

## Book Review

### Seaweed Ecology and Physiology (2<sup>nd</sup> edition)

*By Catriona L. Hurd, Paul J. Harrison, Kai Bischof and Christopher S. Lobban*

*Cambridge University Press, 75 US\$ Paperback, ISBN: 978-0-521-14595-4, 60 US\$ e-book*

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The recently published 2<sup>nd</sup> edition of ‘Seaweed Ecology and Physiology’ is a most welcome addition to our bookshelves – although most likely it will spend very little time there. Within twenty minutes of my copy arriving in my office, I had already lent the book to a final year undergraduate student for background reading on his due essay, and it has had little rest since.

The new edition is carefully put together by the ‘old’ and established team of authors of the previous version, but has benefited from inputs of new (but equally established) authors, Profs Catriona Hurd (Tasmania) and Kai Bischof (Germany). The inclusion of these authors and their broad experience across many fields of algal research has added a new interesting geographic and scientific spread. The book now also draws from ecology and ecophysiology research conducted in the southern hemisphere, making it more attractive to a wider global readership, and providing a broad perspective of global issues concerning seaweed species and communities. Additionally, the authors have invited six further experts to contribute special sections on their respective special fields which are presented as ‘essays’, each providing a particular insight into a selected topic of interest, which are well integrated into the relevant chapters.

In general, the book has received a thorough revision and update based on nearly twenty years of new research – a massive undertaking given the intensity and divergence of seaweed research activity during that period. The contents go way beyond what might traditionally be considered ‘ecology and physiology’ and the book is, as far I know, the most comprehensive book on ‘seaweed biology’ on the market. It now features 439 pages (vs. previously 299 pages), excluding appendices and references, and presents extensive chapters on both environmental and more applied aspects (including molecular genetics and an extensive last chapter on seaweed mariculture, doubled in length since the first edition). The topic of seaweed biotechnology appears a little hidden in ‘mariculture’ – it is clearly not a major focus of the book, but at least the reader will very skilfully be guided in the right direction. Whilst the book probably represents a natural evolution from the previous edition with the same title, it is such a comprehensive resource for information on the many aspects of algal biology that the title might be a little misleading and in fact undersell the book. Luckily, more established seaweed researchers will not be misguided since they can anticipate the quality of the contents from previous versions, by spotting the authors’ names, and by browsing the well-structured content pages.

Amazingly, in fact, despite incorporating the many traditional phycological subjects and new knowledge across so many rapidly advancing areas, the book is exceptionally well-structured. It has kept the clear lines of reason and organisation that help the reader to locate information (assuming that not all will read the book from cover to cover) and also guide her/him through the complexity of algal biology, ecology and physiology without too many diversions into the many and fast developing fields (e.g. biotechnology, genetics). At the same time, the reader can be assured that the fundamentals in all disciplines are covered, and that the extensive literature provided will allow and encourage further reading where needed. One key feature that supports this book's structure is the use of clear and concise chapter and subchapter headings that are limited to a few, sometimes single, keywords; the headers on each page further assist with orientation within the chapter outline.

The original section on morphology, reproduction and development has been significantly extended and split into 'Seaweed thalli and cells' and 'Life histories, reproduction and morphogenesis'; this has allowed the inclusion in the first chapter of the substantial number of significant recent developments in the fields of cell biology, including cell wall biology, and advances in seaweed molecular biology and genetics. A new figure (one of many new figures in the book), in fact the first figure in the book, illustrates a 'schematic view of plastid evolution' and puts 'algae' into a wider evolutionary perspective to set the scene for the first chapter and indeed the entire book.

The book manages to stretch effortlessly from molecular biology to the ecology of seaweed species and communities and biotic interactions, and then deeper into 'classic' physiology ('Light and photosynthesis' and 'Nutrients'). The authors are to be congratulated on their successful coverage of all topics and the simplicity of the language used; including enough detail to provide a thorough background but not too much information so as to confuse the reader - the text is very readable by undergraduate students (so I am told!). Topics close to the heart of every seaweed ecophysicologist, such as Chapter 7's 'Physico-chemical factors as environmental stressors' strike a well-placed balance between the traditional concepts and the wealth of new research in this field, particularly regarding climate change and ocean acidification and their biological impacts, ranging from seaweed metabolism to community level.

The 2-column page layout of the previous version which had worked well has been maintained; some of the photographs appear a little dark and some diagrams that I personally did not find that useful in the previous edition seem to have made it into the new edition. On the other hand, many newly-published figures from the recent literature have been included, illustrating the book well and clearly making the points which students and researchers need to understand. Some images appear a little dull, but this may be beyond the control of the authors. Also, some layout features commonly used in other 'text books' these days might have provided a little more interest for the tired eye during late night study. In some instances, a better distinction between formats of legends and essays would have helped; for example in Essay 2 (p. 109), the reader may get a little lost between different sections of text.

We all know we shouldn't judge books by their covers, but one thing disappoints me: while it is probably intended to highlight the challenging environment of red, (minimalistic green?) and brown seaweeds on exposed rocky shores, the slightly gloomy photographic front cover image is a little disappointing considering the many amazing colourful seaweeds that are out there waiting to decorate the front page of a seaweed book.

The over 100 page-long reference section provides further details on the contents covered in the 10 chapters. It is an invaluable solid starting resource for further reading which will take both students and researchers towards the current literature. The readers can be assured that at the time of publication the authors have appeared to have covered all avenues of relevant recent seaweed research. Considering that even the previous version (after twenty years?) was not so much 'out of date' as more 'incomplete' – this new edition will keep us going for a while.

All in all, those of us familiar with 'the old Lobban and Harrison', and who have used it in our own studies, and then our research and teaching, are delighted to see this new, updated version which was long overdue and urgently needed. The, hopefully, many new readers and new generations of students and researchers will have an excellent rounded book which, even in times of exponential increases in our knowledge, is a worthwhile investment for the next few years. Copies have been ordered for our library since it will be a recommended text for several undergraduate modules in marine plant science. My own copy will be heavily used. So the advice is: get your copy, and keep it handy and not too high up on the shelves, you will refer to it frequently...

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