

**Title: Impacts of invasive ants on ecosystem sustainability and current challenges of management**

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Biological invasions of ant species are regarded as an emerging threat to ecosystem sustainability as they can negatively affect ecosystems in a variety of ways including displacement of native species, reduction of agricultural productivity and alteration of ecosystem processes etc. For example, the invasive yellow crazy ant (*Anoplolepis gracilipes*) is found to wipe out multiple ecosystem service providers such as red land crab that controls forest floor vegetation in an island rainforest, thus indirectly inducing a rapid ecosystem shift (e.g., release seedling recruitment, enhance species richness of seedlings, slower litter breakdown).

To mitigate the impacts of invasive ants, a wide variety of control strategies therefore have been developed and applied to reduce the population of invasive ants. Despite diverse strategies available, low-toxicity bait is arguably among the most efficient method. Normally baits comprise three major components, a toxicant, an attractant and a palatable carrier for carrying the phagostimulant/toxicant solution. The latter two components are particularly important because control success apparently is linked to bait consumption rate that is determined by how attractive the bait is as well as food preference of the target ant species. For example, the invasive fire ant (*Solenopsis invicta*) is considered an "oil-preferring" ant, and the toxic baits were developed for fire ant control using vegetable oil as an attractant.

This seminar session will review some previous case studies regarding the impacts of invasive ants on ecosystem sustainability, followed by the rationale of ant-baiting system and significant challenges to the ant-baiting management scheme based on the recent findings in my laboratory. These findings include (1) virus-induced anorexia and switch in food preference in the invasive fire ant; (2) seasonal food preference triggered by colony nutrition flow of yellow crazy ants. All of which are reported for the first time and thus offer new insights on management implications in response to such challenges. Potential application and a novel management framework also will be discussed.