

Pontoppidan, Maj-Britt*; Himaman, Winanda; Boomsma, Jacobus J.; Hughes, David P.. Genetic population structure in *Cordyceps*-fungi parasitizing *Camponotus* ants. In: **International Meeting on "Population and Evolutionary Biology of Fungal Symbionts"**, Ascona, Switzerland, 2007. AB-13.

In tropical forests the greatest majority of entomogenous fungi belong to the genus *Cordyceps*. *Cordyceps* is highly pathogenic to ants; infected specimens die within 1-6 days and mycelia appear two days later. Abnormal behaviours are exhibited in hosts infected by *Cordyceps*. Infected ants move away from the nest and climb herbs and grass, grasping them with their mandibles and legs before dying. This, combined with a conspicuous hyphal outgrowth from the host body containing spore-producing bodies, makes ants killed by *Cordyceps* easy to recognize.

In this study five 100 m² plots were established in a forest dynamic plot in southern Thailand. The plots were divided in a 1 x 1 m grid and the number of *Cordyceps*-infected ants was counted in each square. The distribution of dead *Cordyceps*-infected ants is very patchy and the density varies considerably both within and between plots. We performed analyses of the genetic population structure within and between plots. Our aim was to assess whether:

- 1) Ants within a plot were infected with single or multiple strains of *Cordyceps*. If multiple strains exist within a plot, within-host competition and dose-responses might create a higher virulence and hence a higher density of dead ants can be expected in multi strain plots compared to single strain plots.
- 2) Ants from different plots were infected with the same or different strains of *Cordyceps*. If only one strain exists within a plot, but the strains differ between plots, a relationship between strain and density suggests differences in virulence (as recounted by number of dead ants in a plot).
- 3) Gene flow existed between plots. *Cordyceps* spores are shot onto the ground within a short distance of the parent fungus, but spores may also be swept away by the small "rivers" forming along the forest trails during heavy rain. In that case we may expect to find evidence of gene flow from uphill plots to downhill plot along the same trails.

Keywords: *Cordyceps*, genetic structure, gene flow

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