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Martin Volf:
Specificity of insect-plant associations and their role in the formation of plant defenses and speciation

The PhD thesis by Martin Volf provides an unusually broad perspective on the ecology and evolution of plant-insect interactions, examining plant-herbivore food webs in temperate-zone forests, and using two speciose lineages of trees, temperate *Salix* and tropical *Ficus*, as model taxa for the study of plant defences and evolutionary dynamics of plant-insect interactions.

The first two chapters combined data on *Salix* phylogeny (rather difficult to obtain) with their secondary metabolites and herbivorous communities. This complex set of data, still rarely available for a diverse lineage of plants, was used to demonstrate that there is no such thing as ideal anti-herbivore refense. Individual herbivore taxa exhibited idiosyncratic responses to various plant defences so that willow species heavily commited to the synthesis of salicylates, their trademark defense alkaloids, ended up with the same herbivore load as the species that did not bother synthetising them at all. This result explains why the salicylate synthesis has indeed been lost repeatedly in the *Salix* phylogeny.

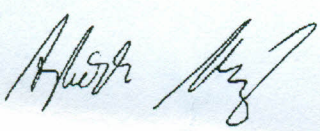
A somewhat similar analysis of trilateral data including herbivores, plant phylogeny and plant chemistry for tropical *Ficus* species from New Guinea revealed phylogenetic divergence in defense syndromes, resulting in related fig species being less chemically similar than expected.

Finally the thesis present extensive surveys of forest canopies in Moravia and Hokkaido, with plant-herbivore food web analysis for three guilds demonstrating for instance the importance of 20-80 million years old lineages in maintaining locally available alternate hosts for leaf-chewing larvae in forest communities. These food webs are of a rather rare kind in community studies as they are plot-based, each representing a full census of 0.1 ha plot of forest vegetation obtained from canopy crane or a heavy duty truck-mounted elevated sampling platform.

M. Volf has produced highly interesting results, which is what matters most. He has been able to publish them well, including in the *Journal of Animal Ecology*. His thesis also demonstrates his ability to form collaborative teams, and his organizational skills in the field were exceptional. M. Volf has managed to operate at the interface of field ecology, taxonomy, molecular biology and chemistry, producing impressively multi-disciplinary studies. He has been an exceptionally independent student, developing his own ideas in the course of his studies; most of his present chapters are not foreshadowed in the thesis outline from the start of the studies in 2012. He was certainly not micromanaged during his studies, partly due to the fact that we have shared the same continent, or at least been on two adjacent continents, during less than half of his studies.

The present dissertation, together with several ongoing collaborations with other laboratories, notable presentations at international conferences, and successful supervision of undergraduate students have convinced me that M. Volf is ready for an independent research career, which is after all the main goal of a PhD study.

In summary, it is my opinion that Martin Volf has clearly demonstrated the intellectual originality and independence, as well as practical and social skills necessary for high quality research, and that he shows a great promise as a scientist.



Vojtěch Novotný
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