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SPATIAL DISTRIBUTION PATTERNS OF POTENTIAL MOTHER TREES IN SECONDARY FOREST OF AYER HITAM FOREST RESERVE, PUCHONG

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Abstract: The sustainability of timber trees with good traits is essential to preserving the quality of timber. It is a good forestry practice to record the spatial distribution of mother trees to facilitate the collection of seeds and to track the variability of such traits and origination. We determined the mother trees based on phenological characteristics and recorded the locations of mother trees in a secondary forest in Ayer Hitam Forest Reserve (AHFR), Peninsular Malaysia using a GPS. We assessed the tree's distribution pattern using Average Nearest Neighbour (ANN) and map visualisation. ANN helps indicate the localities of high ecological importance or habitat suitability by detecting areas of mother tree assembly, thus helping to guide conservation efforts to protect critical habitats. Of the 12 sites assessed, nine were identified as having random mother tree distribution, while three had dispersed distribution. The most common species identified and recorded as mother trees in the AHFR (163 species) were from the Dipterocarpaceae family. A sustainable supply of seeds from these species is vital for the long-term sustainability of tropical forest ecosystems, at least in Malaysia. The eight species from the non-Dipterocarpaceae family possess high timber and non-timber values. Since the AHFR is susceptible to illegal human activities, such as those of poachers and encroachments by the forest-dependent communities, field works and studies were undertaken by students doing practical training and researchers themselves. Through repeated observations over time, ANN could help monitor the status of the mother trees which would aid in forest management strategies. Implementing government policies pertaining to forestry practices is necessary for the long-term ecological persistence of the mother trees.

Keywords: ANN analysis, community assembly, phenology, seed dispersal, mother tree