(ID 139)

Floristic Diversity, Composition and Conservation Importance of Flora in the Salgala Forest Reserve in Kegalle District, Sri Lanka

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Abstract

Salgala forest (Ketagilla Mukalana) reserve (SFR) is a small, isolated lowland wet evergreen forest situated in Kegalle district was declared as a government reserve in 1817 due to its rich plant and animal diversity. This FR is under threat of degradation due to different anthropogenic activities. For conservation and protection measures, a prior knowledge on the floristic composition and diversity of the forest is crucial. This study was carried out to assess the species diversity and composition of FR along an elevational gradient (high elevation- above 300 m, mid elevation- between 250 m-300 m, and low elevation- between 200 m-250 m). The stratified random sampling was carried out due to the heterogeneity of terrain. Therefore 7 plots with the dimensions of 10 m×10 m were used for measuring overstory trees having girth at breast height (GBH), GBH>=30 cm and height>=1.5 m. Total 49 sub-plots (7 sub-plots per one major plot) of sizes 2 m×2 m (4 plots) and two plots of sizes 1 m×1 m were used to assess the diversity of understory vegetation including the herbaceous plant species (GBH<30 cm, height<1.5 m). The Hutcheson's t-test was used to analyse diversity variation in standing vegetation along the three elevations categories. In this study, a total of 51 plant species were identified belonging to 38 families and 47 genera. Out of the species recorded, 28 (55%) were identified as endemic species while 23 (45%) are indigenous. Also, *Zeuxine regia* and *Anoechtochilus regalis,* which are nationally vulnerable plants were identified in SFR. Species belonging to family Annonacea were identified dominantly in overstory vegetation while species belonging to Stemonuraceae and Asparagaceae were dominated in understory vegetation. For the standing vegetation, mid elevation has recorded the highest diversity value for Shannon Weiner diversity index (H') (H'=3.5390), while the high elevation has recorded the least diversity value (H'=2.7659). The elevation and slope-related factors including soil erosion, surface water runoff, soil nutrition depletion due to the irregular surfaces with frequent rock outcrops and amount of sunlight received were affected to diversity reduction with increasing elevation. Therefore, differences in plant growth requirements, competitive pressures, human disturbances could be the cause of variance in the vegetation composition that currently exist in these seven sampling sites. Hence, more studies on diversity and composition variations in different landscapes are importance to get the idea of conservation practices in the Salgala FR.

Keywords: Endemic species, Hutcheson's t-test, Shannon Diversity Index, Slope effect