

## Michael Kaspari

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Born 5 August 1961, Lincoln Nebraska. I am married to the artist Deborah Kaspari.

My research centers on the behavioral, community, and macro-ecology of invertebrates and their function in ecosystems. I combine lab and field experiments with comparative biology and biogeography to understand how these organisms function, the origins of their diversity, how abiotic gradients shape their communities, and how these communities collectively perform work on their ecosystems. As Earth's biogeochemistry and climate continue to change, I work to understand, predict, and advise on the future of its ecosystems.

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### Education

B.S. (with distinction) Univ. of Nebraska. (Biological Sciences). 1983. "A selective test of foraging theory using an assemblage of grassland birds."

M.S. Univ. of Nebraska. (Ecology and Systematics) 1985. "The ecology and evolution of prey preparation". Advisor: A. Joern.

Ph.D. Univ. of Arizona. (Ecology and Evolutionary Biology). 1992. "Niche relationships in an assemblage of Neotropical granivorous ants." Advisor: M. Rosenzweig

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### Positions Held

Post-Doctoral Research Biologist	University of Texas	1992 -1993
NATO Post-doctoral Fellow	University of Guelph	1993
DOE Global Change Fellow	Lawrence Livermore Labs	1994 - 1995
Assistant Professor of Zoology	University of Oklahoma	1995 - 2001
Associate Professor of Zoology	University of Oklahoma	2001 - 2009
Research Associate	Smithsonian Institution	2002-2018
Bullard Fellow	Harvard University	2008
Presidential Professor	University of Oklahoma	2008
Full Professor of Biology	University of Oklahoma	2009
George Lynn Cross Research Professor	University of Oklahoma	2013
Fellow	American Assoc. Adv. Sci.	2016
Fellow	Ecological Society Am.	2020

**Honors**

- "Most Inspiring Faculty 1999-2000", as awarded by student athletes of the University of Oklahoma.
- "Featured Scientist" JASON XV: Panama Forests at the Crossroads. JASON is a nonprofit organization that develops yearly curricula for 1.7 million students in 4-9<sup>th</sup> grade science classrooms. It culminates in a live broadcast "expedition" (two weeks and 55 1-hour broadcasts). It allowed me to teach the ecology and evolutionary biology of the tropical forest from the litter of Barro Colorado Island in Panama.
- Cozzarelli Prize Finalist for best paper in Environmental Science in PNAS, 2020.

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**Selected grant support (not counting ca. \$70K of in-house support)**


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**Current**

NSF: MSB-FRA (PI, with Katie Marshall, Matthew Miller, Cameron Siler, and Michael Weiser): Testing abiotic drivers of activity, abundance, and diversity of ground-dwelling arthropod communities at a continental scale. (\$1.2 million, Start Date: August 2017)

**Past**

NSF: DEB Collaborative Research (PI, with Nate Sanders): Exploring the geography of Na as a catalyst in terrestrial communities and ecosystems (\$532,000, Total \$741,000, Start Date: June 2016).

NSF: EAGER-NEON: 20 Year Dynamics of North American Ant Communities: Evaluating the Role of Climate and Biogeochemistry on Ecological Change (\$300,000 for two years, Start Date: June 2016).

NSF: DIGG (with Jane Lucas): The Influence of Antibiotic Compounds on Soil Microbial and Invertebrate Communities. (\$16,138 through December 2017)

DOE: GANN (co-PI, Jeff Kelly PI) "Ecology and Evolutionary Biology" (\$133,266 per annum, 5 years)

NSF: Macrosystems (with Jizhong Zhou, co-PI Jim Brown, Robert Waide, and Brian Enquist): Experimental Macroecology: the effects of temperature on biodiversity (\$2.8 million, \$4.8 million total for five years)

NSF DIGG (with Natalie Clay): Sodium availability regulates brown food web structure (\$14,903).

NSF Collaborative Research (RUI with Adam Kay): Toward a stoichiometric theory of ant ecology--from colony performance through community dynamics. (\$324K, \$634K total)

NSF EAGER: Does sodium limit the brown food web of an Ecuador forest? (70K)

National Geographic (PI): Toward a biogeography of salt (21K)

NSF: (PI) Workshop Proposal: 2008 Gordon Research Conference on the Metabolic Basis of Ecology (47K)

Harvard University: Bullard Fellow-"Towards a biogeography of brown food webs" (30K)

Center for Tropical Forest Science (PI) "Towards a spatial ecology of brown food webs: soil nutrients and trees as templates." (6K)

- NSF Ecology (PI) “Does ecological stoichiometry and defense theory predict patterns of resource and predator limitation in a tropical litter food web?” (300K) + 26K REU
- National Geographic Society (Steve Yanoviak PI, with Robert Dudley) “Gliding flight in tropical canopy ants” (20K)
- National Geographic Society (PI, with John Lattke and Sean O’Donnell) “Army ant biodiversity, behavior, and impact in 4 Neotropical forests.” (24K)
- Mellon Exploratory Research Award (PI) “On the dynamics and regulation of brown food webs— a pilot study” (6K)
- NASA (co-PI with Yiqi Luo) “Human Impacts on Ecosystem Biodiversity and Functions: Development of Partnerships with NASA Goddard Space Flight Center” (18K)
- The Nature Conservancy (PI with LeeAnne Alonso) "A Plan to Inventory and Monitor the Spread of *Solenopsis invicta*, the Imported Fire Ant, in Oklahoma" (7K)
- Mellon Exploratory Research Award (PI) “Causes of Litter Ant Patchiness at the m<sup>2</sup> scale: studying the effects of rainfall and plant diversity” (4K)
- NSF Interagency Terrestrial Ecology and Global Change Initiative (PI) “Climatic Regulation of Ant Assemblages in North and Central America” (349K) + 20K REU supplement
- National Geographic Society (PI) “Climate, Body Size and the Diversity of Ant Assemblages” (8K)
- NSF International Programs (PI with Larry Gilbert) “On the regulation of *Solenopsis invicta* in native Brazilian populations”. (10K)
- NSF NATO (PI with Peter Yodzis) “Using cellular automata toward understanding spatial interactions in ant communities”

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### **Selected invited lectures, symposia, working groups**

- 2019:** Keynote Speaker: XXIV Simpósio de Mirmecologia: An International Ant Meeting, Belo Horizonte Brasil
- 2018:** Organizer Incite Session "Not the Usual Suspects: Micronutrients with Macro Effects. Ecological Society of America National Meeting
- 2018:** Keynote speaker: Entomological Society of America National Meeting
- 2017:** Keynote Speaker: University of Florida Biodiversity Conference  
Invited Speaker: International Biogeography Society
- 2015:** Keynote Speaker: University of Georgia Department of Entomology Grad awards
- 2014:** Invited Speaker SICB symposium: *The Micro and Macro of Nutrient Effects in Animal Physiology and Ecology*
- 2012:** NSF Working Group, *The future of tropical litter ecology*, La Selva, Costa Rica
- 2011:** XX Symposium of Myrmecology, *Ant ecology in a changing world*, Petropolis Brazil
- 2010:** Entomological Society of America, Symposium on Nutritional Ecology, *Toward a link between geochemistry and the geography of social insect populations*, San Diego.  
Int. Society for Study of Social Insects, Copenhagen, *Toward a link between geochemistry and the geography of social insect populations*. Ent. Soc. America, San Diego
- 2009:** Head Ecology working group: Global Ant Project, Field Museum, Chicago
- 2008:** co-Chair Gordon Research Conference *Metabolic Approaches to Ecology and Evolution*

- 2005:** Smithsonian Institution *Biodiversity science and education initiative* Working group  
 Universita' degli Studi di Firenze: *Distinguished lectures on conservation and biodiversity*. Multiple titles.
- 2004:** Gordon Conference on *Metabolic Approaches to Ecology*: “Beyond Bergmann’s Rule”
- 2002:** Assoc. for Tropical Biology on *Food Webs in Tropical Research*: “The Brown Food Web”
- 2000:** NCEAS *Productivity and Diversity*: “Body size, species diversity and abundance in ant communities”
- 1997:** Santa Fe Institute *Thermodynamics in Ecology*: “Energetic approaches to ant communities”
- 1996:** 20th Intl. Congress of Entomology *Life Histories of Social Insects*: “Size in ants”
- 1995:** Dept. of Energy on *New Research in Global Change*: “Energetic approaches to diversity and abundance”

Harvard University, Stanford University, UC-Berkeley, UC-Davis, Louisiana State University, Mount Holyoke College, Smithsonian Tropical Research Institute, St. Louis University, University of Arizona, University of Missouri, University of Georgia, University of Kansas, University of New Orleans, University of Tennessee, University of Vermont, University of Utah, University of Florida, University of Champagne-Urbana, Brown University, Cambridge Entomological Club, Boston University, North Carolina State, University of Miami, Oklahoma State University, University of Arkansas Little Rock, University of Texas, University of Louisville, Tulane University, Texas A&M, University of Nanjing, Tulsa University, University of Houston, Universite de Pierre et Marie Curie, University of Guelph, Concordia University, Rice University, Wichita State University, University of Dayton, University of British Columbia, University of Maine, George Washington University

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**Publications** students underlined

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***In review***

Kaspari, M., Weiser, M.D., Marshal, K.E., Siler, C. & de Beurs, K.M. (in review) On the temperature sensitivity of seasonal activity density: a geographic analysis from continental array of pitfall traps. **Ecology**

Kaspari, M and EAR Welti (in review) Electrolytes on the prairie: how urine-like additions of Na and K shape the dynamics of a grassland food web. **Ecology**

***Journals***

142. Bujan J, Nottingham AT, Velasquez E, Meir P, Kaspari M, Yanoviak SP (in press) Tropical ant community responses to experimental soil warming. **Biology Letters**
141. Kaspari, M, A Joern, EAR Welti (in press) How and why grasshopper community maturation rates are slowing on a North American tall grass prairie. **Biology Letters**
140. Roeder, K, MD Weiser, M Kaspari (in press) Testing the role of body size and litter depth on invertebrate diversity across six forests in North America. **Ecology**.

139. Kaspari, M., MD Weiser, KE Marshall, M Miller, C Siler, KM de Beurs (2021) Activity density at a continental scale: what drives invertebrate biomass moving across the soil surface? *Ecology* **e03542**
138. Weiser, M, KE Marshall, M Kaspari, CD Siler (2021) Batch extraction of morphometrics and color variables from invertebrate sample. [dx.doi.org/10.17504/protocols.io.buapnsdn](https://doi.org/10.17504/protocols.io.buapnsdn)
137. Roeder, K, J Bujan, K M de Beurs, M D Weiser, M Kaspari (2021) Thermal traits predict the winners and losers under climate change: an example from North American ant communities. *Ecosphere* **12**: p 303645.
136. Prather, R.M., Welti, E.A.R. & Kaspari, M (2021) Trophic differences regulate grassland food webs: herbivores track food quality and predators select for habitat volume. *Ecology* **102**:p. e03453.
135. Kaspari, M (2021) The invisible hand of the periodic table: micronutrients in ecology. *Annual Review of Ecology, Evolution, and Systematics* **52**: 199-219.
134. Kaspari, M., KM de Beurs, EAR Welti (2021) How and why plant ionomes vary across North American grasslands and its implications for herbivore abundance. *Ecology* **102**: e03453.
133. Peterson, T, E A R Welti, M Kaspari (2021) Dietary sodium levels affect grasshopper growth and performance. *Ecosphere*. **12.3** (2021): e03392  
See also "Salt of life: High sodium diets produce longer-jumping, smaller grasshoppers" by Peterson, Taylor, Welti, Ellen, Kaspari, Michael in *Bulletin of the Ecology Society of America*.
132. Welti, E.A.R. & M Kaspari (in press) Sodium addition increases leaf herbivory and fungal damage across four grasslands *Functional Ecology*
131. Welti, E.A.R., Joern, A., Ellison, A.M. ... M Kaspari (2021). Studies of insect temporal trends must account for the complex sampling histories inherent to many long-term monitoring efforts. *Nat Ecol Evol* **5**: 589–591.
130. Ozment, K, E A R Welti, M Shaffer, M Kaspari (2021) Tracking nutrients in space and time: Interactions between bison grazing lawns and drought drive abundance and species composition of tallgrass prairie grasshoppers. *Ecology and Evolution* **2021**:5413-5423.
129. Bujan, J, K Roeder, KM de Beurs, M Weiser, M Kaspari (2020) Thermal Diversity of North American ant communities: Cold tolerance but not heat tolerance tracks ecosystems temperature. *Global Ecology and Biogeography* **29**:1486-1494
128. O'Donnell, S, J Lattke, S Powell, M Kaspari. (2020) Diurnal and nocturnal foraging specialization in Neotropical army ants *Ecological Entomology* DOI: 10.1111/een.12969
127. Blair, J., Weiser, M.D., Kaspari, M., Miller, M., Siler, C. & K, Marshall. (2020). Robust and simplified machine learning identification of pitfall trap-collected ground beetles at the continental scale. *Ecology and Evolution* **10**:13143-13153.
126. Prather, RM, K Castillioni, M Kaspari, L Souza, C M Prather, R W Reihart, E A R Welti. (2020) Micronutrients enhance macronutrient effects in a meta-analysis of grassland arthropod abundances. *Global Ecology and Biogeography* **29**(12), pp.2273-2288

125. Welte, EAR, RM Prather, NJ Sanders, KM de Beurs, M Kaspari (2020) Bottom-up when it is not top-down: Predators and plants control biomass of grassland arthropods. ***Journal of Animal Ecology*** 89:1286-1294.
124. Kaspari, M. (2020) The seventh macronutrient: how sodium shortfall ramifies through populations, food webs, and ecosystems. ***Ecology Letters*** 23:1153-1168.
123. Welte, EAR, KA Roeder, KM de Beurs, A Joern, M Kaspari. (2020) Nutrient dilution and climate cycles underlie declines in a dominant insect herbivore. ***Proceedings of the National Academy of Science USA*** 117-7271-7275. See Pennisi, E. (2020). Carbon dioxide increase may promote ‘insect apocalypse’. ***Science*** 368: 459. **Runner up for the NAS Corazelli Prize.**
122. Prather, RM, K Castillioni, EAR Welte, M Kaspari, L Souza. (2020) Abiotic factors and plant biomass, not plant diversity, strongly shape grassland arthropods under drought conditions. ***Ecology*** 101: e03033
121. Bujan, J. KA Roeder, SP Yanoviak, M Kaspari. (2020) Seasonal plasticity of thermal tolerance in ants. ***Ecology*** 101: e03051
120. Welte, EAR, L Kucyznski, KA Marske, NJ Sanders, KM de Beurs, M Kaspari. (2020) Salty, mild, and low plant biomass grasslands increase top-heaviness of invertebrate trophic pyramids. ***Geographical Ecology and Biogeography*** 29(9), pp.1474-1485.
119. Kaspari, M., EAR Welte, and KM deBeurs (2020) The nutritional geography of ants: gradients of sodium and sugar limitation across North American grasslands. ***Journal of Animal Ecology*** 89:276-284.  
see also Clay NA. (2020) The geography of grassland plant chemistry and productivity accounts for ant sodium and sugar usage. ***J Anim Ecol.*** 89:272–275. <https://doi.org/10.1111/1365-2656.13179>
118. Kaspari, M, J Bujan, KA Roeder, K de Beurs, and MD Weiser (2019) Species energy and Thermal Performance Theory predict 20-yr changes in ant community abundance and richness. ***Ecology*** 100:e02888.
117. Lucas, J.M., Gora, E., Salzberg, A. & Kaspari, M. (2019). Antibiotics as chemical warfare across multiple taxonomic domains and trophic levels in brown food webs. ***Proceedings of the Royal Society B***, 286, 20191536.
116. Prather, RM and M Kaspari (2019) Plants regulate grassland arthropod communities through biomass, quality, and habitat heterogeneity. ***Ecosphere*** 10:e02909.
115. Buzzard, V, ST Michaletz, Y Deng, Z He, D Ning, L Shen, Q Tu, JD Van Nostrand, JW Voordeckers, J Wang, MD Weiser, M Kaspari, RB Waide, J Zhou, BJ Enquist (2019) Continental scale structuring of forest and soil diversity via functional traits. ***Nature Ecology & Evolution.***  
<https://doi.org/10.1038/s41559-019-0954-7>
114. Kaspari, M (2019) In a globally warming world, insects act locally to manipulate their own microclimate. — ***Proceedings of the National Academy of Sciences*** 116: 5220-5222
113. Weiser, MD, D Ning, V Buzzard, ST Michaletz, Z He, BJ Enquist, RB Waide, J Zhou, M Kaspari. (2019) Thermal disruption of soil bacterial assemblages decreases diversity and assemblage similarity. — ***Ecosphere*** 10: e02598.

112. Welty, EAR, NJ Sanders, KM deBeurs, M Kaspari (2019) A distributed experiment demonstrates widespread sodium limitation in grassland food webs. ***Ecology*** 100:e02600  
see also ***The Bulletin of the Ecological Society of America*** 2019-04  
DOI: [10.1002/bes2.1509](https://doi.org/10.1002/bes2.1509)
111. Kaspari, M, Kirsten M de Beurs (2019) On the geography of activity: productivity but not temperature constrains discovery rates by ectotherm consumers. ***Ecosphere*** 10(2):e02536. [10.1002/ecs2.2536](https://doi.org/10.1002/ecs2.2536).
110. Bujan, J, SJ Wright, M Kaspari (2018) Biogeochemistry and forest composition shape nesting patterns of a dominant canopy ant. ***Oecologia*** 2018:1-10.
109. Prather, RM, KA Roeder, NJ Sanders, M Kaspari (2018) Using metabolic and thermal ecology to predict temperature dependent ecosystem activity: a test with prairie ants. ***Ecology*** 99:2113-2121.
108. Roeder, KA, DV Roeder, M Kaspari (2018) The role of temperature in competition and persistence of an invaded ant assemblage. ***Ecological Entomology*** 43:774-781.
107. Lucas, J, N Clay, M Kaspari (2018) Nutrient transfer supports a beneficial relationship between the canopy ant, *Azteca trigona*, and its host tree. ***Ecological Entomology***
106. Wright, JS, BJ Turner, J Yavitt, K Harms, M Kaspari, E Tanner, J Bujan, E Griffin, J Major, S Pasquini, M Seldrake, M Garcia (2018) Plant responses to fertilization experiments in lowland, species-rich, tropical forests. ***Ecology*** 99:1129-1138.
105. Roeder, KA, D V Roeder, M Kaspari (2018) Disturbance mediates homogenization of above and belowground invertebrate communities. ***Environmental Entomology*** 47:545-550.  
Voted as 2019 People's Choice award winner for the journal *Environmental Entomology*
104. Sheldon, K, M Kaspari, N Sanders, R Huey (2018) Fifty years of mountain passes: a perspective on Dan Janzen's classic paper. ***The American Naturalist*** 191: 553-565.
103. Weiser, M, N Swenson, B Enquist, S Michaletz, R Waide, J Zhou, M Kaspari (2018) Taxonomic decomposition of the latitudinal gradient(s) in species diversity of North American floras. ***Journal of Biogeography*** 45:418-428.
102. Clay, NA, R Lehrter, M Kaspari (2017) Toward a geography of omnivory: Omnivores increase carnivory when sodium is limiting. ***Journal of Animal Ecology*** 2017: 1-9. **Winner of the British Ecological Society's Elton Prize for best paper by a young investigator.**
101. Kaspari, M, J Bujan, MD Weiser, D Ning, ST Michaletz, Z He, BJ Enquist, RB Waide, J Zhou, and SJ Wright (2017) Biogeochemistry and soil diversity: multiple elements shape richness of prokaryotes, fungi, and invertebrates in a Panama forest. ***Ecology*** 98:2019-2028.
100. Weiser, MD, ST Michaletz, V Buzzard, Y Deng, Z He, L Shen, BJ Enquist, RB Waide, J Zhou, M Kaspari (2017) Toward a theory for diversity gradients: the abundance-adaptation hypothesis. ***Ecography*** 41: 255-264  
doi:10.1111/ecog.02314

99. Spicer, ME, AY Stark, BJ Adams, R Kneale, M Kaspari, SP Yanoviak (2017) Thermal constraints on foraging of tropical canopy ants. *Oecologia* 183: 1007-1017.
98. K Roeder, M Kaspari (2017) From cryptic herbivore to predator: stable isotopes reveal consistent variability in trophic levels in an ant population. *Ecology* 98:297-303.
97. Kaspari, M., K Roeder, B Benson, MD Weiser, N Sanders (2017) Sodium co-limits and catalyzes macronutrients in a prairie food web. *Ecology* 98:315-320.
96. Lucas J, B Bill, B Stevenson, M Kaspari (2017) The microbiome of the ant-built home: the microbial communities of a tropical arboreal ant and its nest. *Ecosphere* 8: e01639.
95. Bujan J, JP Wright, M Kaspari (2016) Biogeochemical drivers of Neotropical ant activity and diversity. *Ecosphere* 7: e01597.
94. Michaletz, ST, MD Weiser, NG McDowell, J Zhou, M Kaspari, BR Helliker, BJ Enquist (2016) The energetic and carbon economic origins of leaf thermoregulation. *Nature Plants* 2: 16129
93. Kaspari, M, JS Powers (2016) Biogeochemistry and Geographical Ecology: embracing all 25 elements required to build organisms *The American Naturalist* 188.S1
92. Bujan, J, SP Yanoviak, and M Kaspari (2016) Desiccation resistance in tropical insects: causes and mechanisms underlying variability in a Panama ant community. *Ecology and Evolution* 6282-6291
91. Tu, Q, Y Deng, Q Yan, L Shen, L Lin, Z He, L Wu, JD Van Nostrand, V Buzzard, ST Michaletz, BJ Enquist, MD Weiser, M Kaspari, RB Waide, JH Brown and JZhou. (2016), Biogeographic patterns of soil diazotrophic communities across six forests in the North America. *Molecular Ecology* doi:10.1111/mec.13651
90. Zhou, J, Y Deng, L Shen, C Wen, Q Yan, D Ning, Y Qin, K Xue, L Wu, Z He, JW Voordeckers, JD Van Nostrand, V Buzzard, ST Michaletz, BJ Enquist, MD Weiser, M Kaspari, R Waide, Y Yang & JH Brown (2016) Temperature mediates continental-scale diversity of microbes in forest soils. *Nature Communications* DOI: 10.1038/bcinn12083
89. Kaspari, M, NA Clay, J Lucas, S Revzen, Adam Kay, SP Yanoviak (2016) Thermal adaptation and phosphorus shape thermal performance in an assemblage of rainforest ants, *Ecology* 97:1038-1047.
88. Michaletz, ST, MD Weiser, M Kaspari, BR Helliker, BH Enquist (2015) Plant Homeothermy: Energetics, trait-environment interactions, and carbon economics *Trends in Ecology and Evolution* 30: 714-724
87. Helms, JA, M Kaspari. (2015) Reproduction-dispersal tradeoffs in ant queens. *Insectes Sociaux*. DOI 10.1007/s00040-015-0391-9
86. Kaspari, M, NA Clay, J Lucas, SP Yanoviak, A Kay. (2015) Thermal adaptation generates a diversity of thermal limits in a rainforest ant community. *Global Change Biology* 21:1092-1102.
85. Clay, NA, D. Donoso, M Kaspari. (2014) Urine as a source of sodium increases decomposition in an inland but not coastal tropical forest. *Oecologia (2014): 1-9*



84. Kaspari, M (2014) Road salt offers insights into the connections between diet and neural development. ***Proceedings of the National Academy of Science*** 111: 10033-10034.
83. Clay, NA, SP Yanoviak, M Kaspari. (2014) Short-term sodium inputs attract microbi-detritivores and their predators. ***Soil Biology and Biochemistry*** 75: 248-253.
82. Shik, JZ, JC Santos, JN Neal, AD Kay, UG Mueller, M Kaspari. (2014) Metabolism and the rise of fungus cultivation by ants. ***The American Naturalist*** 184: 364-373.
81. Kaspari, M, Clay NA, Donoso D, Yanoviak SP. (2014) Sodium fertilization increases termites and enhances decomposition in an Amazonian forest. ***Ecology*** 95: 795–800.
80. Kaspari, M, MD Weiser (2014) Meet the new boss, same as the old boss. ***Science*** 343: 974-975.
79. Kay, AD, JA Bruning, A Van Alst, TA Abrahamson, WOH Hughes, M Kaspari. (2014) A carbohydrate-rich diet increases social immunity. ***Proceedings of the Royal Society B: Biological Sciences***: 281
78. Shik, JZ, D Donoso, M Kaspari. (2013) The life history continuum hypothesis links traits of male ants with life outside the nest. ***Entomologia Experimentalis et Applicata*** 149: 99-109.
77. Helms, JA, M Kaspari. (2013) Found or Fly: nutrient loading of dispersing ant queens decreases metrics of flight ability (Hymenoptera:Formicidae). ***Myrmecological News*** 19: 85-91.
76. Clay, NA, J Lucas, M Kaspari, AD Kay. (2013) Manna from heaven: refuse from an arboreal ant connects above- and below-ground processes in a lowland tropical forest. ***Ecosphere*** 4: Article 141.
75. Kerekes, J, M Kaspari, B Stevenson, H Nilsson, M Hartmann, A Amend, T Bruns (2013) Nutrient enrichment increased species richness of leaf litter fungal assemblages in a tropical forest. ***Molecular Ecology*** 22: 2827-2838.
74. Donoso, D, MK Johnston, NA Clay, M Kaspari. (2013) Trees as templates for trophic structure of tropical litter arthropod communities. ***Soil Biology and Biogeochemistry*** 61:45-51.
73. Mulder, C, A Boit, S Mori JA Vonk, SD Dyer, L Faggiano, S Geisen, AL Gonzalez, M Kaspari, S Lavorel, PA Marquet, AG Rossberg, RW Sterner, W Voight, DH Wall. (2012) Distributional (In)Congruence of Biodiversity-Ecosystem Functioning. ***Advances in Ecological Research*** 46: 1-88.
72. Shik, JZ, C Hou, A Kay, M Kaspari, JF Gillooly. (2012) Towards a general life-history model of the superorganism: predicting the survival, growth and reproduction of ant societies. ***Biology Letters*** 8:1059-1062.
71. Kaspari M, Donoso D, JA Lucas, T Zumbusch, Kay AD. (2012) Using nutritional ecology to predict community structure: a field test in Neotropical ants. ***Ecosphere*** 3: 1-12.
70. Shik, JZ, D Flatt, A Kay, M Kaspari. (2012) A life history continuum in the males of a Neotropical ant assemblage: refuting the sperm vessel hypothesis. ***Naturwissenschaften*** 99: 191-197.

69. Dudley, R, M Kaspari, SP Yanoviak. (2012) Lust for salt in the western Amazon. *Biotropica* 44: 6-9.
68. Kay, A D, J Z Shik, A Van Alst, K A Miller, M Kaspari. (2012) Diet composition does not affect ant colony tempo. *Functional Ecology* 26:317-323.
67. Sayer, E, SJ Wright, E Tanner, J Yavitt, K Harms, J Powers, M. Kaspari, M Garcia, B Turner. (2012) Variable responses of lowland tropical forest nutrient cycles to fertilization and litter manipulation. *Ecosystems* 15: 387-400.
66. Lattke, JE, M Kaspari, S O'Donnell, S Powell (2007) Las hormigas ecitoninas de Venezuela (Hymenoptera: Formicidae: Ecitoninae) elenco preliminar. *Entomotropica* 22: 153-170.
65. Shik, JZ, M Kaspari, SP Yanoviak (2011) Preliminary assessment of metabolic costs of the nematode *Myrmeconema neotropicalum* on its host, the tropical ant *Cephalotes atratus*. *J. Parasitology* 97: 958-959.
64. Kaspari M. Chapter 4: Stoichiometry, in **Metabolic Ecology: a scaling approach**. (2012) Eds. Richard Sibly, James H Brown, Astrid Kodric Brown, Oxford University Press.
63. Wright, SJ, JB Yavitt, N Wurzburger, BL Turner, EVJ Tanner, EJ Sayer, LS Santiago, M Kaspari, LO Hedin, KE Harms, MN Garcia, MD Corre (2011) Potassium, phosphorus or nitrogen limit root allocation, tree growth and litter production in a lowland tropical forest. *Ecology* 92: 1616-1625
62. Kaspari M, S O'Donnell, J Lattke, S Powell. (2011) Predation and patchiness in the tropical litter: do swarm-raiding army ants skim the cream or drain the bottle? *Journal of Animal Ecology* 80: 818-823.
61. Kaspari M. and MD Weiser. (2011) Per-capita energy availability and the regulation of abundance. *Ecography* 35: 65-72.
60. O'Donnell, S, M Kaspari, A Kumar, J Lattke, S Powell (2010) Elevational and geographic variation in army ant swarm raid rates. *Insectes Sociaux*. 58:293-298.
59. Weiser, M...Kaspari, and 25 authors (2010) Canopy and litter ant assemblages share similar climate-species density relationships. *Biology Letters* 6: 1744-9561.
58. Gillooly, JF, C Hou, and M. Kaspari (2010) Eusocial insects as superorganisms: insights from Metabolic Theory. *Integrative and Comparative Biology* 3:4 1-3.
57. Donoso, D, MK Johnston, and M Kaspari (2010) Trees as templates for tropical litter arthropod diversity. *Oecologia* 164: 201-211.
56. Yanoviak SP, Y Munk, M Kaspari, R Dudley. (2010) Aerial maneuverability in wingless gliding ants. *Proceedings of the Royal Society B* 277: 2194-2204.
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### **books**

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## **chapters**

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2. Kaspari, M & JD. Majer. (2000) Using Ants to Monitor Environmental Change. Pp. 89-98, in: Agosti, D., Majer, J., Alonso, E. and Schultz, T., (eds.). *Ants: Standard Methods for Measuring and Monitoring Biodiversity*. Biological Diversity Handbook Series. Smithsonian Institution Press. Washington D.C., 20+280pp.
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## **Book reviews**

Kaspari M (1997) "Forest Litter Insect Communities: biology and chemical ecology" by T. N. Ananthakrishnan. *Quarterly Review of Biology* 72: 104

Kaspari M (2009) "The Lives of Ants" by L Keller and E Gordon. *BioScience* 60: 78-79.

Kaspari M (2011) "Adventures among ants" by MW Moffett. *Quarterly Review of Biology*.

Kaspari M (2013) "The Art of Ecology: the writings of G. Evelyn Hutchinson" edited by D. Skelly, D. Post, M. Smith. *Quarterly Review of Biology* 88:31.

Kaspari M (2013) Community Ecology: too big for any one book. *Ecology* 94:1207-1208.

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## **Society memberships**

American Society of Naturalists, Ecological Society of America, Society for Integrative Biology

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## **Administrative experience**

**Director of EEB Graduate Program--** Ecology and evolutionary biologists are housed in a variety of units across a modern university. At OU, the separate Departments of Zoology and Botany/Microbiology, without any overarching organization, hindered us in two ways. First, there was no regular vehicle to bring us together. Second, when advertising for graduate students, the breadth of opportunities at OU was diminished. The EEB Graduate Program was an opportunity to remedy both issues.

The program had its genesis in discussions with Yiqi Luo (BOMI). We were later joined by Lee Krumholz, Larry Weider, and Ola Fincke. Over a series of years, the EEB program took shape. I was elected its Director in November of 2004, a position I still hold. Associate faculty come from another 6 departments.

Since our first class in the fall of 2005, EEB has had 91 students in the program; graduates have gone on to academic positions, non-profits, and private industry. As Director I am the first contact in the program, run our weekly seminar Ecomunch, and teach its inaugural course, *Advanced EEB*.

**Co-Chair Gordon Conference Metabolic Ecology--** I was elected, along with Bob Sterner, as a co-chair for the third Gordon Research Conference on Metabolic Ecology in 2008. The workload was episodic, and included soliciting possible speakers and topics, with many emails and conversations between Bob and myself coalescing the information. Since GRC provides only a fraction of the funds necessary, this also meant looking for money to support

bringing in both invited speakers and as many students as possible. Toward that end, I wrote a successful NSF proposal which brought in \$46K, a large amount, we were told by GRC, for one of their conferences. Invitations, and subsequent management of speakers, fixing organizational snafus as the date approached, and running the five day meeting (which received strong reviews) capped the commitment.

**Co-Founder Geographical Ecology Group**—One way for general biology departments to grow is by recognizing and building on their core strengths, and recruiting faculty to build a critical mass in those core areas. In 2010, at the encouragement of our Deans of Research and Arts and Sciences, we were encouraged to self-organize and leverage our strengths with those at the university level. Over a four-year period, I helped lead the effort to build our Geographical Ecology group. A key philosophy is that a collaborative culture evolves slowly through regular interactions. Our “Geographical Ecology Workshop” meets regularly to bring grad students, post docs, and professors from within and outside the department to explore common interests. Because of our vision, and willingness to develop that vision, we were the first group in our department to earn administrative support, reflected in an open rank cluster hire of three Geographical Ecologists.

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## Teaching

Introduction to Zoology, Principles of Ecology, Community Ecology, The Art and Science of Biodiversity (Senior Capstone), Advanced Ecology and Evolutionary Biology, Geographical Ecology Workshop

### ***Post Docs***

Leeanne Alonso, Vice President, Center for Applied Diversity Science Rapid Assessment Program

Stephen Yanoviak, Asst. Professor, University of Louisville

Michael Weiser, currently at OU

Ellen Welti, currently at OU

### ***Graduate Students***

Michael Weiser, M.S., Ph. D. from University of Arizona, Post Doc Univ. Oklahoma

Mary Johnston, M.S., Ph. D. from University of Texas, Asst. Prof. Concordia College

Jon Shik, Professor University of Copenhagen

David Donoso, Professor Universidad Tecnica Particular de Loja, Ecuador

Natalie Clay, Ph. D., Assistant Professor, Louisiana Tech University

Jelena Bujan, Ph. D., Post Doc with Steven Yanoviak

Jane Lucas, Ph. D., Post doc with Michael Strickland

Karl Roeder, Ph. D. candidate

Rebecca Prather, Ph. D candidate

### ***Honors***

- "Most Inspiring Faculty 1999-2000", as awarded by student athletes of the University of Oklahoma.
- “Featured Scientist” JASON XV: Panama Forests at the Crossroads. JASON is a nonprofit organization that develops yearly curricula for 1.7 million students in 4-9<sup>th</sup> grade science classrooms. It culminates in a live broadcast “expedition” (two weeks and 55 1-hour

broadcasts). It allowed me to teach the ecology and evolutionary biology of the tropical forest from the litter of Barro Colorado Island in Panama.

- “Presidential Professor” University of Oklahoma
- “George Lynn Cross Research Professor” University of Oklahoma

### **public correspondence and publicity**

- OU Spotlight on Teaching Spring 1999—*Teaching science’s relevance and beauty*
- NPR 16 May 2002—*Calling Evolution Evolution*.  
<http://discover.npr.org/features/feature.jhtml?wfId=1143470>
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<http://www.usnews.com/science/articles/2010/01/20/study-suggests-theory-for-insect-colonies-as-superorganisms.html>  
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- Featured in “The habits of successful ecologists” in the Bulletin of the Royal Society of Ecology 2012
- Quoted in New York Times “Feathered Freeloaders at the Ant Parade”, 24 September 2012  
[http://www.nytimes.com/2012/09/25/science/spotted-antbirds-feathered-freeloaders-at-the-ant-parade.html?\\_r=1&pagewanted=all](http://www.nytimes.com/2012/09/25/science/spotted-antbirds-feathered-freeloaders-at-the-ant-parade.html?_r=1&pagewanted=all)
- Research predicts growth, survival of “Superorganism” ant colonies. Science daily.  
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- *Science* reviews Kaspari labs work on sodium limitation of ecosystem function. “Ecosystems say ‘Pass the salt’” *Science* (2014) 343:472-473.
- *Science Online* Rotten fruit may be due to microbe warfare.  
<http://news.sciencemag.org/biology/2014/03/rotten-fruit-may-be-due-microbe-warfare>
- *New York Time’s Book Review* 1 February 2015: Feeling Disrupted
- *The Verge*: What would happen if an ant was dropped from the Empire State Building?  
<http://www.theverge.com/tldr/2016/6/15/11936802/ant-dropped-from-empire-state-building-science-experiment-mystery-solved>
- *Why Taller Grass Can Be Bad News For Grasshoppers*. NPR All Things Considered, March 2020.



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**referee**

*American Naturalist, American Zoologist, Annual Review of Ecology and Systematics, Behavioral Ecology, Biological Journal of the Linnean Society, Biotropica, Condor, Conservation Biology, Diversity and Distributions, Ecology Letters, Ecoscience, Ecography, Ecological Entomology, Ecology, Evolution, Global Ecology and Biogeography, Journal of Animal Ecology, Journal of Biogeography, Journal of Hymenopteran Research, Nature, National Geographic, Northeastern Naturalist, Naturwissenschaften, Oecologia, Ohio Journal of Science, Oikos, Proceedings of the Royal Society B, Proceedings of the National Academy of Science, Science, Southwestern Naturalist*

**U.S.:** DOE, NSF, USDA, NASA, and EPSCoR Louisiana NSF Panel 2005, 2010, 2012; **UK:** NERC

**selected service**

Panel of Reviewers for *Ecology's* "The Scientific Naturalist" series  
Director and co-founder: Ecology and Evolutionary Biology Graduate Program at OU  
Executive Committee—Biodiversity Science and Education Initiative  
Lead OU representative to "Central Grasslands NEON" for NEON proposal 2001  
Lead EEB representative for Undergraduate Curriculum Revision at OU—1997-2000

**web sites**

Getting Things Done in Academia [eebatou.wordpress.com](http://eebatou.wordpress.com)

Kaspari Web Page: [michaelkaspari.org](http://michaelkaspari.org)