

University of South Bohemia in České Budějovice  
Faculty of Fisheries and Protection of Waters

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**Confidential**

### **Supervisor's Review of USB RIFCH PhD Thesis**

Surname of the PhD student: <b>Martin BLÁHA</b>	Name of supervisor: <b>Zdeněk BRANDL</b>
Title of PhD thesis: <b>Morfologické a molekulární aspekty v rámci rodu <i>Acanthocyclops</i> Kiefer, 1927</b>	

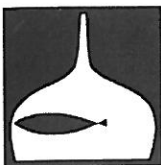
### **OVERALL COMMENTARY ON THE PhD THESIS**

Doctoral student Dipl.-Ing. M. Blaha started his Ph.D. programme in October, 2006. The aim of his project was to examine taxonomic relations of three closely related and morphologically very similar species of the genus *Acanthocyclops* (Crustacea, Copepoda, Cyclopoida), namely *A. einslei*, *A. trajani* and *A. vernalis*. Although the third species was generally accepted as a different of the other two, at least by most zoologists, the first two species passed through a long history of synonymy and changes of their mutual relations, being placed either under another species, *Acanthocyclops robustus*, or sometimes partly identified with the North-American species *Acanthocyclops americanus*. Their clear differences in the habitat preferences and life history were well known and published. Also, their reproductive isolation was known for almost half a century.

In this situation, Mirabdullayev and Defaye (2002, 2004), again using just morphological characters, described *A. trajani* and *A. einslei* as new species and separated them from the North European populations described as *A. robustus* by Sars in 1863. Now the only step necessary to prove the taxonomic separation of all the mentioned species was to examine the relations of these species using methods of molecular biology. Exactly this was the main task for Mr. Blaha. For the beginning of his work, he received just the complete list of all literature existing on this group of cyclopoid copepods

Although marine calanoid copepods are extensively studied using DNA and RNA analyses, cyclopoid copepods are known to be more difficult to handle. Thus, it took some time to achieve the functioning protocol for the procedure used. Fortunately, another laboratory worked on the same problem using material from different localities and populations: Miss Jana Slouková, a Master-Programme student at Charles University, working with Drs. M. Černý and A. Petrusek, studied the same group of species. She succeeded in looking for the convenient procedure and defended her Master thesis in 2008 proving the genetic separation of the mentioned species based on differences in 12S rRNA. This brought great progress in the effort to find a convenient procedure and resulted into a joint paper by Bláha, Hulák, Slouková and Těšitel (Zoologica Scripta, 2010) in which the other two authors are responsible for phylogenetic and statistical data analyses. Both 12SrRNA and 18SrDNA were examined. The paper by Bláha et al. makes the first part of the theses.

The second part of the theses consists of the manuscript of extensive paper by M. Bláha (22 pp. of the MS) describing the details of morphology of the developmental stages of *A. trajani* and *A. einslei*. The paper is submitted and in progress close to be accepted for publication. It brings the basic description of morphology of later developmental stages of these two species based on the material from the laboratory cultures of specimens taken from one field population of each species. The paper is based on very time consuming and tedious, although rather descriptive work. It represents the first and inevitable step which had to precede any future evaluation of the variability within each of these species.



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Dipl.-Ing. M. Bláha worked during his doctoral programme quite independently and had to solve new and rather complicated methodological problems. He received hardly any more support of his supervisor than the literature and few advices. His two papers presented in his theses bring new data which represent substantial progress in the knowledge of the taxonomy of cyclopoid copepods. Thus, I recommend his theses to defense.

**FINAL RECOMMENDATION**

- can be recommended for defence of PhD Thesis - Yes  
 can be recommended with reservations for defence of PhD Thesis - No  
 can not be recommended for defence of PhD Thesis - No

České Budějovice, April 29, 2011.

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Date and place

Prof. RNDr. Zdeněk Brandl, CSc.,  
Professor Emeritus

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surname and signature