The University of Hong Kong
School of Biological Sciences

Public Seminar

A trait-based approach to deciphering diversity change and its consequences on ecosystem functioning

Date: Sept 25th, 2024 (Wed)

Time: 3:00 p.m.

Venue: KBSB 6N-11 & Zoom

About the speaker:

Taylor A. Bogar, a PhD candidate in Dr. Benoit Guénard's lab, investigates how biodiversity affects ecosystem functioning through the lens of functional traits, using ants as a key model for his research.

Abstract:

Amidst rapid shifts in biodiversity, ensuring generalizability and predictability is essential if we aim at mitigating the decline of ecosystem functions. Functional trait-based ecology presents a valuable framework, as it allows for a more mechanistic and coherent examination of the biodiversity and ecosystem function relationship (BEF) by facilitating the integration of co-existence and assembly processes. By capitalizing on the ubiquity and key role of ants in various ecological processes, I examine the consequences of non-random species loss on ecosystem functioning. Firstly, I developed a new experimental approach that allowed for species segregation within ground foraging ant communities in function of their body size. Next, I investigate the consequences of functional changes using biological invasions as a natural experiment. By correlating traits to invasion density, I identified key response traits while simultaneously determining effect traits by estimating their impacts on ecosystem function efficiency. I conclude that a prominent invasive species does alter the resident assemblage, however, scavenging and predation increase with invasion density. Subsequently, I analyze how intraspecific variation in effect traits influences ecosystem function efficiency and evenness of resource use. Finally, I assessed the behavioral mechanisms behind the observed functional differences between invaded and resident ant assemblages. Overall, my work aims to expand trait-based ecology of arthropods to include biodiversity and ecosystem functioning.