

## Book Reviews

### **Fisheries Acoustics: Theory and Practice, 2nd edn**

*By Simmonds E.J. and MacLennan D.N. Fish and Fisheries Series, Blackwell Publishing, Oxford, 2005*  
ISBN 063205994X Hardback, £99.50, US\$199.99,  
AUS\$383.0, 456 pages, 189 illustrations.

This book reviews an extensive range of material from a wide range of established scientists in the fisheries acoustics community. It is a timely and indispensable book for fisheries science which needs efficient and standardized procedures for fish sampling. Today, fisheries acoustics is a central discipline for *in situ* observations of aquatic organisms extending from plankton to whales. Acoustic methods are needed for stock assessment exercises and for behavioural studies, starting from freshwater rivers and extending to the open ocean, including inland lakes and estuaries. Present uses of fisheries acoustics are not only directed at assessment methods, but also at ecological and management studies. The main advantage of acoustics is that it provides for the possibility of collecting information either in an instant or over an extended period, with observations being at all scales from mm to km; for example, from fish to schools at the 'micro-scale', school to a cluster of schools at the 'meso-scale' and clusters to populations at the 'macro-scale'. Observations can be made independently of intrusive fishing operations and are not constrained by the limits of visual observation methods. In fisheries science, whether the approach is at the ecosystem level or is just dealing with individual populations using classical models, fisheries acoustics methods are crucial for an accurate validation of some key parameters for management models. It should also be born in mind that the observation of marine organisms remains particularly difficult in comparison to aerial or terrestrial animals.

This new edition of *Fisheries acoustics* is thus very welcome; the techniques and methods of measure-

ment have quickly evolved during the 12 years that have passed since the first edition. The authors have integrated into the text the new developments that have occurred since then, following the main new trends in the field. Formerly, analyses of acoustics data were limited to specialists and required a long time for processing. The developments in personal computers have increased capabilities in all domains such as in central unit processors, virtual memory, as well as in signal and image analysis. These developments now allow data collection, treatment and analysis using adapted software as a real possibility even to the non-specialists.

*Fisheries acoustics* manages to be both a book that can be used to learn about underwater acoustics in fisheries and to be also a good overview of the methodologies already used widely by national and international organizations. The book has been redrafted with well-organized chapters each written by one of the two authors. It reviews everything from underwater sound introduction to the state of the art in the analysis of acoustic data. Electronic tagging and tracking techniques are not included, reflecting the regrettable 'separation' between the two scientific communities. Some biological aspects are perhaps dealt with rather briefly, such as the avoidance reaction of fish in front of a vessel, but the pragmatism of both authors avoids scientific polemics and in most areas focuses directly on the essential points, which allows specialists and non-specialists alike to understand the science of fisheries acoustics. There are also some very well-organized colour figures. It would have been perhaps useful to have a reference list at the end of each chapter, or maybe a classification of references by topic.

From a retrospective point of view a book captures a moment in time. As with all scientific fields, fisheries acoustics techniques and methods continue to progress. We can already mention, as an example, that just after the book appeared, results were published on the use of omnidirectional

sonar in fisheries science, and on the use of ocean-acoustic waveguide remote sensing in continental shelf environments. Considering the prolific literature produced by scientists around the world, the authors have judiciously selected 770 references as the key introductory texts, in order to offer an essential book of theory and practice to the reader.

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### **Marine Ecology. Process, Systems, and Impacts**

*Edited by Michael Kaiser, Martin Attrill, Simon Jennings, David N. Thomas, David Barnes, Andrew Brierley, Nicholas Polunin, David Raffaelli and Peter B. Williams Oxford University Press, Oxford, 2005*  
ISBN 978 019 9249756; GBP 27.99 (Paperback)  
580 pages, 455 colour illus. On-line resources –  
hyperlinked bibliography and figures for each  
chapter available on the web.

Oxford University Press have just published an excellent textbook entitled 'Marine Ecology: Processes, Systems and Impacts'. The nine UK-based authors are each at the forefront of their respective research topics and specialize in subjects as diverse as microbiology, climate change, fisheries and polar life. Their range of cutting-edge expertise shines through in the text providing a global perspective on marine issues. The book flows well, giving a clear and concise account of the underlying science interwoven with bang up-to-date case histories. An appealing aspect of the book is that it introduces processes that are fundamental to an understanding of marine ecology then regularly revisits these underlying principles as the authors introduce you to the wealth and diversity of the marine realm.

The fundamentals of algal production and microbial ecology are dealt with in detail and right up front in the logical sequence of the text, which is good to see given their critical roles in the functioning of our planet. There are comprehensive chapters on estuaries, intertidal areas, pelagic ecosystems, shelf seas, the deep sea, mangrove and seagrass habitats, tropical coral reefs and polar regions, although the deep-sea section is, to my mind, rather short. A second edition might see improvements to the photographic plates (replacing a few fuzzy images and adding scale bars where necessary). The drawings, however, are highly informative and enhance the overall coherence of the book. I am pleased to see that some of my pet research topics are well covered (e.g. data from satellite tracking fishing vessels and from maerl habitats) and I would thoroughly recommend the text to fellow marine scientists and educators as it provided me with some much needed revision of subjects I had picked up incorrectly in the past.

A major strength of this work, and one that sets it apart from the approach adopted by older marine ecology textbooks, is the emphasis on human-induced impacts to the marine realm. Marine scientists are called upon more and more to provide society with the scientific basis for improved management of our shared resources. The book introduces huge topics such as the implications of climate change and shifting policy in relation to marine socioeconomics. It provides an excellent set of contemporary weblinks and reading lists to help the reader quickly find the best sources of more detailed information. This book will be of use to current practitioners and inform a new generation of marine scientists about major ways in which we are influencing the ecology of our seas.

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