Species diversity and functional diversity of termites in regard to the vertical and horizontal distributions in Lambir Hills National Park

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Termites play a crucial role in forest ecosystems as a decomposition agent. To quantify the role of termites for forest decomposition system, it is important to measure the ability of decomposition and transportation of materials by each termite species. Termites are usually thought to exist on the forest floor (such as in the soil, dead fallen wood and so on), but there are considerable amount of termites on the canopy and they transport a great quantity of wood materials between forest floor and canopy. The material transportations are performed in the two different ways; termite galleries and open-air foraging.

The purpose of this study is to examine the species diversity of termites in each habitat (forest floor and canopy) and their contribution to the material transportation. In this presentation, we especially focus on the termite fauna on the forest floor habitat, the so called "horizontal distribution" and the distribution of termite galleries on trees, the so called "vertical distribution".

The research was conducted at 1 ha (100m x 100m) quadrate set in the 4ha crane site of Lambir Hills National Park, Sarawak, Malaysia. For the study of horizontal distribution, the standardized sampling protocol described by Jones & Eggleton (2000) was used to assess the species diversity and abundance of termites on the forest floor. Thirty-four species were recorded from the sampling. For the study of vertical distribution, all trees in the 1 ha quadrate were examined and the presence of termite galleries, their height and the species were recorded. Totally 515 trees were examined. 159 (30.8%) of them had termite galleries and 38 (7.4%) extended to the canopy. Many galleries were constructed by the *Microcerotermes* and *Nasutitermes* species, which were wood-feeding termites. These results suggest that certain termite species have considerable range of horizontal and vertical distribution, and the range depends on their feeding habits.

REFERENCES

Jones, D.T., Eggleton, P., 2000. Sampling termite assemblages in tropical forests: testing a rapid biodiversity assessment protocol. *J. Appl. Ecol.*, 37: 191-203.