wallenstein**, Colorado State University; M. **Weintraub**, University of Toledo; J.B. **Yavitt**, Cornell University; D.R. **Zak**, University of Michigan; S.H. **Zinder**, Cornell University.

#### ***GRADUATE AND POST DOCTORAL ADVISORS***

*Post doctoral:* D.R. Zak, University of Michigan; G.P. Robertson, Michigan State University

*Ph.D.:* J.B. Yavitt, Cornell University

*M.S.:* J.D. Chinea-Rivera, University of Illinois at Urbana/Champaign

***FOREIGN LANGUAGES SKILLS***

Spanish, Swedish, Norwegian

***REFERENCES***

Dr. Mary Topa, Director of Research, The Holden Arboretum, Kirtland, OH 44094, (440) 602-3838, [mtopa@holdenarb.org](mailto:mtopa@holdenarb.org).

Dr. Joseph B. Yavitt, Professor, Department of Natural Resources, Cornell University, Ithaca, NY 14853, (607) 255-6601, [jby1@cornell.edu](mailto:jby1@cornell.edu)

Dr. Timothy J. Fahey, Professor, Department of Natural Resources, Cornell University, Ithaca, NY 14853, (607) 255-5470, [mth6@cornell.edu](mailto:mth6@cornell.edu)

Dr. Peter M. Groffman, Scientist, Institute for Ecosystem Studies, Box AB Millbrook NY 12545-0129, (845) 677-5343, [groffmanp@ecostudies.org](mailto:groffmanp@ecostudies.org)

Dr. Donald R. Zak, Professor, School of Natural Resources and the Environment, University of Michigan, 430 E. University, Ann Arbor, MI 48109-1115, (734) 763-4991, [drzak@umich.edu](mailto:drzak@umich.edu)

Dr. G. Philip Robertson, Professor, W.K. Kellogg Biological Station, Michigan State University, Hickory Corners, MI 49060, (269) 671-2267, [robertson@kbs.msu.edu](mailto:robertson@kbs.msu.edu)