Fern Species Richness and Diversity in the Forest Ecosystem of Papua New Guinea

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Abstract

This study analyzes the occurrence and composition of ferns along an altitudinal gradient and among different forest types and disturbance regimes in Papua New Guinea (PNG). The assessment was conducted using the monitoring protocol of the National Forest Inventory. The analysis revealed high richness of ferns, with 122 species or morphospecies from 51 genera and 21 families. Among them, 81 species were terrestrial, and 16 epiphytes. The work also highlighted the increasing richness with elevation, both for terrestrial and epiphytic ferns. Elevation was also a significant factor in determining the taxonomic composition. Lowland forest was clearly differentiated from the montane one, which was characterized by epiphytic species form *Drynaria* and *Ctenopteris* genera. Lowland disturbed and primary forests were slightly differentiated in terms of fern composition, the latter being characterized mainly by species of the *Gleichenia* genus adapted to forest margins and gaps, the former by sciapilous species belonging to the *Polypodium*, *Microlepia* and *Pronephrium* genera. In conclusion, this study highlights the richness of ferns in PNG and their effectiveness as a potential

indicator to characterize and monitor forest types and their conservation status with respect to a disturbance regime.