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Book review

Huisman, John M., 2006 — *Algae of Australia. Nemaliales*. Canberra, Melbourne, CSIRO Publishing. 164 pp, hardcover. (www.publishing.csiro.au ; ISBN 0643093798, AU$90.00).

It may be the smallest continent on the planet, with a coastline not exceeding 25,000 km, but arguably Australia hosts the most fascinating algal flora known. And what's even more important, this algal flora is also becoming one of the best studied in the world. As recent as 2003, Bryan Womersley completed the sixth and final volume of his famous "Marine Benthic Flora of Southern Australia", covering more than 1100 species and 460 genera. It marks the Australian attitude that Womersley's Southern Australian algal flora was not perceived as the end of algal floristic and systematic studies. Prior to the publication of the last volume, the Australian Biological Resources Study Program had already committed itself to a new series, "The Algae of Australia". "The Nemaliales" by John Huisman is the first taxonomic volume to appear, but there are at least two more scheduled to be published in the near future. One can only hope that these initiatives to sustain taxonomic research will at least to some degree wear off on the rest of the world.

"The Nemaliales", as the name betrays, presents a taxonomic treatment of the red algal order Nemaliales. The order is subdivided into three families, Galaxauraceae, Liagoraceae and Scinaiaceae, and is represented in Australian waters by 20 genera. The principle author received support from a series eminent phycologists such as G.T. Kraft, G.W. Saunders, A.R. Sherwood and H.B.S. Womersley who assisted in the description of various genera and/or who provided indispensable taxonomic insights based on sequence analyses. Descriptions of families and genera are preceded by an elegant and informative introduction which recounts the taxonomic history of the order and which also details the various morphological and reproductive structures to the uninitiated. The Nemaliales, as is true for many red algal taxa, is currently undergoing major revision as a result of DNA sequence analyses. Several families or genera have recently undergone drastic changes as a result of monographic studies, in many cases aided by molecular phylogenies (e.g. Huisman *et al*., 2004a,b,c). Although nearly all of these studies have been published in the specialist literature, some of them rather recently, it is rewarding to see all this taxonomic information grouped in a single volume. Does this mean "the Nemaliales" is a rehash of published papers? No, on the contrary. This volume of the Algae of Australia is an attractively prepared book, offering detailed descriptions of the Australian representatives of the Nemaliales accompanied by masterful drawings of the diagnostic characters. Distribution maps of each of the 55 species and color photographs of about half the species are also provided. Furthermore, during the twenty odd years that elapsed since the first publication by John Huisman on representatives of the Nemaliales, concepts on every taxonomic level in the Nemaliales have changed to such a degree that some of it was in need for refreshment. The genus *Galaxaura* is a good example. Back in 1990 *Tricleocarpa* was segregated from *Galaxaura* proper based on differences in cortical structure and the ontogeny of the pericarp (Huisman & Borowitzka, 1990). For more than a decade the *Galaxaura – Tricleocarpa* publication was regarded as the standard for anyone who wanted to identify these taxa in the Indo-Pacific. But in the meantime, the generic boundaries within the Galaxauraceae were further refined, leading to the resurrection of *Dichotomaria*.

Similar observations can be made on the genus *Liagora*, which was known to consist of several widely divergent lineages (Kraft 1989), and which is gradually being stripped of heterogeneous elements. Hence, the subsequent resurrection of several genera such as *Ganonema*, *Izziella* and in this volume the description of the monotypic genus *Titanophycus* to accommodate *Liagora valida*.

The book also differs significantly from the previously published papers, by leaving out all references to non-Australian taxa, a decision which I can fully relate to. However, it is unfortunate that no taxonomic discussions are provided, pointing out differences or similarities to other species. This somewhat limits the use of this volume and it would have made it easier for non-Australian systematists if some taxonomic notes were included on closely related species that occur elsewhere.

Twenty five years of accumulated wisdom and new perceptions prompted by gene sequence data have also left their mark on the species level diversity. Congruent with observations from several widespread algae, at least some species in the Nemaliales, e.g. *D. marginata* have been found to consist of a mixture of pseudo-cryptic species. In this volume an additional species of *Dichotomaria* is reinstated, *D. spathulata*. I think it would be safe to claim that this trend can be extrapolated at least to some degree to most of the genera treated in this volume and that additional sampling with enhanced coverage of the entire geographic range of the species will lead to a further increase in alpha-diversity. And in the end the lengthy synonymy lists cited in Papenfuss *et al.* (1982) may turn out to be lot shorter.

"The Nemaliales" is an excellent and timely first volume of the Algae of Australia. The author and co-workers are to be congratulated, not only for producing this book but also for more than two decades of hard work that has reshaped our ideas on the Nemaliales at every taxonomic level.

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