



Tropentag, October 5-7, 2011, Bonn

“Development on the margin”

## Natural Regeneration Patterns Beneath Canopy of Old-growth Tropical Moist Evergreen Forests in Vietnam

MINH TOAI PHAM, RALPH MITLÖHNER

*Georg-August-Universität Göttingen, Burckhardt-Institute, Tropical Silviculture and Forest Ecology, Germany*

### Abstract

A comparative study of regeneration patterns beneath the forest canopy of old-growth tropical rain forests was conducted in three national parks in varying ecological zones of Vietnam. The main objectives of the study were (1) to describe and compare regeneration patterns within and between different forests and (2) to assess the relationship between some structural factors and abundances of seedlings and saplings. Within one study site, 25 sample plots of 400 m<sup>2</sup> were set up systematically to measure all canopy trees. One 25 m<sup>2</sup> subplot and two 4 m<sup>2</sup> subplots were set up at the centre of each plot to measure all saplings and seedlings, respectively. The study showed significant variation in species and family compositions. Of the 134 sapling and 94 seedling species recorded, only 12.4% and 12.8% species, respectively, were re-found between two forests. 6 out of 37 seedling families and 11 out of 46 sapling families were identified in all three national parks. The diversity indices were found to be least under the canopy of Cucphuong forest, followed by Pumat and Xuanson forests while all diversity indices revealed from sapling storey were similar to higher compared to those revealed from seedling storeys. Generally, seedling and sapling abundances and sapling height were not significantly different between the three studied stands while seedling height and root collar diameter of seedlings and saplings showed statistical difference. The Sorensen's index of similarity indicated a considerable similarity between canopy and sapling storeys in Xuanson and Pumat forests (61–70%). He was higher than the similarity between canopy and seedling storeys (53–58%). Abundances of seedlings were strongly influenced by the height of canopy trees, shrub cover (Xuanson), shrub height (Cucphuong), canopy area and tree density (Pumat) whereas only the leaf area index of canopy trees in Pumat forest showed its influence to sapling density. In conclusion, the variation of regeneration patterns in our studied areas suggests that none of the studied plots can be considered as a representative sample of the tropical rain forest in the entire region and any results revealed from a specific plot along tropical rain forest should be considered accordingly.

**Keywords:** Natural regeneration, species composition, species diversity, tropical moist evergreen forests