

INFLUENCE OF ALTITUDE ON DISTRIBUTION OF TERMITES IN FORESTS IN KANDY AND KNUCKLES REGIONS

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Termites play an important role in tropical forests, as decomposers of plant matter and mediators of soil nutrient recycling. Many factors contribute to their distribution. In this study, influence of altitude on termite distribution was assessed in several forest types in Kandy and Knuckles regions. Termites were sampled using the belt transect (2 x 100 m) method and termite abundance was expressed as number of encounters of a given species in a transect. Termites were identified using Regional keys. Feeding habits of termites were deduced from their generic identity. In each forest type, three transects were laid at different altitudes. The 24 transects sampled ranged in altitude from 578-1000 m in the Kandy region and 261-1389 m in the Knuckles region. A total of 60 termite species belonging to 20 genera and three families were documented. From Kandy region 36 species were recorded; *Hantana* (11 spp.), *Gannoruwa* (22 spp.), *Udawattakele* (21 spp.), and from Knuckles region 47 species; Upper montane forests (0 spp.), Lower montane forests (23 spp.), Lowland semi-evergreen forests (28 spp.), Lowland wet evergreen forests (22 spp.), *Pinus* plantations (17 spp.). Overall, *Odontotermes guptai* was the most common species, present in 15 transects (261-1094 m), followed by *Odontotermes* sp.5 in 11 transects (584-1085 m). They are wood feeding foragers and their abundance decreased with increasing altitude. At high altitude (>900 m), *Ceylonitermellus hantanae* and *Dicuspiditermes* sp.1, which are non-foraging soil feeders were the most common and abundant species. At lower altitudes (<500 m), foraging wood feeders, *Nasutitermes kali*, *Nasutitermes* sp.1 and *O.guptai* were the common and abundant species. At mid altitude (500-899 m), *Odontotermes* sp.5 was the most common and abundant species. The data matrices of species specific termite abundance and altitude when subjected to RELATE test (PRIMER software) inferred a significant correlation ($\rho=0.411$, $p=0.63$). Regression analysis indicated a significant inverse relationship ($r^2 = 0.5$, $P = 0.001$) inferring that species richness and total abundance of termites decrease with increasing altitude. Feeding habits of termites are likely to determine their distribution in different altitudes. Decreasing temperatures experienced with increasing altitude, lower the metabolic rate of termites and foraging becomes energetically expensive. Hence, only a few termite species that are non-foragers and feed on live trees or soil are confined to high altitude. Establishing plantations at high altitudes therefore would result in species feeding on live forest trees becoming pests of monoculture plantations and soil feeders that contribute to soil fertility being adversely affected.

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