B-32: Natural regeneration of gaps in a selectively logged area at Morapitiya proposed reserve

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A series of experiments were carried out to investigate the species composition and girth distribution of pioneer and climax tree species in various sizes (small, medium and large) gaps created by selective logging in 1984-85 at Pitakele, in Morapitiya proposed forest reserve, a lowland rain forest, in Ratnapura/Kalutara districts.

Eleven gaps of different sizes were selected for the study. In each gap, 9 plots, 2x2 m^2, were demarcated along N-S and E-W directions. All the species found in plots were recorded and identified. Girth was measured for all seedlings and saplings found within the plots. The height of the saplings and seedlings was also measured.

There were 120 species belonging to 84 genera and 44 families found in all gaps. The 10 dominant families were: Euphorbiaceae, Clusiaceae, Dipterocarpaceae, Melastomataceae, Myrtaceae, Sapotaceae, Lauraceae, Anacardiaceae, Annonaceae and Rubiaceae.

There was a gradual increase in the number of pioneer species and their stem density from small to large gaps. However, this pattern was not shown by climax species. These species showed an inverse-J distribution of gbh (girth at breast height) classes. The individuals of higher gbh classes were found at the periphery of gaps. The number of climax species was higher at the peripheral areas than at the centre of gaps. Number of pioneer stems was higher at the centre of gaps. Light intensity (Photosynthetically Active Radiation- PAR) was varied within (centre and periphery) and between (small, medium and large) gaps.

The gradual increase of the number of species and stem density of pioneers within and between gaps may be due to the increased light intensity and higher Red/Far red ratio which are essential for germination and establishment of pioneer species.

Some pioneer species such as *Macaranga peltata, Schumacheria castaneaefolia* and *Elaeocarpus subvillosus* were confined to medium and large gaps. Most of the pioneers belonging to higher gbh classes, were found at the centre of large gaps. The composition of climax species in undisturbed forest does not seem to change if the size of gaps created by selective logging is within the range of 63-620 m^2 selected for this study.