

the volume or on the cover (!), and that one paper (by Zhu *et al.*) makes liberal reference to colour figures unfortunately reproduced in black and white (eight of the other contributions *are* reproduced with colour figures), but none of these points detracts from the value of this compilation. This book is a must-read for any petroleum geologist or geophysicist interested in Foothills plays, and at a cost of only CDN\$50 (CSEG member price, paperback) it should be a must-have, also.

## Beaches and Dunes of Developed Coasts

By Karl F. Nordstrom  
Cambridge University Press  
40 West 20<sup>th</sup> Street  
New York, NY 10011-4211 USA  
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Partway through this book, the author observes that Great Britain has effectively *no* entirely natural coastal dune systems, even in areas that casual visitors might consider to be undisturbed by humans. The complexity and extent of human influence on coastal dune and beach systems are profound, and *Beaches and Dunes of Developed Coasts* provides an encyclopedic review of the subject. The author takes a holistic view, incorporating data from such fields as history, geomorphology, sociology, and ethics. The end result is a reasonably successful book.

The first two chapters are largely introductory. Chapter 1 reviews trends in human influence on the coastal zone from antiquity to the present day, while Chapter 2 reviews the numerous ways in which modern coastal landforms are influenced by human activity. The following two chapters look more closely at human action in the coastal zone. Chapter 3 discusses efforts at replenishing coastal landforms by introducing extraneous material (generally sand), while Chapter 4 documents the effects of

anthropogenic structures on sediment supply and landform evolution. This section of the book provides interesting reading, including a cautiously favourable reassessment of the use of hard structures, such as the much-maligned groin.

Chapter 5 opens by discussing the characteristics (dimensions, location, orientation, variability, mobility, and sediment characteristics) of human-altered beaches and dunes. This is followed by an interesting treatment of the decreasing distinction between natural and anthropogenic coastal landscapes. Many human influences are subtle, and what the casual user sees as a natural environment may be or have been strongly affected by human activity. The complex interaction of natural and human influences makes it difficult to place coastlines definitively on the continuum between entirely natural and entirely anthropogenic.

Chapter 6 discusses landscape change over various time frames. These range from coastal modification by storms and subsequent recovery projects to the pressing issue of how to manage developed shorelines in the face of rising sea level. Management questions provide a transition to Chapter 7, which selectively reviews coastal management policies and programs, primarily using examples from the United States. This section is not always easy to read, but it provides useful insights into how good policies can be thwarted by lack of funding, and good projects hobbled by lack of regional coordination. An additional difficulty is that the main consideration of most shore-protection programs is perceived social or economic benefit, rather than maintenance of natural ecosystems including sedimentary systems.

Chapter 8 considers how best to maintain and enhance natural coastal features. The author emphasizes the need to preserve the processes of dynamic natural systems, rather than adopting a static approach aimed at preserving individual landforms. The discussion ranges from the ethics of landscape restoration to the technical problem of protecting shoreline development while maintaining landforms in something like a naturally functioning state. The final chapter offers suggestions for future research. Most focus on science and engineering, but there is a strong empha-

sis on interdisciplinary research that includes the humanities and social sciences.

A major theme of the book is pragmatic coexistence of natural processes and landforms with human structures and activities. The author argues that because human influence is pervasive it must be included as a factor at all scales of modeling and planning. Indeed, in a proposal that may displease environmental purists, the author proposes that humans should be considered intrinsic rather than extrinsic factors in coastal evolution.

The book is well produced. Photographs are well chosen, although some are too dark or need additional explanation or annotation. Line diagrams lack scale bars. The text is grammatically sound and generally well argued, with few typographic errors. In some instances the prose is dense and difficult to follow. Additional stylistic editing might have produced a more user-friendly work. In view of the wide intended readership, a glossary would be a useful addition. More than 900 publications are cited and about half are from 1990 or later.

*Beaches and Dunes of Developed Coasts* contains little new data, but digests a great deal of information from diverse disciplines into a single source. I doubt that it will find much use as a teaching text, but it could be a useful reference for students studying coastal development issues. Those concerned solely with scientific aspects of coastal sedimentation will probably find the book to be of limited interest. However, professionals actively dealing with coastal development and preservation should find it a useful addition to their bookshelves, and may even find that it becomes a standard reference.