**Biodiversity-mediated effects of global changes on ecosystems: scaling up and predicting responses**

Forest Isbell

*Department of Ecology, Evolution & Behavior, University of Minnesota, USA*

The long-term impacts of global change drivers on ecosystem functioning and stability can strongly depend on how these drivers alter biodiversity and shift community composition. For example, although chronic nitrogen enrichment initially increases productivity, it can also lead to loss of plant species, including initially dominant species, which can then cause substantial diminishing returns from nitrogen fertilization. Land use change and climate change are similarly eroding biodiversity, with consequences for ecosystem functioning and stability. Importantly, land use change and climate change alter biodiversity at multiple spatial scales and have substantial inertia. Thus, two important next steps in understanding the biodiversity-mediated effects of global changes on ecosystems are to: (1) consider changes in beta diversity and their consequences for ecosystems at larger spatial and temporal scales and (2) predict ecosystem responses to climate change. In this talk, we will explore how long-term and new field experiments that manipulate habitat fragmentation, warming, and drought are advancing understanding in both these ways.