

Book review

Algae of Australia: Nematiales

By John M. Huisman (with co-authors for several genera)

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Algae of Australia: Nematiales is the first published title of the *Algae of Australia* series. This series aims to stimulate research on Australian algae, especially the many poorly known groups and their habitats. This is a long-term project supported by the Australian Biological Resources Study Program whose purpose is to provide the basic systematic data necessary for issues relating to conservation, biological diversity and the management of the Australian aquatic ecosystems. In 2007, this important initiative in taxonomic research was expanded with three new titles: *Algae of Australia: Introduction*; *Algae of Australia: Batrachospermales, Thoreaales, Oedogoniales and Zygnemaceae*; and *Algae of Australia: The marine benthic algae of Lord Howe Island and the Southern Great Barrier Reef. 1: Green algae*.

John Huisman's morphological and taxonomic studies of the red algal order Nematiales (as it is currently delineated) stretch back over twenty years. His first contributions began with work on the genus *Scinaia* in the mid 1980s. Since then, he has continued exhaustive, meticulous and productive planning to describe the distinctive vegetative and reproductive morphology and anatomy of most of the representatives of this primitive order of Rhodophyta. A result of his work has been re-assessment of genera previously rejected, and the description of new genera. Thus, *Tricleocarpa*, *Gloiostrichus*, *Ganonema*, *Izziella*, or *Dichotomaria* are now well characterized and accepted genera. On the other hand, information obtained from DNA sequence analyses has allowed both clarification of the relationships among the genera and has established a solid base for the present segregation of families. In spite of all these previous works by Huisman, *Algae of Australia: Nematiales* represents not only an attractively prepared volume that compiles studies published in the last decades and until now dispersed in specialized journals, but also an exquisite phycological monograph for an especially rich and diverse order of macroalgae within the exciting Australian marine flora. Moreover, the book includes an important account of previously unpublished information on the evolutionary relationships within the order showing that it has a greater diversity than previously realised.

Algae of Australia: Nematiales documents the three families (Galaxauraceae, Liagoraceae and Scinaiceae) represented on Australian coasts by 20 genera and 55 species. Although John Huisman is the principal author, illustrator and photographer, several eminent phycologists (G.T. Kraft, A. Kurihara, J.A.N. Parnell, G.W. Saunders, A.R. Sherwood and H.B.S. Womersley) have made contributions to the descriptions of various genera. The book begins with an introduction that reviews the taxonomic and nomenclatural history of the order Nematiales, and continues with brief notes on *Diagnostic characters* where pre- and postfertilization processes play a pivotal role, *Specimen preparation for microscopical examination* and *Acknowledgements*. With 100 pages, the descriptive section is the most extensive part of the book, and includes both dichotomous keys and full detailed descriptions of families, genera and species. Line drawings and halftones of the most useful diagnostic characters illustrate the descriptions carefully. In addition, underwater photographs of the habit of many species are grouped in 23 color plates. The final part of the book consists of three appendices: *Typification of species based on specimens in the Herbarium of the W.H. Harvey (TCD)* by Parnell and Huisman, *Recognition of Titanophycus, a new genus based on Liagora valida Harv. (Liagoraceae, Nematiales)* by Huisman, Saunders and Sherwood, and *The Dichotomaria marginata assemblage in Australia* by Kurihara and Huisman. A glossary, bibliography, abbreviations and contractions, and a taxonomic index complete the book.

Among the new information presented, phylogenetic trees based on rbcL sequences for the families Liagoraceae and Galaxauraceae are of particular relevance. Morphological and genetic evidence lead to the transfer of several species to the recently resurrected genus *Dichotomaria* (many of the flattened species of Australian *Galaxaura*) and to the description of the new genus *Titanophycus* (based on *Liagora valida*, an unusual taxon related to *Patenocarpus* and *Akalaphycus*).

Technically, the book is beautifully presented. The author is to be congratulated on bringing together such a wealth of information on this important group of marine algae. The *Algae of Australia: Nematiales* will be an invaluable reference source for marine biologists, from beginners to experts; it should also have a wider audience for those not specifically interested in the seaweeds of Australian coasts.

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