BOOK REVIEW

S. Klimpel, M.W. Busch, E. Kellermanns, S. Kleinertz, H.W. Palm: Metazoan Deep-Sea Fish Parasites. Verlag Natur & Wissenschaft, Solingen (Germany), 2009. ISBN 978-3-936616-61-3, hardcover, 383 pp., 6 plates of coloured photos, 4 maps. Price EUR 70.00.

Although the deep-sea belongs to the most fascinating ecosystems on earth, so far it remains little scientifically explored. On the other hand, the oceanic ecosystems are under high pressure due to various human activities and nowadays even the deep-sea becomes negatively affected, including its exploitation by modern fishery. Therefore, studies of biotic diversity in this unique ecosystem are urgent and the faunal surveys and inventories quite necessary, because there is a risk of extinction of some species before they are discovered and described and some details of their biology can be ascertained. This also concerns the highly interesting but hitherto little-known fauna of deep-sea fishes and their parasites. Extensive, long-term investigations into the oceanic and deep-sea fish parasites in different parts of the world have been carried out by researchers of the Institute of Zoomorphology, Cell Biology and Parasitology, Heinrich-Heine University Düsseldorf, Germany. Recently, based on a detailed compilation of available literature, they presented a new (after the first one published in 2001 – reviewed in *Folia Parasitol.* 49: 16, 2002) checklist of metazoan parasites and their fish hosts reported from the deep-sea environment below 200 m. They coped with this difficult work very well and produced an excellent book, which will undoubtedly serve for years as an indispensable source of information about these marine organisms.

The text of the volume is divided into five main chapters. In Introduction (pp. 1–16), the authors characterize marine ecosystems, in particular that of the deep-sea, deal with the history of their exploration, problems of fish parasitology and the parasite fauna in conditions of the deep-sea environment, the importance of host-parasite and parasite-host checklists, and fish parasites as an important contribution to aquatic, especially marine biodiversity. This is followed by information how the present Host-Parasite and Parasite-Host Checklists have been arranged. The chapter is supplemented by six plates of coloured photos introducing the authors of the book, showing the field work and examples of deep-sea fish species and some of their ecto- and endoparasites. The next chapter, named Investigated Areas (pp. 17–25), includes four maps: North Atlantic Ocean, Atlantic and Pacific Ocean, Indian and Pacific Ocean, and Antarctica (Southern Ocean) with the marked sites from where samples of deep-sea fishes were collected, accompanied by the lists of respective localities.

The most extensive chapters are the Host-Parasite Checklist (pp. 27–256) and the Parasite-Host Checklist (pp. 257–338). It is apparent from these data that a total of 789 parasite taxa belonging to the Myxozoa (63 species), Digenea (308), Monogenea (74), Cestoda (113), Nematoda (51), Acanthocephala (40), Hirudinea (5) and Crustacea (135) have been reported so far from 511 different fish species that inhabit the deep-sea be-

low 200 m water depth. Most parasite records originate from the commercially important macrourids, whereas fishes of other families have been widely neglected in parasitological research. The publication indicates that, to date, the northern part of the Atlantic Ocean is the best studied region for deep-sea fish parasites. It follows from this book that the most species-rich parasite fauna occurs between 200 and 1,000 m, predominated by digeneans, cestodes, crustaceans and nematodes, decreasing in diversity and abundance from 1,000 to 3,000 m, with only few parasite records below 3,000 m. Host specificity of many deep-sea fish parasites is low, which may be partly associated with a general food scarcity in this aquatic environment.

In the Host-Parasite Checklist and the Parasite-Host Checklist, each parasite species is provided with data on its host(s), site of infection, locality, sometimes the bathymetric range and parasitological parameters (designated as “infestation”) such as prevalence and intensity, and the citation of the respective records. Without doubt, it is very difficult to compile such a comprehensive publication of this type and I admire the authors’ efforts to realize it. Only a few inaccuracies and some taxonomic information not in accordance with the present literature occur in the text. For example, in nematodes, *Capillaria merluccii* is reported as a valid species although it was synonymized with *C. gracilis* in 2001, in ascaridoid genera (*Anisakis*, *Contracaecum*, *Hysterothylacium*, *Pseudoterranova* (syn. of *Terranova*), *Raphidascaris*, *Terranova*) it is not clear whether the reported species was larvae or adults, *Metaleptus rabuka* is reported in Physalopteridae although it was transferred to Gnathostomatidae (Metaleptinae) in 2000, *Acanthocheilus rotundatus* is erroneously reported in Gnathostomatidae although in fact it belongs to Acanthocheilidae (or Acanthocheilinae within Anisakidae), and *Ichthyophilaria* is reported in Philometridae instead of Guyanemidae (Travassosnemiinae), to which it was transferred in 2006.

Nevertheless, these small shortcomings are negligible and the book as a whole is very well prepared, provides a huge amount of information and, at present, it represents the most important overview of parasites of deep-sea fishes. No doubt this excellent book is very useful and represents not only a unique overview of metazoan parasites of deep-sea fishes, but may also serve as a basis for subsequent studies on the biology, ecology, zoogeography, etc. of these parasites. It will certainly be appreciated as an important source of information and an indispensable aid for the work of parasitologists, but also interested veterinarians, zoologists, marine and fisheries biologists, university students and others. The authors, editor and publisher are to be congratulated on this publication.

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