The Great Barrier Reef: Biology, Environment and Management

Author: Hamylton, Sarah

Source: Journal of Coastal Research, 36(1) : 204

Published By: Coastal Education and Research Foundation

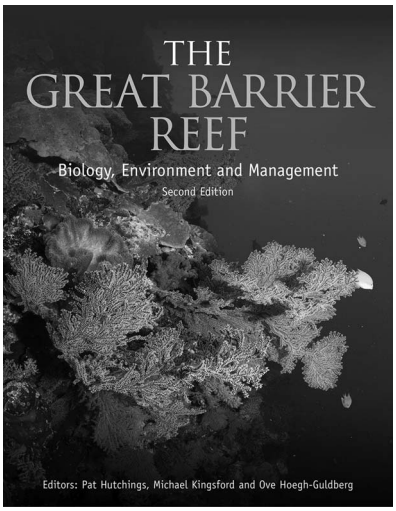
URL: https://doi.org/10.2112/JCOASTRES-D-19A-00006.1

www.JCRonline.org

BOOK REVIEWS

www.cerf-jcr.org

Hutchings, P.; Kingsford, M., and Hoegh-Guldberg, O. (eds.), 2019. *The Great Barrier Reef: Biology, Environment and Management*, 2nd edition. Clayton, Australia: CSIRO Publishing, 488 pages. ISBN: 9781486308200 (available in paperback and e-book).



As pressures on the Great Barrier Reef intensify, there is a growing need to consolidate and communicate the existing scientific knowledge about this globally important coastal environment. *The Great Barrier Reef: Biology, Environment and Management* is the second edition of an edited collection of 32 chapters written by 48 leading coastal and marine experts. The editors have done a good job of bringing together insights from a diverse range of disciplinary fields that constitute "Great Barrier Reef science."

The book is organised into three sections: The Nature of the Reef (chapters 2 to 9), Factors Affecting the Reef (chapters 10 to 14), and Overview of Reef Biodiversity and Organisms (chapters 15 to 32). For a book subtitled "Biology, Environment and Management," it is a pleasant surprise that the first chapter provides an overview of reef geomorphology (by David Hopley and Scott Smithers) and the second describes how the reef has built incrementally with high sea levels over the last 600,000 years.

One of the primary advantages of edited collections, particularly revised editions, is that they communicate the most recent advances in a given subject area. For example, the newly introduced chapter 7 (by Bridge *et al*.) presents detailed bathymetric diagrams revealing the dramatic changing character of the outer shelf with latitude and the considerable extent of *Halimeda* bioherms, palaeochannels, and submerged shoals. These are all reasonably new discoveries enabled by cutting-edge science. One extraordinary photograph shows divers observing the steep canyon walls of the Starkey River palaeochannel, approximately 90 m below the surface. It is unclear whether they are student volunteers or the authors themselves.

In the second section of the book, a new chapter on fisheries shows us that management interventions have considerably reduced the number of active licences across most fisheries. However, there is still some way to go to ensure the sustainability of Great Barrier Reef fisheries, as illustrated by the recent collapse in scallop stocks, driven by trawling. Other management chapters cover human and natural disturbances, climate change, runoff, and a review of the Great Barrier Reef Marine Park Authority's planning and management. Text highlighted in blue boxes draws our attention to pressing issues, such as predictions from the Intergovernmental Panel on Climate Change about the consequences of inaction: "It is almost certain that back-to-back bleaching events will be commonplace in 5–10 years, driving coral cover within reef systems to very low levels" warns the University of Queensland's Professor Ove Hoegh-Guldberg.

Life on the reef is the focus of the third section of this book, and the seabed gets a thorough treatment. Eighteen chapters describe the biodiversity of the Great Barrier Reef from plankton to marine mammals, and a lot in between. More information on the flora and fauna of the islands, and the work on ecological genetics and its potential to address some of the pressing climate change threats would have been welcome.

This book is of considerable practical value for university students, the primary target readership. This value stems from both the cross-disciplinary understanding that emerges from the collective chapters, and the depth with which many of the contributors treat their subject, delivering a wealth of curious facts that jump off the pages. In many cases, such attention to detail is accompanied by a broader commentary on the influence of climate change on the Great Barrier Reef. Overall, the editors and authors have teamed up to construct a coherent, accessible, and comprehensive review of contemporary science on the Great Barrier Reef. Critically, in combining cutting-edge science with the identification of management challenges on the horizon, this collection is also a useful guide to agencies and coastal managers who wish to incorporate insights into their suite of management tools, placing this book at the forefront of the coral reef science literature.

Dr. Sarah Hamylton
School of Earth, Atmospheric and Life Sciences
Faculty of Science, Medicine and Health
University of Wollongong
Wollongong 2522, NSW, Australia

DOI: 10.2112/JCOASTRES-D-19A-00006.1