

Becky A. Ball

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New College of Interdisciplinary Arts & Sciences
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Education

2003-2007 Ph.D., University of Georgia, Odum School of Ecology, Athens, GA
1998-2002 B.A. (honors) in Biology, Goucher College, Baltimore, MD

Related Professional Experience

2016-present Associate Professor, School of Mathematical and Natural Sciences, New College of Interdisciplinary Arts & Sciences, Arizona State University, Glendale, AZ;
2018-2019 Interim Associate Director, School of Mathematical and Natural Sciences
2010-2016 Assistant Professor, School of Mathematical and Natural Sciences, New College of Interdisciplinary Arts & Sciences, Arizona State University, Glendale, AZ
2007-2010 Postdoctoral Research Associate, Dartmouth College, Hanover, NH
2009, 2010 Visiting Assistant Professor of Environmental Studies, Dartmouth College
2003-2007 Graduate Research Assistant, University of Georgia, Athens, GA

Areas of Research Interest

Soil ecology & biogeochemistry Terrestrial-aquatic linkages
Desert ecology Plant-soil interactions
Polar ecology Global change effects on terrestrial ecosystems

Teaching Experience

Program lead:

Environmental Science BS, BA, and minor (ASU)

Instructor:

Applied Learning Lab (LSC 519, seminar, ASU, graduate majors)
BioArt: Sonoran and Arctic Environments (ENV 394, CURE, ASU, undergraduate majors and nonmajors)
Ecosystem Ecology (BIO 422/LSC 598, lecture, ASU, graduate and undergraduate majors)
Fundamentals of Ecology Laboratory (LSC 322, lab, ASU, undergraduate majors)
Fundamentals of Environmental Science (ENV 201, lecture/seminar, ASU, undergraduate majors)
General Biology I Laboratory (BIO 181, lab, ASU, undergraduate majors)
Global Environmental Science (ENVS 30, lecture, Dartmouth, undergraduate majors)
The Human Environment (LSC 362, lecture, ASU, undergraduate majors and nonmajors)
Soil Science (ENV 410/LSC 598, integrated lecture/lab, ASU, graduate and undergraduate majors)
Sustainable World (SOS 110, lecture/seminar, ASU, undergraduate majors and nonmajors)

Supervisor/Mentor:

Applied Project (BIO 593, ASU, graduate majors)
Capstone: Scientific Paper (SOS 596, ASU, graduate majors)
Honors Directed Study (BIO/ENV/LSC/SOS 492, ASU, undergraduate majors)
Honors Thesis (BIO/ENV/LSC/SOS 493, ASU, undergraduate majors)
Individualized Instruction (LSC/ENV 499, ASU, undergraduate majors)
Intro to Research Techniques (BCH 392, ASU, undergraduate majors)
Undergraduate Research (BIO 495, ASU, undergraduate majors)

Students mentored

At ASU, I have mentored 50 undergraduate students who have participated in the field and lab aspects of my research, including [Barrett Honors](#) students, [WAESO](#) undergraduate researchers, [NCEHSS](#) scholars, and [NCUIRE](#) scholars and fellows. This includes securing over \$80,000 in direct support for student stipends and project-specific supplies, in addition to my federally-funded grants, yielding student led and co-authored publications and presentations. I have chaired or co-chaired committees for 3 MS students, and served on MS and PhD committees for 8 graduate students.

Peer-Reviewed Publications

*indicates an undergraduate student author

40. Williamson, M.*, **B.A. Ball**. 2023. Soil biogeochemical responses to multiple co-occurring forms of human-induced environmental change. *Oecologia* 201: 1109-1121. doi: [10.1007/s00442-023-05360-7](https://doi.org/10.1007/s00442-023-05360-7)
39. **Ball, B.**, P. Convey, K. Feeser, U. Nielsen, D. Van Horn. 2023. Habitat severity structures soil communities at fine and broad spatial scales along the Antarctica Peninsula. *Antarctic Science*. doi:[10.1017/S0954102023000019](https://doi.org/10.1017/S0954102023000019)
38. Xue, X., B. Adhikari, **B.A. Ball**, J.E. Barrett, J. Miao, A. Perkes, M. Martin, B.L. Simmons, D.H. Wall, and B.J. Adams. 2023. Ecological stoichiometry drives the evolution of soil nematode life history traits. *Soil Biology & Biochemistry*. 177: 108891. doi:[10.1016/j.soilbio.2022.108891](https://doi.org/10.1016/j.soilbio.2022.108891)
37. **Ball, B.A.**, K. Bergin*, A. Morrison*. 2023. Vegetation influences desert soil arthropods and their response to altered precipitation. *Journal of Arid Environments* 208: 104873. doi: [10.1016/j.jaridenv.2022.104873](https://doi.org/10.1016/j.jaridenv.2022.104873)
36. **Ball, B.**, M. Haberkorn, E. Ortiz. 2022 Mesofauna community influences litter chemical trajectories during early-stage litter decay. *Pedobiologia*. 95: 150844. doi: [10.1016/j.pedobi.2022.150844](https://doi.org/10.1016/j.pedobi.2022.150844)
35. **Ball, B.**, L. Christenson, K. Wickings. 2022. A cross-system analysis of litter chemical dynamics throughout decomposition. *Ecosystems* 25: 1792-1808. doi: [10.1007/s10021-022-00749-6](https://doi.org/10.1007/s10021-022-00749-6)
34. Rowe, H., T. Sprague, **B. Ball**, D. Langenfeld, L. Rivera. 2022. Restoring closed trails in the Sonoran Desert: interactions of seed timing, seed source, and ripping. *Restoration Ecology* 30(2): e13532. doi: [10.1111/rec.13532](https://doi.org/10.1111/rec.13532)
33. **Ball, B.**, P. Convey, K. Feeser, U. Nielsen, D. Van Horn. 2022. Environmental harshness mediates the relationship between aboveground and belowground communities in Antarctica. *Soil Biology & Biochemistry*. 164: 108493. doi: [10.1016/j.soilbio.2021.108493](https://doi.org/10.1016/j.soilbio.2021.108493).
32. Harms, T.K., P.M. Groffman, L. Aluwihare, C. Craft, W.R. Wieder, S.E. Hobbie, S.G. Baer, J.M. Blair, S. Frey, C.K. Remucal, J.A. Rudgers, S.L. Collins, J.S. Kominoski, **B.A. Ball**, LTER OM Working Group. 2021. Patterns and trends of organic matter processing and transport: Insights from the US long-term ecological research network. *Climate Change Ecology*. 2: 100025. doi: [10.1016/j.ecochg.2021.100025](https://doi.org/10.1016/j.ecochg.2021.100025)
31. Bilderback, A.H.*, A.J. Torres*, M. Vega*, **B. Ball**. 2021. The structural and nutrient chemistry during early-stage decomposition and desiccation of cacti in the Sonoran Desert. *Journal of Arid Environments*. 195: 104636. doi: [10.1016/j.jaridenv.2021.104636](https://doi.org/10.1016/j.jaridenv.2021.104636)
30. Dietrich, S.W., D. Goelman, J. Broatch, S. Crook, **B. Ball**, K. Kobojeck, J. Ortiz. 2021. Introducing databases in context through customizable visualizations. *Frontiers in Education, section Digital Education* 6: 719134. doi: [10.3389/educ.2021.719134](https://doi.org/10.3389/educ.2021.719134)
29. Dietrich, S.W., D. Goelman, J. Broatch, S. Crook, **B. Ball**, K. Kobojeck, J. Ortiz. 2020. Using formative assessment for improving pedagogy: Reflections on feedback informing database visualizations. *ACM Inroads* 11(4): 27-34. doi: [10.1145/3430766](https://doi.org/10.1145/3430766).
28. Wlostowski, A.N., N.O. Schulte, B.J. Adams, **B.A. Ball**, R.M. Esposito, M.N. Gooseff, W.B. Lyons, U.N. Nielsen, R.A. Virginia, D.H. Wall, K.A. Welch, D.M. McKnight. 2019. The

- hydroecology of an ephemeral wetland in the McMurdo Dry Valleys, Antarctica. *Journal of Geophysical Research: Biogeosciences* 124(12):3814-3830. doi: [10.1029/2019JG005153](https://doi.org/10.1029/2019JG005153)
27. **Ball, B.A.**, M. Christman* (**co-leads**), S.J. Hall. 2019. Nutrient dynamics during photodegradation of plant litter in the Sonoran Desert. *Journal of Arid Environments* 160: 1-10. doi: [10.1016/j.jaridenv.2018.09.004](https://doi.org/10.1016/j.jaridenv.2018.09.004)
 26. Aanderud, A.Z., S. Saurey, **B.A. Ball**, D.H. Wall, J.E. Barrett, M. Muscarella, N. Griffin, R.A. Virginia, B.J. Adams. 2018. Stoichiometric shifts in soil C:N:P promote bacterial taxa dominance, maintain biodiversity, and deconstruct community assemblages. *Frontiers in Microbiology* 9: 1401. doi: [10.3389/fmicb.2018.01401](https://doi.org/10.3389/fmicb.2018.01401)
 25. Alvarez Guevara, J.N.* and **Ball, B.A.** 2018. Urbanization alters small rodent community composition but not abundance. *PeerJ*. 6:e4885. doi: [10.7717/peerj.4885](https://doi.org/10.7717/peerj.4885)
 24. **Ball, B.A.**, B.J. Adams, J.E. Barrett, D.H. Wall, R.A. Virginia. 2018. Soil biological responses to C, N and P fertilization in a polar desert of Antarctica. *Soil Biology & Biochemistry* 122: 7-18. doi: [10.1016/j.soilbio.2018.03.025](https://doi.org/10.1016/j.soilbio.2018.03.025)
 23. Carrillo, Y., **B.A. Ball**, and M. Molina. 2016. Stoichiometric linkages between plant litter, trophic interactions and nitrogen mineralization across the litter-soil interface. *Soil Biology & Biochemistry* 92: 102-110. doi:[10.1016/j.soilbio.2015.10.001](https://doi.org/10.1016/j.soilbio.2015.10.001)
 22. **Ball, B.A.** and R. Virginia. 2015. Controls on diel soil CO₂ flux across moisture gradients in a polar desert. *Antarctic Science*. 27(6): 527-534. doi: [10.1017/S0954102015000255](https://doi.org/10.1017/S0954102015000255)
 21. **Ball, B.A.**, C.R. Tellez*, and R.A. Virginia. 2015. Penguin activity influences soil biology, biogeochemistry, and soil respiration in rookeries on Ross Island, Antarctica. *Polar Biology*. 38(9): 1357-1368. doi: [10.1007/s00300-015-1699-7](https://doi.org/10.1007/s00300-015-1699-7)
 20. **Ball, B.A.** and J.S. Levy. 2015. The role of water tracks in altering biotic and abiotic soil properties and processes in a polar desert in Antarctica. *Journal of Geophysical Research - Biogeosciences*. 120(2): 270-279. doi: [10.1002/2014JG002856](https://doi.org/10.1002/2014JG002856)
 19. **Ball, B.A.** and J. Alvarez Guevara*. 2015. The nutrient plasticity of moss-dominated crust in the urbanized Sonoran Desert. *Plant and Soil*. 389(1-2): 225-235. doi: [10.1007/s11104-014-2355-7](https://doi.org/10.1007/s11104-014-2355-7)
 18. Nielsen, U.N. and **B.A. Ball (co-leads)**. 2015. Impacts of altered precipitation regimes on soil communities and biogeochemistry in arid and semi-arid ecosystems. *Global Change Biology*. 21(4): 1407-1421. doi: [10.1111/gcb.12789](https://doi.org/10.1111/gcb.12789)
 17. **Ball, B.A.** and R. Virginia. 2014. The ecological role of moss in a polar desert: implications for aboveground-belowground and terrestrial-aquatic linkages. *Polar Biology* 37(5): 651-664. doi: [10.1007/s00300-014-1465-2](https://doi.org/10.1007/s00300-014-1465-2)
 16. **Ball, B.A.** and R. Virginia. 2014. Microbial biomass and respiration responses to nitrogen fertilization in a polar desert. *Polar Biology* 37(4): 573-585. doi: [10.1007/s00300-014-1459-0](https://doi.org/10.1007/s00300-014-1459-0)
 15. Levy, O., **B.A. Ball (co-leads)**, et al. 2014. Approaches to advance scientific understanding of macrosystems ecology. *Frontiers in Ecology and the Environment* 12(1): 15-23. doi:[10.1890/130019](https://doi.org/10.1890/130019) For a special issue on Macrosystems Ecology stemming from a working group at the MSB PI meeting.
 14. **Ball, B.A.**, Y. Carrillo, M. Molina. 2014. The influence of litter composition across the litter-soil interface on mass loss, nitrogen dynamics and the decomposer community. *Soil Biology & Biochemistry*. 69: 71-82. doi: [10.1016/j.soilbio.2013.10.048](https://doi.org/10.1016/j.soilbio.2013.10.048)
 13. **Ball, B.A.** and R. Virginia. 2012. Meltwater seep patches increase heterogeneity of soil geochemistry and therefore habitat suitability. *Geoderma* 189-190, 652-660. doi: [10.1016/j.geoderma.2012.06.028](https://doi.org/10.1016/j.geoderma.2012.06.028)
 12. Magalhães, C., M.I. Stevens, S.C. Cary, **B.A. Ball**, B.C. Storey, D.H. Wall, R. Türk, U. Ruprecht. 2012. At the limits of life: multidisciplinary insights reveal environmental constraints on biotic diversity in continental Antarctica. *PLoS ONE*. 7(9): e44578. doi:[10.1371/journal.pone.0044578](https://doi.org/10.1371/journal.pone.0044578)

11. Carrillo, Y., **B.A. Ball**, M. Strickland, M. Bradford. 2012. Legacies of plant litter on carbon and nitrogen dynamics and the role of the soil community. *Pedobiologia* 55(4): 185-192. [doi: 10.1016/j.pedobi.2012.02.002](https://doi.org/10.1016/j.pedobi.2012.02.002)
10. Nielsen, U.N., D.H. Wall, B.J. Adams, R.A. Virginia, **B.A. Ball**, M.N. Gooseff, D.M. McKnight. 2012. The ecology of pulse events: insights from an extreme climatic event in a polar desert ecosystem. *Ecosphere* 3(2):17. [doi: 10.1890/ES11-00325.1](https://doi.org/10.1890/ES11-00325.1)
9. **Ball, B.A.**, J.E. Barrett, M.N. Gooseff, R.A. Virginia, 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](https://doi.org/10.3402/polar.v30i0.14555). Invited paper for special International Polar Year Oslo Science Conference issue.
8. Carrillo, Y., **B.A. Ball**, M. Bradford, C. Jordan, M. Molina. 2011. Soil fauna alter the effects of litter composition on nitrogen cycling in a mineral soil. *Soil Biology & Biochemistry* 43(7): 1440-1449. [doi:10.1016/j.soilbio.2011.03.011](https://doi.org/10.1016/j.soilbio.2011.03.011)
7. **Ball, B.A.**, J.S. Kominoski, H.E. Adams, S.E. Jones, E.S. Kane, T.D. Loecke, W. Mahaney, J. Martina, C.M. Prather, T.M.P. Robinson, C.T. Solomon. 2010. Direct and terrestrial vegetation-mediated effects of environmental change on aquatic ecosystem processes. *BioScience* 60(8): 590-601. [doi:10.1525/bio.2010.60.8.5](https://doi.org/10.1525/bio.2010.60.8.5)
6. **Ball, B.A.**, R.A. Virginia, J.E. Barrett, A. Parsons, D.H. Wall. 2009. Interactions between physical and biotic factors influence CO₂ flux in Antarctic dry valley soils. *Soil Biology & Biochemistry* 41(7): 1510-1517. [doi:10.1016/j.soilbio.2009.04.011](https://doi.org/10.1016/j.soilbio.2009.04.011)
5. **Ball, B.A.**, M.A. Bradford, D.C. Coleman, M.D. Hunter. 2009. Linkages between below and aboveground communities: decomposer responses to simulated tree species loss are largely additive. *Soil Biology & Biochemistry*. 41(6): 1155-1163. [doi:10.1016/j.soilbio.2009.02.025](https://doi.org/10.1016/j.soilbio.2009.02.025)
4. **Ball, B.A.**, M.A. Bradford, M.D. Hunter. 2009. Nitrogen and phosphorus release from mixed litter layers is lower than predicted from single species decay. *Ecosystems* 12(1): 87-100. [doi: 10.1007/s10021-008-9208-2](https://doi.org/10.1007/s10021-008-9208-2)
3. **Ball, B.A.**, M.D. Hunter, J.S. Kominoski, C.M. Swan, M.A. Bradford. 2008. Consequences of non-random species loss for decomposition dynamics: experimental evidence for additive and non-additive effects. *Journal of Ecology*. 96(2): 303-313. [doi: 10.1111/j.1365-2745.2007.01346.x](https://doi.org/10.1111/j.1365-2745.2007.01346.x)
2. Kominoski, J.S., C.M. Pringle, **B.A. Ball**. 2008. Invasive woolly adelgid appears to drive seasonal hemlock and carcass inputs to a detritus-based stream. *Verh. Internat. Verein. Limnol.* 30(1): 109-112.
1. Kominoski, J.S., C.M. Pringle, **B.A. Ball**, M.A. Bradford, D.C. Coleman, D.B. Hall, and M.D. Hunter. 2007. Non-additive effects of leaf litter species diversity on breakdown dynamics in a detritus-based stream. *Ecology* 88(5): 1167-1176. [doi: 10.1890/06-0674](https://doi.org/10.1890/06-0674)

Manuscripts Submitted, In Review, or Revising

3. Klein, R.*, **B.A. Ball**. The influence of soil properties on abundance and diversity of low-Arctic soil mesofauna communities. In review with *Polar Biology*.
2. Sandrin, S., **B. Ball**, R. Lerman. Interdisciplinary Science: Art and Science Students Learning Science Inquiry and Artistic Communication in an Arctic Setting. In revision.
1. **Ball, B.A.**, M.D. Hunter, J.S. Kominoski, C.M. Pringle, M.A. Bradford. Litter and microbial carbon dynamics with simulated tree species loss in a coupled terrestrial and aquatic system. In revision.

Non-Peer-Reviewed Publications

1. **Ball, B.** 2021. Soil Fauna Assemblages: Global to Local Scales by Uffe N. Nielsen. *Quarterly Review of Biology* (invited review). 96(3): 220. <https://doi.org/10.1086/716129>
2. **Ball, B.** 2016. A Tale of Two Deserts. *The Cactus Wren*’s “Science Corner”. Maricopa Audubon Society. Volume XLII No. 3, p. 18-20.

Data Packages

Datasets generated by research projects for the above manuscripts have been archived and made assessable to the public at the following locations:

11. Ball, B. 2023. Soil biogeochemical responses to multiple co-occurring forms of human-induced environmental change. Environmental Data Initiative. <https://doi.org/10.6073/pasta/07dd0b4586432777e02dae8c2343fd36>
10. Ball, B. 2022. Mesofauna community influences litter chemical trajectories during early-stage litter decay in compost. Environmental Data Initiative. doi.org/10.6073/pasta/32de70d531b9c13e35dc1860d9415b7e
9. Ball, B. 2022. Vegetation influences desert soil arthropods and their response to altered precipitation. Environmental Data Initiative. [doi: 10.6073/pasta/8f3c06718073765480d3b91a9f0820a7](https://doi.org/10.6073/pasta/8f3c06718073765480d3b91a9f0820a7)
8. Ball, B., U. Nielsen, D. Van Horn. 2022. Climatic and environmental constraints on aboveground-belowground linkages and diversity across a latitudinal gradient in Antarctica. OSF Center for Open Science. [doi: 10.17605/OSF.IO/8XFRC](https://doi.org/10.17605/OSF.IO/8XFRC)
7. Ball, B., M. Vega, A. Torres. 2021. The structural and nutrient chemistry of decomposing cacti in the Sonoran Desert. Environmental Data Initiative. [doi: 10.6073/pasta/430a9feb191eb1bd711f6aef7912a700](https://doi.org/10.6073/pasta/430a9feb191eb1bd711f6aef7912a700)
6. Ball B. 2018. Impacts of urbanization and nutrient fertilization on mass loss and nutrient dynamics during photodegradation of plant litter. Environmental Data Initiative. [doi: 10.6073/pasta/1cf9713d1f07c0e19037898ac7ccdc6a](https://doi.org/10.6073/pasta/1cf9713d1f07c0e19037898ac7ccdc6a)
5. Ball, B. 2018. Impact of urbanization on small rodent abundance and community composition. Environmental Data Initiative. [doi:10.6073/pasta/a8ce3e859f142c58a89baa0dd54bd6d3](https://doi.org/10.6073/pasta/a8ce3e859f142c58a89baa0dd54bd6d3).
4. Ball, B. 2017. Underway Hydrographic, Weather and Ship-state Data (JGOFS) from the Antarctic Peninsula acquired during the Laurence M. Gould expedition LMG1602 (2016). Integrated Earth Data Applications (IEDA). [doi:10.1594/IEDA/322420](https://doi.org/10.1594/IEDA/322420)
3. Ball, B. 2017. The role of moss as integrators of soil and stream nutrient status in deserts, Greater Phoenix area, Arizona, 2011 to 2013. Central Arizona-Phoenix Long-Term Ecological Research. Environmental Data Initiative. [doi: 10.6073/pasta/dd579db21f426d83dbcebda3556be3e1](https://doi.org/10.6073/pasta/dd579db21f426d83dbcebda3556be3e1)
2. Ball, B and Carrillo, Y. Interaction of soil fauna and plant litter composition on decomposition processes across the litter-soil interface. Knowledge Network for Biocomplexity. [doi: 10.5063/F1NK3BZ1](https://doi.org/10.5063/F1NK3BZ1)
1. Ball, B and Virginia, R. 2014. Moss nutrient plasticity and stoichiometry. McMurdo Long-Term Ecological Research. [doi: 10.6073/pasta/7de39d6f2fec6b636d3e0988b50ebcf](https://doi.org/10.6073/pasta/7de39d6f2fec6b636d3e0988b50ebcf)

Funded External Grants

During my time at ASU, I have been awarded externally-funded research grants, including 4 as principal investigator (PI) (totaling \$788,900); two as co-PI (totaling >\$12 million); and several additional grants on which I collaborate as senior personnel (with my percent affiliation totaling \$112,450 of the >\$5 million in total funding from these projects).

9. LTER: CAP V: Investigating How Relationships Between Urban Ecological Infrastructure and Human-Environment Interactions Shape the Structure and Function of Urban Ecosystems
PI: D. Childers; Co-PI: B. Ball, K. Larson, B. Turner, N. Grimm
NSF DEB-2224662 1 Dec 2022 - 30 Nov 2028 \$7,649,990
8. Collaborative Research: Exploring the Functional Role of Antarctic Plants during Terrestrial Succession
PI: B. Ball; Co-I's: S. Eppley, T. Rosensteil
NSF OPP-1932876 1 Sep 2020 - 31 Aug 2023 \$333,489
7. New College Environmental Health Science Scholars: A Unique Summer Program Designed to Increase Diversity in the Environmental Health Sciences

- PI: P. Marshall; Co-PI: J. Hackney, K. Watanabe; Other Personnel: B. Ball (2%), C. Wagner, F. Solis, P. Jurutka, J. Johnson, L. Ferry, T. Sandrin, T. Cahill, B. Polidoro, G. Noutsios*
 NIH R25ES030238 1 Feb 2019 - 31 Jan 2026 \$16,188.81 (of \$539,627 total)
6. Collaborative Research: TRAIN (Transfer To Interdisciplinary Natural Sciences): A Community College-University Consortium To Increase Community College Student Transfer And Success
PI: T. Sandrin; Co-PI: L. Ferry, S. Mooney, S. Sandrin, P. Marshall; Other Personnel: B. Ball (3% through 2019), J. Broatch, E. Camacho, S. Dietrich, J. Hackney, Y. Silva
 NSF-EHR: DUE-17420382 15 Jan 2018 - 31 Dec 2022 \$62,569 (of \$2,065,516 total)
5. Polar (DCL-16-119): Development and Evaluation of an Interdisciplinary Course-based Undergraduate Research Experience in Arctic Sciences
PI: B.A. Ball; Co-PIs: R. Lerman, S. Sandrin
 NSF OPP-1707867 15 Aug 2017 - 31 Jul 2023 \$271,820
4. LTER: CAP IV: Investigating Urban Ecology and Sustainability Through the Lens of Urban Ecological Infrastructure
PI: D. Childers; Co-PI: B. Ball, N. Grimm, B. Turner, K. Larson
 NSF DEB-1832016 1 Dec 2018 - 30 Nov 2023 \$4,507,998
 LTER CAP IV: Design with Nature Infrastructure in Phoenix: A Framework for Exploring Urban Ecology and Sustainability
PI: D. Childers; Co-PI: N. Grimm, S. Hall, A. York, B. Turner; Senior Personnel: B. Ball (2%), among ~40 others.
 NSF DEB-1637590 1 Dec 2016 - 30 Nov 2018 \$22,540 (of \$2,254,000 total)
3. Collaborative Research: EAGER: Pathways and Patterns of Litter Chemistry During Decomposition
PI: B.A. Ball; Co-PIs: K. Wickings, L. Christensen
 NSF DEB-1537920 1 Jun 2015 - 31 May 2018 \$57,489
 Supplements: REU \$5,667; ROA \$25,679
2. Collaborative Research: Climatic and Environmental Constraints on Aboveground-Belowground Linkages and Diversity across a Latitudinal Gradient in Antarctica
PI: B.A. Ball; Co-I: D. Van Horn; Senior Personnel: U. Nielsen; Collaborator: P. Convey
 NSF PLR-1341429 1 Oct 2014 - 30 Sep 2018 \$126,110
1. Collaborative Research: Databases for Many Majors: Customizable Visualizations to Improve STEM Learning
PI: S. W. Dietrich; Senior Personnel: B. Ball (5%), C.M. Borrer, S.M. Crook, K. Kobojek
 NSF DUE-1431848 1 Sep 2014 - 31 Aug 2019 \$11,149.10 (of \$222,982 total)

Professional Meeting Presentations and Invited Seminars

Listed presentations are where I was the presenting author. In addition, 15 students have presented under my mentorship.

National/International

33. **B.A. Ball**, L. Christenson, K. Wickings. Broad-scale patterns of litter chemistry throughout decomposition: chemical classes respond differently to litter characteristics and the decay environment. Ecological Society of America Annual Meeting, virtual, August 2021. Oral presentation.
32. **B.A. Ball**. Soil biogeochemistry and biodiversity in the urbanized Sonoran Desert. ASA-CSSA-SSSA International Annual Meeting, virtual, November 2020. Invited speaker for CrossDiv Symposium: Urban Soil Biology and Ecosystems: Promoting Soil Health and Sustainability. [Available online](#).
31. **B.A. Ball**, P. Convey, K. Feeser, U. Nielsen, D. Van Horn. Habitat severity structures soil communities and aboveground-belowground linkages across a latitudinal gradient on the Antarctica Peninsula. Scientific Committee on Antarctic Research Open Science Conference,

- virtual, August 2020. [Available online \(starts at 16:40\) McMurdo Long-Term Research Site All-Hands Meeting](#), virtual, July 2020. Oral presentation.
30. **B.A. Ball**, L. Christenson, K. Wickings. Beyond Initial C:N: Litter chemistry dynamics throughout decomposition. [Soil Ecology Society Biennial Meeting](#), Toledo, OH, May 2019. Oral presentation.
 29. **B.A. Ball**, K. Hughes, D. Van Horn, U. Nielsen, P. Convey. Climatic and environmental constraints on aboveground-belowground linkages and diversity across a latitudinal gradient on the Antarctica Peninsula. [Scientific Committee on Antarctic Research: Biology Symposium](#), Leuven, Belgium, July 2017. Oral presentation.
 28. **B.A. Ball**, L. Christenson, K. Wickings. Pathways and patterns of plant litter chemistry throughout decomposition. [Soil Ecology Society Biennial Meeting](#), Fort Collins, CO, Jun 2017. Oral presentation.
 27. **B.A. Ball**, S.W. Dietrich, D. Goelman. An interactive learning module for teaching ecology students (and professors) about databases for managing and querying large datasets. [Soil Ecology Society Biennial Meeting](#), Fort Collins, CO, Jun 2017. Oral presentation. [Ecological Society of America Annual Meeting](#), Portland, OR, Aug 2017. Poster presentation.
 26. **B.A. Ball**, S.J Hall. The impacts of urbanization on soil biogeochemistry and biodiversity in the Sonoran Desert. [International Long-Term Ecological Research Network 1st Open Science Meeting](#), Skukuza, South Africa, Oct 2016. Oral presentation.
 25. **B.A. Ball**, U.N. Nielsen, D. Van Horn, P. Convey. Plant-soil environment and microbial communities across a latitudinal gradient. [Scientific Committee on Antarctic Research Biennial Open Science Conference](#), Kuala Lumpur, Malaysia, Aug 2016. Oral presentation.
 23. **B.A. Ball**, K. Wickings, L. Christenson. Synthesizing the vision for decomposition in the Anthropocene. [Ecological Society of America Annual Meeting](#), Fort Lauderdale, FL, Aug 2016. Oral symposium presentation.
 22. **B.A. Ball**, U.N. Nielsen, D. Van Horn, P. Convey. Aboveground-belowground linkages and soil biodiversity across a latitudinal gradient in Antarctica. [Ecological Society of America Annual Meeting](#), Baltimore, MD, Aug 2015. Oral presentation.
 20. **B.A. Ball**, J.S. Levy. Water tracks alter biotic and abiotic soil properties and processes in Antarctic soils. [Soil Ecology Society Biennial Meeting](#), Colorado Springs, CO, Jun 2015. Oral presentation.
 19. **B.A. Ball**, Y. Carrillo, M. Molina. Litter composition effects on decomposition across the litter-soil interface. [Ecological Society of America Annual Meeting](#), Minneapolis, MN, Aug 2013. Oral presentation.
 18. **B.A. Ball**, J. Levy. Hidden hydrology and soil biology: The influence of water tracks on soil biological activity in a polar desert of Antarctica. [Soil Ecology Society Biennial Meeting](#), Camden, NJ, June 2013. Oral presentation.
 16. **B.A. Ball**. Effective field data collection in a soils course: Teaching soil ecology in one lab session. [On the Cutting Edge Workshop: Teaching Hydrogeology, Soils, Biogeochemistry, and Low-T Geochemistry in the 21st Century](#), Albuquerque, NM, June 2013. “Great Strategies” presentation and discussion.
 15. **B.A. Ball**, R. Virginia. Moss nutrient plasticity in desert ecosystems: insights from a hot desert comparison. [Long Term Ecological Research \(LTER\) All-Scientist Meeting](#), Estes Park, CO, Sep 2012. Poster presentation.
 14. **B.A. Ball**, R. Virginia. Moss nutrient plasticity in a polar desert: insights from a hot desert comparison. [Ecological Society of America Annual Meeting](#), Portland, OR, Aug 2012. Oral presentation.
 13. **B.A. Ball**, R. Virginia, B. Adams, J. Barrett, D. Wall. Extreme stoichiometry: Nutrient limitation and fertilization in polar desert soils. [Ecological Society of America Annual Meeting](#), Austin, TX, Aug 2011. Oral presentation.

12. **B.A. Ball**, R. Virginia. Permafrost melt seep patches increase heterogeneity of soil geochemistry and therefore habitat suitability. Soil Ecology Society Biennial Meeting, Kelowna, BC, Canada, May 2011. Poster presentation.
11. **B.A. Ball**, R. Virginia. The role of moss as integrators of soil and stream nutrient status in a polar desert. Ecological Society of America Annual Meeting, Pittsburgh, PA, Aug 2010. Oral presentation.
10. **B.A. Ball**, J. Barrett, R. Virginia, D. 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 2010. *Invited Session Speaker*.
9. **B. Ball**, R. Virginia. The response of soil biogeochemical cycling and microbial stoichiometry to water pulse events in a polar desert. LTERR All-Scientist Meeting, Estes Park, CO, Sep 2009. Poster presentation
8. **B.A. Ball**, R. Virginia. Microbial biomass and respiration responses to nitrogen fertilization in a polar desert. Soil Ecology Society Biennial Meeting, Burlington, VT, July 2009. Oral presentation.
7. Y. Carrillo, **B.A. Ball**. Interactions between the legacies of plant litter inputs on soil chemistry and soil communities affect litter and soil organic matter dynamics. Soil Ecology Society Biennial Meeting, Burlington, VT, July 2009. Poster presentation. (2nd author, presenter).
6. **B. Ball**, M. Bradford, D. Coleman, M. Hunter, J. Kominoski, C. Pringle. Effects of leaf litter species richness and composition on nutrient turnover and decomposer biota: Consequences of non-random tree species loss for decomposition. Ecological Society of America Annual Meeting, San Jose, CA, Aug 2007. Oral presentation.
5. Y. Carrillo, **B.A. Ball**. Biochemical quality of litter as a driver of detrital community assemblage in mineral soil. Soil Ecology Society Biennial Meeting, Moab, UT, Apr 2007. Poster presentation. (2nd author, presenter).
4. **B.A. Ball**, M. Bradford, D. Coleman, M. Hunter, J. Kominoski, C. Pringle. Tree species richness and composition effects on nutrient turnover and decomposer biota in a forested watershed in the southern Appalachians. Soil Ecology Society Biennial Meeting, Moab, UT, Apr 2007. Oral presentation.
3. **B. Ball**, J. Kominoski, M. Hunter, C. Pringle, D. Coleman, M. Bradford. The effects of leaf litter species diversity on decomposition in a forested watershed in the southern Appalachians. Ecological Society of America Annual Meeting, Memphis, TN, Aug 2006. Oral presentation.
2. **B.A. Ball**, J. Kominoski, M. Hunter, C. Pringle, D. Coleman, M. Bradford. The effects of leaf litter species diversity on decomposition in a forested watershed in the southern Appalachians. LTERR All-Scientist Meeting, Estes Park, CO, Sep 2006. Poster presentation.
1. **B.A. Ball**, J. Kominoski, M. Hunter, D. Coleman, C. Pringle. The effects of leaf litter species diversity on ecosystem function in a forested watershed. Southeastern Ecology and Evolution Conference, Athens, GA, 2005; Soil Ecology Society Biennial Meeting, Chicago, IL, May 2005; LTERR Graduate Student Symposium, Eugene, OR, Apr 2005. Poster presentation.

Regional

7. **B.A. Ball**, S.J. Hall, H. Heavenrich, J. Ripplinger. Long-term patterns in land use and soil properties across the CAP LTER Ecosystem. CAP-LTER All-Scientist Meeting, Scottsdale, AZ, Jan 2017. Poster presentation.
6. **B.A. Ball**, K. Wickings, L. Christenson. Pathways and patterns of litter chemistry during decomposition. Hubbard Brook Cooperator's Meeting, Jul 2016, Thornton, NH. Oral presentation.
5. **B.A. Ball**, S.J. Hall, J. Ripplinger. Influence of climate, plant communities, and land-use on long-term patterns of soil properties in the CAP LTER ecosystem. CAP-LTER All-Scientist Meeting, Scottsdale, AZ, Jan 2016. Poster presentation.

4. **B.A. Ball.** Stoichiometry and soil CO₂ flux. McMurdo All-Science Meeting, Chicago, IL, June 2008. Oral presentation.
3. **B. Ball,** J. Kominoski, M. Hunter, D. Coleman, C. Pringle. The effects of leaf litter species diversity on decomposition in a riparian zone in the southern Appalachians. UGA Institute of Ecology Graduate Student Symposium, Athens, GA, Jan 2005. Oral presentation.
2. **B. Ball.** Site review of graduate research at Coweeta LTER, North Carolina. LTER Graduate Student Symposium, Eugene, OR, Apr 2005. Oral presentation.
1. **B. Ball,** J. Kominoski, M. Hunter, D. Coleman, C. Pringle. The effects of leaf litter species diversity on decay rate, microbial and faunal identity and biomass, and chemical composition in a riparian zone and its associated stream in the southern Appalachians. Dave Coleman retirement symposium, Athens, GA, Oct 2005. Poster presentation.

Invited seminars

4. **B. Ball.** Aboveground-belowground connections in Antarctic soil ecosystems. Portland State University Lester Newman Seminar Series, Portland, OR, May 2015.
3. **B. Ball.** The influence of meltwater pulses on soil biology and biogeochemistry in a polar desert of Antarctica. ASU Hugh Hanson Ecology and Evolution Seminar Series, Tempe, AZ, Feb 2013.
2. **B. Ball.** Extreme biogeochemistry: the influence of water-pulse events in polar desert soils of Antarctica. ASU Polytechnic Applied Sciences Seminar Series, Mesa, AZ, Jan 2013.
1. **B. Ball.** Cross-site synthesis: Using terrestrial-aquatic linkages to form graduate student linkages. LTER Graduate Student Symposium, Estes Park, CO, Sep 2009. Invited session speaker.

Workshops and Working-groups Co-Chaired

All Creatures Great and Small: Synthesizing critter control of nutrient dynamics across the LTER network. Working group at the Long-Term Ecological Research (LTER) Network All-Scientist meeting, Estes Park, CO, Sep 2015. Co-chairs L. Christenson and B. Ball. Planned product: synthesis paper for peer-reviewed publication

Changes in litter chemistry during decomposition: pathways and patterns. Working group at the Long-Term Ecological Research (LTER) Network All-Scientist Meeting, Estes Park, CO, Sep 2012. Co-chairs B. Ball and K. Wickings. Products: research grant proposal to NSF-DEB (funded), Ball et al. 2022.

Approaches for advancing scientific understanding of macrosystems. Working group from Macrosystems Biology PI meeting, Boulder, CO, Mar 2012. Co-leads B. Ball and O. Levy. Product: manuscript presenting characteristics, challenges, and examples of macrosystems ecology methodology for a special issue of *Frontiers in Ecology & the Environment*. (Levy, Ball, et al. 2014.)

Linkages between terrestrial structure and aquatic function: a cross-site synthesis. Follow-up workgroup to the 2006 LTER ASM workshop, Kellogg Biological Station, MI, Apr 2007. Co-chairs B. Ball and J. Kominoski. Product: manuscript presenting conceptual framework for considering terrestrial-aquatic linkages in the context of global change (Ball et al. 2010. *BioScience* 60: 590-601).

Changes in terrestrial-aquatic resource subsidies during species declines. LTER All-Scientist Meeting, Estes Park, CO, Oct 2006. Co-chairs B. Ball and J. Kominoski. Product: proposal for follow-up workgroup (funded).

Professional Service Appointments

2022-present: LTER DEIJ Committee's Assessment working group, Long-Term Ecological Research Network

2021-present: US LTER International Committee, Long-Term Ecological Research Network

2020-present: Executive Committee member, Central Arizona-Phoenix Long-Term Ecological Research (CAP-LTER) site
2019-present: Executive Committee member, Global Drylands Center, Arizona State University
2019-2023: Science Committee / Emerging Ecological Issues member, Ecological Society of America
2019-present: Section Editor, *Pedobiologia*
2019-present: NEON Terrestrial Biogeochemistry Technical Working Group member
2017-2021: Co-Lead, Fluxes & Flows Interdisciplinary Research Team (IRT), CAP-LTER
2015-2017: Secretary, Soil Ecology section of the Ecological Society of America
2014-2017: Secretary, Soil Ecology Society
Manuscript reviewer for *Arctic Antarctic and Alpine Research*, *Antarctic Science*, *Applied Soil Ecology*, *Basic and Applied Ecology*, *Biogeochemistry*, *Biological Reviews*, *Biology*, *Biology and Fertility of Soils*, *Catena*, *The Cryosphere*, *Current Biology*, *Ecological Applications*, *Ecological Engineering*, *Ecology*, *Ecology Letters*, *Ecosphere*, *Ecosystems*, *European Journal of Soil Science*, *FEMS Microbiology Ecology*, *Forest Ecology & Management*, *Frontiers in Ecology and the Environment*, *Frontiers in Microbiology*, *Functional Ecology*, *Geoderma*, *Geophysical Research Letters*, *Global Change Biology*, *Journal of Arid Environments*, *Journal of Ecology*, *Journal of Plant Nutrition and Soil Science (Wiley)*, *Journal of Soil Science and Plant Nutrition (Springer)*, *Journal of Urban Ecology*, *Land Degradation & Development*, *Landscape and Urban Planning*, *Marine & Freshwater Research*, *Nature Communications*, *Oecologia*, *Oikos*, *Pedobiologia*, *Pedosphere*, *Plant and Soil*, *Plant Biology*, *PLoS ONE*, *Polar Biology*, *Polar Research*, *Polar Science*, *Proceedings of the Royal Society B*, *Rangeland Ecology and Management*, *Restoration Ecology*, *Science of the Total Environment*, *Scientific Reports*, *Soil Biology & Biochemistry*, *Soil Science Society of America Journal*
Grant proposal reviewer for *Israel Science Foundation*, *Italian Scientific Committee for Antarctic Research*, *Natural Sciences and Engineering Research Council (Canada)*, *National Science Foundation*, *Netherlands Organisation for Scientific Research*, *New Zealand Antarctic Research Institute*, *Swiss National Science Foundation*, *Chilean Antarctic Institute (INACH)*

Recognition, Appointments, and Awards

2021-2025: Fulbright Specialist Roster
2021-present: Global Futures Scientist, Global Futures Laboratory, Arizona State University
2019: Outstanding Commitment to Innovation Award, New College of Interdisciplinary Arts & Sciences, ASU
2018-present: Affiliate, Global Drylands Center
2018: Outstanding Undergraduate Mentor 2017-2018, New College of Interdisciplinary Arts & Sciences, ASU
2015: Outstanding Teaching-T/TT Faculty 2014-2015, New College of Interdisciplinary Arts & Sciences, ASU
2014-present: Affiliated Faculty, Center for Biodiversity Outcomes, Arizona State University
2011-present: Barrett Honors Faculty, Arizona State University
2011-2021: Senior Sustainability Scientist, Global Institute of Sustainability, Arizona State University
2002-present: Phi Beta Kappa National Honor Society

Society Memberships

Ecological Society of America (Biogeosciences and Soil Ecology sections)
Soil Ecology Society
Long-Term Ecological Research (LTER) Network

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ResearchGate: [Becky Ball](https://orcid.org/BeckyBall)