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PE-7 Comparative studies on community ecology of two types of subtropical forests grown in silicate and limestone habitats in the northern part of Okinawa Island

S. M. FERROZ and A. HAGIHARA

Faculty of Science, University of the Ryukyus

In order to compare woody species diversity, floristic composition and spatial distribution of trees on the basis of the architectural stratification between two types of subtropical forests in the northern part of Okinawa Island, tree censuses in a 750 m² plot in silicate habitat and a 1000 m² plot in limestone habitat were performed. It was found that both of subtropical forests grown in silicate and limestone habitats consisted of four architectural layers. A total of 26 families, 43 genera, 60 species and 4684 individuals in the silicate habitat, and 31 families, 51 genera, 62 species and 4798 individuals in the limestone habitat, were recorded. As a result, the floristic composition in the silicate habitat was quite different from that in the limestone habitat in terms of similarity index ($C_n = 0.07$); approximately only one-sixth of the species were in common. The floristic composition among layers was more similar in the silicate habitat than in the limestone habitat. *Castanopsis sieboldii* (Mak.) Hatusima was the most dominant species in the silicate habitat, whereas it was completely absent in the limestone habitat, where *Cinnamomum japonicum* Sieb. was the most dominant species. The potential number of species was lower in the silicate forest (62) than in the limestone forest (71). However, the woody species diversity was higher in the silicate forest than in the limestone forest. The values of H' and J' tended to increase from the top layer downward except for the bottom layer in the silicate forest, while this increasing trend was the reverse in the limestone forest. It follows that high woody species diversity in the silicate forest depends on small-sized trees, whereas in the limestone forest it depends on big-sized trees. The spatial distribution of trees in the forests was random in each layer, except the top layer, where there existed a double-clump structure. High degree of overlapping in the spatial distribution of trees among layers in both of the forests suggested that light can not penetrate easily to the lower layers, so that understory trees might be shade-tolerant species. Mean tree weight decreased from the top toward the bottom layer, whereas tree density increased from the top downward. It was concluded that this trend was general in both of the forests, and this trend was termed the quasi mean weight–density trajectory of architectural stratification.