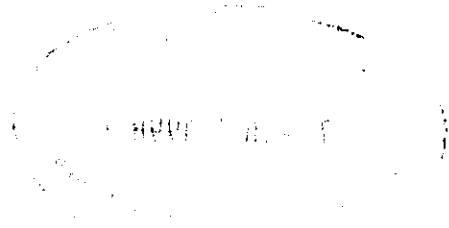


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COMPARATIVE STUDY OF SOIL AND LITTER  
ARTHROPOD FAUNA  
IN SINHARAJA WET ZONE FOREST AND SIGIRIYA DRY ZONE  
FOREST IN SRI LANKA.



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## ABSTRACT

A comparative study was undertaken to investigate the major groups, population densities and the seasonal fluctuations of soil and litter dwelling arthropods found in two selected areas of the wet zone (Sinharaja) and the dry zone (Sigiriya) forests of Sri Lanka. The different groups of arthropod fauna from these two forest types were compared using the extraction methods of hand sorting, floatation and sieving.

The population densities of the soil and litter arthropods were found to be higher in the dry zone ( $5229 \text{ N/m}^2$ ) when compared with the wet zone forest ( $4057 \text{ N/m}^2$ ).

In both forest types microarthropods were dominant in numbers as compared to macroarthropods. However population densities of the microarthropods were significantly higher in the dry zone forest when compared with those of the wet zone forest. The predominant microarthropod groups in both forest types were the Acarina, Symphyla and Collembola.

The density of the macroarthropod fauna was higher in the wet zone forest compared to the dry zone forest. This difference was due to significantly higher numbers of Diplopods, Coleopterans and Dipterans in the wet zone forest. In the dry zone forest these were found in relatively low numbers. The Coleopteran density in the wet zone was significantly higher and this was attributed to the lower pH values in wet zone forest.

The common Coleopteran families found in both the dry zone and the wet zone forests were the Elateridae, Staphylinidae, Carabidae, Scarabaedae and Scolytidae. In both forest types significantly higher numbers of larval Coleoptera were found in the forest soils as compared to the litter. The inverse is true of adult forms where large numbers forms were found in the litter as compared to the soil.

No adult Dipterans were found in both forest soils. However, larval Dipterans were detected in both types of forests. The families Sciaridae, Dolichopodidae were the predominant Dipteran groups in both forests. Asilidae and Chironomidae were never found in the dry zone forest and they were present only in the wet zone forest.

Population fluctuation of soil and litter arthropods in general follows the changing abiotic conditions. The seasonal variation of the densities of arthropods was studied in both the wet zone as well as dry zone forest. More arthropods were collected during the rainy seasons in both forest areas and low densities were recorded during the dry seasons. In both forest areas the total arthropod densities both in litter and soil were high during the rain fall seasons because of the increase in moisture content whereas the density was found to be low during the dry season when the

moisture content was low and the temperature was high. According to the correlation analysis of the variable edaphic factors, the correlation coefficient of the moisture content and temperature values is highly significant while there is little correlation with respect to soil pH and with the density of the arthropod fauna in either of the forest types.