

DIVERSITY, DISTRIBUTION AND ECOLOGY OF TERMITES AMONG SELECTED VEGETATION TYPES IN KANDY AND KNUCKLES REGIONS

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Termites are major decomposers in tropical forests and have beneficial influence over soil processes. The study addresses (i) species composition, diversity, abundance, distribution, microhabitats and feeding habits of termites, (ii) variation in termite assemblages in different vegetation types, (iii) effect of environmental variables, (iv) distribution in different altitudes and (v) role of termites in different vegetation types.

The study was conducted in three lowland evergreen mixed forests in the Kandy region in Gannoruwa, Hantana and Udawattakele that had been subjected to different types of disturbances and 11 vegetation types (upper montane, lower montane, lowland semi-evergreen and lowland wet evergreen forests, *Pinus*, Eucalyptus, cardamom and tea plantations, riverine forest, Pitawala patana and dry patana grasslands) in the Knuckles region. Termites were sampled by belt transect method (2x100 m) in eight vegetation types with three transects in each and by casual searching in others. Termites were identified using keys and descriptions for the Indian region. Data on termites and environmental variables obtained from sampling were analyzed using PRIMER Version 6.

Of the total 68 species of termites in 22 genera and three families recorded, 19 species and two genera are new to Sri Lanka and 13 are endemics. Identity of 29 morphospecies could not be confirmed beyond generic level due to lack of literature. All species recorded were described using morphological features and measurements. Identification keys were prepared. Termites of the Kandy region comprised 41 species in 12 genera with 17 species confined to the region. Knuckles region recorded 52 species in 21 genera, with 26 restricted species. Forty three species were common to both regions. *Odontotermes* was the genus with the highest number of species (24 spp.). Nearly half of the species (33) were restricted to a particular vegetation type. *Odontotermes bellahunisensis* was the most widely distributed species.

Highest relative abundance (227 encounters/3 transects) of termite was recorded from lowland semi-evergreen forests in Knuckles region and the lowest from differently disturbed forests in Hantana (66 encounters/3 transects). *Nasutitermes kali* had the highest overall total abundance (102 encounters). Fifteen species were recorded only from a single encounter.

Highest taxonomic diversity of termites was in the lowland semi-evergreen forest in Knuckles region and in the differently disturbed lowland evergreen mixed forest in Gannoruwa. Former had the highest species richness; latter the highest species diversity. The highest termite species dominance was in differently disturbed forests in Hantana. The highest β diversity (Sørensen's Similarity Index=60) of termites was between differently disturbed forests in Udawattakele & Gannoruwa and Udawattakele & lowland semi-

evergreen forest in Knuckles. The lowest was between lowland semi-evergreen forest in Knuckles and Hantana.

The majority of termites were wood feeders (55 spp.) and the rest were soil-wood-interface feeders (10 spp.), lichen feeders (2 spp.) and true soil feeders (1 sp.). Termite microhabitats comprised of soil (42 spp.), logs and stumps (36 spp.), branches and sticks (34 spp.), leaf litter and humus (27 spp.), runways on trees (20 spp.) and in live trees (4 spp.) and most species occupied several microhabitats. Termite assemblages and their microhabitats varied significantly with vegetation types. Termite assemblages showed a significant relationship with altitude ($\rho=0.411$, $p=0.63\%$) and termite species richness and abundance correlated negatively ($r^2=0.5$, $P=0.001$) with increasing altitude. None of the 11 environmental variables comprising weather parameters, ground cover and vegetation characteristics showed any relationship with termite assemblages.

This study highlights the species composition, diversity abundance and selected ecological aspects of termite assemblages in different vegetation types in two regions subjected to forest fragmentation, deforestation and reforestation over decades. The findings of the study infer the ecological role of termites, which make them vital components in their habitats.