

Frett, Terrence J., "Diversity, Abundance, and Distribution of Epiphytic Orchids on Fallen Trees in cloud forests of Llano bonito, Chirripó National Park and Herradura, Perez Zeledón, Costa Rica." Advisor: Walter A. Marin. Lawrence University. 2009.

The aim of this study was to evaluate and compare the diversity, abundance, and distribution of epiphytic orchids on fallen trees in two primary cloud forests: Llano bonito, Chirripó National Park, and Herradura, Perez Zeledón, Costa Rica. A side chemical study was done to compare soils vs. aerial environment, for better understanding of available nutrients in the epiphytic habitat. In total, fourteen and eight trees were studied in Herradura and Chirripó respectively. Each fallen tree was broken up into six zones, in order to study the identity, distribution and abundance of orchids throughout the tree. All orchids were identified at least at the genus level, and recorded as to where in the tree they were found. A total of 13,741 orchids were found in all trees, 10,324 in Herradura and 3,417 in Chirripó. In general there were more orchids in the middle and outer parts of the canopy, 4,426 (32.21% of all individuals) in the middle part and 4,458 (32.44%) in the outer section. However, in the outer part of the canopy a drop in diversity was observed, with only 38 species (19.09%) present in this zone, compared to 58 species (29.15%) found in the middle part of the canopy. The selected forests for this study differed in their altitude; Herradura and Chirripó were found at averages of 1883.12m.a.s.l. and 2337.293 m.a.s.l. respectively. There were also differences in species composition at those locations, 48 different morphospecies were seen in Herradura, and 14 in Chirripó. Interestingly, the forests only contained 3 morphospecies in common. Moreover in Herradura 22 different species were found, one being *Maxillaria variabilis*, as compared with only 4, for example *Maxillaria robledeae*, in Chirripó. The two forests once again only held, 3 species in common, one being *Scaphyglottis acostaei*. Herradura de Rivas was found to have a higher abundance and diversity of orchids compared to Chirripó. Herradura de Rivas held an average of 688.27 individuals, compared to a much lower average of 413.88 orchids found on the trees in Chirripó. Furthermore the trees in Herradura de Rivas held an average of 9.73 different species of orchids on each, while those in Chirripó each only contained an average of 5.29 identified orchids. The two most common genus found in both forests were *Scaphyglottis* and *Maxillaria* with 3305 and 3203 individuals respectively, representing 47.36% of all orchids found at both forests.