

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
2012- Adjunct Professor, Department of Ecology and Evolutionary Biology
University of Kansas
2012- Adjunct Scientist, Kansas Biological Survey
University of Kansas
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

- 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.
Kappa Mu Epsilon Honor Society for Mathematics, 1999.

FUNDING

Current

03/31/2016-03/31/2019. 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.

01/01/14-12/31/2016. High Resolution Linkages Between DOC Turnover and Bacterioplankton in a Coastal Ocean; NSF: \$998,701. PI: Mary Ann Moran; co-PIs: John Amster, Ford Ballantyne, Patricia Medieros, William Whitman.

10/01/2011-9/30/2016. 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.

Past

8/15/2010-7/31/2014. National Science Foundation 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. Dermeyer, 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

Song, C, W. K. Dodds, M. Trentman, J. Ruegg, and F. Ballantyne. *in press*. Methods of approximation influence stream metabolism estimates. *Limnology and Oceanography Methods*.

Lehmeier, C. A., F. Ballantyne, K. Min, and S. A. Billings. 2016. Temperature-mediated changes in microbial carbon use efficiency and ¹³C 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 CO₂. *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. O'Neill, 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.

SUBMITTED MANUSCRIPTS

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

MANUSCRIPTS IN PREPARATION

- Ballantyne, F., and S. A. Billings. Different formulations of microbial efficiency have pronounced consequences for soil C.
- Song, C., A. Argerich, C. Baker, W. Bowden, W. Dodds, M. Douglas, K. Farrell, M. Flinn, E. Garcia, K. Gido, T. Harms, J. Jones, L. Koenig, J. Kominoski, K. McDonald, W. McDowell, S. McMaster, S. Parker, A. Rosemond, J. Ruegg, K. Sheehan, M. Trentman, W. Wolheim, and F. Ballantyne. Temperature sensitivity of carbon balance in streams.
- Ballantyne, F., and S. A. Billings. Linking microbial resource allocation to exoenzymes, biomass stoichiometry, and soil respiration.
- Ballantyne, F., C. Song, R. Behrens, V. H. Smith, L. Bennett, F. DeNoyelles. N:P input stoichiometry and species N:P requirements determine species richness and community similarity along a productivity gradient.
- Ruegg, J., D. T. Chaloner, P. S. Levi, J. L. Tank, S. D. Tiegs, F. Ballantyne, C. Song and G. A. Lamberti. Salmon influence on stream biofilm shifts from net enrichment to disturbance during a spawning migration.
- Glaser, S. M. and F. Ballantyne. Strategic time delays in predator foraging behavior.
- Ballantyne, F., J. Wielgus, L. R. Gerber, M. Aburto-Oropeza, G. Paredes and E. Sala. Temporal and spatial variability in the structure of reef fish communities in the Gulf of California: the combined role of habitat and climate.

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/BIOL 3500, Ecology; ECOL/BIOL 3505, Honors Ecology; 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

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, Biogeochemistry, Conservation Biology, Ecography, Ecology, Ecology Letters, Ecological Modelling, Functional Ecology, Global Change Biology, Journal of Theoretical Biology, Journal of Zoology, Limnology and Oceanography Letters, Marine and Freshwater Research, Marine Ecology Progress Series, Oikos, PLoS ONE, Population Ecology, PNAS, Proceedings of the Royal Society B, Science Advances, Sustainability, Soil Biology and Biochemistry, Theoretical Ecology, Trends in Ecology and Evolution.*

OSE Graduate Coordinator; (2016-present)

UGA OSE Graduate Program Committee; (2016-present)

UGA OSE Executive Committee; (2013-2015)

UGA OSE Seminar Committee; chair (2013-2016)

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, 2008-2009), Assistant Professor at Oklahoma State University
Quinn Long (PhD, 2008-2010), Research Scientist at the Missouri Botanical Garden
Lisa Tiemann (PhD, 2009-2011), Assistant Professor at Michigan State University
Mari Pesek (MS, 2010-2013), Deceased
Carly Phillips (PhD, 2013-present)
Jeff Minucci (PhD, 2013-present)
Kaitlin Farrell (PhD, 2013-present)
Christina Varian (PhD, 2014-present)
RajReni Kaul (PhD, 2014-present)
John Vinson (PhD, 2015-present)
Caitlin Hodges (MS, 2015-present)
Daniel Baker (MS, 2015-present)
Rebecca Atkins (PhD, 2015-present)
Greg Jacobs (PhD, 2016-present)

POSTDOCS, GRADUATE AND UNDERGRADUATE STUDENTS SUPERVISED

Undergraduates:

Patrick Dermeyer (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 (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-present), Major: Ecology

Masters Students:

Chao Song (2009-2011)

Doctoral Students:

Chao Song (2011-present)

Elise Krueger (2011-present)

Kyungjin Min (2011-present)

Liz Guinessey (2013-present)

Postdoctoral Fellows:

Sarah Glaser (2010-2011), currently a research scientist at The Josef Korbel School of International Studies at The University of Denver

Jarad Mellard (2010-2012), currently a postdoctoral researcher at the University of Tromso, Norway.

Christoph Lehmeier (2011-2013), currently a postdoctoral researcher with Sharon Billings at the University of Kansas.