

FACTORS AFFECTING THE VEGETATION SUCCESSION OF MOIST-DECIDUOUS FORESTS AT SIGIRIYA SANCTUARY, SRI LANKA

G A D Perera

University of Peradeniya, Perdeniya

This study examines the vegetation succession of moist deciduous forests at the Sigiriya sanctuary and some factors affecting for this. Thirty eight 20x20m² experimental plots were established in sites ranging in disturbance history from areas abandoned for one month after swidden farming to forests not known to have been recently disturbed. The vegetation was enumerated while the canopy openness, soil moisture and soil temperature were measured. Seed rain was monitored while the soil seed bank was enumerated three times over a year in four month intervals. Seedling bank was also enumerated in 1x2m² quadrat in each experimental plot. Seed predation was examined by keeping seeds of *Chloroxylon swietenia* seeds in the experimental plots and by continuous observations.

Succession appears to be a process of progressive change in species dominance and loss of less shade-tolerant subordinates rather than accumulation of new colonists. Both seed rain and soil seed bank in all these young successional forests contain many agricultural weed species but the density of seeds of climax species is negligible. Consequently, the seedling bank is very poor and contains many agricultural weed and light demanding shrub species. The soil temperature in young successional forests is higher while the soil moisture is lower than the older successional or high forests. After 18-20 years, the trees are released and shade-out light demanding species. This results in the death of most of the light demanding shrubs and as a consequence, root competition is reduced and more space is available for the establishment of new immigrant climax forest species. The seed rain, soil seed bank and the seedling bank of 20-25 year old forests contain some seeds of climax forest species.

High forests contain many climax forest tree and shrub species but seeds and seedlings of valuable timber tree species are rare in them. High seed predation is one reason for this situation. Seedling bank is very fragmented and mostly contains individuals of climax forest shrub species.

It seems that the studied moist deciduous forests are somewhat degraded and the vegetation succession after a large scale disturbance is a slow process. Therefore, protection and rehabilitation of these forests are vital activities for their perpetuity.