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ment of the GBR compared with many terrestrial national parks. The final part of this chapter reflects on the importance of global climate change and the impact of projected sea-level rise on the GBR from a geomorphological perspective. This discussion is very relevant for the current global debate on the impacts of climate change such as the Fourth Assessment of the Intergovernmental Panel on Climate Change (IPCC), in particular the report from Working Group II (Parry et al., 2007). At the regional level, this issue is also addressed in the recent volume on *Climate Change and the Great Barrier Reef* (Johnson and Marshall, 2007), which incorporates a detailed discussion on potential geo-

morphological impacts resulting from climate change on the GBR.

Overall, I think the book is an excellent synthesis of current knowledge on the geomorphology of the Great Barrier Reef. While I agree with the authors that understanding geomorphological reef processes is very important in the management of the GBR, I don't think that this book alone will convince managers of that need because it is largely written for a different target audience. However, the book will undoubtedly become an essential reference for reef researchers and graduate students, and I give it my strongest endorsement. I congratulate the three authors on producing such a comprehensive text.

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The Unnatural History of the Sea

We learn from history that we do not learn from history.

—Georg Wilhelm Friedrich Hegel (1770–1831)

By Callum M. Roberts, Island Press, 2007, 435 pages, ISBN 9781597261029, Hardcover, \$28.00 US

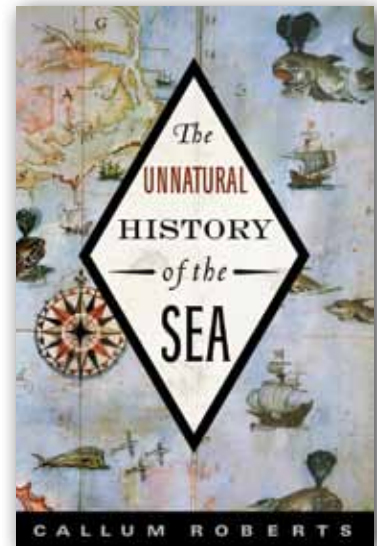
REVIEWED BY ANDREW J. READ

On June 15, 2006, President George W. Bush created the world's largest fully protected marine reserve, the Papahānaumokuākea Marine National Monument in the Northwestern Hawaiian Islands (NWHI). Established by Presidential proclamation, the monument is the largest conservation area in the United States. In his proclamation speech, the president noted that, "our duty is to use the land and seas wisely, or

sometimes not use them at all."

Coming, as it did, from a president not known for his sensitivity to environmental issues, the establishment of the Papahānaumokuākea Marine National Monument was a major victory for the conservation of marine ecosystems. Commercial fisheries, and other forms of resource extraction, are to be banned from the monument, providing an unparalleled level of protection to the fragile coral reef ecosystems of the NWHI. Coral reefs are often described as the rainforests of the sea because of their biodiversity and, in some areas, high levels of endemism.

Throughout the world ocean, coral



reefs are in decline, due to the synergistic effects of overfishing, coastal development, and climate change. One of the most pervasive threats is overfishing, particularly of large, predatory fishes. In one stroke of his pen, President Bush eliminated this threat to the extensive

coral reef systems in the NWHI. But what of coral reef systems elsewhere in the world? And what about the effects of fishing on other, less-celebrated marine ecosystems?

To answer these questions, Callum Roberts has written *The Unnatural History of the Sea*, which he describes as "...an account of the history of fishing and the effects it has had on the sea." The book is encyclopedic in scope, starting with the earliest accounts of fishing in the medieval period and continuing to the present. Roberts covers the history of European and North American harvests of whales, seals, sea turtles, oysters, and fish and the effect of these removals on marine ecosystems.

The history of many fisheries, as seen through Roberts' long historical lens, is depressingly familiar. The initial discovery of a new resource is followed by a rapid and profitable harvest expansion, which leads to overcapitalization, excess harvesting capacity, and eventual collapse of both the resource and the fishery. Roberts argues, correctly in my view, that to fully understand the effects of marine fisheries, we need to compare the current status of marine ecosystems with their structures and compositions prior to exploitation. But this is a difficult task, as most marine ecosystems were first exploited long before the fields of marine ecology and fisheries biology were conceived. Intensive fisheries have existed in Europe for centuries, but systematic observations of fisheries and fish populations (using fisheries-independent data) began only at the dawn of the twentieth century. Thus, when we examine trend data on the abundance of an exploited population, the starting point of our time series may not be representa-

tive of pre-exploitation conditions. This gap in our knowledge is exacerbated by the problem of shifting baselines, a term coined by Daniel Pauly of the University of British Columbia, which describes the tendency of each scientist to evaluate the degradation of marine ecosystems over her or his lifetime, thus ratcheting down expectations of ecosystem structure and function.

One of the great strengths of *The Unnatural History of the Sea* is the use of older sources. The first third of this book, entitled "Explorers and Exploiters in the Age of Plenty," is replete with citations to antique volumes. In the preface, Roberts admits to "an incurable passion for dusty, ancient tomes," and the reader is all the better for his obsession. Later in the book, Roberts describes some of the first reviews of the ecological effects of commercial fishing, including a British Royal Commission appointed to examine the effects of bottom trawling in 1863. The excerpts of the Commission report will make sadly familiar reading to anyone acquainted with today's battles over fisheries conservation in Europe or North America.

Any book of this scope will contain some shortcomings and a few errors, and *The Unnatural History of the Sea* is no exception. Roberts does not give much consideration to opposing points of view and occasionally presents controversial hypotheses without an adequate explanation of the uncertainty associated with these ideas. Nevertheless, the book is a call to action rather than a dry, scholarly account of divergent viewpoints, and I have no quarrel with any of Roberts' fundamental conclusions.

In the last third of the book, Roberts lays out a series of recommendations

for the reform of fisheries management. He does so in a nontechnical and very accessible fashion, in keeping with the rest of the book. He identifies seven specific areas of reform that he believes are necessary to create sustainable (and more profitable) fisheries: (1) reduce the amount of fishing, (2) eliminate risky decisions, (3) eliminate catch quotas, (4) require fishers to keep what they catch, (5) use the best available fishing technology to reduce bycatch, (6) ban or restrict the most damaging fishing gear, and (7) implement extensive networks of marine reserves that are off limits to fishing. Roberts is best known for his work on marine reserves and he makes a strong argument for their efficacy in improving fish yields and conserving biodiversity.

I read Callum Roberts' book while taking a graduate class in Marine Conservation Biology to Midway Atoll in the newly created Papahānaumokuākea Marine National Monument. After the experience of snorkeling in a small marine reserve near Honolulu, my students and I were amazed to see the abundance and size of reef fish at Midway. It was a profound experience to swim alongside enormous jacks and through huge schools of goatfish. Perhaps Roberts' book, and his optimism, will help to prove Hegel wrong. I hope so.

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