

IMPACT OF CARDAMOM CULTIVATION ON FLORISTIC DIVERSITY OF MONTANE FORESTS IN THE KNUCKLES RANGE

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This study was carried out to investigate the impact of cardamom cultivation on the structure and floral diversity of the montane rain forest in the Knuckles range. The study was confined to the Kelebokka area of the Knuckles forest range.

Stratified random sampling was carried out in the relatively undisturbed natural forest and in the forest disturbed by cardamom cultivation, lying close to each other. Ten, 15m x 15m plots were marked in the area and the vegetation over 1 m height was enumerated. The dbh of individual trees were measured if over 3 cm.

The total density of woody trees was higher in the natural forest than in the disturbed forest. Shannon's Diversity Index, Species Richness, and Evenness values for the natural forest were 9.54, 3.204 and 0.73 respectively and 7.56, 2.122 and 0.52 for the disturbed forest. These findings indicate that the natural forest is more diverse than the disturbed forest in terms of floristic composition. In terms of number of species, the two most dominant families in the two forest types were Lauraceae & Rubiaceae but species dominance according to tree density differed in the two habitats. Abundant species in the natural forest were *Lasianthus oliganthus*, *Gaertnera walkeri*, *Psychotria nigra*, *Hedyotis trimini*, *Eurya acuminata* and *Calophyllum trapezifolium* whereas *Eurya acuminata*, *Acronychia pedunculata*, *Camellia sinensis*, and *Macaranga peltata* were the most abundant in the disturbed forest. Endemicity of trees in the natural forest was 65% and was 22% in the disturbed forest. Of the 160 endemic plants recorded from the Knuckles area, 19 species were found in the disturbed forest while 39 species were found in the natural forest. Of them, *Eleocarpus montanus*, *Antidesma pyrifolium*, *Syzygium micranthum*, *Calophyllum tomentosum*, and *Lasianthus oliganthus* are rare species according to the IUCN Red List of threatened plants. Furthermore, *Eugenia cotinifolia* and *Gordonia zeylanica* found in the natural forest are endangered species.

Although human interference was evident in the natural forest, it still has high plant diversity. Cardamom cultivation may have a short-term and long-term impact on the montane forest ecosystem. Immediate effects on the density of individuals, density of endemics and floristic richness was evident. For the cultivation of cardamom, trees including seedlings and saplings are removed to obtain light and space. Pioneer species would grow and reach the canopy changing the species composition and diversity of the canopy vegetation. Cardamom cultivation could wipe out endangered and rare species from this ecosystem.