

Recent Freshwater Ostracods of the World

Ivana Karanovic

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Preface

Scientists have described over 1.7 million of the world's species of animals, plants, and algae, as of 2010. Invertebrates make around 77% of that number, of which the greatest species diversity exists among insects. There are more than 67,000 described living species of Crustacea, and probably five or ten times that number waiting to be discovered and named. Crustaceans have many forms and living strategies, and they have been found at all depths in every marine, brackish, and freshwater environment on Earth. Ostracods are often considered the most primitive and one of the oldest crustacean groups. The group was named in 1802 by Latreille, and the name comes from the Greek *óstrakon*, meaning shell or tile. The common name in English for ostracods is “mussel shrimp” or “seed shrimp,” while in German it is “Muschelkrebse,” names describing their most prominent characteristics: soft body enclosed between two valves. However, it was not Latreille who first described an ostracod species. The first ostracod is attributed to Baker, who illustrated a fossil ostracod in 1742, but Linné actually named the first species in 1746 as *Monoculus conchapedata*. Many great scientists have contributed and are still contributing to the field of ostracodology. Two hundred and sixty years of diligent work on ostracods brings us to approximately 8,000 living species described so far (Horne et al. 2000). However, the group is better known from its fossils. True ostracods first appeared in the Ordovician, about 500 million years ago (Martens et al. 1998), and more than 50,000 fossil species have been named so far. This extremely rich fossil record is a result of the well-calcified, bivalved shell and a small size. The size of adult ostracods ranges from 0.2 to 32 mm. The soft body is extremely reduced (in comparison with other crustaceans), having only up to eight pairs of appendages. These animals live in all types of water ecosystems both fresh and marine. Thanks to the rich fossil and recent diversity, and environmental plasticity, ostracods are one of the best model groups for evolutionary studies, and stand for all four pillars of evolutionary wisdom: morphology, genetics, ecology, and paleontology (Martens and Horne 2000). Trends in ostracodology today clearly favor paleontology over all the other disciplines. In a retrospective of ostracod research between the 1st (year 1963) and the 15th (penultimate one in the

year 2005) International Symposia on Ostracoda, given by Matzke-Karasz et al. (2007), ecology (mostly paleoecology) was and still is the major field of investigation within ostracodology. On the other hand, taxonomy of ostracods is in a constant decline. Although taxonomy is the basis of all biological research, it is overly neglected and is in serious distress all over the world (Boero 2010). Taxonomy of living ostracods is particularly difficult because of two factors: small size and very few morphological characters. In spite of the decline of this field of study, the taxonomic literature is sometimes overwhelming. Until 1997, there were about 22,000 taxonomic references for the non-marine ostracods (both fossil and recent ones). Professor Eugen Kempf published indexes in 1980, 1991, and 1997, each year in several volumes (A, B, C, D) listing all the references (both taxonomical and non-taxonomical literature), as well as all the ostracod generic and species names ever published. Without these publications, work on ostracods would be much more difficult. However, they are only a starting point, from which an ostracodologist has to find their way around and about in identifying a species.

In 2000, Claude Meisch published the book “Freshwater Ostracods of Western and Central Europe,” a thorough systematic insight which provides systematic, taxonomic, ecological, and distributional data on the ostracods from this part of the world. This meticulous work is widely used, not only by ostracodologists working on the European ostracod fauna. Several countries have their freshwater ostracod fauna published as books, which are often used as reference works, such as Hungary (Daday 1900a), Germany (Klie 1938a), Russia (Bronstein 1947), Poland (Sywula 1974b), Great Britain (Henderson 1990), etc., but in many cases the language they are published in is a limiting factor. Hartmann (1966, 1976, 1968, 1975, 1989) published five volumes on ostracods as part of the series “Klassen und Ordnungen des Tierreichs,” a study of the entire class Ostracoda from morphological, anatomical, and systematic points of view. Unfortunately, this comprehensive and valuable work never was translated to English and therefore is not widely used in the modern studies. On the other hand, books such as Horne and Martens (1994) “The Evolutionary Ecology of Reproductive Modes in Non-marine Ostracoda” and Martens (1998b) “Sex and Parthenogenesis – Evolutionary Ecology of Reproductive Modes in Non-marine Ostracods” have become landmarks in studies of ostracod ecology and reproduction modes.

The present book intends to provide a practical synopsis of the recent ostracods of the world, living in all types of freshwater ecosystems. According to the latest account, there are close to 2,000 subjective species and about 200 genera of recent non-marine ostracods (Martens et al. 2007). They all belong to the order Podocopida. This book provides a diagnosis for each taxonomic unit with living freshwater representatives, keys down to the species level and illustrations of the main generic characters. Most illustrations and photographs are original, and those kindly donated by colleagues are always acknowledged in figure legends. Each species listed is given in its currently accepted systematic position and no new combinations are provided. For each species, the type locality and the repository of the type material (if known) is listed. Maps of distributions are presented for each genus, and they include all species which currently belong to the genus and their

present day distribution. Most of the synonyms are also listed, as well as some taxonomical remarks, pointing out potential systematic and taxonomic problems and needs of revision. All the subfamily, generic, and species names are listed in the alphabetical order. The book should be of value to both beginners and experienced workers, in all aspects of the current trends in ostracodology. Most of all it is intended to encourage more taxonomic studies of ostracods since there are still many ostracod species to be described and contribute to the foundation of the “four pillars of evolutionary wisdom.”

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