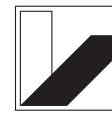# BayCEER Kolloquium

Lectures in Ecology and Environmental Research

Summer 2024

Donnerstag/Thursday
13.06.2024
12:15 in H6, GEO

Prof. Dr. Richard Philips

Department of Biology, Indiana University

Seeing the forest beneath the trees: Mycorrhizal fungi as trait integrators of ecosystem processes

Global environmental change is shifting the distribution and abundances of species globally, though the ecosystem consequences of such changes are poorly understood. Here, I present a framework that seeks to unify the heterogeneity of plant-microbe-soil interactions in forests, as a means for predicting the impacts of community change. The Mycorrhizal-Associated Nutrient Economy (**MANE**) hypothesis predicts that species that associate with different types of mycorrhizal fungi possess an integrated suite of nutrient-use traits that lead to the maintenance of biogeochemical syndromes in forests.

To test MANE, we combine observations, experiments, syntheses and modeling in forest stands across the US, and examine the effects of trait variation and community composition on ecosystem processes. We have found support for MANE in many (but not all) temperate forests in the United States. Moreover, we find that MANE dynamics can be detected by remote sensing and incorporated into large-scale models, facilitating the MANE framework as a tool for predicting forest response to global change. Collectively, our results suggest that shifts in the relative abundance of AM and ECM trees will likely have profound implications for how forests function and the services that they provide.