

Title: Tree Demography in the Tropical Rain Forest in Guyana

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Abstract: This book presents the results of a 4-year PhD study on the growth and survival of three tropical rain forest trees in Guyana, and the impact of timber exploitation on the demography of these species. It discusses the role of seedlings in forest composition and evaluates the major factors that affect the course of succession. All demographic stages receive attention from flowers, via germination and vegetative reproduction to seedlings and finally adolescent and adult trees. The distribution, growth and survival of seedlings of *Chlorocardium rodiei*, *Dicymbe altsonii* and *Duguetia neglecta* are compared, dealing with factors that may affect them, such as light and seedling size. Tests were done to find out whether there is a relation between demographic behaviour in deep shade and in well-lit environments, and whether this might explain the co-occurrence of these species. Also, seedling demography of *Chlorocardium* in exploited forest was studied, showing that for *Chlorocardium* seedlings exploited forests are not light at all, and how they cope with the gloom. The last chapter integrates growth, survival and reproduction of these species in matrix models. These models can be set up in a relatively easy way, bridging the gap between ecological research and the practice of forest management. With the help of matrix models, exploited and non-exploited populations can be compared, and the age of tropical trees can be estimated. The book presents the application of such a model for *Chlorocardium rodiei* in logged-over forest. The study shows that the sustainable management of *Chlorocardium* requires intensive attention and post-logging investment. To get a return on these investments, silvicultural management is to be accompanied by other measures. These measures range from improving timber recovery in the forest and at the sawmill, extending the range of utilised species, and optimising the legal framework in which forestry is operating in Guyana, to a more realistic valuation by customers of this unique timber resource.

