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メタデータ	言語: 出版者: 琉球大学21世紀プログラム 公開日: 2007-07-10 キーワード (Ja): キーワード (En): 作成者: Feroz, S.M., Hagihara, A., Yokota, M. メールアドレス: 所属:
URL	http://hdl.handle.net/20.500.12000/840

PE-10 Woody species diversity and floristic similarity in relation to the stand stratification of a subtropical rain forest in the northern part of Okinawa Island

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On the basis of stand stratification, stand structure and woody species diversity of a subtropical rain forest grown in a silicate habitat, Okinawa Island, were investigated. The forest stand consisted of four layers. A weak similarity in floristic composition existed between the top and the lower three layers, though around one-third of species were common between them. Mean tree weight decreased from the top toward the bottom layer, while tree density increased from the top downward. This trend resembled the mean weight–density trajectory of self-thinning plant populations. The relationship of mean tree height to tree density for the upper two layers supported Yamakura's quasi $-1/2$ power law of tree height. The values of the Shannon-Wiener index H' and equitability index J' tended to increase from the top layer downward except the bottom layer. The values of H' and J' were respectively 4.83 bit and 0.82 for trees taller than 0.10 m. The lower layers contained many species relative to their smaller height ranges. High species diversity of the forest depended on small-sized trees in the lower layers. Conservation of small-sized trees in the lower layers, especially the bottom layer, is indispensable to maintain Okinawan evergreen broadleaf forests to be sound.