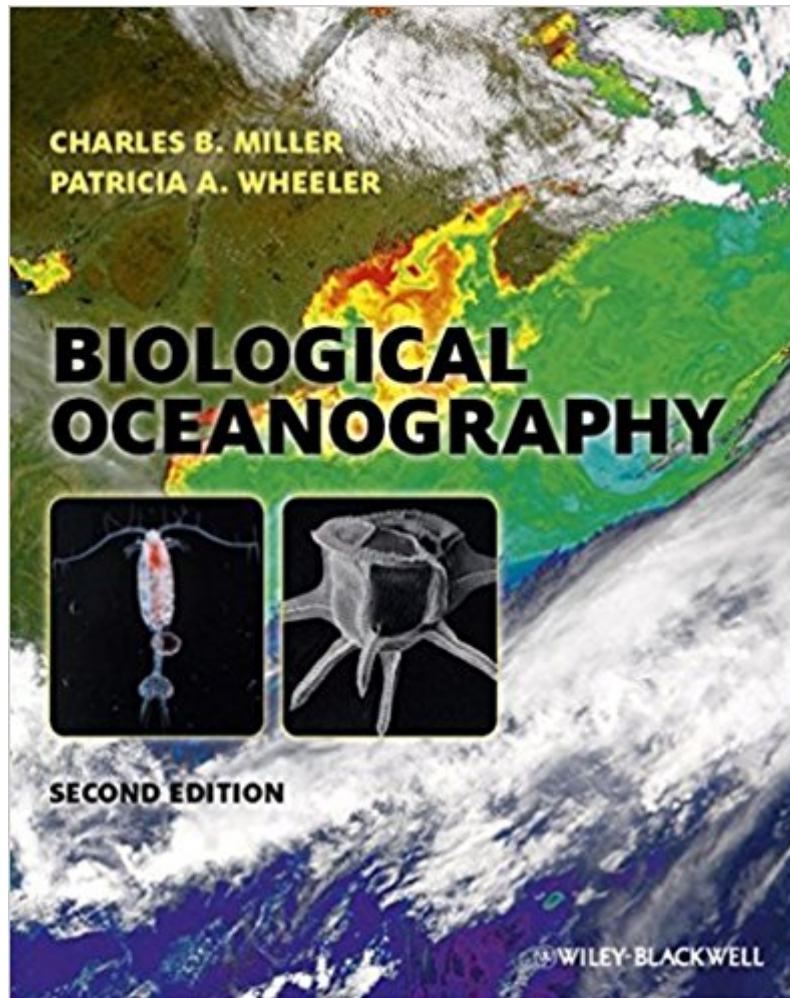




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# Biological Oceanography



## Synopsis

This new edition of Biological Oceanography has been greatly updated and expanded since its initial publication in 2004. It presents current understanding of ocean ecology emphasizing the character of marine organisms from viruses to fish and worms, together with their significance to their habitats and to each other. The book initially emphasizes pelagic organisms and processes, but benthos, hydrothermal vents, climate-change effects, and fisheries all receive attention. The chapter on oceanic biomes has been greatly expanded and a new chapter reviewing approaches to pelagic food webs has been added. Throughout, the book has been revised to account for recent advances in this rapidly changing field. The increased importance of molecular genetic data across the field is evident in most of the chapters. As with the previous edition, the book is primarily written for senior undergraduate and graduate students of ocean ecology and professional marine ecologists. Visit [www.wiley.com/go/miller/oceanography](http://www.wiley.com/go/miller/oceanography) to access the artwork from the book.

## Book Information

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## Customer Reviews

“Due to its comprehensive nature, it is clear that this book will also succeed as a standard text for use in undergraduate and graduate marine science courses.” (Austral Ecology, 10 October 2014)  
“Overall I found it to be an immensely informative and entertaining read. This book will make an excellent core text for any graduate level course in Biological Oceanography whether introductory or advanced...I also think that every Biological Oceanographer should read it. It is an enlightening experience to view your field through the eyes of two colleagues who have been

in this business for a long time. I also found reading this book a humbling experience.Ã Â Charlie Miller and Pat Wheeler demonstrate an amazing depth and diversity of understanding in almost every topic that is taken up. I hope by the time I get to where they are in their careers I have achieved this level of scholarship in Biological Oceanography.Ã Â (Limnology and Oceanography Bulletin, 1 May 2013) Ã Â “The book is extremely well referenced for further study and the impression is that most of the work cited is from within about the last twenty years. Altogether a worthy addition to any marine departmental library.Ã Â (British Ecological Society Bulletin, 1 December 2012)

This new edition of Biological Oceanography has been greatly updated and expanded since its initial publication in 2004. It presents current understanding of ocean ecology emphasizing the character of marine organisms from viruses to fish and worms, together with their significance to their habitats and to each other. The book initially emphasizes pelagic organisms and processes, but benthos, hydrothermal vents, climate-change effects, and fisheries all receive attention. The chapter on oceanic biomes has been greatly expanded and a new chapter reviewing approaches to pelagic food webs has been added. Throughout, the book has been revised to account for recent advances in this rapidly changing field. The increased importance of molecular genetic data across the field is evident in most of the chapters. As with the previous edition, the book is primarily written for senior undergraduate and graduate students of ocean ecology and professional marine ecologists.

If you want to learn ocean oceanography in a common language go for this book. Its one of the best text books for starting studies in biological oceanography. The author goes into deep concepts with the use of common language and easy to follow examples. Highly recommended, its like been in a classroom listening to a great professor.

I chose the kindle version of this text. It is easily searchable and easy to read on my screen. It is well written and easy to understand.

Review of Biological Oceanography by Miller and Wheeler (2012, second edition) Sometimes a textbook captures the voice of its author so perfectly that upon reading it you can imagine yourself in a large lecture hall listening with rapt attention. The author carefully and deliberately builds each piece of the story so that by the end of the book you feel as if you know the person as well as the

subject, and in that familiarity, you have a deeper understanding of the field than would otherwise be the case. It was in that sense that I absolutely loved the first edition of Biological Oceanography by Miller (2004). Would the second edition, with the addition of author Pat Wheeler, generate the same enthusiasm? In my view, Biological Oceanography as a discipline is an integrated systems science that exposes the interactions between the physics, chemistry, and biology of the ocean. But like the first edition, the second edition distinguishes itself as a more organismal-than-ecological approach to the subject of biological oceanography (though ecology is carefully woven into each chapter). The Preface of both editions recommends Mann & McCall's *Dynamics of Marine Ecosystems* for those wishing a more systems approach (i.e., biological-physical interactions). The original Table of Contents remains intact with the exception of a new first chapter, a reverse in order of the last two chapters, and the addition of a chapter on pelagic food webs (Chapter 9). Similarly, the text aims to serve graduate-level and advanced-undergraduate level courses in biological oceanography. Despite its obvious similarities, the second edition represents a significant revision and expansion of the first. The level of detail has grown considerably, and a much greater number of references appear in the text. The second edition features a greater number of illustrations, more tables, and several more color plates, and even includes an accompanying website where figures and tables can be downloaded. All of this new material comes in a larger size, too, as the physical size of the book has grown to standard textbook dimensions, making the book heftier but perhaps better suited for notemaking. While much of the original material of the first edition remains, the increased level of detail in some chapters comes at a cost to readability and comprehension. I found myself having to re-read sections several times to grasp the main concept. There was an unevenness to the coverage—highly specific in some instances, overgeneralized in others. The connections between the chapters where information in earlier chapters builds a knowledge and understanding of succeeding chapters within them were not always clear. While many of the subjects covered by the text are not my field of expertise, I found myself wondering how a student new to the field would fit the pieces together and walk away with a general understanding of biological oceanography and the broader questions that remain to be addressed. A few examples may help to explain my difficulties. The original first chapter, The Spring Phytoplankton Bloom has been replaced by a chapter called Ocean Ecology: Some Fundamental Concepts, though a better title might have been Fundamentals of Oceanography. The chapter provides an overview of some aspects of seawater chemistry, physical oceanography, habitat partitioning, and mathematics. Though important, it is not clear that the topics covered provide enough breadth or merit inclusion at all, given that some are barely mentioned in the succeeding chapters. I missed the

broader questions raised and the framework for understanding the field of biological oceanography that was set up so well by a discussion of the spring phytoplankton bloom in the first chapter. An instructor using the text will want a more general presentation of basic physical, chemical, and biological concepts, such as that found at the beginning of most marine biology textbooks, to prepare students for the more advanced concepts that follow. Chapter Four, Numerical Models, now incorporates extensive references to a Matlab script for a program modeling Lotka-Volterra predator-prey interactions. While useful when presented as separate boxes within the chapter, inclusion of commands within the main text (e.g., “Type the program into the editor window, hit the run button, and the results will appear”) make it difficult reading, especially for students (and instructors!) unfamiliar with Matlab. The uses and limits of modeling so deftly discussed in the first edition are not as obvious here. Although a brief summary of the spring bloom begins this chapter in lieu of a first chapter on the topic, instructors may wish to place this chapter later in the semester after students have been exposed to the seasonal dynamics of phytoplankton and zooplankton and become more able to evaluate the uses, limits, and applications of modeling. Several chapters remain standouts, as they were in the first edition. Chapter 2 on phytoplankton has been updated to include the rapid advances that molecular biology and genome sequencing have brought to the field. Chapter 3 on primary production has been expanded and includes advances in fluorometry, including pulse amplitude-modulated fluorometers and fast-repetition-rate fluorometers, and their application for understanding measurements of productivity in the ocean. Discussion of iron limitation, presented in this chapter in the first edition, has been moved to Chapter 16: Ocean Ecology and Global Climate Change. Chapter 5: A Sea of Microbes has been updated with an expanded discussion of planktonic archaea and viruses. Chapter 6: The Zoology of Zooplankton is nearly identical, with a nice addition of a section on box jellies. Overall, I still prefer the first edition for its friendly voice, its ability to connect disparate topics, and its better suitability as a general introduction to the topic. The second edition just doesn’t mesh in the manner of the first. If you want an up-to-date synopsis (albeit uneven treatment) of biological oceanography, this is a great text. If you want something more general, get the first edition, or go for the Open University’s introductory text on the subject, or check out Takahashi and Hargraves (which, though dated, remains true to the subject).

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