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# Coastal Cliffs: Morphology and Management

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# Preface

Coastal cliffs have formed as the result of erosion of the borders of uplands. They present a range of problems, many of which are the result of their instability: they have retreated and are still receding, some rapidly, others very slowly. As they recede, areas of land are consumed, most of which are valued, either because of their utilisation for agriculture, industry, human settlements or communication, or because they are resources of scenic, recreational or scientific significance.

Coastal cliffs are landforms produced and modified by geomorphological processes. Their abruptness provides secure habitats for plants and animals, particularly birds, but they are also hazardous, a place where accidents happen; where people can come to harm. They provide sections exposing geological formations and are consequently of educational value and features that stimulate research in geology, geomorphology and ecology: features and processes. They offer opportunities for recreation, such as climbing and abseiling, or launching places for kites and hang-gliders. They attract artists and photographers, walkers, bird watchers, as well as people who simply come to enjoy the view. Their scenic attraction and ecological importance have been recognised in the designation of coastal reserves of various kinds, including national parks, nature reserves, sites of scientific interest, bird sanctuaries and recreation areas.

This book provides an introduction to the geology and geomorphology of cliffs, their evolution and the changes taking place on them. There is consideration of the various coastal processes that have shaped them and that result in changes. There is explanation of how they change, and the differing rates at which they recede. On some coasts, cliff recession has been halted, but this is not always necessary or desirable. Where they have been stabilised in one way or another there have sometimes been unexpected consequences, such as the loss of nearby beaches. The decision on whether to stabilise cliffs or allow them to continue to recede is an important part of coastal cliff management.

Such management should be based on an understanding of geomorphology: how a cliff or bluff has formed, how it is changing naturally and as the result of human activities and how management procedures are likely to modify it. This

requires knowledge of the processes at work, their effects and changes likely to occur whether they are modified. The present book provides background to this knowledge.

The text is accompanied by numerous photographs, intended to illustrate and clarify concepts of cliffed coasts and their management. The author is of the opinion that these illustrations provide important supplements to the text, showing the variety of situations that have arisen on coasts around the world. Lists of References provide a guide to more detailed information, and a Glossary is provided to explain the meanings of technical terms used in the text.

Eric Bird is a Principal Fellow in the Department of Geography, University of Melbourne, and Director of Geostudies. He is the author of several books, including *Beach Management* (1996), *Coastal Geomorphology: An Introduction* (1999, 2008), *Submerging Coasts* (1993), an *Encyclopedia of the World's Coastal Landforms* (2010) and (with Nick Lewis) *Beach Renourishment* (2015). He lives and writes in Melbourne.

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