

J. E. “Jeb” BARRETT

Curriculum vitae

October 2017

Department of Biological Sciences
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EDUCATION

Ph.D., Ecology, Colorado State University, Fort Collins, CO, USA, 1999.

B.S., Natural Resource Ecology, Rutgers University, New Brunswick, NJ, USA, 1994.

PROFESSIONAL APPOINTMENTS

2017 - present	Professor, Dept. of Biological Sciences, Virginia Tech.
2011 - 2017	Associate Professor, Dept. of Biological Sciences, Virginia Tech.
2007 - 2011	Assistant Professor, Dept. of Biological Sciences, Virginia Tech.
2002 - 2006	Research Assistant Professor, Dartmouth College.
1999 - 2002	Postdoctoral Research Associate, Dartmouth College.

PUBLICATIONS

Refereed Journal Articles

(71 since 2000; Web of Science H' Index = 26; Google Scholar H' Index = 32, i10 Index = 49)

*Barrett supported student author, #Barrett supported postdoc author

2017

- Andriuzzi, W., B. J. Adams, **J. E. Barrett**, R. A. Virginia, and D. H. Wall. Observed trends of soil fauna in the Antarctic Dry Valleys: early signs of shifts predicted under climate change. *Ecology*, accepted October 2017.
- Shaw, E. A., B. J. Adams, **J. E. Barrett**, W. B. Lyons, R. A. Virginia, and D. H. Wall. Stable C and N isotope ratios reveal soil food web structure and identify the omnivore-predator (*Eudorylaimus antarcticus*, *Nematoda*) in Taylor Valley, Antarctica. *Polar Biology*, accepted October July 2017.
- Lin*, L., J. S. Norman*, and **J. E. Barrett**. Ammonia-uptake kinetics and group-level contributions of bacteria and archaea to nitrification in temperate forest soils. *Ecological Modeling* 362:111-119.
- Geyer*, K. M., C. Takacs-Vesbach, M. Gooseff, and **J. E. Barrett**. Primary productivity as a control over soil microbial diversity along environmental gradients in a polar desert ecosystem. *PeerJ* 5:e3377; DOI 10.7717/peerj.3377.
- Gooseff, M. N., **J. E. Barrett**, B. J. Adams, P. T. Doran, A. G. Fountain, W. B. Lyons, D. M. McKnight, J. C. Priscu, E. R. Sokol, C. Takacs-Vesbach, M. L. Vandegehuchte, R. A. Virginia, and D. H. Wall. 2017. Recent climate shift produces a state change in an Antarctic terrestrial ecosystem. *Nature Ecology and Evolution* 1(9):1334-1338.

- Wepking*, C., B. Badgley, **J. E. Barrett**, K. F. Knowlton, P. P. Ray, M. S. Strickland. 2017. Increased antibiotic resistance: Effects on microbial communities and ecosystem function. *Proceedings of the Royal Society B*, 284 (1851), 20162233.
- Sokol[#], E. R., B. L. Brown and **J. E. Barrett**. 2017. A simulation-based approach to understand how metacommunity characteristics influence emergent biodiversity patterns. *Oikos* 126 (5): 723-737.

2016

- Buelow, H. N., D. J. Van Horn, **J. E. Barrett**, M. N. Gooseff, E. Schwartz, and C D. Takacs-Vesbach. 2016. Microbial community responses to increased water and organic matter in the arid soils of the McMurdo Dry Valleys, Antarctica. *Frontiers in Microbiology* 10.3389/fmicb.2016.01040.
- Sakaeva, A., E. R. Sokol[#], T. J. Kohler, L. F. Stanish, S. A. Spaulding, A. Howkins, K. A. Welch, W. B. Lyons, **J. E. Barrett** and D. M. McKnight. 2016. Evidence for dispersal and habitat controls on pond diatom communities from the McMurdo Sound Region of Antarctica. *Polar Biology* DOI 10.1007/s00300-016-1901-6.
- Norman*, J.S., and **J. E. Barrett**. 2016. Substrate availability drives local patterns in richness of ammonia-oxidizing bacteria and archaea in temperate forest soils. *Soil Biology and Biochemistry* 94: 169-172.

2015

- Rodrigues, R. R., R. P. Pineda, J. N. Barney, E. T. Nilsen, **J. E. Barrett**, and M. A. Williams. 2015. Plant invasions associated with change in root-zone microbial community structure and diversity. *PLoS ONE* 10 (10), e0141424.
- Okie, J. G., D. Van Horn, M. N. Gooseff, **J. E. Barrett**, and C. D. Takacs-Vesbach. 2015. Niche and metabolic principles explain patterns of diversity and distribution: theory and a case study with soil bacterial communities. *Proceedings of the Royal Society B* 282:20142630.
- Smith, M. D., K. La Pierre, S. L. Collins, A. K. Knapp, K. L. Gross, **J. E. Barrett**, S. D. Frey, L. Gough, R. Miller, J. T. Morris, L. Rustad, and J. Yarie. 2015. Global environmental change and the nature of aboveground net primary productivity responses: Insights from long-term experiments. *Oecologia* 177:935–947.
- Norman*, J.S., L. Lin and **J. E. Barrett**. 2015. Paired carbon and nitrogen metabolism by ammonia-oxidizing bacteria and archaea in temperate forest soil. *Ecosphere* 6 (10): 176.
- Kohler, T. J., E. Chatfield, M. N. Gooseff, **J. E. Barrett** and D. M. McKnight. 2015. Recovery of Antarctic stream epilithon from simulated scouting events. *Antarctic Science* 27(4):341-354.
- Sokol[#], E. R., B. L. Brown, C. C. Carey, B. Tornwall, C. M. Swan, and **J. E. Barrett**. 2015. Linking management to biodiversity in built ponds using metacommunity simulations. *Ecological Modeling* 296:36-45.

2014

- Richter, I., C. Herbold, C. Lee, I. McDonald, **J. Barrett**, and S.C. Cary. 2014. Influence of soil properties on archaeal diversity and distribution in the McMurdo Dry Valleys, Antarctica. *FEMS Microbiology Ecology* 89: 347-359.

- Geyer^{*}, K. M., A. E. Altrichter^{*}, C. D. Takacs-Vesbach, M. N. Gooseff, and **J. E. Barrett**. 2014. Bacterial community composition of divergent soil habitats from a polar desert. *FEMS Microbiology Ecology* 89: 490-494.
- Schwartz, E., H. N. Buelow, M. N. Gooseff, **J. E. Barrett**, C. D. Takacs-Vesbach, and D. J. Van Horn. 2014. Characterization of growing bacterial populations in McMurdo dry valley soils through stable isotope probing with ¹⁸O-water. *FEMS Microbiology Ecology* 89: 415-425.
- Van Horn, D., J. G. Okie, H. N. Buelow, M. N. Gooseff, **J. E. Barrett**, and C. D. Takacs-Vesbach. 2014. Soil microbial responses to increased moisture and organic resources along a salinity gradient in a polar desert. *Applied and Environmental Microbiology* 80: 3034-3043.
- Norman^{*}, J. S. and **J. E. Barrett**. 2014. Substrate and nutrient limitation of ammonia-oxidizing bacteria and archaea in temperate forest soils. *Soil Biology and Biochemistry* 69:141-146.
- Levy, J. S., A. G. Fountain, M. N. Gooseff, **J. E. Barrett**, W. Berry Lyons, and D. Wall. 2014. Water track modification of soil ecosystems in the Lake Hoare basin, Taylor Valley, Antarctica. *Antarctic Science* 26: 153-162.
- 2013**
- Sokol[#], E. R., C. W. Herbold, C. K. Lee, S. C. Cary, and **J. E. Barrett**. 2013. Local and regional influences over soil microbial metacommunities in the Transantarctic Mountains. *Ecosphere* 4:art136. <http://dx.doi.org/10.1890/ES13-00136.1>.
- Geyer^{*}, K. G., A. E. Altrichter, D. J. Van Horn, C. D. Takacs-Vesbach, M. N. Gooseff, and **J. E. Barrett**. 2013. Environmental controls over bacterial communities in polar desert soils. *Ecosphere* 4(10):127. <http://dx.doi.org/10.1890/ES13-00048.1>
- Van Horne, D. J., M. L. Van Horn, **J. E. Barrett**, M. N. Gooseff, A. E. Altrichter^{*}, K. M. Geyer^{*}, L. H. Zeglin, and C. D. Takacs-Vesbach. 2013. Factors controlling soil microbial biomass and bacterial diversity and community composition in a cold desert ecosystem: role of geographic scale. *PLOS ONE*: 8, Article Number: e66103, DOI: 10.1371/journal.pone.0066103
- Eveland, J. W., M. N. Gooseff, D. J. Lampkin, **J. E. Barrett**, and C. D. Takacs-Vesbach. 2013. Seasonal controls on snow distribution and aerial ablation at the snow-patch and landscape scales, McMurdo Dry Valleys, Antarctica. *Cryosphere* 7: 917-931, DOI: 10.5194/tc-7-917-2013
- Eveland, J., M. N. Gooseff, D. J. Lampkin, **J. E. Barrett**, and C. Takacs-Vesbach. 2013. Spatial and temporal patterns of snow accumulation and aerial ablation across the McMurdo Dry Valleys, Antarctica. *Hydrological Processes* 27:2864-2875.
- Burke, I. C., **J. E. Barrett**, P. N. Lowe, W. K. Lauenroth, and R. Riggle. 2013. Impact of labile and recalcitrant carbon treatments on available nitrogen and plant communities in a semiarid ecosystem. *Ecological Applications* 23: 537-545.
- Gooseff, M. N. **J. E. Barrett** and J. Levy. 2013. Shallow groundwater systems in a polar desert, McMurdo Dry Valleys, Antarctica. *Hydrogeology Journal* 21: 171–183.
- 2011**
- Ball, B. A. **J. E. Barrett**, M. N. Gooseff, R. A. Virginia, and D. H. Wall. 2011. Implications of meltwater pulse events for soil biology and biogeochemical

cycling in a polar desert. *Polar Research* 30: 14555 (DOI: 10.3402/polar.v30i0.14555).

Zeglin, L. H., C. N. Dahm, **J. E. Barrett**, M. N. Gooseff, S. K. Fitzpatrick, and C. D. Takacs-Vesbach. 2011. Bacterial community structure along moisture gradients in the parafluvial sediments of two ephemeral desert streams. *Microbial Ecology* 63: 543-556.

2010

Smith, J. L., **J. E. Barrett**, G. Tusnády, L. Rejtő, and S. Craig Cary. 2010. Resolving environmental drivers of microbial community structure in Antarctic soils. *Antarctic Science* 22: 673-680

Ayres, E., J. N. Nkem, D. H. Wall, B. J. Adams, **J. E. Barrett**, A. G. Fountain, and R. A. Virginia. 2010. Experimentally increased snow accumulation alters soil moisture and animal community structure in a polar desert. *Polar Biology* 33:897-907.

Cary, S. C., I. R. McDonald, **J. E. Barrett**, and D. A. Cowan. 2010. On the Rocks: the microbiology of Antarctic cold desert soils. *Nature Reviews Microbiology* 8: 129-138.

2009

Simmons, B. L., D.H. Wall, B. J Adams, E. Ayres, **J. E. Barrett**, and R. A. Virginia. 2009. Terrestrial mesofauna in above- and below-ground habitats: Taylor Valley, Antarctica. *Polar Biology* 32: 1549-1558.

Simmons, B. L., D. H. Wall, B. J. Adams, E. Ayres, **J. E. Barrett**, and R. A. Virginia. 2009. Long-term experimental warming reduces soil nematode populations in the McMurdo dry valleys, Antarctica. *Soil Biology and Biochemistry* 41: 2052-2060.

Barrett, J. E., M. N. Gooseff, and C. Takacs-Vesbach. 2009. Spatial variation in active-layer geochemistry across hydrologic margins in a polar desert ecosystems. *Hydrology and Earth System Science* 13: 2349-2358.

Ball, B.A., R. A. Virginia, **J. E. Barrett**, A. N. Parsons, and D. H. Wall. 2009. Interactions between physical and biotic factors drive CO₂ flux in Antarctic dry valley soils. *Soil Biology and Biochemistry* 41: 1510-1517.

Zeglin, L. H., R. L. Sinsabaugh, **J. E. Barrett**, M. N. Gooseff, and C. D. Takacs-Vesbach. 2009. Landscape distribution of microbial activity in the McMurdo Dry Valleys: Linked biotic processes, hydrology and geochemistry in a cold desert ecosystem. *Ecosystems* 12: 562-573.

Northcott, M. L., M. N. Gooseff, **J. E. Barrett**, L. H. Zeglin, C. D. Takacs-Vesbach, and J. Humphrey. 2009. Hydrologic characteristics of lake- and stream-side riparian margins in the McMurdo Dry Valleys, Antarctica. *Hydrological Processes* 23: 1255-1267.

Ikard, S. J., M. N. Gooseff, **J. E. Barrett**, and C. D. Takacs-Vesbach. 2009. Active layer thermal characterization across a soil moisture gradient in the McMurdo Dry Valleys, Antarctica. *Permafrost and Periglacial Processes* 20: 27-39.

2008

- Ayres, E., J. N. Nkem, D. H. Wall, B. J. Adams, **J. E. Barrett**, E. J. Broos, A. N. Parsons, L. E. Powers, B. L. Simmons, and R. A. Virginia. 2008. Human trampling reduces soil faunal populations in a polar desert, McMurdo Dry Valleys, Antarctica. *Conservation Biology* 22: 1544-1551 (cover photograph featured).
- Doran, P. T., C. P. McKay, A. G. Fountain, T. Nylen, D. M. McKnight, C. Jaros, and **J. E. Barrett**. 2008. Hydrologic response to extreme warm and cold summers in the McMurdo Dry Valleys, East Antarctica. *Antarctic Science*: 20: 499-509.
- Barrett, J. E.**, R. A. Virginia, D. H. Wall, P. T. Doran, A. G. Fountain, K. A. Welch, and W. B. Lyons. 2008. Persistent effects of a discrete climate event on a polar desert ecosystem. *Global Change Biology* 14: 2249-2261.
- Barrett, J. E.**, R. A. Virginia, D. H. Wall, and B. J. Adams. 2008. A decline of a dominant invertebrate species contributes to altered carbon cycling in low diversity soil ecosystem. *Global Change Biology* 14: 1734-1744.
- Niederberger, T. D., I. R. McDonald, R. M. Soo, **J. E. Barrett**, D. H. Wall, and S. C. Cary. 2008. Microbial community composition in soils of Northern Victoria Land, Antarctica. *Environmental Microbiology Journal* 10: 1713-1724 (cover photograph featured).
- Poage, M. A., **J. E. Barrett**, R. A. Virginia, and D. H. Wall. 2008. Geochemical control over nematode distribution in soils of the McMurdo Dry Valleys, Antarctica. *Arctic, Antarctic and Alpine Research* 40: 119-128.
- Bate*, D. B., **J. E. Barrett**, M. A. Poage, and R. A. Virginia. 2008. Soil phosphorus cycling in an Antarctic polar desert. *Geoderma* 144: 21-31.

2007

- Gooseff, M. N., N. L. Northcott, **J. E. Barrett**, D. B. Bate, K. Hill, L. H. Zeglin, M. Bobb, and C. D. Vesbach. 2007. Controls on soil water dynamics in near-shore lake environments in an Antarctic polar desert. *Vadose Zone Journal* 6:841-848.
- Ayres, E. B., B. J. Adams, **J. E. Barrett**, R. A. Virginia, and D. H. Wall. 2007. Unique similarity of faunal communities across aquatic-terrestrial interfaces in a polar desert ecosystem - Soil-sediment boundaries and faunal community. *Ecosystems* 10: 523-535.
- Barrett, J. E.**, R. A. Virginia, W. B. Lyons, D. M. McKnight, J. C. Priscu, P. T. Doran, A. G. Fountain, D. H. Wall, and D. L. Moorhead. 2007. Biogeochemical stoichiometry of Antarctic Dry Valley ecosystems. *Journal of Geophysical Research: Biogeosciences* 112: G01010.

2006

- Foley, K. K., W. B. Lyons, **J. E. Barrett**, and R. A. Virginia. 2006. Pedogenic carbonate distribution within glacial till in Taylor Valley, Southern Victoria Land, Antarctica in Alonso-Zara, A. M., and Tanner, L. H., ed., *Paleoenvironmental Records of Calcretes and Palustrine Carbonates*, GSA Special Paper 416, p. 89-103.
- Barrett, J. E.**, R. A. Virginia, D. H. Wall, S. C. Cary, B. J. Adams, A. L. Hacker, and J. M. Aislabie. 2006. Co-variation in soil biodiversity and biogeochemistry in northern and southern Victoria Land, Antarctica. *Antarctic Science* 18:535-548.

- Wall, D. H., B. J. Adams, **J. E. Barrett**, D. W. Hopkins, and R. A. Virginia. 2006. A synthesis of soil biodiversity and ecosystem functioning in Victoria Land, Antarctica. *Soil Biology and Biochemistry* 38:3001-3002.
- Barrett, J. E.**, R. A. Virginia, D. W. Hopkins, J. Aislabie, R. Bargagli, J. G. Bockheim, I. B. Campbell, W. B. Lyons, D. Moorhead, J. Nkem, R. Sletten, H. Steltzer, D. H. Wall, and M. Wallenstein. 2006. Terrestrial ecosystem processes of Victoria Land, Antarctica. *Soil Biology and Biochemistry* 38: 3019-3034.
- Barrett, J. E.**, R. A. Virginia, D. H. Wall, and A. N. Parsons. 2006. Soil carbon turnover in Antarctic Dry Valley ecosystems. *Soil Biology and Biochemistry* 38: 3065-3082.
- Nkem, J. N, R. A. Virginia, **J. E. Barrett**, and D. H. Wall. 2006. Salt tolerance and survival thresholds for two species of Antarctic soil nematodes. *Polar Biology* 29: 643-651.
- Blecker, S. W., J. A. Ippolito, **J. E. Barrett**, D. H. Wall, R. A. Virginia, and K. L. Norvell. 2006. Phosphorus fractions in soils of Taylor Valley, Antarctica. *Soil Science Society of America Journal* 70: 806-815 (cover photograph featured).
- Nkem, J. N, D. H. Wall, R. A. Virginia, **J. E. Barrett**, E. J. Broos, B. J. Adams, and D. L. Porazinska. 2006. Wind dispersal of soil invertebrates in the McMurdo Dry Valleys, Antarctica. *Polar Biology* 29: 346-352.
- 2005**
- Barrett, J. E.**, R.A. Virginia, A.N. Parsons, and D.H. Wall. 2005. Potential soil organic matter turnover in Taylor Valley, Antarctica. *Arctic, Antarctic and Alpine Research* 37:107-116.
- 2004**
- Parsons, A. N., **J. E. Barrett**, D. H. Wall, and R. A. Virginia. 2004. Soil carbon dioxide flux in Antarctic Dry Valley ecosystems. *Ecosystems* 7:286-295.
- Barrett, J. E.**, D. H. Wall, R. A. Virginia, A. N. Parsons, L. E. Powers, and M. B. Burkins. 2004. Variation in biogeochemistry and soil biodiversity across spatial scales in a polar desert ecosystem. *Ecology* 85: 3105-3118.
- 2003**
- Moorhead, D. L., **J. E. Barrett**, R. A. Virginia, D. H. Wall, and D. Porazinska. 2003. Organic matter and soil biota of upland wetlands in Taylor Valley, Antarctica. *Polar Biology* 26:567-576.
- Gooseff, M. N., **J. E. Barrett**, P. T. Doran, W. B. Lyons, A. N. Parsons, D. L. Porazinska, R. A. Virginia, and D. H. Wall. 2003. Snow-patch influence on soil biogeochemical processes and invertebrate distribution in the McMurdo Dry Valleys, Antarctica. *Arctic, Antarctic, and Alpine Research* 35: 92-100.
- 2002**
- Barrett, J. E.**, R. A. Virginia, and D. H. Wall. 2002. Trends in resin and KCl-extractable soil nitrogen across landscape gradients in Taylor Valley, Antarctica. *Ecosystems* 5:289-299 (cover photograph featured).
- Burke, I. C., W. K. Lauenroth, G. Cunfer, **J. E. Barrett**, A. Mosier, and P. Lowe. 2002. Nitrogen in the Central Grasslands region of the U.S.: A regional perspective. *BioScience* 52:813-823.

- Barrett, J. E.**, R. L. McCulley, D. R. Lane, I. C. Burke, and W. K. Lauenroth. 2002. Influence of annual and seasonal climate variability on plant production and N mineralization in the U.S. Central Grasslands region. *Journal of Vegetation Science* 13:383-394.
- Kaye, J., **J. Barrett**, and I. Burke. 2002. Rapid incorporation of ¹⁵Nitrogen into non-labile soil pools in Great Plains Grasslands. *Ecosystems* 5:461-471.
- Barrett, J. E.**, and I. C. Burke. 2002. Nitrogen retention in semiarid ecosystems across a soil organic matter gradient. *Ecological Applications* 12:878-890.
- Barrett, J. E.**, D. W. Johnson, and I. C. Burke. 2002. Abiotic nitrogen uptake in semiarid grassland soils. *Soil Science Society of America Journal* 66:979-987.
- 2000**
- Barrett, J. E.**, and I. C. Burke. 2000. Potential nitrogen immobilization in grassland soils across a soil organic matter gradient. *Soil Biology and Biochemistry* 32:1707-1716.
- Book Chapters (7 since 2005)**
- 2012**
- Levy, J., A. Fountain, M. Gooseff, **J. Barrett**, D. Wall, B. Adams and W. B. Lyons. Permafrost and active layer processes in the McMurdo Dry Valleys, Antarctica: Decadal ecosystem trends and new insights into cold desert connectivity *IN* Hinkel KM (ed). 2012a. *Tenth international Conference on Permafrost*, Vol. 1: International Contributions. The Northern Publisher: Salekhard Russia; 504 pp.
- 2010**
- Barrett, J. E.**, M. A. Poage, M. N. Gooseff, and C. L. Takacs-Vesbach. 2010. The legacy of aqueous environments on soils of the McMurdo Dry Valleys: considerations for future exploration of Martian soils, pp 78-109 *IN* P. Doran, W.B. Lyons, D.M. McKnight (eds.) *Life in Antarctic deserts and other cold and dry environments: Astrobiological analogues*. Cambridge University Press, Astrobiology Series.
- Takacs-Vesbach, C., L. Zeglin, **J. E. Barrett**, M. N. Gooseff, and J.C. Priscu. 2010. Factors promoting microbial diversity in the McMurdo Dry Valleys, pp 221-257 *IN* P. Doran, W.B. Lyons, D.M. McKnight (eds.) *Life in Antarctic deserts and other cold and dry environments: Astrobiological analogues*. Cambridge University Press, Astrobiology Series.
- 2008**
- Gooseff, M. N., **J. E. Barrett**, S. Ikard, M. L. Northcott, C. Vesbach, and L. Zeglin. 2008. Thermal dynamics of active layer along a hydrologic gradient bordering lakes in the McMurdo Dry Valleys, Antarctica, pp 529-534 in D. L. Kane, and K. M. Hinkel (eds) *Proceedings of the Ninth International Conference on Permafrost*, Institute of Northern Engineering.
- Burke, I. C., A. R. Mosier, P. B. Hook, D. G. Milchunas, **J. E. Barrett**, M. A. Vinton, R. L. McCulley, J. P. Kaye, R. A. Gill, H. E. Epstein, R. H. Kelly, W. J. Parton, C. M. Yonker, P. Lowe, and W. K. Lauenroth. 2008. Soil organic matter and nutrient dynamics of shortgrass steppe ecosystems *IN* W.K. Lauenroth and I. C. Burke, eds. *Ecology of Shortgrass Steppe: A Long-Term Perspectives*. Oxford University Press.
- Vinton, M.A., I. C. Burke, A. R. Mosier, P. B. Hook, D. G. Milchunas, J. E. Barrett, R. L. McCulley, J. P. Kaye, R. A. Gill, H. E. Epstein, R. H. Kelly, W. J. Parton, C. M.

Yonker, P. Lowe, and W. K. Laurenroth. 2008. Soil Organic Matter and Nutrient Dynamics of Shortgrass Steppe Ecosystems. WK Laurenroth and I. C. Burke (eds.) *Ecology of the Shortgrass Steppe: Perspectives from Long-term Research* (pp. 306-341). Oxford, England: Oxford University Press.

2005

Epstein, H. E., J. M Paruelo, G. Piñeiro, I. C. Burke, **J. E. Barrett**, and W. K. Lauenroth. 2005. Interactions of water and nitrogen on primary productivity across spatial and temporal scales in grassland and shrubland ecosystems *IN P. D'Odorico and A. Porporato (eds.) Dryland Ecohydrology*. Springer, pp 201-216.

Manuscripts In Review

Adams, B. J., B. Ball, **J. E. Barrett**, D. Bergstrom, E. Butler, N. Cannone, C. Cary, A. Cho, L. Connell, P. Doran, A. Fountain, N. Gilbert, M. Gill, J. Gillies, M. Gooseff, M. Gulgielmin, I. Hawes, D. Hik, I. Hogg, C. Howard-Williams, O.S. Kim, C. Lee, J. Levy, W. B. Lyons, D. M. McKnight, J. Mikucki, F. Morgan, H. J. Noh, C. Poirot, J. Priscu, S. Robinson, I. San Gil, L. Selbmann, R. Sletten, L. Stanish, B. Storey, C. Takacs-Vesbach, A. Terauds, M. Vandegehuchte, M. and D. H. Wall. A Terrestrial Observation Network for the McMurdo Dry Valleys, Antarctica. *Antarctic Science*, In revision.

Kohler, T., L. Stanish, D. Liptzin, **J. E. Barrett**, D. M. McKnight. Catch and release: hyporheic retention and remineralization of N-fixing Nostoc sustains downstream microbial mat biomass in two polar desert streams. *Limnology and Oceanography Letters*, submitted October 2017.

Caruso, T., I. D. Hogg, U. N. Nielsen, E. M. Bottos, C. K. Lee, D. W. Hopkins, S. C. Cary, **J. E. Barrett**, T. G. A. Green, B. C. Storey, D. H. Wall, B. J. Adams. Biotic interactions influence the distribution of soil animals in a polar desert. *Animal Ecology*, submitted October 2017.

Geyer, K. M. and **J. E. Barrett**. Unimodal productivity - diversity relationships among bacterial communities in a simple soil ecosystem. *Environmental Microbiology*, submitted October 2017.

FEDERAL RESEARCH GRANTS AWARDED

NSF #1637708, *LTET: Ecosystem response to amplified landscape connectivity in the McMurdo Dry Valleys, Antarctica*. Principal Investigator M. Gooseff University of Colorado. Total Award: \$6,762,000 (sub-award to Co-PI **J. E. Barrett**: \$523,176). Award Period: April 1, 2017-March 31, 2023.

NSF #1637522, Coweeta LTER: Examining long-term Southern Appalachian ecosystem dynamics through interactions and indirect effects. Principal Investigator C. R. Jackson, University of Georgia. Total Award \$1,279,999 (sub-award to Co-PI **J. E. Barrett**: \$49,400). Award Period: March 1, 2017-February 28, 2021.

NSF #1440485, *LTET: The Interacting Effects of Hydroclimate Variability and Human Landscape Modification in the Southern Appalachian Mountains*. Principal Investigator T. Gragson University of Georgia. Sub-award to **J. E. Barrett**: \$47,880. Award Period: Feb.1, 2015-Jan. 31 2017.

- USDA #2013-02838, *Interactions between antibiotic resistance in soil microbial communities and coupled elemental cycles*. Principal Investigator: Michael Strickland; Co-PIs: **J. E. Barrett**; Brian Badgley; Katherine Knowlton. Total award: \$478,616. Award Period: Sep 1, 2013 - Aug 31, 2017.
- NSF Long Term Ecological Research (LTER) Network Office Synthesis Grant. 2013. *A synthesis of LTER community data to test metacommunity theory under different ecological conditions*. Principal Investigator: E. R. Sokol[#], Co PIs: **J. E. Barrett** and B. L. Brown. Total award \$30,000. Award Period: January 1-July 31 2013.
- NSF #1210607, *Dissertation Research: Do the concomitant effects of pH and ammonium concentration on ammonia availability explain differential ammonia oxidation by bacteria and archaea?* Principal Investigator: **J. E. Barrett** for J. S. Norman. Total award: \$14,999. Award Period: July 1, 2012 - June 30, 2013.
- NSF #1210570, *Dissertation Research: The influence of resource gradients on soil bacterial communities in a simple ecosystem*. Principal Investigator: **J. E. Barrett** for K. M. Geyer. Total award: \$14,999. Award Period: July 1, 2012 - June 30, 2013.
- NSF #1027284, *Increased Connectivity in a Polar Desert Resulting from Climate Warming: The McMurdo Dry Valleys LTER Program*. Principal Investigator D. M. McKnight, University of Colorado. Total Award: \$5,640,000 (sub-award to **J. E. Barrett**: \$290,000). Award Period: March 2011- February 2017.
- NSF #0944556, *Collaborative Research: Controls Over The Spatial Distribution and Activity Of Microbial Communities In Antarctic Soils*. Principal Investigator: **J. E. Barrett**. Co-PI: S.C. Cary (Univ. of Delaware). Total Award: \$388,251 (Barrett portion: \$198,768). Award Period: Sept 2010–August 2013.
- NSF #0838922, *Collaborative Research: The Role of Snow Patches on the Spatial Distribution of Soil Microbial Communities and Biogeochemical Cycling in the Antarctic Dry Valleys*. Principal Investigator: **J. E. Barrett**, Co-PIs: M. Gooseff (Penn State), C. Takacs-Vesbach (UNM). Total Award: \$825,422 (Barrett portion: \$244,066). Award Period: Sept 2009–August 2012.
- NSF #0338174, *Collaborative Research: Hydrologic controls over biogeochemistry and microbial community structure and function across terrestrial/aquatic interfaces in a polar desert*. Principal Investigator: M. Gooseff (Penn State), Co-PIs: **J. E. Barrett** (Dartmouth/Virginia Tech.), C. Takacs-Vesbach (UNM). Total Award: \$421,447 (Barrett portion: \$102,957). Award Period: July 2004–June 2007.
- NSF #0229836, *Collaborative Research: Soil Biodiversity and Response to Climate Change: A Regional Comparison of Cape Hallett and Taylor Valley*. Principal Investigator: W. B. Lyons (The Ohio State Univ.), Co-PIs: **J. E. Barrett** and R. A. Virginia (Dartmouth College), S. C. Cary (Univ. of Delaware), D. H. Wall (Colorado State Univ.). Total Award: \$556,058 (Barrett portion: \$131,100). Award Period: July 2003–June 2006.

OTHER GRANTS and AWARDS (>\$10,000)

- Global Change Center at Virginia Tech Seed Grant Award. *Climate mitigation from biofuels: is loblolly or switchgrass more beneficial in the southeast?* Principal Investigator: R. Quinn Thomas, CoPIs **J. E. Barrett** and Thomas L. O'Halloran. Award: \$33,500. Award Period: December 2015-July 2016.

Merck #2014-036900-20. *Monitoring the Environmental and Conservation Impact of Conversion of Agriculture Lease Lands to Warm Season Grasses at Merck, Sharp and Dohme Corp.* Principal Investigator: V. Emrick III, Co-PI **J. E. Barrett**. Award: \$192,856. Award Period: May 1, 2014- April 30, 2015.

2012 Virginia Bioinformatics Institute and Fralin Life Sciences Institute, Virginia Tech. *Small Grants Program for Next Generation Sequencing.* Co- Principal Investigators: **J. E. Barrett** and B. L. Brown, students K. Geyer and J. Skelton. Total Award: \$14,156.

PRESENTATIONS

Invited Talks, Seminars and Symposia

2017

Ecological Responses of Soil Communities to Landscape and Climate Variation in the McMurdo Dry Valleys of Antarctica. Presented to the Program in Plant Biology and Conservation, Chicago Botanical Gardens and Northwester University, May 19, 2017.

2013

Plenary Talk: Biodiversity at the End of the World: What can the Transantarctic Mountain region tell us about ecology, evolution, and biogeography? Transantarctic Mountains Science Meeting, Minneapolis/St. Paul, MN, September 22-24, 2013.

The legacy of Virginia Tech *and* aqueous environments on soils of the McMurdo Dry Valleys. ROBERT WHARTON MEMORIAL SYMPOSIUM, American Society of Limnology and Oceanography Annual Meeting. New Orleans, LA, February 21, 2013.

2012

Ecological Responses to Landscape & Climate History in the McMurdo Dry Valleys, Antarctica. Presented to the University of Kentucky, Dept. of Plant & Soil Sciences Seminar, Feb. 24, 2012.

2011

Influence of climate variation on soil ecosystems of the McMurdo Dry Valleys, Antarctica. Symposium talk at the Ecological Society of America Annual Meeting, Austin, TX, August 8-12, 2011.

2010

Ecological Responses to Climate Variability in the McMurdo Dry Valleys of Antarctica. Environmental Science Seminar Series, University of Virginia, April 22, 2010.

Geochemical controls over the spatial distribution of biota in the McMurdo Dry Valleys, Antarctica. Seminar at the 8th International Congress On Extremophiles Ponta Delgada, Portugal, September 13-16, 2010.

2009

Climate Change in Polar Regions: the View From Antarctica. Sustainability Seminar Series, Ferrum College, Ferrum, VA. Nov. 5, 2009.

2007

Organic matter cycling in soils of the McMurdo Dry Valleys, Antarctica. Invited seminar in Biogeochemical Cycling in Polar Environments Session. American Geophysical Union Annual Meeting, San Francisco, CA, December 13, 2007.

- 2006**
Biodiversity and Ecosystem Functioning in the Antarctic Dry Valleys. Northern Studies Seminar Series, the Dickey Center for International Understanding and the Institute for Arctic Studies at Dartmouth College, Hanover, NH. November 13, 2006.
- 2005**
Ecosystem dynamics in Victoria Land, Antarctica. Presented at the National Science Foundation Workshop on Soil Biodiversity and Ecosystem Functioning in Victoria Land, Antarctica, Jekyll Island, GA April 21-23, 2005.
- 2003**
Biogeochemical development of Antarctic Dry Valley landscapes. Indiana University of Pennsylvania Geosciences Seminar Series, Indiana, PA. October 24, 2003.
Elemental stoichiometry and ecosystem evolution in the Antarctic Dry Valleys. Marine Biological Laboratory, Ecosystems Center Seminar Series. Woods Hole, MA. May 6, 2003.
- 2002**
Soil Biodiversity and Biogeochemistry in the Antarctic Dry Valleys. Boston University Biology Seminar Series, Boston, MA. December 1, 2002.
- 2001**
Long Term Ecological Research in the McMurdo Dry Valleys of Antarctica. Landmark College. Putney, VT. April, 2001.

Conference Presentations (with Abstracts)

- 2017**
Barrett, J. E., Ball, B. A., B. J. Adams, R. A. Virginia, and D. H. Wall. Biogeochemical stoichiometry influences simple soil food web response to resource additions. Ecological Society of America, Portland, OR, August 2017.
Shaw, E. A., B. J. Adams, R. A. Virginia, **J. E. Barrett**, and D. H. Wall. Does the stress gradient hypothesis apply to soil food webs? Testing the biotic interactions of soil nematodes along a salinity gradient at the McMurdo Dry Valleys Long Term Ecological Research site. Ecological Society of America, Portland, OR, August 2017.
Hedin, M., **J. E. Barrett**, K. Knowlton, J.B. Badgley, M. Strickland. Effects of antibiotic residues on extracellular enzyme activity in soils. Soil Ecology Society, Bi-Annual Meeting, Fort Collins, CO, June 2017.
C. J. Wepking, **J. E. Barrett**, K. Knowlton, J.B. Badgley, and M. Strickland. Antibiotic exposure in agroecosystems: Evidence for altered microbial community structure and ecosystem function. Soil Ecology Society, Bi-Annual Meeting, Fort Collins, CO, June 2017.
- 2016**
Hedin, M., **J. E. Barrett**, K. Knowlton, J.B. Badgley, M. Strickland. Effects of antibiotic residues on extracellular enzyme activity in soils. American Microbiology Association, Virginia Branch Annual Meeting, Roanoke, VA, November 2016.
- 2015**
Gooseff, M. N., B. Adams, **J. E. Barrett**, P. T. Doran, A. G. Fountain, W. B. Lyons, D. M. McKnight, C. D. Takacs-Vesbach, J. C. Priscu, E. Sokol, R. A. Virginia, D. H.

Wall. The Past as a Window to the Future-What Does Long Term Research in the McMurdo Dry Valleys, Antarctica Tell Us About the Trajectory of Polar Ecosystems? American Geophysical Union Annual Meeting, San Francisco, CA, December 2015.

Strickland, M., **J. E. Barrett**, K. Knowlton, J.B. Badgley, and C. J. Wepking. Antibiotic exposure in agroecosystems: Evidence for altered microbial community structure and ecosystem function. Annual Meeting of the Ecological Society of America, Baltimore, MD, August 2015.

Gooseff, M. N., **J. E. Barrett**, B. J. Adams, P. T. Doran, A. Fountain, W. B. Lyons, D. M. McKnight, J. Priscu, E. R. Sokol, C. Takacs-Vesbach, R. A. Virginia, and D. H. Wall. Antarctic terrestrial ecosystems abide: Changes in soils, lakes and streams of the McMurdo Dry Valleys as a cooling trend ends. Annual Meeting of the Ecological Society of America, Baltimore, MD, August 2015.

Sokol[#], E. R., B. L. Brown and **J. E Barrett**. A simulation-based approach to understand how metacommunity characteristics influence emergent biodiversity patterns. Annual Meeting of the Ecological Society of America, Baltimore, MD, August 2015.

Pryatel^{*}, M. J. V. Emrick^{*} III and **J. E Barrett**. Recovery of soil organic matter stocks from switchgrass plantings in agricultural landscapes. Annual Meeting of the Ecological Society of America, Baltimore, MD, August 2015.

Pryatel^{*}, M. J. V. Emrick^{*} III and **J. E Barrett**. Recovery of soil organic matter stocks from switchgrass plantings in agricultural landscapes. Annual Meeting of the Association of Southeastern Biologist, Chattanooga, TN, April 2015.

2014

Sokol[#], E. R., and **J. E. Barrett**. 2014. A synthesis of metacommunity dynamics in the McMurdo Dry Valleys, Antarctica. XXXIII Scientific Committee on Antarctic Research Open Science Meeting. Auckland, NZ, August 2014.

Herbold, C., E. R. Sokol[#], C. K. Lee, **J. E Barrett**, and S. C. Cary. 2014. Detangling spatial and environmental controls over soil Bacterial distribution in the Transantarctic Mountains. 15th International Symposium on Microbial Ecology. Seoul, South Korea, August 24-29, 2014.

2013

Sokol[#], E. R., **J. E. Barrett**, B. L. Brown, and J. C. Trexler. 2013. Linking local and regional metacommunity dynamics to diversity outcomes. Annual Meeting of the Ecological Society of America, Minneapolis, MN, August, 2013.

Geyer^{*}, K. and **J. E. Barrett**. 2013. Resource gradient effects on microbial communities of a polar desert soil. Annual Meeting of the Ecological Society of America, Minneapolis, MN, August, 2013.

Norman^{*}, J. S., and **J. E. Barrett**. 2013. Substrate preference, resource availability, and environmental stress control the diversity of ammonia-oxidizing bacteria and archaea in temperate forest soils. Annual Meeting of the Ecological Society of America, Minneapolis, MN, August, 2013.

Barrett, J. E. The legacy of Virginia Tech and aqueous environments on soils of the McMurdo Dry Valleys. *Invited Talk*, the ROBERT WHARTON MEMORIAL

SYMPOSIUM, American Society of Limnology and Oceanography Annual Meeting. New Orleans, LA, February 21, 2013.

2012

- Barrett, J. E.**, J. S. Norman^{*}, Tara Ursell, and Mark Bradford. The influence of *Microstegium* invasions on soil nitrifier communities. Ecological Society of America Annual Meeting, Portland, Oregon, August 5-10, 2012.
- Sokol[#], E. R., **J. E. Barrett**, J. M. Hoch and Joel C. Trexler. The influence of ecological context over community assembly processes and diversity patterns. Ecological Society of America Annual Meeting, Portland, Oregon, August 5-10, 2012.
- Norman^{*}, J. S. and **J. E. Barrett**. Environmental controls on the activity of ammonia oxidizing archaea and bacteria in temperate forest soils. Ecological Society of America Annual Meeting, Portland, Oregon, August 5-10, 2012.
- Altrichter^{*}, A.E., **J. E. Barrett**, C. Takacs-Vesbach, and M. N. Gooseff. Landscape history and contemporary environmental drivers of microbial community structure and function. Ecological Society of America Annual Meeting, Portland, Oregon, August 5-10, 2012.
- Geyer^{*} K., A. E. Altrichter, **J. E. Barrett**, C. Takacs-Vesbach M. N. Gooseff. Influence of resource gradients on soil microbial communities in a polar desert. Ecological Society of America Annual Meeting, Portland, Oregon, August 5-10, 2012.
- Altrichter^{*}, A.E. and **J. E. Barrett** Landscape history and contemporary environmental drivers of microbial community structure and function. International Polar Year Conference, Montréal, Canada, April 22-27, 2012.
- Gooseff, M. N., S. E. Godsey, **J. E. Barrett**, A. Lewcowicz. The Influence of snow, water bodies, and permafrost degradation on shallow soil energy and hydrology in the Arctic and Antarctic. European Geophysical Union General Assembly in Vienna, Austria, April 22-27, 2012.
- Norman^{*}, J. S. and **J. E. Barrett**. Environmental controls on the activity of ammonia oxidizing archaea and bacteria in temperate forest soils. Ecological Society of America Mid-Atlantic Chapter Meeting, Blacksburg VA, April 15, 2012.
- Altrichter^{*}, A.E. and **J. E. Barrett**. Landscape history and contemporary environmental drivers of microbial community structure and function. Ecological Society of America Mid-Atlantic Chapter Meeting, Blacksburg VA, April 15, 2012.
- Geyer^{*} K. and **J. E. Barrett**. The influence of resource gradients on microbial communities of a Polar Desert soil. Ecological Society of America Mid-Atlantic Chapter Meeting, Blacksburg VA, April 15, 2012.
- Opgrand^{*}, M., J. S. Norman^{*} and **J. E. Barrett**. Environmental factors influencing the distribution of *Leptospira interrogans* in soil and surface waters using quantitative PCR. Ecological Society of America Mid-Atlantic Chapter Meeting, Blacksburg VA, April 15, 2012.

2011

- Geyer^{*} K. and **J. E. Barrett**. The influence of resource gradients on microbial communities of a Polar Desert soil. Virginia Chapter, American Society of Microbiology, Annual Meeting, Blacksburg, VA, November 4-5, 2011.

Barrett, J. E. Geochemical controls over the spatial distribution of biota in the McMurdo Dry Valleys, Antarctica. Third Annual Argonne Soil Metagenomics Meeting. Bloomingdale, IL October 5-7, 2011.

Barrett, J. E., B.J. Adams, B.A. Ball, U. Nielsen, R. A. Virginia, and D.H. Wall. Influence of climate variation on soil ecosystems of the McMurdo Dry Valleys, Antarctica. *Invited* symposium talk at the Ecological Society of America Annual Meeting, Austin, TX, August 8-12, 2011.

Ball, B.A., R.A Virginia, B.J. Adams, **J.E. Barrett** and D.H. Wall. Extreme stoichiometry: Nutrient limitation and fertilization in polar desert soils. Ecological Society of America Annual Meeting, Austin, TX, August 8-12, 2011.

Barrett, J. E., M.N. Gooseff and C. Takacs-Vesbach. Influence of snow pack distribution on soils in the McMurdo Dry Valleys 3rd International Symposium on Antarctic Earth Sciences, Edinburgh, Scotland, July 10-15, 2011.

2010

Barrett, J. E. Geochemical controls over the spatial distribution of biota in the McMurdo Dry Valleys, Antarctica. *Invited* Seminar at the 8th International Congress On Extremophiles Ponta Delgada, Portugal, September 13-16, 2010.

Geyer^{*}, K.M., **J.E. Barrett**, M.N. Gooseff, and C. Takacs-Vesbach. Geochemical controls over biotic communities in melt-water ponds of Wright Valley, Antarctica. Ecological Society of America Annual Meeting, Pittsburgh, PA. August 1-6, 2010.

Altrichter^{*}, A.E., K.M. Geyer^{*}, **J.E. Barrett**, M.N. Gooseff, and C. Takacs-Vesbach. Influence of snow packs on soil biota and biogeochemical patterns in polar desert soils. Ecological Society of America Annual Meeting, Pittsburgh, PA. August 1-6, 2010.

Ball, B. A., **J.E. Barrett**, R. A. Virginia, and D. H. Wall. Soil biology and biogeochemical cycling under water-pulse events in a polar desert: Responses and mechanisms. International Polar Year Oslo Science Conference, Oslo, Norway, June 8-12, 2010.

2009

Barrett, J. E., D.W. Hopkins, I. Hogg, and S.C. Cary. Spatial variation in organic matter and soil biota in the McMurdo Dry Valleys, Antarctica. Ecological Society of America Annual Meeting, Albuquerque, NM. August 2-7, 2009.

Burke, I. C., W. K. Lauenroth, **J. E. Barrett**, and S. Evans. Coupled biogeochemical cycles in arid and semi-arid ecosystems. Ecological Society of America Annual Meeting, Albuquerque, NM. August 2-7, 2009.

Barrett, J. E., D.W. Hopkins, I. Hogg, and S.C. Cary. Spatial variation in soil biota and organic matter in the McMurdo Dry Valleys, Antarctica. Soil Ecology Society Meeting, Burlington, VT, July 12-15, 2009.

Barrett, J.E., D.W. Hopkins, I. Hogg, and S.C. Cary. Spatial variation in soil biota and organic matter in the McMurdo Dry Valleys, Antarctica. Scientific Committee on Antarctic Research International Biology Symposium. Sopporo, Japan, July 26-31, 2009.

2008

Barrett, J. E., D. H. Wall, B. J. Adams, and R. A. Virginia. Net primary production in soils of a polar desert, pp 206 in Scientific Committee on Antarctic Research Open Science Conference Proceedings. Saint Petersburg, Russia, July 6-11, 2008.

Poage, M. A., **J. E. Barrett**, and R. A. Virginia. Spatial variation in soil geochemistry within Taylor Valley, Antarctica, pp 216 in Scientific Committee on Antarctic Research Open Science Conference Proceedings. Saint Petersburg, Russia, July 6-11, 2008.

2007

Barrett, J. E. Organic matter cycling in Soils of the McMurdo Dry Valleys, Antarctica. Invited seminar in Biogeochemical Cycling in Polar Environments Session. American Geophysical Union Annual Meeting, San Francisco, CA, December 13, 2007.

Ayres, E., J. N. Nkem, D. H. Wall, B. J. Adams, **J. E. Barrett**, E. J. Broos, A. N. Parsons, L. E. Powers, B. L. Simmons, and R. A. Virginia. Human trampling reduces soil faunal populations in a polar desert, McMurdo Dry Valleys, Antarctica. Ecological Society of America Annual Meeting, San Jose, CA, August 2007.

Smith, J.L., **J.E. Barrett**, and S.C. Cary. Resolving environmental drivers of microbial biodiversity in Antarctic Dry Valley mineral soils. American Society of Microbiology Annual Meeting, Toronto, Ontario, Canada, May 21-25, 2007.

Barrett, J.E., R. A. Virginia, D. H. Wall, and B.J Adams. Persistent effects of climate driven hydrological pulses on soil communities in a Polar Desert ecosystem. Soil Ecology Society Annual Meeting, Moab, UT, April 29-May 3, 2007.

Simmons, B.L., D.H. Wall, B.J. Adams, E. Ayres, and **J.E. Barrett**. Linking Aboveground and Belowground Diversity and Soil Properties in the McMurdo Dry Valleys, Antarctica. Soil Ecology Society Annual Meeting, Moab, UT, April 29-May 3, 2007.

Takacs-Vesbach, C., K. R. Mitchell, L. Zeglin, **J. E. Barrett**, and M. Gooseff. Microbial diversity and temperature-differing processes at the two extremes. Freshwater Sciences Meeting of the American Society for Limnology and Oceanography. Santa Fe, NM, February 4-9, 2007.

Zeglin, L.H., C.D. Vesbach, C.N. Dahm, **J.E. Barrett**, and M.N. Gooseff. Biological, physical and nutrient gradients in near-stream hydrologic margins of hot and cold deserts. Freshwater Sciences Meeting of the American Society for Limnology and Oceanography. Santa Fe, NM, February 4-9, 2007.

2006

Zeglin, L.H., C.D. Vesbach, C.N. Dahm, **J.E. Barrett**, and M.N. Gooseff. Nitrogen cycling and bacterial diversity in hot and cold desert stream margins. Invited oral paper: American Geophysical Union Annual Meeting, San Francisco, CA, December 11-5, 2006.

Crossey, E., L. Zeglin, **J. Barrett**, M. Gooseff, and C. Vesbach. Temporal dynamics of an Antarctic riparian zone microbial community. American Geophysical Union Annual Fall Meeting, San Francisco, CA, December 11-5, 2006.

- Northcott, M. L., M. N. Gooseff, **J. E. Barrett**, L. Zeglin, and C. Takacs-Vesbach. Wetted margin dynamics: The interplay of soil hydrology, biogeochemistry, and microbial ecology in the Dry Valleys of Antarctica. American Geophysical Union Annual Fall Meeting, San Francisco, CA, December 11-5, 2006.
- Simmons, B., D. Wall, B. Adams, R. Virginia, and **J. Barrett**. Effects of increased temperature and moisture on nematode abundance, diversity and biomass in the McMurdo Dry Valleys, Antarctica. Long Term Ecological Research Program, All Scientist Meeting, Estes Park, CO, September 20-23, 2006.
- Adams, B., A. Dillman, D. Wall, B. Simmons, E. Ayres, R. Virginia, and **J. Barrett**. Effects of taxonomic precision on studies of distribution ecology and the relationship between biodiversity and ecosystem functioning. Long Term Ecological Research Program, All Scientist Meeting, Estes Park, CO, September 20-23, 2006.
- Barrett, J. E.**, R. A. Virginia, D. H. Wall, P. T. Doran, A. G. Fountain, B. J. Adams, and W. B. Lyons. Extreme climate events alter soil community structure in a polar desert. Long Term Ecological Research Program, All Scientist Meeting, Estes Park, CO, September 20-23, 2006.
- Ayres, E., D. Wall, B. Adams, **J. Barrett**, and R. Virginia. Soil and sediment properties and invertebrate community structure across lake-soil transition zones in the McMurdo Dry Valleys, Antarctica. Long Term Ecological Research Program, All Scientist Meeting, Estes Park, CO, September 20-23, 2006.
- Bate^{*}, D. B., **J. E. Barrett**, M. A. Poage, and R. A. Virginia. Controls over the distribution of biologically available soil phosphorus pools in the McMurdo Dry Valleys, Antarctica. Long Term Ecological Research Program, All Scientist Meeting, Estes Park, CO, September 20-23, 2006.
- Zeglin, L., C. Vesbach, M. Bobb, **J. Barrett**, and M. Gooseff. Biological, physical and nutrient gradients in near-stream hydrologic margins of hot and cold deserts. Long Term Ecological Research Program, All Scientist Meeting, Estes Park, CO, September 20-23, 2006.
- Stucker^{*}, R. **J. Barrett**, M. Poage, R. Virginia, and W. Lyons. Nitrate accumulation and cycling in hot and cold desert ecosystems. Long Term Ecological Research Program, All Scientist Meeting, Estes Park, CO, September 20-23, 2006.
- Crossey, E., L. Zeglin, **J. Barrett**, M. Gooseff, and C. Vesbach. Temporal dynamics of an Antarctic riparian zone microbial community. American Geophysical Union Annual Fall Meeting, San Francisco, CA, December 11-5, 2006.
- Northcott, M. L., M. N. Gooseff, **J. E. Barrett**, L. Zeglin, and C. Takacs-Vesbach. Wetted margin dynamics: The interplay of soil hydrology, biogeochemistry, and microbial ecology in the Dry Valleys of Antarctica. American Geophysical Union Annual Fall Meeting, San Francisco, CA, December 11-5, 2006.
- Barrett, J. E.**, R. A. Virginia, S. C. Cary, D. H. Wall, and B. J. Adams. Covariation in Soil Biodiversity and Biogeochemistry in Northern and Southern Victoria Land, Antarctica. Scientific Committee on Antarctic Research Open Science Conference, Hobart, Australia July 10-13, 2006.

2005

- Bobb, M., L. Zeglin, M. N. Gooseff, **J. E. Barrett**, and C. Vesbach. Spatial Variability in Microbial Community Structure In Antarctic Riparian Zones. Presented at the American Geophysical Union Fall Meeting, San Francisco, CA, December 9, 2005.
- Poage, M. A., **J. E. Barrett**, R. A. Virginia, and D. H. Wall. A Field and Statistical Evaluation of Soil Geochemical Control Over Nematode Populations in Bull Pass, Antarctica. Presented at the American Geophysical Union Fall Meeting, San Francisco, CA, December 9, 2005.
- Barrett, J. E.**, R. A. Virginia, and D. H. Wall. Controls over soil organic matter accumulation and turnover in the McMurdo Dry Valleys, Antarctica. Presented at the American Geophysical Union Fall Meeting, San Francisco, CA, December 9, 2005.
- Gooseff, M. N., **J. E. Barrett**, K. R. Hill, D. B. Bate, M. Bobb, M. Northcott, L. Zeglin, and C. Vesbach. Controls on Soil Moisture Wicking Extent Away From Lake Fryxell (constant boundary condition) in the Dry Valleys Polar Desert, Antarctica. Presented at the American Geophysical Union Fall Meeting, San Francisco, CA, December 9, 2005.
- Norvell, K., J.A. Ippolito, S.W. Blecker, **J. Barrett**, D.H. Wall, and R. Virginia. Biogeochemical implications of phosphorus fractionation in soils of Taylor Valley, Antarctica. Presented at the American Society of Agronomy National Meetings. Salt Lake City, UT, September 2005.
- Barrett, J. E.**, R. A. Virginia, D. H. Wall, B. J. Adams, and S. C. Cary. Soil biodiversity and ecosystem functioning across a latitudinal gradient in Victoria Land, Antarctica. Presented at the Annual Meeting of the Ecological Society of America, Montreal, Quebec, August 2005.
- Bate^{*}, D. B., **J. E. Barrett**, and R. A. Virginia. Phosphorus cycling across a soil chronosequence in the McMurdo Dry Valleys of Antarctica. Presented at the Annual Meeting of the Ecological Society of America, Montreal, Quebec, August 2005.
- Virginia, R. A., **J. E. Barrett**, R. Stucker, M. Poage, and W. B. Lyons. Nitrate accumulation and cycling in hot and cold desert ecosystems. Presented at the Annual Meeting of the Ecological Society of America, Montreal, Quebec, August 2005.
- Nkem, J. N., D.H. Wall, R.A. Virginia, **J.E. Barrett**, and B.J. Adams. Sources of soil moisture and their impacts on soil biodiversity in Taylor Valley, Antarctica. Presented at the Annual Meeting of the Ecological Society of America, Montreal, Quebec, August 2005.
- Bobb, M., L. H. Zeglin, M. N. Gooseff, **J. E. Barrett**, C. Dahm, and C. D. Takas-Vesbach. Hydrological/biogeochemical controls over microbial diversity across varying spatial scale in Antarctic hyporheic zones. Presented at the Annual Meeting of the Ecological Society of America, Montreal, Quebec, August 2005.
- Barrett, J. E.**, M. N. Gooseff, M. L. Northcott, M. Bobb, L. Zeglin, D. B. Bate, and C. Takacs-Vesbach. 2005. Nutrient Cycling in Riparian Soils and Sediments

Bordering Cold Desert Streams and Lakes. American Geophysical Union Spring Meeting, New Orleans, LA, May 27, 2005.

Nkem, J. N, D. H. Wall, R. A. Virginia, **J. E. Barrett**, and B. J. Adams. Groundwater seeps in a Cold Desert Ecosystem: Community changes in soil invertebrates in the McMurdo Dry Valleys. Soil Ecology Society Annual Meeting, Argonne National Laboratory, Illinois. May 22-25, 2005.

Bobb, M., L. Zeglin, **J. E. Barrett**, M. N. Gooseff, and C. Takacs-Vesbach. Scales of microbial diversity across aquatic/terrestrial interfaces in a polar desert. American Society of Limnology and Oceanography Annual Meetings, Salt Lake City, UT, May, 2005.

2004

Burke, I. C., **J. E. Barrett**, P. Lowe, B. Ford, and W. K. Lauenroth. Impact of Five Carbon Treatments on Labile Nutrient Pools in a Historically Nitrogen Stressed Semiarid Ecosystem. Agronomy Abstracts 2004:251. Presented at the Soil Science Society of America Annual Meeting, Seattle, WA. Oct. 31-Nov. 4, 2004.

Nkem, J. N, D. H. Wall, R. A. Virginia, E. J. Broos, **J. E. Barrett**, B. J. Adams, and A. N. Parsons. Response of soil nematodes to moisture additions from snow fences in Taylor Valley, Antarctica. Society of Nematology, Estes Park, Colorado, August, 7-11, 2004.

Barrett, J. E., R. A. Virginia, and D. H. Wall. Organic matter accumulation and turnover in Antarctic Dry Valley soils. Scientific Committee on Antarctic Research Conference, Bremen, Germany, July 25-28, 2004.

2003

Barrett, J. E., R. A. Virginia, D. H. Wall, and A. N. Parsons. Does legacy C fuel soil food webs in the Antarctic Dry Valleys? Long Term Ecological Research Program, All Scientist Meeting, Seattle, WA, September 18-21, 2003.

Barrett, J. E., R. A. Virginia, D. H. Wall, and W. B. Lyons. Stoichiometric evolution of Antarctic Dry Valley landscapes. Supplement to the Bulletin of the Ecological Society of America 84:21. Presented at the Annual Meeting of the Ecological Society of America, Savannah, GA., August, 2003.

2002

Barrett, J. E., C. A. McManus, R. A. Virginia, A. N. Parsons, and D. H. Wall. Soil carbon turnover in Antarctic Dry Valley ecosystems, an analytical approach. Supplement to the Bulletin of the Ecological Society of America 83:316. Presented at the Annual Meeting of the Ecological Society of America, Tucson, AZ., August, 2002.

Parsons, A. N., **J. E. Barrett**, D. H. Wall, and R. A. Virginia. Responses of Antarctic Dry Valley soil biota and soil respiration to long-term carbon and climate manipulations. Supplement to the Bulletin of the Ecological Society of America 83:232. Presented at the Annual Meeting of the Ecological Society of America, Tucson, AZ, August, 2002.

2001

Barrett, J. E., A. P. Parsons, D. Porazinska, R. A. Virginia, and D.H. Wall. Organic matter accumulation and turnover in Dry Valley soils of Antarctica. Supplement to the Bulletin of the Ecological Society of America 82:52. Presented at the

Annual Meeting of the Ecological Society of America, Madison, WI, August 2001.

Parsons, A. P., **J. E. Barrett**, S. Blecker, D. Porazinska, K. G. Catapano, R. A. Virginia, and D. H. Wall. CO₂ flux from Antarctic Dry Valley soils: Cross valley comparisons and relationship to soil biota. Supplement to the Bulletin of the Ecological Society of America 82:180. Presented at the Annual Meeting of the Ecological Society of America, Madison, WI, August 2001.

2000

Parsons, A. P., **J. E. Barrett**, R. A. Virginia, and D. H. Wall. Carbon dioxide flux in Antarctic Dry Valley soils. Supplement to the Bulletin of the Ecological Society of America 81:173. Presented at the Annual Meeting of the Ecological Society of America, Snowbird, UT, August, 2000.

Ford, B., **J. Barrett**, I. Burke, and W. Lauenroth. Impact of 5 carbon treatments on the labile nutrient pools of historical nitrogen and water manipulated plots. Supplement to the Bulletin of the Ecological Society of America 81:274. Presented at the Annual Meeting of the Ecological Society of America, Snowbird, UT, August 2000.

Gooseff, M. N., **J. E. Barrett**, and P. T. Doran. Snow pack coverage and influence on soils of a polar desert. Supplement to the Bulletin of the Ecological Society of America 81:280. Presented at the Annual Meeting of the Ecological Society of America, Snowbird, UT, August, 2000.

1999

Barrett, J. E., and I. C. Burke. Sensitivity analysis of soil C:N ratios to temperature and anthropogenic nitrogen inputs. Supplement to the Bulletin of the Ecological Society of America 80: 48. Presented at the Annual Meeting of the Ecological Society of America. Spokane, WA, August 1999.

1998

Barrett, J. E., I.C. Burke, G. Maciel, and J. Xiong. 1998. Nitrogen retention in organic fractions along a soil organic matter (SOM) gradient in the U.S. Central Grasslands region. Agronomy Abstracts 1998:251. Presented at the Annual Meeting of the Soil Science Society of America. Baltimore, MD, October, 1998.

Barrett, J. E., and I. C. Burke. Nitrogen retention in semi-arid ecosystems of the central grasslands region, U.S.A. Supplement to the Bulletin of the Ecological Society of America 79: 31. Presented at the Annual Meeting of the Ecological Society of America, Baltimore, MD, August, 1998.

1997

Barrett, J. E., and I. C. Burke. N retention in soils from a SOM gradient in the central grasslands region of the United States. Supplement to the Bulletin of the Ecological Society of America 78:50. Presented at the Annual Meeting of the Ecological Society of America, Albuquerque, NM, August, 1997.

1996

Barrett, J. E., and I. C. Burke. Microbial immobilization and short-term N retention in soils from a SOM gradient in the Central Grasslands region. Agronomy Abstracts 1996:305. Presented at the Annual Meeting of Soil Science Society of America. Indianapolis, IN, October 1996.

1995

Barrett, J. E., I. C. Burke, and W. K. Lauenroth. A regional analysis of N mineralization in coarse and fine textured sites along a precipitation gradient in the Central Grasslands of the U.S. Supplement to the Bulletin of the Ecological Society of America 76:300. Presented at the Annual Meeting of the Ecological Society of America, Snowbird, UT, August 1995.

Workshops and Other Professional Presentations

2011

Geochemical controls over the spatial distribution of biota in the McMurdo Dry Valleys, Antarctica. 3rd Annual Workshop on Soil Metagenomics, sponsored by the Argonne National Laboratory, Bloomingdale, IL, October 6-8, 2011.

Results from long-term manipulative experiments in the McMurdo Dry Valleys LTER program. Long Term Ecological Research Network sponsored workshop. Hartford, CT, Oct. 3-4, 2011.

2008

Biogeochemical Cycling in Riparian Soils Bordering Cold Desert Lakes and Streams. 1st International Conference on Hydopedology, Penn State, July 28-31, 2008.

2004

Spatial variability in soil biogeochemistry and biodiversity in periglacial landscapes of the McMurdo Dry Valleys, Antarctica. Presented at the National Science Foundation International Workshop on Antarctic Permafrost and Soils, Madison, WI, Nov.15-18, 2004.

2002

Bringing Antarctica into Your Classroom. Presented at the National Science Teachers Association Annual Convention in San Diego, CA, July, 2002.

1999

Regional controls over N cycling and retention: Insights from the U.S. Mid-latitude transect. International Geosphere Biosphere Programme Transect Workshop. Darwin/Alice Springs, Australia. July 1999.

Internal Seminars

2016

Responses of soil ecosystems to environmental change. Evolution and Behavior Seminar, Department of Biological Sciences, Virginia Tech, Ecology, Sept. 2016.

Ecological Responses to Climate Variability in the McMurdo Dry Valleys, Geobiology Seminar, Department of Geosciences, Virginia Tech, March 31, 2016.

2012

Soil Ecology and Biodiversity in the McMurdo Dry Valleys, Antarctica. Presented to the Plant Pathology and Weed Science Department, Virginia Tech, September 6, 2012.

2011

Ecological Responses to Landscape and Climate History in the McMurdo Dry Valleys, Antarctica. Geosciences Seminar, Department of Geosciences, Virginia Tech. Friday Oct. 21, 2011.

Biodiversity Hotspots in Cold Deserts and Beyond. Ecology, Evolution and Behavior Seminar, Department of Biological Sciences, Virginia Tech, April 2011.

2009

Biodiversity Hot-Spots in Cold Desert Ecosystems: Soil Ecology of the Antarctic Dry Valleys. Crop, Soil and Environmental Science, Virginia Tech, Departmental Seminar, October 22, 2009.

HONORS and RECOGNITION

2014 Virginia Tech Student Services *Excellence in Access and Inclusion Award*.

2013 Virginia Tech Department of Biological Sciences *Outstanding Graduate Advising Award*

2010 Virginia Tech Department of Biological Sciences *Outstanding Research Award*

UNIVERSITY TEACHING EXPERIENCE (Instructor of Record)

Virginia Tech

Ecology: fall semester 2007-2009, 2012-2014, 2016.

Global Change Ecology: spring semester 2008-2013, 2015, 2017.

Ecosystem Dynamics: fall semesters 2007, 2011, 2013, 2015, 2017.

Methods in Biogeochemical Analysis: fall semesters 2015-2017.

Dartmouth College

Global Environmental Science: spring terms 2001-2006.

Agro-ecology: summer term 2001, 2003, 2006.

Ecosystem Science: spring term 2004.

Student Mentoring

Major Advisor

Matthew Hedin, graduate student Dept. of Biological Sciences, Virginia Tech.

Ernie Osburn, graduate student, Dept. of Biological Sciences, Virginia Tech.

Sarah Power, graduate student, Dept. of Biological Sciences, Virginia Tech.

Stephen McBride, graduate student, Dept. of Biological Sciences, Virginia Tech.

Carl Wepking, PhD candidate, Dept. of Biological Sciences, Virginia Tech.

Matthew Hedin, M.S. Dept. of Biological Sciences, Virginia Tech, 2017.

Margaret Pryatel, M.S. Dept. of Biological Sciences, Virginia Tech, 2015.

Kevin Geyer, Ph.D. Dept. of Biological Sciences, Virginia Tech, 2014.

Jeffrey Norman, Ph.D. Dept. of Biological Sciences, Virginia Tech, 2013.

Verl Emrick, Ph.D. Dept. of Biological Sciences, Virginia Tech, 2013

Adam Altrichter, M.S., Dept. of Biological Sciences, Virginia Tech, 2012.

D. Bradley Bate, M.S., Earth Sciences, Dartmouth College 2007.

Pamela Collins, Dartmouth College 2007, undergraduate senior thesis advisor.

Rebekka Stucker, M.S., Earth Sciences, Dartmouth College 2006, co-advisor w/ R. Virginia.

D. Bradley Bate, Dartmouth College 2004, undergraduate senior thesis advisor, 2004.

Graduate Student Committees

Ryan McClure, graduate student, Dept. of Biological Sciences, Virginia Tech.

Spencer Bell, graduate student, Dept. of Biological Sciences, Virginia Tech.

Rosana Paola Pineda Tuiran, Ph.D. candidate, Dept of Horticulture, Virginia Tech.

Kevin Failor, graduate student, Dept. of Plant Pathology and Weed Science, Virginia Tech.

Chelsea Taylor, graduate student, Dept. of Biological Sciences, Virginia Tech, 2016.

Jay Raymond, Ph.D. candidate, FREC, Virginia Tech, 2015.

Alexander Gerling, M.S., Dept. of Biological Sciences, Virginia Tech, 2015.

Tyler Kholer, Ph.D., INSTAAR University of Colorado, 2015.

Brett Heim, M.S. FREC, Virginia Tech, 2014.

Fiona Shanhun, Ph.D., Lincoln University, Christchurch, New Zealand, 2014.

Joshua Scarrow, M.S. University of Wakaito, Hamilton, New Zealand, 2013.

Laurence Lin, Ph.D. Dept. of Biological Sciences, Virginia Tech, 2013.

Robert Northington, Ph.D., Dept. of Biological Sciences, Virginia Tech, 2013.

Beth Cheever, Ph.D., Dept. of Biological Sciences, Virginia Tech, 2012.

Nanda Chassott, M.S. Department of Geosciences, Virginia Tech 2009.

PROFESSIONAL SERVICE

2016 Participant in National Science Foundation supported International Workshop on Environmental Stewardship in the McMurdo Dry Valleys, Fort Collins, May 2016

2015 National Science Foundation, Division of Environmental Biology Ecosystem Proposal Review Panel, April 20-23, 2015.

2015 Life Sciences Representative on Executive Committee for Integrative Antarctic Science Meeting, Boulder, CO, September 2015.

2013 – 2015. Executive Committee for McMurdo Dry Valleys Long Term Ecological Research project.

2013 Planning Committee for Transantarctic Mountains Science Meeting, St. Paul, Minnesota.

2012 Steering Committee for planning of International Workshop on Terrestrial Observatory Network, hosted at the 2012 SCAR meetings in Portland, OR.

2008 National Research Initiative USDA Soil Processes Panel.

2007 National Science Foundation International Polar Year, Understanding Change Panel.

- 2006 Chair and organizer of National Science Foundation supported workshop on soil microclimate and active layer dynamics in the McMurdo Dry Valleys, Dartmouth College, Hanover NH.
- 2005 Steering committee for National Science Foundation Workshop: Synthesis of Soil Biodiversity and Ecosystem Functioning in Victoria Land, Antarctica. April 21-23, 2005, Jekyll Island, GA.

DEPARTMENTAL/UNIVERSITY SERVICE

- 2017 – present. Executive and Personnel Committee, Department of Biological Sciences, Virginia Tech.
- 2016 – present. Facilities Task Force, Department of Biological Sciences, Virginia Tech.
- 2010 - present. Curriculum Committee, Department of Biological Sciences, Virginia Tech.
- 2010 - present. Undergraduate Curriculum Assessment Committee, Department of Biological Sciences, Virginia Tech.
- 2016 – 2017. Leadership Task Force, Department of Biological Sciences, Virginia Tech.
- 2016 - 2017. Global Systems Science Faculty Design Team, Virginia Tech.
- 2013 - 2017. Graduate Selection Committee, Department of Biological Sciences, Virginia Tech.
- 2015 - 2016. Chair of search committee for stream ecology faculty, Department of Biological Sciences, Virginia Tech.
- 2014 - 2016. Biological Sciences Representative, Virginia Tech Faculty Senate.
- 2011 - 2014. *Ad hoc* steering committee on the Fralin Life Science Institute's Organismal Biology and Ecology Initiative
- 2012 - 2013. Search committee for geobiology/paleontologist position, Department of Geosciences, Virginia Tech
- 2011 - 2013. Executive and Personnel Committee, Department of Biological Sciences, Virginia Tech.
- 2011-2012. Search committee for stream ecosystem scientist and microbial ecologist faculty positions, Department of Biological Sciences, Virginia Tech.
- 2010-2011. Search committee for ecosystem scientist, Department of Biological Sciences, Virginia Tech.
- 2010-2011. Search committee for sedimentologist/stratigrapher position, Department of Geosciences, Virginia Tech.
- 2007 - 2010. Chair, Curriculum Committee, Department of Biological Sciences, Virginia Tech.
- 2009 - 2010. Executive and Personnel Committee, Department of Biological Sciences, Virginia Tech.
- 2006 - 2009. Graduate Selection Committee, Department of Biological Sciences, Virginia Tech.

PUBLIC OUTREACH

2016

Ecological Responses to Climate Variability in the McMurdo Dry Valleys, Sunday Night Community Lecture Series, McMurdo Station, Antarctica, January 2016.

2014

Science News Article in LTER Network Newsletter: Barrett, J. E. MCM researchers simulate permafrost thaw to study response of soil ecosystems and biota to climate change. *LTER Network News* Volume **27**, No 1.

Contributor to National Public Radio program Science Friday, “*The Science of Frank Herbert’s Dune*”, July 25, 2014.

2013

Presentation to 6th grade classes at Glenvar Middle School: “Living on the Edge: Life in An Antarctica Oasis”, May 2013.

2010

Webinar for teachers through the National Science Teacher Association. 37 High School and Middle School teachers participated in a 90-minute session, May 2010.

2008

Research published in *Global Change Biology* Vol 14 was featured by the European Commission in their periodical: *Science for Environment Policy*, Issue 122.

2006

Member of McMurdo Long Term Ecological Research (MCM-LTER) team hosting site visit by Congressional Delegation to MCM-LTER site in Taylor Valley, Antarctica. Congressional Delegation included: Rep. Sherwood Boehlert (R–N.Y.), Rep. Roscoe G. Bartlett (R–Md.), Rep. Bob Inglis (R–S.C.), Rep. Phil Gingrey (R–Ga.), Rep. Darlene Hooley (D–Ore.), Rep. Robert E. 'Bud' Cramer (D–Ala.), Rep. Lincoln Davis (D–Tenn.), Rep. Brad Miller (D–N.C.), Rep. Jim Costa (D–Calif.), Rep. Ben Chandler (D–Ky.), Sen. John McCain (R–Ariz.), Sen. Susan Collins (R–Maine), Sen. John E. Sununu (R–N.H.), January 2006.

PROFESSIONAL ORGANIZATIONS

Ecological Society of America since 1995

American Geophysical Union since 2004

Soil Ecology Society since 2007