

Chomphu Boonrodklab 2007: Forest Dynamics Along an Altitudinal Gradient in Doi Inthanon National Park, Northern Thailand. Master of Science (Forestry), Major Field: Silviculture, Department of Silviculture. Thesis Advisor: Mr. Sakhan Teejuntuk, Ph.D. 94 pages.

The purpose of this research was to study forest dynamics along an altitudinal gradient in Doi Inthanon National Park, northern Thailand by emphasizing on the community structure, aboveground biomass and population change during 1999-2006. The results showed that the total of 289 species, 150 genera and 69 families were found in five forest types, DDF, MDF, PDF, POF and HEF. The mean DBH, density and basal area were found to increase with the rising altitude. HEF was found to have largest basal area, density and aboveground biomass while POF, PDF, MDF and DDF had less in all these values respectively. The cluster analysis classified all these 5 forest types floristically into three forest zones and could be clustered into six forest community groups. Various species diversity indices indicated the significant difference among forest groups, being lowest in group I and highest in group IV and group V. Richness indices also showed the similar trend, while evenness indices indicated no significant difference among groups except for the evenness index E_1 which were highest in group V and VI, moderately high in group III and IV and lowest in group I and II. Changes in tree populations during the 7 years period were found to be different in six groups, resulting from tree death and replacement by new recruits. The absolute growth rate was different between groups and it was found that group II was higher than other groups. The relative growth rate in group II was higher than other groups, however depending on successful establishment and survival of the component species of the stands. Group III had the largest density than in other groups and group V had the lowest. In spite of the large gain and loss of individuals, all groups gained in net basal area coverage, about 0.34-7.81 m²/ha during the 7 years period. The aboveground biomass gain in all groups were in the range of 2.69-54.95 ton/ha, by which group II had the lowest and group III had the highest gain. The most remarkable tree death were *Aporosa villosa* and *Wendlandia tinctoria* in group III, *Tectona grandis* and *Xylia xylocarpa var. kerii* in group II, *Litsea dubele* and *Myrsinese miserrata* in group IV, V and VI. Group III had recruitment involved *Aporosa villosa*, *Lithocarpus elegans* and *Castanopsis acuminatissima* as the abundant species. Group II found *Tectona grandis* and *Xylia xylocarpa var. kerii*, which are relatively common species in this group whereas group IV, V and VI are found *Castanopsis diversifolia*, *Cryptocarya dencifolia* and *Rapanea yunnanensis* as the most potential species recruited in the groups respectively besides several unidentified species.

Student's signature

Thesis Advisor's signature

/ /