
Part III

Assessment of Marine Biological Diversity and Habitats

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3 Introduction – Biodiversity

- REFERENCES

4 Beaches and the Nearshore

- HABITATS
- Rocky shores
- Sandy beaches
- Muddy shores, estuaries and mangroves
- NEARSHORE BIODIVERSITY
- Turtles
- Bivalves and gastropods
- Crustaceans
- Cephalopods
- Bêche-de-mer
- Seabirds
- SOCIO-ECONOMIC SIGNIFICANCE
- THREATS
- CLIMATE DRIVERS
- HUMAN IMPACTS
- CONCLUDING REMARKS
- REFERENCES

5 Mangroves, Salt Marshes, Seagrass Beds

- MANGROVES
- Status and trends
- Coverage, distribution and composition
- Trends
- Threats
- SALT MARSHES
- Status and trends
- Coverage, distribution and composition
- Threats
- SEAGRASSES
- Status and trends
- Composition and coverage
- Threats
- DRIVING FORCES
- IMPACTS
- RESPONSES
- Mangroves

37

38

41

41

41

42

42

42

42

42

43

45

45

45

47

47

47

48

49

49

53

54

54

54

56

57

58

58

58

60

60

60

60

62

63

63

63

63

- Saltmarshes
- Seagrasses
- POLICY OPTIONS
- REFERENCES

6 Coral and Biogenic Reef Habitats

- INTRODUCTION
- SCALE OF BIOLOGICAL DIVERSITY (MAIN GRADIENTS OF DIVERSITY FOR SPECIES AND COMMUNITIES)
- PROPORTION OF MAJOR GROUPS OF SPECIES THAT ARE ASSESSED ON A SYSTEMATIC BASIS FOR STATUS
- TRENDS AND THREATS
- Drivers
- Pressures, state and impacts
- Responses
- CONCLUSION
- REFERENCES

7 Intertidal and Nearshore Rocky Reefs

- INTRODUCTION
- Rocky reefs: general overview and formation
- Biological structures and patterns of resource distribution in rocky reef habitats
- Rocky reefs in the WIO region
- IMPORTANCE OF ROCKY REEF ECOSYSTEMS IN THE WIO REGION
- Ecological value
- Socio-economic value
- Conservation value
- THREATS TO THE INTERTIDAL ROCKY REEF ECOSYSTEMS IN THE WIO
- Resource overexploitation
- Trampling
- Pollution
- Introduced species
- Climate change
- Coastal development
- CONCLUSION AND IDENTIFICATION OF GAPS
- REFERENCES

8 Shelf Sediments and Biodiversity

• WHAT ARE CONTINENTAL SHELVES?	103
• TYPES OF SEDIMENT	105
• BIODIVERSITY AND SHELF SEDIMENTS	105
• IMPACTS ON SHELF SEDIMENTS	108
• CONCLUSIONS	108
• REFERENCES	109

9 Deep Sea and Offshore/Pelagic Habitats

• INTRODUCTION	115
• Plate tectonics	115
• Hotspots and other geological features	115
• Ocean basins	116
• Oceanography	116
• Productivity	117
• SCALE OF BIOLOGICAL DIVERSITY (MAIN GRADIENTS OF DIVERSITY FOR SPECIES AND COMMUNITIES)	118
• Marine mammals	118
• Marine turtles	118
• Seabirds	118
• Elasmobranchs	119
• Bony fish	119
• PROPORTION OF MAJOR GROUPS OF SPECIES THAT ARE ASSESSED ON A SYSTEMATIC BASIS FOR STATUS	119
• TRENDS AND THREATS	120
• Drivers	120
• Pressures, state and impacts	120
• Responses	120
• CONCLUSION	124
• REFERENCES	124

10 Threatened Marine Species

• INTRODUCTION	129
• VULNERABLE OR THREATENED MARINE SPECIES IN THE WESTERN INDIAN OCEAN	130
• SEAGRASSES	131
• HARD CORALS	132
• GASTROPOD MOLLUSCS	132

• SEA CUCUMBERS	133
• RAYS	133
• SHARKS	133
• BONY FISH	134
• MARINE TURTLES	135
• MAMMALS	136
• CURRENT TRENDS AMONG POPULATIONS OF THREATENED MARINE SPECIES	137
• CAPACITY AND NEED TO PROTECT THREATENED SPECIES IN THE WIO REGION	138
• CONCLUSIONS AND RECOMMENDATIONS	139
• RECOMMENDATIONS	139
• Raised awareness	139
• Increased funding for marine resource management	140
• WIO Threatened Species Task Force	140
• National integration and cross-sectoral cooperation	140
• Strengthened regional integration and coherence	140
• Alternative livelihoods	140
• Alternative food sources/equivalents	140
• Monitoring the harvest of threatened species	140
• Targeted research	140
• REFERENCES	143
• APPENDIX 10.1	146

11 Significant Social and Economic Aspects of Biodiversity Conservation

• INTRODUCTION	153
• THE SOCIAL CONTEXT OF CONSERVATION	154
• TRADITIONAL MANAGEMENT REGIMES	154
• VALUATION OF RESOURCES AND BENEFITS TO BIODIVERSITY	154
• ECOTOURISM AND CONSERVATION THROUGH NON-CONSUMPTIVE USES OF RESOURCES	156
• THE COSTS OF BIODIVERSITY LOSS	159
• MANAGEMENT RESPONSES TO BIODIVERSITY CONSERVATION	159
• RECOMMENDATIONS FOR POLICY	163
• REFERENCES	164

12 Summary on Marine Biological Diversity

167



Introduction – Biodiversity

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Opposite page: Diversity of sea star colours at Inhaca Island, Mozambique. © José Paula.

While biodiversity is most simply defined by the Oxford dictionary as the variety of plant and animal life in the world or in a particular habitat, it is given greater complexity within certain disciplines. It can be viewed quite differently, for example, if one considers species diversity not from the more classical approach, but rather according to genetic diversity, where the variation within species at the molecular level is also considered, or ecosystem diversity, in which the same matrix of species can result in different biotopes under different environmental conditions. In the latter case, processes and species interactions within the ecosystem enter consideration, along with species diversity itself.

The importance of biodiversity is manifold. The popular concept of its importance is that the diversity of life in our environment enriches our lives, provoking the sentiment that it should be preserved in perpetuity so that our children will also enjoy what we have. While this sentiment is commendable, it is incomplete. If we are to preserve our biodiversity, it will ultimately be for our survival. Ecosystem services, or the provision of goods and services, enter the picture as well, as it is upon these services that human livelihoods are dependent. We need to sustainably conserve our environment and resources to survive.

This becomes particularly true in poorer communities that live metaphorically close to the soil (or sea). By and large, communities in tropical and subtropical regions fall into this category and this is the case throughout most of the western Indian Ocean (WIO) with its estimated popu-

lation of 156M people. Population drift to the coast in shore-fringed countries is a global phenomenon and, in sub-Saharan Africa, it is complex (see eg Annez and others, 2010, Parnell and Walawege 2011), much or most of the population being dependent on coastal and marine resources and ecosystem services. This dependence hinges around the biodiversity of these systems (see eg Díaz and others, 2006) and places direct and indirect pressures upon them through resource extraction, pollution and anthropogenically-driven habitat degradation. The effects and consequences of climate change add further pressure to this challenging situation; these and other anthropogenic pressures are summarised in IPCC (2014a, 2014b) documentation and are presented in the WIO context in the ensuing chapters.

The major coastal habitats in the WIO comprise estuarine and coastal systems ranging from mangroves, salt marshes and seagrass beds to beaches, rocky shores and reefs, coral reefs, nearshore sandy substrata, the offshore shelf and deep sea environments. The biodiversity of these is considered in the following chapters, giving consideration to their status and associated threats, and highlighting those that require special attention. While human implications are dealt with in terms of socio-economic considerations here, gaps in our capacity to deal with environmental management issues are dealt with in a later chapter. A summary of the main issues closes the section.

The coastal habitats under consideration in this section comprise the most productive of ecosystems, and the

richest in biodiversity in the world. Valuable additional reading can be found in a Millenium Ecosystem Assessment (Hassan and others, 2005), particularly the chapter on

coastal systems (Agardy and others, 2005), which presents the threats these ecosystems face with the associated issues in a global context.

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