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## Natural Regeneration in Pine Plantations in the Buffer Zone of Sinharaja World Heritage Site

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### Abstract

Plantations of fast growing *Pinus caribaea* in degraded lands have become increasingly common in the recent past as a tool for ecological restoration. In Sri Lanka Caribbean pine was planted on abandoned agricultural lands in the wet zone since the late 1960s (Pereira, 1988) as an effort to counteract land degradation caused by forest clearance and unsustainable use for the cultivation. Because of its ability to grow fast and vigorously in degraded lands, this species is potentially useful in restoration. Caribbean pines are said to improve soil nitrogen status, and their light crown structure allows more light to penetrate into lower strata than other tropical lowland pines (Lamb 1973). From 1978 to 1982, plantations of Caribbean pines were established in the buffer zone of Sinharaja World Heritage Site. They are provided suitable environments for the growth of seedlings of late-successional native trees (Ashton et al., 1997 a, 1997 b, 2001).

This study is to investigate natural regeneration potential beneath the pine plantations in the Sinharaja buffer zone with the distance from natural forest. To investigate the regeneration potential, three main sites were selected and each site was divided into three 100 m\*10 m plots perpendicular to the edge of the natural forest with 50 m gaps. Plots were demarcated 400 m in to the interior of pine plantations on various slopes. In each plot all trees larger than 5 cm in diameter excluding lianas were identified and their height and diameter at breast height (DBH) were measured. A total of 81 species including 35 families were identified in the study. Among the 81 species 15 were climax and 46 were pioneers.

In conclusion, species composition was decreased with the distance from the natural forest. Vegetation represented a mixture of pioneer species and climax species. However, majority of the species was pioneers and climax species were mostly absent. The highest numbers of species were found in site 02 with 57 species. And also a diversity indices was calculated for each site using Shannon index. The highest diversity was recorded in site 2 with 2.925 in value. *Alstonia macrophylla* was the species which the highest Important Value Index (IVI) in every site.

However in three plantation sites *Clidemia hirta* and *Oclandra* undergrowth were found in high densities. Light canopy of Caribbean pines may provide a suitable environment for this *Clidemia hirta*.

**Keywords:** Regeneration, Caribbean pine, IVI, *Clidemia hirta*