

BOOK REVIEWS

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SOROKIN, YURI I. 1999. **Aquatic microbial ecology**. Backhuys. vii+252 p. \$71. ISBN 90-5782-027-7.

When first handed this compact volume, I looked forward with pleasure to learning more about the relatively inaccessible Russian literature. The author is a well-known Russian freshwater microbiologist whose work has been influential and significant since the 1950s. Russian scientists have been associated with aquatic (particularly freshwater) microbiology for decades, yet their publications are not cited often and do not receive the appreciation and attention they deserve from western science. This book does give Russian science equal treatment and is valuable for that. Despite that, I cannot recommend it; indeed, I view it as a dangerous book.

Subtitled "A textbook for students in environmental sciences," its intended audience is presumably undergraduate or graduate students. The book offers students an enormous wealth of information in eight chapters (phytoplankton, bacteria, microzooplankton, benthic communities, food webs, physiological types of bacteria, regional studies, and methodology). Unfortunately, the information in this book is mixed seamlessly with a fair helping of speculation and opinion. For example, Sorokin states that taxonomic studies based on agar plating "... account for one percent of bacterial communities, mostly alien bacteria derived from the land or from ships." The former may or may not be true; a number of recent studies demonstrate that a much higher percentage of species can be cultured if the right media are used. The latter statement is pure speculation. He further states that the development of epifluorescence microscopy methods "made it possible to account for all groups of aquatic microbes—phytoplankton, bacterioplankton, and planktonic Protozoa—with a practically 100% accuracy." If only it were that easy! I am far less confident in the accuracy of epifluorescence methods and would never dream of telling a student that they are virtually 100% accurate. In a subtler example, Sorokin states that in summer primary production in freshwater basins decreases to a minimum, "while there is a considerable increase in the abundance of heterotrophic bacteria, ciliates, rotifers and planktonic crustacea, *because of rising water temperatures*" (emphasis mine). Is the increase in heterotrophs really due to rising water temperatures and not to some other factor? Who says?

And so we arrive at the root problem: the book has no citations. Thus, everything is presented as absolutely authoritative. In the absence of citations, there is no way to check any given assertion—one must have faith that the author's view and presentation of the field is reasonably well balanced and objective, which is clearly not always the case. For example, the author spends three pages dismissing the tritiated-thymidine method (a standard technique for bacterial growth rate measurements) as deeply flawed and one short paragraph dismissing the leucine method as even worse. Although

he may be correct, the hundreds of published thymidine- and leucine-based papers deserve more careful consideration. The author presents his own method (dark $^{14}\text{CO}_2$ uptake) uncritically, though it is cumbersome and has its own problems.

Discussions of work done by others that I recognize and know well contain no mention of the source material and very little attribution of work to a person or group. This lack of citation extends to the use of figures that have the appearance of being extracted, unaltered, and uncredited, from a variety of sources. I find this disturbing; attribution allows the reader to track down and decide whether the cited work really supports the conclusions. Formal attribution also honors the work of others and is intrinsic to the conventions and ethics of the process of doing science. This book is not targeted to the general public, where one might reasonably omit citations. It is a scholarly review of the literature for students of the field. In my view, the omission of citations renders the book far less useful, if not actually useless.

I was also disturbed by Sorokin's cursory dismissal of very important topics. For example, marine bacterial ecologists are increasingly reliant on molecular techniques based on analysis of DNA and ribosomal RNA sequences. Despite their unquestionable importance, molecular techniques are discussed in a single short paragraph. Elsewhere, he dismisses the concept of the microbial loop in one paragraph, listing arguments against the validity of the concept. Whether right or wrong, the microbial loop has been extremely important to the development of marine microbial ecology, both as an organizing theme and a focus of debate, and deserves more attention.

On top of these problems, the book is replete with typographic errors. One of my own publications is mentioned once in the foreword and again in the one-page list of recommended reading. In the foreword the authors are given incorrectly, and in the recommended reading list the authors are incorrect and the title is misspelled. That's about par for this book. The worst examples are unintelligible fragmentary sentences, perhaps left over from some cut-and-paste editing. Finally, although the book has a detailed table of contents, it lacks an index, which is essential for finding information about a particular topic.

To sum this up, I am impressed with the huge amount of information in this book and completely dismayed by the way it is presented. I admit to enjoying reading it, but I would never recommend it to a student, and I wasn't sure what I could take away and use without having someone ask *me* "Who says?"

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