Chapter 1

Vascular plants of the Kaijende Highlands, Papua New Guinea: Taxonomic and vegetation survey

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SUMMARY

The flora of the Kaijende Highlands is described from a rapid assessment survey of its principal montane habitats, with specific emphasis on three vegetation formations: 1) lower montane forest, 2) upper montane forest, and 3) subalpine grassland. Species-level determinations are provided for most of the 759 specimens obtained during the survey. The checklist of inventoried species includes 492 tracheophytic taxa (112 ferns and lycophytes, 6 gymnosperms, 69 monocots, and 305 dicots), from a total of 262 genera.

At least 16 plants are determined as species new to science, including five arborescent taxa, five understory shrubs, two vines, two orchids, and two ferns. Other botanical results are presented with commentary on their presumed significance. The collective findings are distilled into a conservation-focused discussion highlighting the taxonomic and ecosystem value of the most notable plants.

INTRODUCTION

The botanical survey in regional context

Although the true size of its inventory is unknown and subject to considerable speculation, there is no doubt that New Guinea is home to one of the world's richest floras. According to most modern estimates, approximately 15,000–20,000 species are probably present on the island (Davis et al. 1995). Using orchids and ferns as benchmarks for extrapolation, the most recent assessment places the upper limit at 25,000+ vascular plants (Supriatna 1999).

A remarkable feature of New Guinea's floristic diversity is that several groups attain levels of species richness usually seen only on continental spatial scales. Ferns, for example, are represented by an astonishing total of 3,000 species (Parris in press) and orchids by 2,800 species (Vogel and Schuiteman in press). This extraordinary diversity has arisen largely under the influence of one of the most active orogenies on earth. The Central Cordillera has the highest peaks in Malesia and the richest assortment of montane plant life in the Indo-Malayan region. With an estimated 5,000–6,000 species in 9,000 sq. km (Davis et al. 1995), the area centered on Mt. Wilhelm and its environs (including all of the Kaijende Highlands) comprises one of the world's five phyto-maxima for vascular plant diversity (Barthlott et al. 1996, 2005).

Despite Papua New Guinea's (PNG) floristic wealth, our knowledge of this resource is still substantially incomplete. Seven of the 10 species of *Homalium* are known only from single specimens (Craven 1979, Steenis 1982), and of the 50 species of Papuasian *Marsdenia*, 32 are still known just from their type localities (Forster 1995). There are similar examples of sampling gaps in virtually every major plant family. The documentation deficiencies can be attributed in large part to the erratic spatial distribution of past collecting. Although the number of botanical surveys in PNG has increased substantially since 1950, many areas remain practically unknown (Frodin 1990).