

Book reviews

KEITH E. COOKSEY (Editor). *Molecular Approaches to the Study of the Ocean*. Chapman and Hall, London, 1998, xvi + 549 pp.

From the title, it is clear that the scope of this book is extraordinarily ambitious. Ocean environments from the pelagic to the benthic to the intertidal are considered and there is some coverage of virtually every group of organisms. Moreover, since 'molecular' is taken to include 'all analyses related to the determination of chemical markers, whatever the molecular size', the field of research is vast. The editor has done an excellent job in convincing many field-leading scientists to contribute chapters, but problems arise because of the very broad coverage attempted.

To begin with, the level and focus of chapters vary dramatically. DeLong has contributed an overview of molecular phylogenies (Chapter 1) that is at the level of an advanced textbook and provides a review of principles and methods before moving on to case studies. Although there is a strong microbial focus, examples are drawn from prokaryotes to cetaceans. In contrast, Proctor's chapter (Chapter 4) on the ecology of marine viruses has a very different organization and reads more like a review article in a journal. Later articles by Pomponi *et al.* (Chapter 22) on culture of sponge cells, Inoue *et al.* (Chapter 19) on molluscan adhesive protein genes, and Robarts (Chapter 25) on the problems in estimating bacterial growth by radioisotope incorporation seem rather too specialized and narrow to suit a book such as this.

Compounding this, the balance and organization of the book are weak. From the Foreword it appears that three themes will be developed: taxonomy and phylogeny (naming biomass), enumeration (measuring biomass) and function (determining what the biomass is doing). However, chapters on these themes are scattered throughout the volume in no clear order. There is also the hint of a phylogenetic organization; chapters dealing with prokaryotes are followed by those dealing with protists and later on there are chapters concerning invertebrates and vertebrates. This is not consistent either, and some of the very last chapters return to the prokaryotes.

Phycologists should be aware that there is a bias towards planktonic and microscopic organisms. Of 26 chapters, five focus on planktonic viruses or bacteria, six concern phytoplankton and three focus on zooplankton. The first three more general chapters are also dominated by examples from bacterio- and phytoplankton. In contrast, there are two chapters on macroalgae, one on

phylogeny (Chapman *et al.*, Chapter 20) and one on red algal development (Garbary and McDonald, Chapter 21). Even more disappointing in a volume on the ocean, the planet's most abundant vertebrate group, the fishes, is conspicuously neglected.

On the other hand, there are some chapters on topics that normally do not receive great emphasis. Fell and Newell (Chapter 12) review the marine fungi, Geller reviews invertebrate biodiversity (Chapter 18), Weis *et al.* consider gene expression in symbioses (Chapter 23) and Brusseau *et al.* deal with biofilms (Chapter 24). There is also a chapter on electronic databases (Fitzgerald and Blake, Chapter 27) that is rather useful, though some of the internet sites referenced have already become outdated.

For a volume that seems destined to be used as a reference work, the indexing is rather disappointing. Several very specific entries are included that will be meaningless to a non-specialist (e.g. 'AL07 group'), yet there is only one index reference to 'microalgae' and none for 'macroalgae'. Extra attention would have greatly improved the accessibility of such a large book. As well, for a broad reference work the glossary provided is terribly uneven. It consists of four pages (73 words) that vary from the simple ('detritus' and 'natural selection' are defined) to the specialist ('Nei's distance' is defined by an equation whose terms are not explained, and the 'rel A' gene is also included).

The grouping of colour plates in the centre of a book of this length is annoying. One must also question the need for so many colour plates of molecular models of the structures of toxins; eleven of sixteen plates pertain to one small chapter (Baden *et al.*, Chapter 26). The remaining colour plates are largely photomicrographs of fluorescently stained cells and these tend to lack sharpness and clarity. In contrast, the majority of figures in the book are clear, well thought out, and well reproduced.

On balance, there is certainly something for everyone in the volume (though it may prove hard to find). In addition to a role as a general reference volume (to help ocean scientists keep pace with progress in an increasingly fragmented field), the book may be useful to teachers in upper level ocean sciences. One strength of the book, its currency, will ultimately become a weakness as the fields advance; however, the contents should remain relevant for some time to come.

JOHN BERGES

*School of Biology and Biochemistry
Queen's University of Belfast
Northern Ireland*

SENNA, P. A. C., SOUZA, M. G. M. & COMPRE, P. *A Check-list of the Algae of the Federal District (Brazil)*. Scripta Botanica Belgica 16. National Botanic Garden of Belgium, Meise, 1998, ISBN 90 72619 40 4, DM36.00/US\$21.82.

A list of all the algae reported from the Federal District of Brazil up to the beginning of 1998 is given. A total of 138 genera and 499 species (plus 56 infraspecific taxa) are cited in the 65 references. The Chlorophyta form 47.4% of the algal flora, the Cyanophyta 24.1%, the Euglenophyta 14.1%, the Chromophyta (mostly diatoms) 12.8%, the Pyrrhophyta (Cryptophyceae and Dinophyceae) 1.4% and the Rhodophyta 0.2%. The low number of recorded species of Chromophyta (including diatoms) indicates that this algal group has been largely neglected in studies of this region. The algal names are brought to the standard of present-day taxonomy in the check-list. Five new combinations of Cyanophyta and one new combination of a desmid are formally established in an appendix at the end of the paper.

HANS PREISIG

*Institut für Systematische Botanik
Zurich, Switzerland*

PETER F. M. COESEL. *Sieralgen en Natuurwaarden. (Desmids and Nature Value: A Guide for Using Desmids in the Assessment of Nature Value in Standing Freshwaters.)* Wetenschappelijke Mededeling 224. 1998.

This 56 page booklet, written in Dutch, is aimed at providing a guide for those involved in water quality assessment by the use of desmids as indicators. The author is the recognized authority on the taxonomy and ecology of Netherlands desmids, having published an impressive number of papers on these exclusively freshwater algae, as well as six volumes on their taxonomy. The present volume is profusely illustrated with a selection of photomicrographs and nine attractive colour plates containing drawings of the assemblages of desmids which the author has found typically to inhabit different types of waters. For those who cannot read Dutch, there is a useful three and a half page English summary outlining the scope and aims of the volume, as well as complete translations of three important tables dealing with the assessment of diversity, rarity and 'indicator value'. Of special interest to many algal ecologists will be the very detailed Table 4, which is a comprehensive 9 page listing of all Netherland desmids giving their trophic status, their preference for acid, neutral or alkaline waters, as well as their rarity value. In this latter connection, as Dr Coesel emphasizes, desmids are probably the most endangered group of aquatic microorganisms, particularly in densely populated countries, as a consequence of land cultivation, eutrophication, acidification and pond drainage.

ALAN J. BROOK

*The University of Buckingham
Buckingham, UK*

MICHAEL J. WYNNE. *A Checklist of Benthic Marine Algae of the Tropical and Subtropical Western Atlantic: First Revision*. Nova Hedwigia, Beiheft 116. Distributor: E. Schweizerbart'sche Verlagsbuchhandlung (Johannesstrasse 3A, D-70176 Stuttgart; e-mail: order@schweizerbart.de), 1998, 155 pp, 5 figures, DM 120/US\$ 69.

The first edition of this checklist appeared in the *Canadian Journal of Botany* in 1986, and consisted entirely of a species list with numerous, mostly short, taxonomic and nomenclatural notes. This first revision is a much more substantial work. The most important literature is listed by country or state (for the USA), with several maps showing where these are. Almost half the volume is taken up by the checklist of red, green and brown algae, arranged in a classification scheme following that of recent texts. Synonyms are given where there have been name changes since the first edition, and the notes also concentrate on these changes but include items missed initially.

An enormous amount of information is covered in the notes at the end, listed by numbers in the checklist. As well as large numbers of short entries, there are also longer notes, amounting to short essays, on various relevant matters of taxonomic and nomenclatural interest. Among the topics covered are the relationship between *Gracilaria* and *Polycavernosa* and the status of *Herposiphonia tenella* relative to *H. secunda*. The notes are very comprehensive, and will be an important source of information for workers throughout the world, not just in the region covered. Many of them tell interesting stories about the ebb and flow of how particular genera and species have been regarded over the last few decades. The reference list covers all the notes, but can only be used as a bibliography for the region in combination with the first edition of the checklist, because references cited previously have generally been omitted from this list.

Several new combinations are proposed, mostly of subspecific taxa. These are helpfully printed in bold. The nomenclature appears to be as up to date as possible, with literature citations including works still in press at the time of publication. I was puzzled, however, by the continued use, without explanation, of the name *Laurencia* for species such as *L. pinmatifida* that have been segregated into *Osmundea* Nam (Nam *et al.*, 1994). This seems odd in view of the adoption of *Osmundea* by Silva *et al.* (1996), a work that Wynne has naturally drawn extensively on for this revision of his checklist.

References

- NAM, K. W., MAGGS, C. A. & GARBARY, D. J. (1994). Resurrection of the genus *Osmundea* with an emendation of the generic delineation of *Laurencia* (Ceramiales, Rhodophyta). *Phycologia*, **33**: 384–395.
SILVA, P. C., BASSON, P. W. & MOE, R. L. (1996). *Catalogue of the Benthic Marine Algae of the Indian Ocean*. University of California Press, Berkeley.

CHRISTINE A. MAGGS

*School of Biology & Biochemistry
Queen's University of Belfast
Northern Ireland*