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Innsbruck, 23 august 2010

Ref.: Evaluation of the PhD Thesis of Mgr. Jan Mourek, Charles University in Prague

To
Prof. RNDr. Bohuslav Gaš, CSc.
Dean of the Faculty of Science
Charles University in Prague
Albertov 6,
CZ 128 43 Prague 2
Czech Republic

Dear Prof. Gaš,

enclosed I send you the review for the PhD thesis of Mgr. Jan Mourek.
"*Systematics of oribatid mite families Damaeidae and Gymnodamaeidae (Acari: Oribatida), feeding ecology of selected oribatid species*".

In my opinion the quality of the thesis fulfills the criteria necessary for obtaining the Ph.D. degree and I strongly recommend the thesis of Mgr. Jan Mourek for public defence.

Concerning the defence itself – is my presence necessary? I ask because I am overloaded with urgent projects this summer which should be finished in time. If I sould come I can come only briefly, but before to plan the travel, 2 questions:
1 Do you have the possibility of a videoconference?
2 If not; I just found a flight going to Prague on 23 Sept evening, and back on 24, also in the evening. Does your university covers the expenses?

Best regards

Heinrich Schatz

Dr. Heinrich Schatz
Acarologist and lecturer at the
Leopold-Franzens University of Innsbruck

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This opinion is based on the dissertation of Jan Mourek "*Systematics of oribatid mite families Damaeidae and Gymnodamaeidae (Acari: Oribatida), feeding ecology of selected oribatid species*".

The submitted dissertation consists of seven publications (submitted or published in International Journals) which can be grouped into two clusters – morpho-taxonomical studies on two families (Gymnodamaeidae and Damaeidae), and studies on nutrition biology, especially interactions with Ascomycetes. The extensive introduction gives an outline of the modern studies and literature and leads to the current morphological and taxonomical state and problems of the first part as well as to trophic interactions between oribatid mites and fungi of the second part.

The aims of the first studies are European members of the families Damaeidae and Gymnodamaeidae. Both families "represent moderately diverse families of oribatid mites with about 260 and 70 named species" (Mourek, 2010: p. 8). The detailed taxonomy and systematic classification of both families is still a major problem among oribatologists. In his contributions Jan Mourek presents detailed redescriptions and the classification of several species whose taxonomical status was obscure (e.g. *Gymnodamaeus bicostatus* species group – Contribution 1.1, *Epidamaeus bituberculatus* – Contribution 1.5.). New concepts of classification of generic complexes are presented (*Kunstidamaeus* group – Contribution 1.2., partial revision of the genus *Metabelba* – Contribution 1.4). Phylogenetically important morphological details are also included, as the "ontogeny of the famulus in selected members of Damaeidae and its suitability as a phylogenetic marker" (Contribution 1.3). These studies are part of a large scale project to understand the classification and systematic position of both families and the species concerned.

From my own experience I know the frequent difficulties when working with species of those families. The redescriptions given by Jan Mourek and results of his studies will contribute to a much better and easier use of the species in taxonomic and ecological studies. A remarkable detail of his contributions are the excellent illustrations, both the drawings and the SEM micrographs. It should be mentioned that the contributions presented by Jan Mourek are based on detailed morphological studies. The present trend in the scientific community leads mainly towards molecular methods. However, profound morphological studies on oribatid mites, though quite rare currently, are essential for the interpretation of molecular results and for an understanding of phylogeny and classification as a whole.

The second part of the thesis deals with trophic interactions between oribatid mites and soil fungi. Recent studies demonstrate that mycophagy is widespread in oribatid mites, and oribatid mites influence strongly the fungal communities. The dispersal of viable fungal propagules is of great ecological importance since the oribatid mites facilitate the saprotrophic fungal colonisation of new substrates. The first contribution (2.1.) demonstrates that "true" fungivorous oribatid mites are not more selective fungal feeders than are "unspecialised, panphytophagous" species (in classical sense). It means that there is no graduation in preference of fungi for oribatid mites as whole. On the other hand, several oribatid species prefer particular substrate-specific fungal species, but they are able to switch to other fungi if the most preferred are removed. This pattern probably reduces the competition for food source among coexisting species. Part of the species used for the experiments are Damaeidae.

The second contribution of this part (2.2.) shows the effect of oribatid mites on the dispersal potential of two anamorphic ascomycetes. Two Damaeidae species with a thick cerotegument coat which often harbours fungal spores may disperse fungal species and affect the composition of fungal communities in pine litter. Jan Mourek was responsible for the acarological part of this study as well for the experimental designs and the interpretation of the results.

In conclusion I can state that the scientific work of Mgr. Jan Mourek is an independent and comprehensive piece of original scientific work of high academic standard with regard to the formulation of research questions, methodological, theoretical and empirical basis, documentation, treatment of the published literature, taxonomy of the studied taxon and form of presentation. The thesis contributes new and important knowledge to oribatology and is of an academic standard appropriate for publication as part of the scientific literature in the field. The presented papers are published or submitted in International Journals of high reputation. The content of the presented papers forms a whole. The integrated nature of the work is documented in a separate section (introduction and synopsis of the contributions) of the thesis merging the research questions and conclusions presented in the separate works. The nature of the contributions of the coauthors are presented. The contribution of the candidate to the joint

publications can be identified. The quality of the thesis fulfills the criteria necessary for obtaining the Ph.D. degree.

I strongly recommend the thesis of Mgr. Jan Mourek for public defence.

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