

Atchara Jingjai 2014: Relationships between Environmental Factors and Plant Species Distribution in Lower Montane Evergreen Forest at Doi Sutep-Pui National Park, Chiang Mai Province. Master of Science (Forest Biological Science), Major Field: Forest Biological Science, Department of Forest Biology. Thesis Advisor: Associate Professor Dokrak Marod, D.Sci. 131 pages.

The study on relationships between environmental factors and plant species distribution in lower montane evergreen forest, LMEF, was carried out at Doi Sutep-Pui National Park, Chiang Mai province, during September to October 2012. The objectives aimed to clarify the forest structure and species composition in undisturbed LMEF and to determine the influences of environmental factors on plant species distribution. The temporary sampling plots, 20 × 50 m, were established along the altitudinal gradient from 900 to 1,600 m asl, total 63 plots. The altitudinal was recorded and soil sample was also collected in every plot for soil property analysis.

The results showed that plant species (diameter at breast height, $DBH \geq 2$ cm) in undisturbed LMEF were 196 species in 134 genera and 56 families. The average of basal area of saplings and trees were 0.68 and 33.02 m². ha⁻¹ while their density were 948.19 and 883.56 tree. ha⁻¹, respectively. The family FAGACEAE had the highest basal area (9.97 m². ha⁻¹) while family LAURACEAE had highest species number (20 species). The diameter class distribution among the trees was the negative exponential growth form, indicating the LMEF would be able to maintain forest structure in the natural process. The ordination analysis by Canonical Correspondence Analysis (CCA) revealed that environmental factors had high correlation on plant species distribution ($r=0.94$). The increasing of altitude is the main factor to determine the presence of the Oaks with pine subtype. While the soil property, especially percentage of clay is the limiting factor to determining the presence of LMEF. The widely distributed species in LMEF, through different environmental factors, were *Castanopsis armata*, *Castanopsis acuminatissima*, *Schima wallichii*, *Helicia nilagirica*, *Vernonia volkameriifolia*, *Styrax benzoides*, *Wendlandia tinctoria*, *Pinus kesiya*, *Anneslea fragrans*, *Prunus cerasoides* and *Vaccinium sprengelii*. Indicating these species groups are appropriated to be used for the restoration program of degraded LMEF.

Student's signature

Thesis Advisor's signature