

A Case Study on Forest Harvesting, Damage, Structure and Composition Dynamic Changes of the Residual Stand for Dipterocarps Forest in East Kalimantan, Indonesia

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Forest harvesting is an important intervention factor on the environment. Together with Indonesian Selection Cutting and Planting (TPTI)-system, they ensure the survival of the natural dipterocarps forest in Indonesia, by harvesting commercial trees with diameters above 50 cm and leaving behind minimal 25 young commercial and healthy trees per hectare distributed uniformly in the area.

The research plots are located on forest concession areas of PT. Narkata Rimba and PT. Kiani Lestari, East Kalimantan, Indonesia. They consist of 4 permanent plots at PT. Narkata Rimba and 8 at PT. Kiani Lestari. The size of each plots is 100 x 100 m. The research began in 1992. The remeasurements are conducted annually.

The observations and analysis had been made on the effects of forest harvesting with TPTI-system on the residual stand of dipterocarps forest and it's relation to the damages, structure and composition dynamic changes, natality, mortality, growth after wood harvesting, and the sustainability of the logged over forest.

The research indicates that the levels of residual stand damages (2845%) correlate to the logging intensity and the incident of damages to small trees is greater (ca. 80%). Most of the damage trees are heavy injured (ca. 85%). Harvesting cause decreases of biodiversity (lost of some species) but do not change the structure of the stand. It takes about 14 years after wood harvesting, that the biodiversity will be as before.

The high mortality of small trees occurs during the harvesting year 6.026.6% and one year after harvesting 2.013.6% but it decreases drastically in the third year 0.73.6%. The mortality and natality of seedlings are irregular.

Base on the linear regression equation of logged over areas the average growth of commercial trees is 2.97 m³/ha/year. The increment of trees with diameters greater than 10 cm in the logged over areas one year after wood harvesting are as follows: commercial dipterocarps species 0.80-1.25 cm/year, commercial non dipterocarps species 0.551.11 cm/year and non commercial species 0.621.01 cm/year.

Key words: forest harvesting, damage, dynamic changes, sustainability.

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