

iFAST: The International Forum on Advanced Environmental Sciences and Technology

A series of distinguished seminars by eminent scientists

8 a.m. CDT; 9 a.m. EDT; 1 p.m. GMT; 9 p.m. Beijing

Wednesday, May 12, 2021



Elizabeth Borer

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Elizabeth Borer's research focuses on quantifying how global changes, including atmospheric pollution and species invasions and extinctions, change the composition and function of the world's ecosystems. Most of her work is in grasslands, where she studies the effects of these human changes on global biodiversity, disease transmission and the identity and function of microbes inhabiting individuals (the "microbiome"). Borer is co-founder and co-lead of the Nutrient Network, a global scientific cooperative studying the effects of global changes on critical processes and functions in the world's grasslands. The Nutrient Network, begun in 2007, now includes over 300 scientists performing identically replicated experiments and observations at about 140 sites in 26 countries spanning six continents. Borer also is active in the United States National Science Foundation Long-Term Ecological Research program, is an editor at two journals and regularly serves on national and international scientific panels. She is a lifetime fellow of the American Association for the Advancement of Science and the Ecological Society of America, a Leopold Leadership fellow and received the 2015 Alphonse J. Pauchon Foundation award for the Betterment of Mankind.

Chasing contingency to discover generality: climate, nutrients, and herbivores in Earth's grasslands

Changing climate poses such existential challenges that we often equate global change with climate change. But while predicting and mitigating the impacts of climate change is critically important, it is only one of many ongoing global changes shaping the ecology of current and future Earth. In addition to climate, humans are altering global cycles of elements like nitrogen and phosphorus and influencing species' distributions and abundances by causing extinctions and invasions of plant and animal species. Understanding the conditions under which these concurrent changes may amplify or mitigate impacts on plant biodiversity and the functioning of ecosystems remains an open question. While this challenge is global in scale, experiments and sampling to measure many of the ongoing changes in plant community composition and function must be done at local scales. Yet comparisons among studies done at different sites can lead to a sense of heterogeneity and contingency, without emergent properties to guide understanding and prediction. I will discuss my experience with conceiving and implementing a collaborative experiment, the Nutrient Network, replicated at nearly 150 grassland sites spanning six continents. I will illustrate the power of this collaborative approach for generating an emergent understanding that builds from the context-dependence of global change impacts among sites. To do this, I will focus on the role of mammalian herbivores and nutrients across Earth's climates in shaping biodiversity and ecosystem processes in the world's grassland ecosystems.



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Organizing Committee Chair: Jizhong Zhou (University of Oklahoma, USA; <https://www.ou.edu/ieg>)
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