

E-3 Changes in Physical Processes of Disturbed Forest

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Abundance of termites and wood decay fungi as decomposers were censused or manipulated in natural and regenerate forests of the Pasoh Forest Reserve, a lowland rain forest of peninsular Malaysia to assess effects of logging on soil formation.

(1) Occurrence of wood decay fungi was affected by the substratum conditions: diameters, tree species and decay level. Species diversity was higher in natural forest than in regenerate one. Species number of the fungi increased after massive tree falls, and then slowly decreased, suggesting the tree falls is one of the causes of the higher diversity in natural forest.

(2) In both forests, a fungus-growing termite *Macrotermes malaccensis* was the most dominant among the wood-foraging termites whose diversity was higher in natural forest. Processional termites of the genus *Hospitalitermes* preferred big trees as a foraging site and nested more densely in natural forest where big trees were more numerous.

(3) Termite-removal experiment suggested that experimental removal should be undertaken not with seedlings, but with naturally-grown trees for functionally-dominant termites

Field studies were conducted in Peninsular Malaysia to predict effects of forest disturbance on hydro-meteorological processes. The following results were obtained.

(1) An energy exchange estimation using an observation tower showed that the surface conductance was mainly controlled by solar radiation and specific humidity deficit in a wet season.

(2) A short-term eddy correlation measurement of CO₂ flux gave information on a substantial large uptake of CO₂ by the forest.

(3) Changes in soil properties caused by a disturbance suggested that the runoff generation process might change into frequent occurrences of surface runoff.

(4) Soil chemical properties in catchments, where logging and burning are planned, were classified as Acrisols or Cambisols.