

**Abstract No: BO-38**

**Changes in the composition and diversity of standing vegetation and soil seed bank in a lowland wet evergreen forest**

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The lowland wet evergreen forests in Sri Lanka hold significant ecological and socio-economic value, making it a crucial ecosystem worthy of conservation efforts. Salgala forest reserve (FR) in the Kegalle district is one of the small, isolated forest reserves and home to many endemic plant species. Like many other forest reserves in the country, Salgala FR is also under anthropogenic and natural threats such as habitat degradation, erosion, and invasive species. In order to take protection measures, it is important to assess the amount and trends in biodiversity on the site. This study was carried out to assess the species diversity and composition of vegetation and soil seed bank (SSB) in the Salgala FR along an elevational gradient. Vegetation and soil sampling were conducted at three different elevations: above 300 m elevation, between 250 m- 300 m and between 250 m and 200 m. The stratified random sampling method was carried out due to the heterogeneity of the terrain and vegetation and seven main sampling plots of 10 m x 10 m were laid to assess the overstory vegetation with the individuals higher than 1.5 m and circumference of tree trunks at breast height is greater or equal to 30 cm. Five subplots of 2 m x 2 m and another two 1 m x 1 m sub-sub plots were laid within each main sampling plot to assess the diversity of understory vegetation in two strata. During this study, 70 soil samples (35 kg) were collected from 7 sampling plots and under greenhouse conditions, soil samples were incubated for SSB analysis. Hutcheson's t-test was used to analyze diversity variation in standing vegetation and SSB along the elevational clusters in FR with Shannon Weiner index values. The results indicate a decreasing trend in the Shannon diversity index ( $H'$ ) with increasing elevation for SSB, while the vegetation has shown a different pattern. However, the higher diversity was recorded in mid-elevation for the standing vegetation ( $H'=3.5390$ ), while the higher elevation for both standing vegetation ( $H'=2.7659$ ) and SSB ( $H'=1.4809$ ) has recorded the least diversity values. Higher slopes and soil erosion in higher elevations in the sampling sites and several slope-related factors can have an impact on the differences of diversity in vegetation. And, these differences are due to the amount of sunlight received, lack of water, and nutrient depletion brought on by soil erosion. *Stemonurus apicalis* was identified as the dominant plant species in the standing vegetation. However, *Clidemia hirta* was the dominant species in the soil seed bank in Salgala FR. Hence, variations in the composition of the existing vegetation in these seven sampling locations may be attributed to disparities in germination prerequisites, competitive forces, anthropogenic disruptions, and soil erosion processes.

**Keywords:** Hutcheson's t-test, Shannon diversity index, Slope effect, Soil seed bank, Overstory