

H. Williams, A. Jones: Parasitic Worms of Fish. Taylor & Francis, London and Bristol 1994, 593 pp., 140 Plates of illustrations, 62 Tables. Price £ 95.00.

Helminths of fish represent the largest and the most important group of fish parasites. No other group of vertebrates has such a diversity of helminth species and many of the helminth groups are unique to fish. It is estimated that there are more than 30 000 species parasitizing marine and freshwater fish and some of them are known to be the agents of serious fish diseases or may represent an important public health problem. Moreover, the fish helminths with their mostly complex life-cycles are a significant model for the solution of a number of theoretical questions including host-parasite relationships, biology, ecology, zoogeography and phylogeny of these parasites and their hosts. Although an enormous literature has accumulated dealing with helminth parasites of fish, including research papers, books, monographs, taxonomic works and checklists, there was undoubtedly a need to have all extensive contemporary knowledge in this respect summarized in one volume.

This difficult work was undertaken by a well-known British fish helminthologist, Professor Harford Williams, in a co-authorship with Dr. Arlene Jones, an authority for the taxonomy of platyhelminth and acanthocephalan parasites. On the basis of a selection of important contributions from the literature and own many-year experience with fish helminths they produced an excellent, comprehensive book that will be highly appreciated by all those who have something to do with these interesting parasites.

In this book the authors try to cover every aspect of the biology of helminths including their identification, life-cycles and host-parasite relationships, the socio-economic impact of fish diseases in nature or under aquaculture conditions, and possibilities of their control. The first chapter entitled "The variability of fish worms" gives a brief account of the main groups of fish helminths where a system of three phyla, Platyhelminthes (classes Turbellaria, Monogenea, Cestoidea, Trematoda), Nematoda and Acanthocephala, has been used for these metazoan parasites, which were considered representatives of a single phylum *Vermes* (= worms) in the past. Under the chapter heading "Life-cycles" there are described a variety of different life-cycle patterns in different groups of helminths of fish, largely in those species which mature in fish. The extensive data on the definitive-, intermediate- and paratenic hosts of helminth species are arranged in tables which enable a quick reader's orientation. It is a pity that some important and characteristic fish parasites (e.g., *Anguillicola* spp., skrjabillanids) have been omitted.

The chapter "Ecology" includes important data on problems of the use of ecological terms and the methods of theoretical, mathematical, experimental and field studies of fish helminths as well

as discussions on the biotic and abiotic factors, seasonality, biogeography, sites and site-selection and community ecology. The next two chapters are devoted to host-parasite relationships and interactions and cover the questions of phylogenetic relationships and host-specificity in helminths, origin, evolution and phyletic relationships, other factors affecting host-specificity, pathology of organ systems, susceptibility to stress, and immunology. Of practical importance are then the data included in the sixth chapter entitled "Fish worms and man" where such problems as worm disease in captive fish, human infections with fish worms, fish worms and animal health, control of fish worms, helminths as indicators of fish population biology, of pollution, or fish worms as models in teaching and research are discussed.

The book is supplemented by an "Appendix" representing a list of publications on physiology, biochemistry and immunology, *in vitro* culture, chemotaxonomy and ultrastructure. The list of citations includes more than 3 500 references.

The text of the book, which is well written and well arranged, confirming thus authors' rich experience, as well as an inclusion of many high-standard line drawings and photographs, make from this publication an excellent modern key work on fish helminthology. Some criticism may arise only from the use, in a few cases, of scientific names for some species of helminths or their hosts (e.g., the use of senior synonyms such as *Capillaria coregoni* (= *Pseudocapillaria salvelini*), *Filaria carassius* (= *Philometrodes sanguinea*) or *Anguilla vulgaris* (= *A. anguilla*) or the use of both the presently valid name and its synonym in different parts of the book; for example, the same nematode species is designated as *Cystidicoloides ephemeridarum* or as *C. tenuissima* – p. 243). Nevertheless, these minor shortcomings are negligible.

The aim of this book is to present a panoramic view of adult parasitic worms living on or in fish and to indicate a variability of fish helminths. This will be undoubtedly appreciated as an important source of information by ichthyologists, as well as interested zoologists, veterinarians, physicians, wildlife and fisheries biologists and university students. It is also possible to agree with Professor D.W.T. Crompton, who in the Foreword to this book states that "we have now entered the era of biodiversity" and that this book, from the viewpoint of academic learning, "should prove to be a significant contribution to our understanding of the fascinating complexity of the fauna of our planet".

The book as a whole is of a high standard and is much enhanced by good graphics and layout. Both the authors and the publisher are to be congratulated on this publication.

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