

Diversity and Ecological Analysis of Vascular Epiphytes in Gera Wild Coffee Forest, Jimma Zone of Oromia Regional State, Ethiopia

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Abstract : The diversity and ecological analysis of vascular epiphytes was studied in Gera Forest in southwestern Ethiopia at altitudes between 1600 and 2400 m.a.s.l. A total area of 4.5 ha was surveyed in coffee and non-coffee forest vegetation. Fifty sampling plots, each 30 m x 30 m (900 m²), were used for the purpose of data collection. A total of 59 species of vascular epiphytes were recorded, of which 34 (59%) were holo epiphytes, two (4%) were hemi epiphytes and 22 (37%) species were accidental vascular epiphytes. To study the altitudinal distribution of vascular epiphytes, altitudes were classified into higher >2000, middle 1800-2000 and lower 1600-1800 m.a.s.l. According to Shannon-Wiener Index ($H' = 3.411$) of alpha diversity the epiphyte community in the study area is medium. There was a statistically significant difference between host bark type and epiphyte richness as determined by one-way ANOVA $p = 0.001 < 0.05$. The post-hoc test shows that there is significant difference of vascular epiphytes richness between smooth bark with rough, flack and corky bark ($P = 0.001 < 0.05$), as well as rough and cork bark ($p = 0.43 < 0.05$). However, between rough and flack bark ($p = 0.753 > 0.05$) and between flack and corky bark ($p = 0.854 > 0.05$) no significant difference of epiphyte abundance was observed. Rough bark had 38%, corky 26%, flack 25%, and only 11% vascular epiphytes abundance occurred on smooth bark. The regression correlation test, ($R^2 = 0.773$, $p = 0.0001 < 0.05$), showed that the number of species of vascular epiphytes and host DBH size are positively correlated. The regression correlation test ($R^2 = 0.28$, $p = 0.0001 < 0.05$), showed that the number of species and host tree height positively correlated. The host tree preference of vascular epiphytes was recorded for only *Vittaria volkensii* species hosted on *Syzygium guineense* trees. The result of similarity analysis indicated that Gera Forest showed the highest vascular epiphytic similarity (0.35) with Yaju Forest and shared the least vascular epiphytic similarity (0.295) with Hareenna Forest. It was concluded that horizontal stems and branches, large and rough, flack and corky bark type trees are more suitable for vascular epiphytes seedling attachments and growth. Conservation and protection of these phorophytes are important for the survival of vascular epiphytes and increase their ecological importance.

Keywords : accidental epiphytes, hemiepiphyte, holoeipiphyte, phorophyte

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