Ford Ballantyne IV

Odum School of Ecology
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EDUCATION

2003	Ph.D. Biology, University of New Mexico ADVISOR: James H. Brown
1999	M.S. Statistics, University of New Mexico
1997	B.S. Zoology, University of Wisconsin, Madison

PROFESSIONAL EXPERIENCE

2015-	Associate Professor, Odum School of Ecology University of Georgia
2019-2021	Program Officer, Division of Environmental Biology The National Science Foundation
2016-2019	Graduate Coordinator, Odum School of Ecology University of Georgia
2012-2014	Assistant Professor, Odum School of Ecology University of Georgia
2008-2012	Assistant Professor, Department of Ecology and Evolutionary Biology University of Kansas
2008-2012	Assistant Scientist, Kansas Biological Survey
2006-2008	Postdoctoral Research Associate, Department of Ecology and Evolutionary Biology Princeton University SUPERVISOR: Simon Levin
2003-2005	Postgraduate Researcher, Marine Biology Research Division Scripps Institution of Oceanography SUPERVISOR: Enric Sala
1999	Statistical Consultant, Heber River Restoration Project, Utah
1996	Research Assistant for A. R. Ives, Department of Zoology University of Wisconsin

HONORS AND AWARDS

UGA Career Center Award, 2016, 2019.

Odum School of Ecology Teaching Excellence Award, 2017.

NCEAS Postdoctoral Fellowship, 2005 (declined).

National Science Foundation Biocomplexity Fellowship, 2002-2003.

Santa Fe Institute Complex Systems Summer School, Budapest, Hungary, 2001.

National Science Foundation GRT Fellowship in Ecological Complexity, 2000-2001.

FUNDING

03/31/2016-03/31/2019. NSF LTER 5b: Understanding environmental change in northeast Puerto Rico. NSF: ($301,585 to UGA). PI: Cathy Pringle; co-PIs: Ford Ballantyne, Alan Covich, Tom Mote.

01/01/14-12/31/2017. NSF BIO OCE: High Resolution Linkages Between DOC Turnover and Bacterioplankton in a Coastal Ocean; $998,701. PI: Mary Ann Moran; co-PIs: John Amster, Ford Ballantyne, Patricia Medieros, William Whitman.

10/01/2011-9/30/2017. NSF Macrosystems Collaborative Research: Scale, Consumers and Lotic Ecosystem Rates (SCALER): Scaling from Centimeters to Continents (Total award for all 8 participating institutions, $3,304,097; FB4 portion $195,660). PI for FB4 portion.

8/15/2010-7/31/2014. NSF DEB: (ETBC) Temperature sensitivity of substrate decomposition from enzymes to microbial communities ($595,998). Co-PI with Sharon Billings as PI and Susan Zielger as Co-PI.

10/18/2010-9/01/2012. University of Kansas Commons' Seed Grant: The texture of desert landscapes: visualizing interactions between humans and their environments ($6,900). F. Ballantyne, P. Dermyer, A. Lira-Noriega, J. Soberón, and D. Worster

7/01/2010-6/31/2012. University of Kansas General Research Funds: Refining current notions of single species nutrient uptake to understand the causes and consequences of nitrogen:phosphorus stoichiometry in aquatic ecosystems ($14,750). PI

PEER REVIEWED PUBLICATIONS

Ballantyne, F., C. Song, E. A. Garcia, A. M. Helton, W. H. McDowell, S. P. Parker, M. T. Trentman, and W. K. Dodds. *accepted for publication*. Light and temperature regimes interact to shape thermal performance of whole stream metabolism across biomes. *Freshwater Science*.

Ballantyne, F. 2025. Dimensional consideration of the relationship between organism abundance and body size. *Ecological Research* 40(5):e70005.

Wieder, W. R., Pierson, D., Earl, S., Lajtha, K., Baer, S., Ballantyne, F., Berhe, A. A., Billings, S., Brigham, L. M., Chacon, S. S., Fraterrigo, J., Frey, S. D., Georgiou, K., de Graaff, M.-A., Grandy, A. S., Hartman, M. D., Hobbie, S. E., Johnson, C., Kaye, J., Kyker-Snowman, E., Litvak, M. E., Mack, M. C., Malhotra, A., Moore, J. A. M., Nadelhoffer, K., Rasmussen, C., Silver, W. L., Sulman, B. N., Walker, X., and Weintraub, S. 2021. SoDaH: the SOils DAta Harmonization database, an open-source synthesis of soil data from research networks, version 1.0, *Earth Syst. Sci. Data*, 13, 1843-1854.

Ruegg, J., D. T. Chaloner, F. Ballantyne, P. S. Levi, C. Song, J. L. Tank, S. D. Tiegs, and G. A. Lamberti. 2020. Understanding the Relative Roles of Salmon Spawner Enrichment and Disturbance: A High-Frequency, Multi-Habitat Field and Modeling Approach. *Frontiers in Ecology and Evolution* 8:19.

Machmuller, M. B., F. Ballantyne, D. Markewitz, A. Thompson, N. Wurzburger, P. Frankson, and J. E. Mohan. 2018. The temperature sensitivity of soil respiration in a low-latitude ecosystem is unaffected by warming treatments but varies considerably with environmental parameters. *Biogeochemistry* 141:63-73.

Vorobev. A., S. Sharma, W. B. Whitman, P. M. Medeiros, F. Ballantyne, B. Washington, J. Lee, M. Yu, and M. A. Moran. 2018. Short-term shifts in bacterioplankton gene expression patterns as sensors of labile marine DOM. *Environmental Microbiology* 20(8):3012-3030.

Song, C., W. K. Dodds, J. Ruegg, A. Argerich, C. Baker, W. Bowden, M. Douglas, K. Farrell, M. Flinn, E. Garcia, K. Gido, A. Helton, T. Harms, S. Jia, J. Jones, L. Koenig, J. Kominoski, W. McDowell, D. McMaster, S. Parker, A. Rosemond, C. Ruffing, K. Sheehan, M. Trentman, M. Whiles, W. Wollheim, and F. Ballantyne. 2018. Continental-scale decrease in net primary productivity in streams due to climate warming. *Nature Geoscience* 11:415-420.

Ballantyne, F., and S. A. Billings. 2018. Model formulation of microbial CO_2 production and efficiency can significantly influence short and long term soil C projections. *ISME Journal* 12:1395-1403.

Medeiros, P. M., M. Seidel, S. M. Gifford, F. Ballantyne, T. Dittmar, W. B. Whitman, and M. A. Moran. 2017. Microbially-mediated transformations of estuarine dissolved organic matter. *Frontiers in Marine Science* 4:69.

Min, K., C. A. Lehmeier, F. Ballantyne, and S. A. Billings. 2016. Carbon availability modifies temperature responses of heterotrophic microbial respiration, substrate affinity, and stable carbon isotope discrimination. *Frontiers in Microbiology* 7:2083.

Billings, S. A., K. Min, F. Ballantyne, Y. Chen, and M. Sellers. 2016. Aging exo-enzymes can create shifting, temperature-dependent resource landscapes for microbes. *Biogeochemistry* 131:163-172.

Song. C, W. K. Dodds, M. Trentman, J. Ruegg, and F. Ballantyne. 2016. Methods of approximation influence stream metabolism estimates. *Limnology and Oceanography Methods* 14:557-569.

Lehmeier, C. A., F. Ballantyne, K. Min, and S. A. Billings. 2016. Temperature-mediated changes in microbial carbon use efficiency and ^{13}C discrimination. *Biogeosciences* 13:3319-3329.

Billings, S. A., L. K. Tiemann, F. Ballantyne, C. A. Lehmeier and K. Min. 2015. Investigating microbial transformations of soil organic matter: Synthesizing knowledge from disparate fields to guide new experimentation. *SOIL* 1:313-330.

Min K., C. A. Lehmeier, F. Ballantyne, A. Tatarko, and S. A. Billings. 2014. Differential effects of pH on temperature sensitivity of organic carbon and nitrogen decay. *Soil Biology and Biochemistry* 76:193-200.

Mellard, J. P. and F. Ballantyne. 2014. Conflict between dynamical and evolutionary stability in simple ecosystems. *Theoretical Ecology* 7:273-288.

Song, C., F. Ballantyne and V. H. Smith. 2014. Enhanced dissolved organic carbon production in aquatic ecosystems in response to elevated atmospheric CO_2. *Biogeochemistry* 118:49-60.

Rife, A. N., M. Aburto-Oropeza, P. A. Hastings, B. Erisman, F. Ballantyne, J. Wielgus, E. Sala and L. R. Gerber. 2013. Long-term effectiveness of a multi-use marine protected area on reef fish assemblages and fisheries landings. *Journal of Environmental Management* 117:276-283.

Lehmeier, C. A., N. D. Niehues, K. Min, F. Ballantyne and S. A. Billings. 2013. Temperature-

mediated changes of exoenzyme-substrate reaction rates and their consequences for the carbon to nitrogen flow ratio of liberated resources. *Soil Biology and Biochemistry* 57:374-382..

Ballantyne, F. 2013. Evaluating model fit to determine if logarithmic transformations are necessary in allometry: a comment on the exchange between Packard (2009) and Kerkhoff & Enquist (2009). *The Journal of Theoretical Biology* 313:418-421.

Billings, S. A. and F. Ballantyne. 2013. How interactions between microbial resource demands, soil organic matter stoichiometry and substrate reactivity determine the direction and magnitude of soil respiratory responses to warming. *Global Change Biology* 19:90-102.

Alexander, H. M., B. L. Foster, F. Ballantyne, C. D. Collins, J. Antonovics and R. D. Holt. 2012. Metapopulations and metacommunities: combining spatial and temporal perspectives in plant ecology. *Journal of Ecology* 100:88-103..

Ballantyne, F., O. M. E. Schofield, and S. A. Levin. 2011. The emergence of regularity and variability in marine ecosystems: the combined role of physics, chemistry and biology. *Scientia Marina* 75(4):719-731.

Menge, D. N. L., F. Ballantyne and J. S. Weitz. 2011. Dynamics of nutrient uptake strategies: lessons from the tortoise and the hare. *Theoretical Ecology* 4(2):163-177.

Ballantyne, F. and D. Menge and J. S. Weitz. 2010. A discrepancy between predictions of saturating nutrient uptake models and nitrogen-to-phosphorus stoichiometry in the surface ocean. *Limnology and Oceanography* 55(3):997-1008.

Thorp, J. H., J. E. Flotemersch, M. D. Delong, A. F. Casper, M. C. Thoms, F. Ballantyne, B. S. Williams, B.J. ONeill, C. S. Haase. 2010. Linking Ecosystem Services, Rehabilitation, and River Hydrogeomorphology. *Bioscience* 60(1):67-74.

Ballantyne, F., D. Menge, A. Ostling and P. Hosseini. 2008. Nutrient recycling affects autotroph and ecosystem stoichiometry. *The American Naturalist* 171(4):511-523.

Hurlbert, A. H., F. Ballantyne, and S. Powell. 2008. Shaking a leg and hot to trot: the effects of body size and temperature on running speed in ants. *Ecological Entomology* 33:144-154.

Wielgus, J., F. Ballantyne, E. Sala and L. Gerber. 2007. Viability analysis of reef fish populations based on limited demographic information. *Conservation Biology* 21(2):447-454.

Ballantyne, F. and A. J. Kerkhoff. 2007. The observed range for temporal mean-variance scaling exponents can be explained by reproductive correlation. *Oikos* 116:174-180.

Ballantyne, F. 2005. The upper limit for the exponent of Taylor's power law is a consequence of deterministic population growth. *Evolutionary Ecology Research* 7(8):1213-1220.

Ballantyne, F. and A. J. Kerkhoff. 2005. Reproductive correlation and mean-variance scaling of reproductive output for a forest model. *The Journal of Theoretical Biology* 235(3):373-380.

Gerber, L., S. Heppell, F. Ballantyne and E. Sala. 2005. The Use of Life History Information in Managing Marine Protected Areas in the Gulf of California. *The Canadian Journal of Fisheries and Aquatic Sciences* 62(4):863-871.

Ballantyne, F. 2004. The relative importance of herbivory and carnivory on the distribution of energy in a stochastic tri-trophic food web. *Journal of Theoretical Biology* 226(3):349-357.

Kerkhoff, A. J. and F. Ballantyne. 2003. The scaling of reproductive variability in trees.

Ecology Letters 6(9):850-856.

Losey, J. E., A. R. Ives, J. Harmon, F. Ballantyne and C. Brown. 1997. A polymorphism maintained by opposite patterns of parasitism and predation. *Nature* 388(6639):269-271.

BOOK CHAPTERS

Ballantyne, F. 2014. Commentary on classic paper (Taylor, 1961) in Smith, F.A., J.L. Gittleman and J.H. Brown. *Foundations of Macroecology*. University of Chicago Press.

INVITED SEMINARS

University of Vermont, Rubenstein School of the Environment, April, 2015.

Columbia University, Ecology, Evolution & Environmental Biology Dept., October, 2013.

University of Georgia, Department of Marine Sciences, February, 2013.

University of Georgia, Soil Seminar, November, 2012.

University of Georgia, Odum School of Ecology, February, 2012.

University of Kansas, Center for Bioinformatics, October, 2010.

University of Missouri-Columbia, Department of Biology, October, 2010.

University of Kansas, Department of Mathematics, February, 2009.

Kansas State University, Division of Biology, February, 2009.

University of Kansas, Department of Ecology and Evolutionary Biology, January, 2008.

Texas A&M University, Department of Wildlife and Fisheries Science, August, 2007.

UCSD, Ecology, Behavior and Evolution Section, October, 2005.

TEACHING

University of Georgia: ECOL 1000, Ecological basis of environmental issues; ECOL/BIOL 3500, Ecology; ECOL/BIOL 3505, Honors Ecology; BIOL/ECOL 4910, Special Topics in Biology; ECOL 8000, Topics in modern Ecology; ECOL 8030; ECOL 8990, Likelihood based inference in Ecology; ECOL 8322, Ecosystem concepts.

University of Kansas: BIOL153, Principles of Organismal Biology, Honors; BIOL 701, Systems Biology; BIOL 701, Advanced Statistical Modeling for Biosciences; BIOL 701, Likelihood Methods in Biology.

Princeton University: EEB211, The biology of organisms (co-instructor); EEB321, Introduction to population and community ecology (co-instructor); EEB324, Theoretical Ecology (advised group projects).

Scripps Institution of Oceanography: Guest lecturer for SIO276, Quantitative Theory of Populations and Communities.

University of New Mexico: Course development and instruction for 2002 high school summer enrichment program, UNM Medical School, Office of Cultural and Ethnic Programs; Guest lecturer for BIO511, Community Ecology and BIO494, Biogeography.

International: Ad hoc Teaching Assistant for SFSU Wildlands Studies Program–Nepal, 1995;

Teaching Intern at Lunza Secondary School with Global Routes–Kenya, 1993.

PROFESSIONAL SERVICE

Associate Editor, *Frontiers in Ecology and Evolution*, 2023-present

Grant proposal review panels: DOE/NASA - 2013; NSF DEB - 2014, 2016.

Grant reviewer for *California Sea Grant, Biotechnology and Biological Sciences Research Council (in the UK), Austrian Science Fund (FWF)*

Peer reviewer for *Animal Biology, The American Naturalist, BMC Ecology, Biogeochemistry, Biogeosciences, Conservation Biology, Ecography, Ecology, Ecology Letters, Ecological Modelling, Environmental Microbiology, Environmental Science and Technology, Forests, Functional Ecology, Geoscientific Model Development, Global Change Biology, Journal of Theoretical Biology, Journal of Zoology, Limnology and Oceanography, Limnology and Oceanography Letters, Marine and Freshwater Research, Marine Ecology Progress Series, Oikos, PLoS Computational Biology, PLoS ONE, PLoS Computational Biology, Population Ecology, PNAS, Proceedings of the Royal Society B, Science Advances, Sustainability, Soil Biology and Biochemistry, Theoretical Ecology, Trends in Ecology and Evolution.*

UGA IT Committee (2025-present)

UGA OSE DEI/IE Committee (2022-present; chair, 2024-2025)

UGA OSE IT Committee (2022-2023)

UGA Graduate Council (2021-2022)

UGA OSE Quantitative Disease Ecologist Search Committee (2021-2022)

UGA OSE Graduate Coordinator (2016-2019)

UGA OSE Graduate Program Committee; chair (2016-2019)

UGA OSE Bylaws Committee (2017-2019)

UGA OSE Ecologist Search Committee (2015-2016)

UGA OSE Seminar Committee; chair (2013-2016)

UGA OSE Executive Committee (2013-2015)

UGA OSE Analytical Chemistry Lab Committee (2012-2015)

UGA OSE Facilities Committee (2012-2016)

UGA OSE Strategic Planning Committee (2012-2014)

UGA OSE Senior Ecologist Search Committee (2012-2013)

KU EEB/KBS Microbial Ecologist Search Committee (2011-2012)

KU EEB Seminar Committee (2009-2012; chair 2011-2012)

KU EEB Strategic Planning Committee (2009-2011)

Graduate committees:

Monica Papes (PhD, 2009), Assistant Professor at The University of Tennessee, Knoxville

Quinn Long (PhD, 2010), Research Scientist at the Missouri Botanical Garden

Lisa Tiemann (PhD, 2011), Associate Professor at Michigan State University

Mari Pesek (MS, 2013), Deceased
Kaitlin Farrell (PhD, 2017), Academic Faculty Member, University of Georgia
Caitlin Hodges (MS, 2017), Assistant Professor, University of Oklahoma
Daniel Baker (MS, 2017)
Jeff Minucci (PhD, 2017), Postdoc with the Environmental Protection Agency
Carly Phillips (PhD, 2018), Postdoc with the Union of Concerned Scientists
Morgan Teachey (PhD, 2019), Postdoc with the Environmental Protection Agency
Christina Varian (PhD, 2019), Staff scientist, Integral Ecology Research Center
John Vinson (PhD, 2020), Postdoc with CEID at UGA
Daniel Hawkins (MS, 2020)
RajReni Kaul (PhD, 2021)
Rebecca Atkins (PhD, 2022), Program Manager at NOAA
Goncalo Gouveia (PhD, 2022), Senior research associate, Cornell University
Jeremy Schreier (PhD, 2023), Postdoc, Orphan Lab, Caltech
Benjamin Frick (MS, 2023-present)
Andrea Rivera (MS, 2024-present)

POSTDOCS, GRADUATE AND UNDERGRADUATE STUDENTS SUPERVISED

Undergraduates:
Patrick Dermyer (2009-2011), Major: Mathematics, Computer Science
Ryan Behrens (2009-2012), Major: Microbiology
Michelle Mubarak (2010-2011), Major: Ecology and Evolutionary Biology
Ryan Felton (2011-2012), Major: Biochemistry
Tashitso Anamza (2011-2012), Major: Ecology and Evolutionary Biology
Arthur Ankeney (2011-2012), Major: Biochemistry
Jason Heckler (2013-2015), Major: Environmental Engineering
Doug Hart (2013-2016), Major: Ecology
Minkuk Han (2014-2015), Major: Biology
Katelyn Esters (2015-2016), Major: Ecology
Ashley Jacob (2015), Major: Biology
Alyson Wright (2016-2017), Major: Ecology, Statistics
Luke Gamblin (2016-2017), Major: Ecology, Biology

Graduate Students:
Kyungjin Min (PhD, 2017); Assistant Professor, Seoul National University, South Korea
Liz Guinessey (MS, 2017); Manager, Food and Blue Carbon Innovation, Verra
Chao Song (MA, 2011; PhD, 2018); Assistant Professor, Lanzhou University, China

Elise Krueger (MS, 2018); Middle School Science Teacher, Arlington Public Schools, VA

Carter Watson (MS, 2025); PhD program, School of the Environment, UVA

Postdoctoral Fellows:

Sarah Glaser (2010-2011); Research scientist at The University of Denver

Jarad Mellard (2010-2012); Associate Professor at the University of Tromso, Norway.

Christoph Lehmeier (2011-2013); Research scientist at Technische Universität München.

Paula Pappalardo (2017-2018); Researcher at The Smithsonian Natural History Museum