P. Klimeš: Diversity and ecology of arboreal ant communities in a tropical lowland forest

The PhD dissertation examines the composition of ant communities in a primary and a secondary forest in New Guinea and its ecological determinants. This appears to be a rather good PhD thesis as it addresses important problems of tropical ecology using novel methods and a unique data set.

One of the central issues of the ecology of ant communities in rainforests is the question of species competition and coexistence, particularly whether the spatial distribution of ants is shaped by inter-specific competition into "ant mosaic" patterns. The present study makes an important contribution to this problem, particularly as it is the first ant study from a tropical rainforest which completely maps ant nest distribution within a continuous patch of rainforest, specifically a patch 0.32 ha in area.

Imagine the difficulties faced by plant ecologists if they were for some reason unable to census contiguous plant plots, and the sudden progress caused by the introduction of such plots in the vegetation science. The ant studies in tropical forests have been precisely in this unenviable position, lacking data on contiguous spatial distribution of ants, at least until the present study. It is true that P. Klimeš had to cut down 684 rainforest trees in order to achieve this methodological breakthrough, but it was clearly worth the effort.

The unique data set was used to analyze the differences in ant diversity between primary and secondary forests, with rather interesting and counter-intuitive results, pointing for instance to low importance of plant diversity for ant diversity, and to species turnover between ant communities on individual trees as a major determinant of high species richness in primary forests.

The analysis of community patterns is followed by the next logical, but rarely taken, step, viz. the experimental manipulation of ant communities. Such community-wide experiments represent the most promising approach in the present-day community ecology. P. Klimeš managed to create almost ant-free patches of primary and secondary forest and keep them in that condition for nine months. This is again a methodologically novel approach, opening new opportunities for the study of ants and their importance in tropical forest food webs. The importance of this method is illustrated by the fact that it was published in *Ecological Entomology* despite the fact that it was applied only as a pilot experiment, with the total number of replicates equal to one. This is thus a rare example of a study where the novelty and general interest trumps the dictates of statistical correctness.

In summary, it is my opinion that the present dissertation demonstrates a combination of field, taxonomic and analytical skills of the author to the extent clearly sufficient for awarding him a PhD degree.

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In Madang, 20 August 2011