Studies on the dynamics of dry dipterocarp forest.

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ABSTRACT

Studies on the dynamics of dry dipterocarp forest were carried out in Sakaerat Environmental Research Station (SERS) since 1984. This interim report summarized on several measures of stand structure and some aspects of forest dynamics within the period of 9 years. The studies were conducted in 4 permanent sample plots of each 1 ha square shape in 4 association types of dry dipterocarp forest. Tree census was made on every individual tree with DBH $\geq$ 4.5 cm, numbering tagged, species identified and tree sizes (DBH, H and H_B) recorded since the onset of studies. Crown projection diagram, stem position and stand profile were mapped and sketched for the analyses of the horizontal and vertical stand structures. Census was repeated at an approximately 1 year interval for studying on stand and individual growth, death and recruitment of trees reaching the limit size of with DBH $\geq$ 4.5 cm as well as change of stand structure, species composition, species diversity, growth and productivity of stands. Preliminary analysis revealed that the horizontal structure of Sakaerat dry dipterocarp forest showed a discontinuous and less overlapped crown type, creating a considerable large canopy gap. Vertical structure of the forest was found to be composed of 2 layers. Spatial distribution of all individuals showed a random pattern while that of some important tree species, a contagious (clump) pattern. Stand density ranged between 554-733 trunks/ha with 28-33 species abundances. Species diversity of each stand was rather low. Four association types might be recognized accordingly to the IVI of the dominant and co-dominant species of stands, being *Shorea floribunda – Quercus kerr*ii, *Shorea obtusa – Shorea siamensis, Shorea obtusa-Pterocarpus macrocarpus* and *Shorea siamensis – Shorea floribunda* association types respectively. Species diversity indices ranged between 2.73 – 4.26 and lower in species richness and concentration of dominance as compared to some dry dipterocarp forest in other locations but these indices were higher than the secondary dry dipterocarp forest. The species abundance distribution followed well with the logarithmic series model in all stand studied and the tree size

distributions were of the negative exponential types. Dynamics of stand, which had been analyzed so far, was the tree population change in 9 years period. The studies found that numerous trees of Sakaerat dry dipterocarp forest died in all stands but those recruited reaching the DBH $\geq$ 4.5 cm were considerably large in *Shorea obtusa -Pterocarpus macrocarpus* association type. Highest mortality rate was in *Shorea floribunda - Quercus kerrii,* the lowest was in *Shorea obtusa - Shorea siamensis* while the rests were moderate. The studies have not yet included the changes in stand structure of those having DBH $\geq$ 4.5 cm. Moreover, the dynamic aspects of stand structure, species composition, species diversity, other quantitative ecological parameters as well as growth, regeneration and productivity of stands have not yet been analyzed although some data were already available but some more field data were still needed to be further monitored. These data will facilitate for the accurate and reliable conclusions for the benefit of an appropriate suggestion to formulate the management and conservation guidelines of this important forest type.