PROF. VOJTECH NOVOTNY

Professor of Ecology

DEPARTMENT OF ZOOLOGY, FACULTY OF SCIENCE, UNIV. OF SOUTH BOHEMIA
Branisovska 31, CZ 370 05 Ceske Budejovice, CZECH REPUBLIC
Ph (+420) 385 310 350, Fax (+420) 385 310 354, Email novotny@entu.cas.cz

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Re: Supervisor's Thesis evaluation for Carlo Seifert

Carlo Seifert: Ecological factors affecting the structure, diversity, and specialisation of caterpillar communities in forest ecosystems

Carlo Seifert's PhD Thesis examines various interesting aspects of plant – caterpillar foodwebs in temperate and tropical forests. C. Seifert has examined details of three-dimensional spatial structure of caterpillar communities from understorey to canopy in a North American deciduous forest. Further, in a geographically broader study he compared this forest with forests in Central Europe and Japan, examining caterpillar diversity and host specialization in the context of phylogenetic structure of their plant communities. He has shown, across three continents, how phylogenetic isolation of host plants lowers the diversity and specificity, but not abundance, of their caterpillars. In his excursion to caterpillar assemblages on Ecuadorean bamboos, C. Seifert shows that by far not all caterpillars feed on leaves, and documents changes in their communities with elevation. The final chapter of the Dissertation outlines the methodological approach used to sample complete caterpillar assemblages from forest plots, using forest felling in North America, sampling from a cherry-picker in the Czech Republic and a canopy crane in Japan. This is a multi-authored paper to which C. Seifert contributed by his study conducted in USA.

The Thesis comprises papers published in Oecologia, Ecological Entomology a PlosOne, plus what I consider the most important results, reported in Chapter 2, still in review. It is my opinion that the four chapters of this Dissertation represent an important progress in our understanding of plant-caterpillar food webs in forests. In particular, the study improves our ability to predict the composition and structure of plant-caterpillar food webs in forests on different continents, which is the ultimate test of our ability to understand how these food webs are being assembled, and how they function.

PhD study should not only produce interesting science, but also prepare the student for independent research career. I believe C. Seifert has demonstrated his ability to design, organize and publish high quality research. In particular, he managed a complex research project involving a large team at the US study site, where the study of caterpillars presented here constituted only a smaller part of a complex research agenda. The project included felling 0.2 ha of the forest and sampling plants and several taxa of herbivorous insects by an international team comprising students, technicians and volunteers, all based in rural Virginia. After managing such project for the entire vegetation season, I have no doubt C. Seifert is ready for any managerial challenges he might meet when leading his own laboratory in the future.

In summary, C. Seifert has produced a scientifically interesting and methodologically refined Thesis. He has also demonstrated the combination of personal qualities required to become a successful scientist. He has shown independency, intellectual level as well as practical and social skills needed for a career in research. It is my opinion that Carlo Seifert has demonstrated his capacity for conducting high-quality research and shows an excellent promise as a scientist.

Vojtech Novotny
PhD supervisor