

Dolan J.R., Montagnes D.J.S., Agatha S., Coats D.W., Stoecker D.K. (eds). 2013. *The biology and ecology of tintinnid ciliates. Models for marine plankton*. Wiley-Blackwell, Chichester, U.K., VIII+296 pp. Hardcover. ISBN: 978-0-470-67151-1.

Building up a monograph on a given group of organisms involves bringing together and imposing order on a huge amount of references, usually scattered in a variety of scientific documents. This is the difficult but necessary task that has been undertaken in this book, described in the Introduction as a mere “digest”. It assembles and comments on around 1200 references (probably all the available bibliography) on every possible taxonomical, biological and ecological aspect of an extraordinary set of mainly marine planktonic ciliates: the *Tintinnidae*. This family has lost part of its past status since microbial ecology became mainstream. The growing recognition of the real importance of microbial food webs led to a decrease in the role attributed to tintinnids as the almost unique representatives of planktonic ciliates in microplankton. By the latest estimates tintinnids seem to contribute a relatively modest 7% to the abundance, biomass and activity of ciliates (and less to total microplankton). However, in addition to their scientific interest, the extraordinary morphological features of the minute shells (loricae) in which they live, and which are essential for their taxonomic classification, are wonderful artistic forms of nature.

The objective of this book is to provide a comprehensive view of the role of tintinnids in the marine pelagic world for anyone interested in marine plankton. The book is divided into ten chapters in which the authors develop and discuss most of the aspects relevant to understanding their biology and ecology. It closes with a complete list of references, including some used in the last chapter but not specifically mentioned in the text, and the organism and subject indexes.

A certain lack of uniformity and redundancy of information is probably explained by the fact that the editors seem to have respected the style of the different authors and, most important, the contents of the chapters. However, all the chapters have the same structure, with a specific introduction and a useful final short list of key points intended to provide an overview of the chapter, in some cases identifying poorly known aspects and suggesting future research. In addition to justifying the subtitle of the book (*Models for Marine Plankton*) from an ecological and even artistic point of view, Chapter 1 introduces the reader to the characteristics and historical background of the group. Chapter 2 provides an up-to-date vision of the morphology and structure of loricae. Chapter 3 deals with taxonomy, including complex kinetical maps, which are essential for

a cladistic study of the group but quite hard to follow for a non-specialist. Although in this chapter molecular genetics adds an entirely new approach, a classical taxonomic key based on lorica characters would have been welcome, particularly because well-sequenced species are poorly studied from a morphological point of view, and vice-versa.

In Chapter 4 (*Ecophysiology and Behaviour of Tintinnids*), aside from the key points, the author includes text boxes to remind the reader of familiar ecological concepts such as the functions relating the response of grazing rates to food concentration (the so-called “functional response”), and assimilation and growth efficiency. There follows a study of swimming behaviour and the effects of biotic and abiotic variables on tintinnids. In this chapter, the genus *Favella*, probably the most well-known tintinnid, is chosen as a model of models. In a chapter about ecophysiology, however, I would have expected to find some reference to metabolism. Respiration is not even mentioned, and only a few lines are devoted to excretion in Chapter 9, in which the author also insists in boxing familiar ecological concepts (e.g. the allometric, $2/3$ or $3/4$ power function law). The efforts to establish tintinnids as models for marine plankton found throughout the book are extremely evident in Table 4.4, a list of what a model species should be, and the pros and cons exhibited by tintinnids to deserve the name. Chapter 5 deals with predators of tintinnids and includes exhaustive tables listing preys and predators (although, as mentioned in the book, the relative importance of tintinnids as preys, and that of any food item with identifiable hard parts, is probably exaggerated). Chapter 6 describes the parasites of tintinnids, Chapter 7 describes the importance of resting stages (cysts) of tintinnids, and Chapter 8 provides a short, critical approach to the possible fossil record of tintinnids. Chapter 9 (*Tintinnids in Microzooplankton Communities*) could probably have been merged with Chapter 4 or Chapter 5, just to avoid part of the redundancy. Finally, Chapter 10 gives an exhaustive biogeographic account of tintinnids, their temporal occurrence, spatial distribution and relations between species numbers (once more erroneously labelled as “diversity” in the unstoppable present fashion). The book is beautifully illustrated, with excellent colour and black and white photographs and line-drawing images, although the figure captions in some cases lack uniformity and are somewhat confusing. On occasions figures are attributed to the original authors, including the complete bibliographic reference (authors, year, title of the paper, journal and pages), while on others there is only the regular citation of the author and year. The editing errors are minimal (e.g. p. 215, line 14; and the same caption for Fig. 9.5, p. 213, and Plate 9.5).

Strange as it may seem, this specialised book not only includes a wealth of knowledge and references but is also a stimulating read. Even for non-specialists in the topic like myself, most of the chapters flow nicely, although some specific concepts require either a brief explanation in the text or in the subject index. The minor flaws observed do not at all detract from the value of the book, as it provides a solid evaluation of the current state of knowledge on the group. In

summary, this is a unique and valuable addition to the literature on marine plankton and a comprehensive text for graduates, PhD students and even non-specialized seasoned scientists.

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