Structural characteristics, rate of gap formation and turnover rate in dry dipterocarp forest at Sakaerat.

SIRIPA NILROUNG.

Thesis. Kasetsart University., 1986.

ABSTRACT

Structural characteristics, rate of gap formation and turnover rate time in Dry Dipterocarp forest at Sakaerat Environmental Research Station, Pak Thong Chai, Nakhon Ratchasima were investigated during February 1984 to December 1984. Four sample plots of 100X100 m^2 of 1 hectare in 4 subtypes (different community) of the Dry Dipterocarp Forest were studied by subdivided into 400 subplots (10 X 10 m^2). All trees with 4.5 cm. In DBH and over existing in the plots were mapped, species recorded and their trunk diameter at 1.30 m. aboveground were measured for calculating the species diversity, relative density, relative frequency, relative dominance, basal area, importance value index and gap age. Height of the lowest living branch, total height, position and crown diameter of trees were also measured for the analysis of the vertical structure, crown projection, size, number, distribution of canopy gap and biomass. DBH of all dead trees were also recorded and measured for calculating tree age and biomass of dead trees.

The results of the study showed that the vertical structure of this forest could be divided into two layers in all 4 subtypes. The 1st layer was trees with height of above 10.5, 13, 10.5 and 14 m. in plot 1, 2, 3 and 4. The dominant species of the 1st layer were *Shorea floribunda* Kurz, S. *obtusa* Wall, S. *obtusa* Wall and S. *siamensis* Miq. and the 2nd layer was *Shorea floribunda* Kurz, S. *obtusa* Wall, S. *obtusa* Wall and S. *floribunda* Kurz in plot 1, 2, 3 and 4. The five important tree species : *Shorea floribunda* Kurz, *Quercus kerrii* Craib, *Pterocarpus macrocarpus* Kurz, *Shorea obtusa* Wall and *Xylia xylocarpa* Taub in plot 1 was recognized as *Shorea floribunda-Quercus kerrii* community type while *Shorea obtusa* Wall, S. *siamensis* Miq, *Pterocarpus macrocarpus* Kurz, *Xylia xylocarpa* Taub, *Mangifera caloneura* Kurz in plot 2 was recognized as *Shorea obtusa-Shorea siamensis* community type while *Shorea obtusa* Wall, *Pterocarpus macrocarpus* Kurz, *Sindora maritima* Pierre, *Dipterocarpus intricatus* Wall, *Morinda coreia* in plot 3 was recognized as *Shorea obtusa-Pterocarpus macrocarpus* community type and *Shorea siamensis* Miq, S. *floribunda* Kurz, *Quercus kerrii* Craib *Pterocarpus macrocarpus* Kurz, *Sindora maritima* Pierre, in plot 4 was recognized as

Shorea siamensis-Shorea floribunda community type. Diameter and height distributions of all trees in the 4 subcommunity types were L-shape and bell shape respectively, suggesting trees as being in a stationary stage or well regeneration.

The mean area of canopy gap in four hectare plots (4 subtypes) of dry dipterocarp forest were 98, 82, 110 and 105 m^2 in plot 1, 2, 3 and 4. There were approximately 19.6, 27, 27.4 and 26.7 percent of total land area. These findings supported the presumption that trees regenerate in the gaps made by the fallings or death of one or several canopy trees. The concentration of gap formation in particular years was not observed. On the average 0.38, 0.88, 0.58 and 0.77 canopy trees per hectare died in plot 1, 2, 3 and 4 and the gap area of 0.36-0.73, 0.50-0.10, 0.51-1.02 and 0.42-0.84 m^2 per hectare in plot 1, 2, 3 and 4 were made annually. The turnover time of the canopy layer in the forest, which was calculated from the rate of the gap formation were 122-244, 81-162, 79-158 and 100-199 years in plot 1, 2, 3 and 4. The turnover time was comparable to that calculated from the annual increment or death rate based on biomass of dead trees and the biomass of the forest. Sapling and seeding of the important tree species will regenerate in the gap and will grow well to become the canopy trees in the future.