NUS National University of Singapore
Department of Biological Sciences
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SEMINAR

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Hosted by Assistant Prof Lim Jun Ying

Ecological mechanisms underlying ecosystem stability and plant tolerance to global change

By Robert R. Junker

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Global change components restructure communities, are major drivers of biodiversity decline, and thus destabilize ecosystems. Nonetheless, some individuals, species, and communities better tolerate environmental stresses than others suggesting specific mechanisms increasing their resilience and resistance. In my talk I will explore mechanisms underlying ecosystem stability and plant tolerance: 1) Rapid natural modulations of the plant microbiome within or across plant individuals affect plant phenotype and performance, and thus increase plant tolerance to environmental stresses. 2) Chemodiversity of plants, i.e. the diversity of metabolites produced by a plant, mediates the diversity of interacting insects and bacteria and thus increases ecosystem coupling and thus stability. 3) Response diversity, which is the ability of some species to compensate for the loss of others due to different responses to environmental changes, has been identified as an important but understudied component of biodiversity that facilitates ecosystem stability. Understanding these mechanisms will help to inform conservation efforts protecting natural or restoring degraded ecosystems.

About the Speaker

Prof. Dr. Robert R. Junker is an ecologist focusing on species and ecosystem responses to global change components. In observational and experimental studies in the field as well as in the lab he is examining how climate change, land-use change and pollution impact the diversity and composition of plant, animal and microbe communities and ecosystem functions. Particularly, he is interested in how microbes increase the tolerance of plants to environmental stresses and how chemodiversity and response diversity stabilize ecosystems. Given that microorganisms are fundamental to life on earth, he is working on concepts integrating microorganisms into conservation theory and practice.