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Comparison of litter ant diversity and species assemblages between two vegetation types in upper Hanthana Forest Reserve, Sri Lanka

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Abstract

Litter ants play a significant role as ecosystem engineers. Diversity and species composition of a litter ant assemblage were studied in a secondary forest and a pine plantation above 700 m elevation in the Upper Hanthana Forest Reserve, Sri Lanka. Ants were sampled from December 2013 to June 2014, along three, 100 m transects laid at each site. On left and right side of each transect, 1 m^2 plot was demarcated at 20 m intervals; ants in the left plots were sampled using Winkler method whereas hand collection was conducted in the right plots. In addition, six pitfall traps were fixed to flush the mouth of the cup with the ground, 2 m away from each transect. A total of 1894 litter ants in 35 morphospecies of seven subfamilies were recorded; Cerapachyinae (single genus and species), Dolichoderinae (3, 5), Formicinae (3, 3), Leptanillinae (1, 1), Myrmicinae (12, 16), Ponerinae (6, 8) and Pseudomyrmecinae (1, 1). Myrmicinae included the highest number of species. *Pheidole* was the most speciose genus (4 species) and *Solenopsis* sp. 1 had the highest proportion (639/1894) among them. A significantly higher value of Shannon-Wiener diversity Index was observed for the litter ant fauna in secondary forest ($H' = 1.372$) than that observed for the pine plantation ($H' = 0.778$). Species accumulation curves for the two sites did not reach a plateau, indicating more species are to be encountered. BIO-ENV analysis showed an association between species diversity and litter structural variables in the secondary forest. Temperature and humidity in the secondary forest and the temperature in the pine plantation seemed to affect the diversity and the species composition of the litter ant fauna.

Key words: diversity, litter ants, pine plantation, secondary forest

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