

Abstract of the dissertation: “Dispersal of flowering plants on areas of different pre-use in the Central Amazon”

M. Skatulla, Applied Botany, University of Hamburg, Germany

The spontaneous vegetation is subject to continuous alterations during succession. Plant species establish themselves and disappear, resulting in changes in vegetation structure and common plant regeneration mechanisms. The vegetation structure influences the establishment of new plants, while the regeneration mechanisms limit the distance of further establishment within the same or into neighbouring areas.

The mutual effects of vegetation types with different structures and common plant regeneration mechanisms were analysed on Terra-firme sites near Manaus, Central Amazon, Brazil, in a three years old fallow vegetation, a nine years old secondary forest and a primary forest demonstrating different successional stages. The structural traits of each vegetation type are determined by studying species diversity, density of plant individuals, and by calculating the above ground plant biomass. The regeneration mechanisms are characterised by describing fruit dispersal agents, and quantifying seed rain, and resprouting of stems and roots.

The three vegetation types vary in their structural traits. The species diversity, number of individuals and above ground biomass are highest in the primary forest. The fallow vegetation has lower species diversity and above ground biomass than the older secondary forest but is build up by a higher number of plant individuals, especially of *Vismia guianensis* (Aubl.) Choisy (Clusiaceae), which resprouts from lateral roots.

The different structural traits effect on the plant regeneration. The fallow vegetation shows high seed production and high seed dispersal rates within the own area and into the other neighbouring areas, but the seeds do not germinate under the conditions of the secondary and primary forest. The primary forest, in contrast, has low seed production and only few seeds reach the neighbouring areas. However the seeds of primary forest species germinate in all three vegetation types. The secondary forest has a high seed production and seed dispersal rates, similar to the fallow vegetation. The seeds germinate only in the fallow vegetation.

Therefor the three vegetation types differ in the number of newly regenerated plants. In the primary forest only few new plant individuals grew up, germinated from seeds normally dispersed by birds and monkeys. In the secondary forest and the fallow vegetation many new plant individuals grew up. In the secondary forest these plants germinated from seeds manly dispersed by birds and bats. In the fallow vegetation nearly half the of new plants germinated from seeds dispersed by birds, a quarter of the new plants sprouted vegetatively from roots.

On Terra-firme sites near Manaus the vegetative regeneration has high importance only during early succession. Germinating seeds are mostly dispersed by birds from the early to the later successional stages. Seed dispersal by monkeys is restricted only to the later successional stages. Although plants with bat dispersed fruits have high fruit production during early succession, these plant species do not cause further generative regeneration in all three vegetation types.

A complete list of species with collected data about occurrence in the area, vegetative regeneration, germination, flowering and fruit phenology and dispersal is enclosed.

Key words

Central Amazon, dispersal, generative regeneration, primary forest, secondary forest, species diversity, structural traits, succession, Terra-firme, vegetative regeneration