Abstract

Cyclopoids are together with Calanoids and Harpacticoids a part of the largest, very diverse group of crustaceans and the most numerous aquatic metazoans of the world. The history of their research goes as far back as to the beginning of 19th century when the first cyclopoid copepods were described. The taxonomy of cyclopoids started to develop gradually since that time, adding new and more detailed methods and morphological characters, as well as a certain degree of taxonomical confusion. In last decades, the molecular-genetic techniques of DNA sequencing have become available offering a new independent tool for taxonomists. This work contains different studies concerning the morphology, taxonomy, ecology, distribution and colonisation of cyclopoid copepods, with the use of molecular tools as a uniting element.

Chapter 1 of this thesis summarizes basic knowledge about the taxonomy, morphology and biology of cyclopoid copepods and introduces the following chapters containing four studies presented as single publications. The taxonomy of copepods of the genus *Cyclops* is based mainly on the morphology which is sometimes ambivalent and some of the most problematic species groups are presented here. **Chapter 2** presents our unique results, the first reconstruction of phylogenetic relationships among 15 *Cyclops* species based on a comprehensive dataset of DNA sequences of six mitochondrial and nuclear markers. Additionally, a summarization of morphological microcharacters useful for species delineation is provided. In **Chapter 3** the mitochondrial sequence variation of two crustacean species, the cyclopoid *Eucyclops serrulatus* and the cladoceran *Daphnia longispina* from East European mountain lakes is compared, and their dispersal ability and patterns of colonisation are discussed. **Chapter 4** questions the cosmopolitan distribution and possible anthropogenic translocation of a freshwater copepod *Macrocyclops albidus* using molecular and morphological traits. The last paper, presented in **Chapter 5**, is focussed on the West Australian *Diacyclops* species of the *alticola*-group, and discuss the size differentiation and monophyly of these species using a molecular sequence data. Finally, in **Chapter 6** different methods useful in the research of copepods are summarized with a special emphasis on the DNA sequencing.