THE CLIMATE AND FLOWERING PHENOLOGY OF EIGHT *Shorea* SPECIES IN SINHARAJA RAIN FOREST, SRI LANKA

A THESIS PRESENTED BY

BATANGALA KORALAGE HIMALI CHANDRIKA MUNIDASA

to the Board of Study in Plant Science
POSTGRADUATE INSTITUTE OF SCIENCE

in partial fulfillment of the requirement
for the award of the degree of

MASTER OF PHILOSOPHY

of the

UNIVERSITY OF PERADENIYA
SRI LANKA

2005

THE CLIMATE AND FLOWERING PHENOLOGY OF EIGHT *Shorea* SPECIES IN SINHARAJA RAIN FOREST, SRI LANKA

B. K. H. C. Munidasa

Department of Botany

University of Peradeniya

Sri Lanka

The study was carried out in the Sinharaja rain forest in Sri Lanka. The canopy of Sinharaja rain forest is dominated by species of *Mesua* and *Shorea* spp., of which majority are endemic to Sri Lanka. Flowering of selected individuals had been recorded fort-nightly as a percentage of the observable part of the crown in flower buds and flowers. To understand the climate and the climatic changes of the area, time plots were prepared for three climatic parameters (rainfall, maximum and minimum temperatures and the number of dry days) of the time series (1984-2002). Annual, seasonal and monthly scales of these parameters were studied to find out the differences between El-Niño, La-Niña and normal events. The effect of environmental parameters on flowering was assessed using Spearman rank correlation coefficient.

The results of the present study show strong deviations in all three climatic parameters from the average climate of the study area. Wet season irradiance or a reduction of rainfall during the south west monsoon period was observed in two out of three El-Niño years. The flowering pattern shown by *Shorea* during the study was bimodal with peaks observed in March and May and in November and December. Two flowering patterns were observed among the eight *Shorea* species: annual flowering species and supra-annual flowering. Time of bud emergence among the study *Shorea* species in the community was observed in September, February or August. Bud maturation varied over a period of 1-11 months. Results of the present study also revealed that flowering among the eight *Shorea* species was staggered in a given year. Intra specific synchronization was evident in the flowering of all selected *Shorea* species in Sinharaja. Among the eight *Shorea* species studied, monthly rainfall significantly affected flower bud production only in *S. congestiflora*, *S. disticha* and *S. cordifolia*.