

Chapter 4

Orchids and Orchid Bees of the Brownsberg, Nassau and Lely ranges

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SUMMARY

A total of 190 species of orchids have been recorded from the Brownsberg, Nassau and Lely ranges: 141 from Brownsberg, 70 from Nassau, and 96 from Lely; 16% are known from all three ranges, and 31% only from Brownsberg. The lower orchid richness figures for Lely and Nassau can be regarded as artifacts due to low collecting effort. Compared to other sites in the Guayana Shield region, Brownsberg has the second-highest recorded orchid species richness. The available information suggests that a number of orchid species that are very rare in the region occur at these three ranges, e.g. *Beloglottis costaricensis* (Brownsberg), *Cranichis diphylla* (Lely) and *Quekettia papillosa* (Nassau).

There was no significant difference between the three ranges (at $p < 0.05$; based on test of independence) in the proportion of species assigned to different elevation classes, but there were significant differences in the proportion of species assigned to different substrate classes. Lely with 16% ground and epilithic orchids diverges from the other two ranges, which each have 4-5% of such orchids. A high proportion of highland orchid species – ca. 30-40% – may be the characteristic that distinguishes these ranges with elevated plateaus from areas that are true lowlands, and may explain the high species richness. There may be a trend that highland orchids become more important as the height of the range's main plateau increases. This and the greater importance of ground and epilithic orchids at Lely suggests that Lely may be the most divergent, unique and species rich of the three ranges.

A total of 34 species of orchid bees was collected at the three ranges: 13 at Brownsberg, 22 near Lely and 23 at Nassau. The frequency of bees with orchid pollinaria differed significantly between Nassau and a lowland location near Lely. At the first location, none of the bees carried pollinaria, while at the second, the figure was 13%. More sampling needs to be done before a detailed comparison of the bee faunas of the three ranges can be made. The high frequency of orchid bees with pollinaria at Nassau is unusual, and may be linked to the habitat in which most sampling took place: the low elevation cloud forest of the submontane plateau.

It is recommended that rapid orchid inventories of Nassau and Lely are undertaken, in which herbarium specimens are collected as well as live specimens. Data resulting from these inventories should be processed together with existing data in relation to the Brownsberg. More orchid bee samples must be obtained from all three ranges, and the relationship between orchids and orchid bees at these ranges should be investigated.

Special protection should be given to the submontane habitats (400 m and higher) at all three ranges, most urgently so at Lely; representative parts of the Nassau and Lely ranges require a degree of protection. The Brownsberg submontane zone where a mining concession is located also requires adequate protection.

INTRODUCTION

The Orchidaceae – the orchid family – is the largest family of flowering plants in the world, with at least 20,000 species worldwide and 7,000 in the Neotropics (see Roubik and Hanson