



240/B

Determination of floristic diversity in Adam's Peak mountain along the altitudinal gradient

S. M. Pawuluwage,^{1*} H. S. Kathriarachchi,¹ and A. M. A. S. Attanayake²

¹Department of Plant Sciences, University of Colombo, Colombo 03

²Royal Botanic Gardens, Peradeniya.

A fundamental characteristic of mountain ecosystems is the drastic change in vegetation from the base to the summit of mountain. The Kuruwita-Erathna trail in Adam's Peak mountain consists of three elevation ranges as lowland range (below 900 m), sub-montane range (900–1500 m) and upper-montane range (above 1500 m). This study is focused on determining floristic richness related to altitudinal variation in Adam's Peak mountain with special emphasis on Kuruwita-Erathna trail. Sampling was carried out in 55 randomly placed plots (10×10 m²). During sampling, 15, 19 and 21 quadrates were placed in lowland, sub-montane and upper-montane ranges respectively to determine the floristic richness along the altitudinal gradient. Floristic diversity of the tree, understory and ground layers was determined separately by calculating stand variables for each layer. The highest species richness was recorded in sub-montane region with 123 species of 67 genera and 41 families. Lowland and upper montane regions contained 76 and 114 species respectively. Among the three different altitudinal regions, endemism was highest in sub-montane region (70 %) followed by upper-montane region (64%) and lowland region (61%). Out of the total 232 plant species, 38 species are restricted to lowland range and 60 and 73 species are restricted to sub-montane and upper-montane ranges respectively. There are 61 plant species that were recorded in more than one altitudinal range.

Adam's Peak mountain shows mid-elevation species richness pattern with relation to the elevation. When considering the lower elevations, *Melicope lunu-ankenda*, *Calamus digitatus* and *Acrotrema walkeri* record the highest IVI values in the tree, understory and ground layers respectively. The tree layer of the sub-montane range was dominated by the *Melicope lunu-ankenda* while understory and ground layer were dominated by *Agrostistachys indica* and *Arundinaria debilis* respectively. In the highest elevation level, *Palaquium rubuginosum*, *Agrostistachys indica* and *Arundinaria debilis* record the highest IVI values in the tree, understory and ground layers respectively. According to the values of the Shannon, Margalef and Menhinck's indices, diversity is highest in the sub-montane region followed by upper-montane and lowland regions. Cluster analysis and PCA identified two distinct floristic communities as one in lowland region and other one in highland regions.

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E-mail: supun.madhumadhawa@gmail.com