

## Preface

Zooplankton is an important biotic component of aquatic ecosystems. These tiny organisms (usually 0.02–20.0 mm in size) transfer organic matter and ensure energy flow from primary producers to secondary consumers. They serve as food for fish and mammals (whales) and can be used as biological indicators of water quality. Zooplankton also play a significant role in the formation and maintaining of natural biological diversity and thus secure ecosystem stability.

This RMB volume contains an extended and updated version of the booklet “Zooplankton of the Baltic Sea: Introduction to the Distant Learning Module” (Telesh et al., 2015). This publication, originally thought to serve as background material, preparing students and scientists for determination courses, has been sold out within a few years, indicating high demand for its content. In addition, working with it for a couple of years the need for additions and updates became obvious. So in order to make it available for all colleagues, publication of a reviewed and, revised version was seen as a better option than copying the former one.

This volume provides the general information on zooplankton organisms inhabiting the Baltic Sea: their morphology, biodiversity, ecology and roles in the food webs, picture key to the higher invertebrate taxa, and methodological recommendations for sampling, identification and counting of zooplankton. The contents is enhanced by tables, line drawings, and colour photographs depicting some of the most common species of Protozoa, Cnidaria, Ctenophora, Turbellaria, Rotifera, Phyllozoa, Copepoda, Chaetognatha and Copelata, as well as meroplanktonic larvae of Polychaeta, Mollusca, and Cirripedia. We also present here the checklist of meso- and macrozooplankton species that inhabit the open areas and coastal waters of the Baltic Sea.

Precise species identification of zooplankton organisms is necessary for the evaluation of their functional roles, bio-indication, and production potential – the important species-specific ecological parameters. However, it is a tedious and time-consuming work, which requires certain taxonomic skills, understanding of the general principles of species identification, and knowledge of taxonomically-important morphological characteristics of zooplankters from different groups.

Nowadays, it is a common problem worldwide that taxonomic expertise is becoming rare. For the Baltic Sea region, taxonomic training of the staff in hydrobiological laboratories that store their results in joint databases is of exceptional importance for acquiring and maintaining the quality assurance of the laboratories that participate in the international monitoring programmes in the Baltic Sea region.

Several international initiatives and working groups in the Baltic Sea area are active to maintain and enhance zooplankton taxonomic expertise. Quality assurance of the Baltic Sea wide zooplankton monitoring activities are supported through HELCOM expert groups such as the Zooplankton Expert Network and Zooplankton Expert Group. The Russian Hydrobiological Society organizes every three years zooplankton taxonomic training courses in the frames of the international conferences

“Frontiers in Plankton Research”. Other events like the International Rotifer Symposia also support taxonomic skills.

The information given in this volume provides the primary knowledge on zooplankton characteristics, which is essential for the identification and study of zooplankton. This information largely bases on the series of research papers and four Baltic Sea zooplankton atlas books (Telesh & Heerkloss, 2002, 2004; Telesh et al., 2008b, 2009).

The description of zooplankton is preceded by brief introduction into the vast field of knowledge about the environmental characteristics and peculiarities of the community structure and distribution patterns of mesozooplankton in the Baltic Sea. These sections allow mentioning only the basic features, facts and regularities that are specific to the Baltic Sea. Basing on this information, the interested reader will easily find a number of recent books, reviews, and research papers for further reading and getting more in-depth knowledge, which is necessary to study the zooplankton of the Baltic Sea. For example, for a detailed description of the historic data on oceanography of the Baltic Sea see Matthäus (1995) and Feistel et al. (2008), for ecology of the Baltic Sea see Schiewer (2008). And, of course, the most recent comprehensive description of all aspects of the Baltic Sea biology is presented in the book “Biological Oceanography of the Baltic Sea” edited by Pauline Snoeijs-Leijonmalm, Hendrik Schubert and Teresa Radziejewska (Snoeijs-Leijonmalm et al., 2017).

The authors of the current edition hope that the new, updated version of “Zooplankton of the Baltic Sea: General Aspects and Identification Hints” will make the zooplankton species identification easier and thus contribute to better usage of the zooplankton data for water quality assessment in the Baltic Sea and dissemination of knowledge on marine biodiversity.

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