
Contents

Note: A CD-ROM containing figures and animations accompanies this book. Readers can access the contents on this CD-ROM by opening the file *default.htm*. If any problem occurs, instructions on accessing this CD-ROM can be found in the file *help.htm*.

Foreword

The Right Honourable Malcolm Fraser, A.C., C.H.

Introduction

Oceanographic Processes of Coral Reefs
David Suzuki

Chapter 1

The Place of Science and Technology in the Wise Management
of the Great Barrier Reef. 1
Joe Baker

Chapter 2

Physics–Biology Links in the Great Barrier Reef. 7
Eric Wolanski

Chapter 3

Landcover and Water Quality in River Catchments of the Great
Barrier Reef Marine Park 19
Andrew K.L. Johnson, Robert G.V. Bramley, and Christian H. Roth

Chapter 4

Runoff of Terrestrial Sediment and Nutrients into the Great Barrier
Reef World Heritage Area 37
Miles Furnas and Alan Mitchell

Chapter 5

Water Circulation in Mangroves, and Its Implications for Biodiversity 53
*Eric Wolanski, Yoshihiro Mazda, Keita Furukawa, Peter Ridd,
Johnson Kitheka, Simon Spagnol, and Thomas Stieglitz*

Chapter 6

Muddy Coastal Waters and Depleted Mangrove Coastlines—
Depleted Seagrass and Coral Reefs. 77
Norman C. Duke and Eric Wolanski

Chapter 7

The Effects of Siltation on Tropical Coastal Ecosystems 93
Miguel Fortes

Chapter 8

Modelling and Visualising Interactions between Natural Disturbances and
Eutrophication as Causes of Coral Reef Degradation 113
Laurence J. McCook, Eric Wolanski, and Simon Spagnol

Chapter 9

Biodiversity on the Great Barrier Reef: Large-Scale Patterns
and Turbidity-Related Local Loss of Soft Coral Taxa 127
Katharina Fabricius and Glenn De'ath

Chapter 10

River Plume Dynamics in the Central Great Barrier Reef 145
*Brian King, Felicity McAllister, Eric Wolanski, Terry Done,
and Simon Spagnol*

Chapter 11

Connectivity in the Great Barrier Reef World Heritage Area—
An Overview of Pathways and Processes 161
Mike Cappo and Russell Kelley

Chapter 12

A Model of the Ecosystem, and Associated Penaeid Prawn
Community, in the Far Northern Great Barrier Reef 189
Neil A. Gribble

Chapter 13

The Effects of Water Flow around Coral Reefs on the Distribution
of Pre-Settlement fish (Great Barrier Reef, Australia) 209
John H. Carleton, Richard Brinkman, and Peter J. Doherty

Chapter 14

Topographic Steering by Coral Reef Assemblages 231
Simon Spagnol, Eric Wolanski, and Eric Deleersnijder

Chapter 15

Environmental Factors Influencing the Activity of Black Marlin 237
Peter Speare and Craig R. Steinberg

Chapter 16

Ocean Nutrients to Sediment Banks via Tidal Jets and *Halimeda* Meadows 255
Edward A. Drew

Chapter 17

Climate Variability and Change on the Great Barrier Reef 269
Janice M. Lough

Chapter 18

The Sea Surface Temperature Story on the Great Barrier
Reef during the Coral Bleaching Event of 1998 301
William Skirving and John Guinotte

Chapter 19

The Challenges of Coral Reef Management in Indonesia. 315
Ian M. Dutton, Dietrich G. Bengen, and J. Johnnes Tulungen

Chapter 20

Will the Great Barrier Reef Survive Human Impact? 331
Frank H. Talbot