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Richard Čtvrtečka: Host specificity and species diversity in communities of frugivorous insect in lowland rain forest of Papua New Guinea

Supervisor's assessment of the thesis

PhD research by Richard Čtvrtečka is based on exceptionally detailed surveys of insects attacking fruits in lowland rainforests in New Guinea, and focuses on the composition and structure of the plant-frugivore food webs, including herbivore host specificity and species diversity of herbivores hosted by individual plant species. His extensive data set is used to examine the effects plants may have on their herbivores, as well as the effects herbivores may have on plants. In particular, the study includes an analysis of plant species traits, related to fruit and seed morphology, and their effect on fruit and seed infestation by insects. The host specificity of herbivores is also examined in relation to the target plant tissue, either fruit pulp or seeds.

The potential effect on plants is examined in the theoretical framework of Janzen-Connell hypothesis, postulating density-dependent mortality caused by natural enemies of plants. The present study does not examine density dependency directly, but comes to the conclusion that the Janzen-Connell effect caused by insect seed predators is unlikely to be important, even if it exists, due to low infestation of seeds in a majority of plant species. This conclusion is particularly important considering large sample size – 3,500 kg of fruits from 531 woody plant species, and a broad taxonomic scope of the study including Coleoptera, Lepidoptera and partly also Diptera.

R. Čtvrtečka has not been one of my fastest PhD students, considering that this dissertation has taken over seven years to completion. However, I appreciate his perseverance and ability, with his largely taxonomic background, to venture into ecological research areas and, in collaboration with colleagues, to complete what I consider to be a solid piece of research that is well publishable (as demonstrated by Chapter 1) and that advances our understanding of plant-frugivore food webs in tropical rainforests.

In summary, it is my opinion that Richard Čtvrtečka has submitted thesis that fulfils PhD criteria at this university and that he should be awarded PhD degree on its basis.



Vojtěch Novotný
PhD supervisor