

THE OFFICIAL MAGAZINE OF THE OCEANOGRAPHY SOCIETY

# Oceanography

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Grassle, J.P. 2014. Review of *Marine Conservation: Science, Policy, and Management*, by G.C. Ray and J. McCormick-Ray. *Oceanography* 27(2):226–227, <http://dx.doi.org/10.5670/oceanog.2014.58>.

## DOI

<http://dx.doi.org/10.5670/oceanog.2014.58>

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## Marine Conservation: Science, Policy, and Management

By G. Carleton Ray and Jerry McCormick-Ray, 2014, Wiley Blackwell, Chichester, UK, 370 pages, ISBN 978-1-4051-9347-4, Softcover \$79.95 US, E-book \$63.99 US

REVIEWED BY JUDITH P. GRASSLE

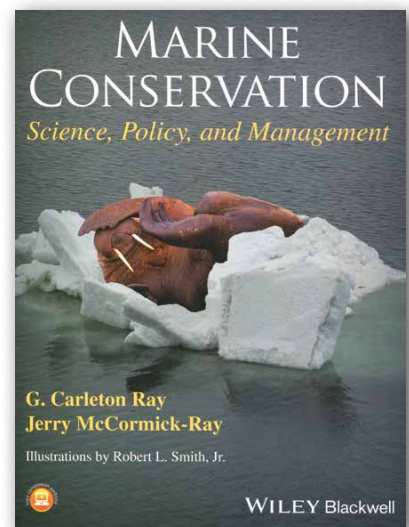
I have used these authors' previous text, *Coastal-Marine Conservation: Science and Policy* (2004), in an upper-level undergraduate course on coastal marine conservation for several years, and have been looking forward to the planned expansion of the number of region-specific case studies in this new volume. The previous three cases (Chesapeake Bay, the Bering Sea, and the Bahamas) are well chosen because they provide opportunities to focus on different key issues. Chesapeake Bay exemplifies a very well-studied system that is subject to multistate jurisdictions in the United States and that has been profoundly influenced by human disturbance. The Bering Sea case study provides opportunities to discuss the system-wide effects of large-scale physical oscillations and to focus on the population dynamics of certain charismatic species of marine mammals and fish. The Bahamas exemplify an island nation whose economic dependence on ecotourism dictates preservation of biodiversity at all levels while at the same time dealing with a potential shortage of freshwater and with the many-layered national jurisdictions in the Caribbean. These case studies are in the current volume. All have been revised and new material has been added. One welcome change is that each chapter is now extensively documented by citations from the peer-reviewed and gray literature, many of the latter accompanied by a corresponding online source.

The four "new" case studies, some of which are unexpected choices, each have their own authors. Giving the full chapter titles helps to explain the choices:

- The Isles of Scilly: Sustaining Biodiversity
- Gwaii Haanas: From Conflict to Cooperative Management
- South Africa: Coastal-Marine Conservation and Resource Management in a Dynamic Socio-Political Environment
- Species-Driven Conservation of Patagonian Seascapes

Reading these case studies suggested some additions to my bucket list of the last, best places on Earth to visit. More seriously, I look forward to testing them out on my students, whose perspectives on the world will certainly be enriched by reading them.

One strength of these authors' 2004 volume was the chapter on the mechanisms available to marine conservation researchers and managers, that is, the policies, strategies, and tactics that must be developed from an original vision of marine protection and restoration. This chapter details in a series of tables the complex array of international treaties and conventions and US legislation that all affect marine conservation action plans. Other tables list international conventions on vessel pollution of the pelagic realm, United Nation agencies with international marine programs, United Nations Environment Programme (UNEP) Regional Seas Conventions, and the international banks and funds that can provide support for conservation. There is an updated map showing the 64 Large Marine Ecosystems that were designated to foster ecosystem-based management and assessment of regional



Cover image created in Photoshop by Robert L. Smith from two photographs taken by the authors of this text.

marine fisheries resources. There is a table showing the large number of Marine Protected Areas worldwide and the discouragingly tiny fraction of the world ocean that they cover. This chapter is a useful introduction for students to the alphabet soup of agencies, laws, and nongovernmental organizations. To students who generally complain about the cost of assigned course texts and their short-lived utility, I suggest they keep this particular text as a primer if they are planning careers in marine conservation.

I was interested in assessing whether certain emergent issues of the last decade receive more focused attention in this new volume than in the previous one, issues such as human population increase, overfishing, invasive species, climate change, ocean acidification, and anoxia. The authors identify the latter three as *the* emergent issues of the day, and this is reflected throughout the text. Human-caused climate change is now central to almost every chapter of the book. Whereas the previous volume briefly reflected uncertainty about its causes or direction, the present one takes it as a given whose effects have already changed ecosystems. Multiple figures and tables vividly document

these changes. Previously, reports by the Intergovernmental Panel on Climate Change went unmentioned, but the 2007 report now figures in the subject index, and references to the report appear multiple times in the individual chapter bibliographies.

Other welcome changes in this new volume are the larger page format and the colored illustrations, many of them photographs taken by the authors. Robert L. Smith is credited for many illustrations, including the frontispiece, which depicts an idealized coastline, from high latitude to low, with no humans or human artifacts in sight. This illustration formed the cover of the 2004 volume. The cover of the 2014 edition is an amusing Photoshopped integration of Bering Sea photographs of a walrus swooning on a jagged ice floe, a not-so-oblique reference to the centrality of climate change in this new synthesis. These illustrations might suggest that humans do not figure largely in this book, but in fact they are everywhere. In every chapter, the actions of humans as agents of coastal change are traced from the historical past to the present. Indigenous societies and their present-day circumstances and needs are considered. Humans as ocean explorers, philosophers, and researchers are quoted, named, and honored. Nearly 50 contemporary authorities are the authors of the 38 “boxes” interspersed throughout the text. These boxes variously supply focused perspectives on special topics relevant to the chapters in which they appear. For example, in Chapter 3 (Marine Conservation Mechanisms), three US National Oceanic and Atmospheric Administration scientists write on the failures of the International Whaling Commission to curb previous illegal whaling by the former Soviet Union. In Chapter 8, a representative of The Nature Conservancy writes about recent initiatives in the Bahamas

in partnership with other Caribbean countries to protect 20% of Caribbean marine and coastal habitats by 2020. In a separate box, The Bahamas Minister for the Environment states unequivocally, “It is countries like the Bahamas—low lying coastal nations with alluring displays of beautiful beaches, crystal-clear warm waters, and sublime winter climates—that face the adverse impact of climate change most acutely.” He goes on to detail recent legislative actions taken by Bahamians to protect their environmental heritage and their livelihoods.

As I prepare to use this text as a teaching tool, my attention is drawn to a recent journal article titled “Cultivating Creativity in Conservation Science” (Aslan et al., 2013). The authors point out that while the fields of business, education, and engineering have long realized that creativity can be taught in universities and fostered in organizations and corporations, conservation biologists and environmental managers have been slow to take advantage of this knowledge. The authors identify four strategies for developing creative approaches to the solution of complex conservation issues. *Marine Conservation: Science, Policy, and Management* amply supplies information and insights on the issues. The challenge for an instructor is not to let students become overwhelmed by the magnitude and apparent intractability of the problems, but to free them up to think about novel solutions.

## REFERENCE

Aslan, C.E., M.L. Pinsky, M.E. Ryan, S. Souther, and K.A. Terrell. 2013. Cultivating creativity in conservation science. *Conservation Biology* 28:345–353, <http://dx.doi.org/10.1111/cobi.12173>.

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