Species richness of mosses and vascular plants in the vicinity of „hard wood“ tree species in primary tropical rain forest

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What character has dispersal and seedling survival of „hard wood“ species *Pometia pinata* and *Pterocarpus indicus*?

Are the seeds able to travel and establish itself further away from mother tree?

Can the old „hard wood“ trees affect species composition in their surrounding?

What is the diversity of vascular plants and bryophytes in tropical primary rain forest like?
Sampling Design

- location of mature tree 
  (*Pometia pinata* or *Pterocarpus indicus*)
- Plots establishment; for every plot was done:
  (i) tree species identification; 
  (ii) measurement of DBH and hight for every specimen higher 1.3m or of DBH more than 1cm; 
  (iii) seedling count for *Pometia* and *Pterocarpus* 
- distance from nearest mature *Pometia* and *Pterocarpus* was measured and *Fish eye* photo was made for every plot
Identification of bryophytes in two of eight plots (for every found species was noted the mikrohabitat – bark, decaying wood, roots, soil)
Seed dispersal and seedling survival of *Pometia pinata*

Seedlings of *Pterocarpus indicus* were found only in 2 from 80 plots.

\[ \text{seeds} = 4.7579 - 0.1571 \times x; 0.95 \text{ Conf.Int.} \]

\[ \text{dist:seeds: } r = -0.1602, p = 0.1558; r^2 = 0.0257 \]

Seedlings of *Pterocarpus indicus* were found only in 2 from 80 plots.
Does the *Pometia pinata* or *Pterocarpus indicus* affect surrounding vegetation? (Is the vegetation dependent upon light going through canopy?)

considering tree basal area (for trees >1.3m or DBH>1 cm):
- vegetation near *Pometia pinata* is significantly different from vegetation near *Pterocarpus indicus* (p = 0.01)
- vegetation do not change with the distance from the central tree and is not dependent upon light going through canopy

considering presence of species none of the measured parameter is significant

CCA (first axis explains 1.6% variability, second 4.6%) (first axis of DCA would explain 3.6%, second 6.4%)
CCA (first axis 6%, second 2.5% of variability); microhabitats explain 11% of variability in species composition; all measured parameters are significant (first axis DCA would explain 7.5%, second 13%)
species accumulation curve

66 bryophyte species; 231 vascular plants

70 epifitic species on 1ha plot (Da Costa (1999), The Bryologist 102: 320 – 326)
Species composition of plots around central trees
Summary

In spite of having heavy seeds *Pometia pinata* can establish itself outside area of the canopy; there were no relationship between distance from mother tree and number of seedlings.

Mature „hard wood“ trees (*Pometia pinata, Pterocarpus indicus*) have significant effect on composition of small trees and on bryophytes.

The occurrence of bryophytes is strongly dependent on microhabitats.

The species richness of bryophytes has different character than species richness of vascular plants; if there isn´t large β diversity the tropical rain forest will not have so many species as is expected.