

## E-2 Criteria for biodiversity and sustainable management of the tropical rain forest

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A long-term census of small mammal community was carried out to examine habitat selection in the Pasoh Forest Reserve (PFR), Peninsular Malaysia. Seventeen species were recorded by four-year monthly trappings. Small mammal species were divided into four categories according to their trapability. We placed automatic camera system to reveal mammalian community in relation to their habitats. Fourteen species which visited the baits were identified. The abundance and species richness varied remarkably with their habitats.

Monthly-netting have been conducted at the core area of PFR since 1992 and at the edge of forest since 1996. Mist-net operations were carried out for 3,291 day×net at the core and for 903 day×net at the edge. In order to detect the edge effect, 862 artificial nests with a few quail eggs were set in the understory. Species diversity of birds was low at the edge and high at the core. Predation pressure increased at the forest edge.

Number and species richness of the understory butterflies, flower visiting beetles, bees and soil micro arthropoda were compared between the primary and secondary forests in PFR. The butterfly fauna of the regenerated forest has not been recovered after about 30 years of natural regeneration. Number of the flower visiting beetles was not different between the natural and regenerated forests. Bee community structure was strongly influenced by the dipterocarp mass flowering which occurred in 1996. Numbers of Collembola, Pseudoscorpion and Schizomida were fewer in the plantations than in the primary forest. Community structures of the oribatid mites were similar among study site except for plantation.

To clarify the plant and animal interaction in disturbed and non-disturbed patches, canopy structure and gap formation process and their effects on the seedling establishment, plant defense mechanism against herbivore and animal behavior were studied in PFR. Canopy structure were found to be dependent on the soil and topography, whereas the distribution and size of the canopy gaps were found not to be changed between the two census in 1995 and 1997. Mortality and growth of juvenile trees were much influenced by the presence of canopy gaps. The forest appears to be in a equilibrium condition in terms of gap formation rate, but the regeneration after gap formation were strictly regulated by the interaction among the tree seedlings, herbivores and predators.