COMPARISONS ON ANT AND TERMITE DIVERSITY BETWEEN REGENERATING AND PRIMARY FOREST IN DANUM VALLEY AND THEIR RELATIONSHIP WITH PHYSICAL, CLIMATIC AND BIOLOGICAL FACTORS

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ABSTRAK

PERBANDINGAN DIVERSITI SEMUT DAN ANAI-ANAI ANTARA HUTAN REGENERASI SEMULA DAN PRIMER DI LEMBAH DANUM DAN HUBUNGAN MEREKA DENGAN FAKTOR-FAKTOR FIZIKAL, CUARA DAN BIOLOGI

Penyelidikan ini dijalankan untuk mengkaji kepelbagaian semut dan anai-anai, serta interaksi mereka terhadap faktor-faktor persekitaran selepas 14 tahun regenerasi semula hutan. Perbandingan kepelbagaian spesies adalah tertumpu di hutan tidak dibalak dengan hutan tebangan terpilih di Lembah Danum selama 12 bulan. Sejumlah 114 spesis semut daripada 45 genus, dan 44 spesies anai-anai daripada 23 genus telah dikutip daripada hutan tidak dibalak dan hutan tebangan terpilih. Kekayaan dan kepelbagaian spesis semut dan anai-anai di kedua-dua hutan tersebut didapati sama, selepas 14 tahun regenerasi semula hutan. Peratusan persamaan spesis semut dan anai-anai di kedua-dua kawasan tersebut juga adalah tinggi. Bandingan kumpulan anai-anai menurat pemakanan (feeding groups) dengan fungsian (functional group) di dalam perkadaran yang sama. Kehadiran sila-sisa balak mempengaruhi keunggulan kumpulan pemakan kayu di hutan tebangan terpilih. Kepelbagaian tumbuh-tumbuhan di hutan tebangan terpilih mungkin boleh menyumbang kepada kepelbagaian semut, dengan membekalkan nektari luar bunga yang merupakan zat penting dalam pemakanan kebanyakan spesies semut. Penghasilan daun-daun atau pucuk-pucuk muda menarik perhatian serangga herbivor yang lain, yang menjadi mangsa kepada semut pemangsa. Analisis Fungsian Diskriminasi Kanonikal (CDFA) menunjukkan terdapat pemisahan bererti di antara hutan regenerasi semula dan hutan primer. pH tanah dan penutupan silara merupakan faktor pembezaan yang utama dalam faktor persekitaran, manakala faktor-faktor lain mempunyai pengaruh yang kuat untuk menjadi faktor pembeza pada masa akan datang. Perubahan habitat di hutan tebangan terpilih mempengaruhi komposi spesies apabila sesuatu spesies lebih cenderung untuk terus berada di hutan tersebut atau pun berpindah ke hutan yang berdekatan.

ABSTRACT

COMPARISONS ON ANTS AND TERMITE DIVERSITY BETWEEN REGENERATING AND PRIMARY FORESTS IN DANUM VALLEY AND THEIR RELATIONSHIP WITH PHYSICAL, CLIMATIC AND BIOLOGICAL FACTORS

This research investigated the diversity of ants and termites and their interactions with the different environmental variables after 14 years of forest regeneration. Comparison of species diversity was focused between unlogged and selectively-logged forest at Danum Valley for 12 months. A total of 114 species of ants belonging to 45 genera and 44 species of termites belonging to 23 genera were collected in unlogged and selectively-logged forest. Species richness and diversity of ants and termites between the two sites were found very similar after 14 years of forest regeneration. Percentage of species similarity of ants and termites in both sites were also found relatively high. Feeding groups of termites were all also found proportion in both sites likewise with the functional groups of ants. The presence of logging debris influenced the dominance of wood feeding groups in selectively-logged forest. The varieties of plants occurring in selectively-logged forest may have also contributed to the diversity of ants by providing a source for dietary requirements and as a habitat. The production of young leaves or shoots had also attracted herbivory insects, which had been served as prey to predatory ants influencing their dominance. Canonical Discriminant Function Analysis revealed a significant separation between regenerating and primary forest. Soil pH and canopy cover were found to be the most discriminating factors among the environmental variables and other variables were found to have strong potential to be discriminating in the future. This was accounted for by habitat changes occurring in selectively-logged forest affecting the species composition by either favoring some species to remain in the area or immigrate to nearby sites.