

Project details

Title: Ant and termite assemblages along a tropical forest disturbance gradient in Sabah, Malaysia: A study of co-variation and trophic interactions

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Sampling details and required resources

Spatial scale: 2nd order

Sampling sites: OG SF SFE VJR A B C D E F OP

Time frame: April 2010-July 2011

Resources: Research Assistant Vehicle

Rationale and questions

In Malaysian forests, ants and termites are keystone species that provide services such as decomposition and interact through predator-prey relationships. However, very little is known about interactions between these key groups, effects of habitat change on assemblages and potential for changes in functionality with forest conversion. This study aims to determine how ant and termite assemblages vary across a habitat disturbance gradient and with changes in environmental conditions, and investigate the role of ant-termite trophic interactions in shaping community structure. In addition, data will form a baseline pre-fragmentation data set of ant and termite diversity and abundance, which will be useful for comparison with future research.

Methods

Replicate 4m x 4m quadrats will be marked out, one at each of the SAFE project 2nd order points in old growth forest, secondary forest and oil palm control sites, and the experimental area. Termites and ants will be sampled in the soil at each quadrat by digging 16 equally spaced soil pits (12x12x10cm) and sorting through the soil for 10 person-minutes. All dead wood items encountered from ground level up to a height of 2m within each section will also be sampled for termites and ants. For each separate encounter with termites and/or ants, soldiers and workers will be sampled in the case of termites, just workers in the case of ants, and these will be stored in vials of ethanol to preserve them for later identification. Relative species abundance will be assessed by recording the number of separate encounters, or 'hit rate' at each survey point (after Davies *et al.* 2003). Habitat features including canopy cover, tree size, leaf litter depth, abundance of dead wood, grass etc., will be measured at each locality sampled for termites and ants. Specimens will be identified to species level under the guidance of Dr Paul Eggleton and Dr Tom Fayle of the Natural History Museum, London. Ordination analyses will be conducted to investigate variation in assemblages across habitat types and the role of environmental variables in determining community structure, whilst randomisation analyses will be used to test for non-random occurrences of ant and termite species that may indicate interactions. Analyses will be completed under the guidance of Dr Richard Davies at the School of Biological Sciences, University of East Anglia.