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Diversity of Trees at Pulau Timun Forest Reserve in Langkawi Archipelago

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Introduction. The small islands that line the coast of Peninsular Malaysia are mostly forested and are likely to have a very important ecological role [1]. Such islands often provide heaven of endemics, endangered and migratory species as previously found on similar forested islands in Southeast Asia [1]. Langkawi Archipelago situated on the northwestern tip of Peninsular Malaysia, has been noted to support a number of rare and endemic plant species [2]. According to [3], islands tend to have higher percentage of endangered species than other areas due to small geographical area available for each species. [4] noted that the information on the distribution and abundance of flora is very vital in order to understand the patterns of speciation, extent of plant diversity across the small islands and thus to draw long term plans for their conservation and management for future generations. The main focus of this study is to determine the diversity and structure of tree communities on the small island of Pulau Timun Forest Reserve.

Materials and Method

Study Area. The study was conducted in Pulau Timun Forest Reserve of Langkawi Archipelago, Kedah (Figure 1). Pulau Timun FR was gazetted since 29 May 1937 which covers an area of 857 hectares. The location of the study plots were at 06° 17.523' - 06° 19.487' N and 99° 53.118' - 99° 56.345' E. Ten rectangular plots of 25 m x 20 m (total 0.5 ha) were established at study area by taking into consideration the suitability of the area such as accessibility from the seashore, less disturbed by humans as well as avoiding the very steep limestone hill that might be dangerous to the researchers. All trees with diameter at breast height (DBH) of 5 cm and above, occurred in all plots were enumerated using a diameter tape based on techniques recommended by [5]. All specimens of each measured tree were collected for specimen voucher and species identification using keys in *Tree Flora of Malaya* [6]; [7] & [8]; [9]. All the identified voucher specimens were deposited in the University Kebangsaan Malaysia Herbarium (UKMB).

Data Analyses. All specimens that have been identified were tabulated and summarized into family, genus and species representing the taxonomic composition of the forest areas. Several abundance parameters were determined to describe the tree community structure of the study areas i.e. Density per hectare (d) and basal area (BA) of occurrence for each species or family. Tree basal areas (BA) were calculated using formula by [10] as follows: $BA = \pi D^2 / 4$. The importance value index (IV_i) was calculated by using formula by [11] as summing up the values of relative density (R_d), relative dominance (R_D) (based on BA) and relative frequency (R_f) of each species or family [$IV_i = (R_d + R_D + R_f) / 3$]. To determine species