

Chapter 2

Introduction

BCLME Top Predators Project Steering Committee

A seal, fifteen species of seabird and an endemic shorebird breed in the Benguela Current Large Marine Ecosystem (BCLME). Aspects of their biology may be readily monitored because they breed on land. For several reasons, which are expounded more fully in chapters 3, 46 and 47, it is necessary to undertake monitoring of the BCLME's land-breeding top predators. By virtue of their position at the apex of the food chain, they integrate processes occurring at lower trophic levels and hence are potentially good indicators of ecosystem changes. Further, several of the BCLME's predators have a poor conservation status. Many of the BCLME's predators are endemic to southern Africa, so that states bordering the BCLME have sole responsibility for their conservation.

Aware of these factors BCLME Project LMR/EAF/03/02 *A Regional Ecosystem Monitoring Programme: Top Predators as Biological Indicators of Ecosystem Change in the BCLME* was initiated in March 2004. It had as objectives "to assess the utility of top predators as biological indicators of ecosystem change in the BCLME, and to implement an appropriate, integrated, system-wide monitoring programme to support sustainable management of the BCLME." Towards this objective, the project:

- 1 Defined the objectives for an ecosystem monitoring programme in the BCLME based on land-breeding top predators (chapters 3, 46, 47);
- 2 Collated existing time series for land-based top predators of the BCLME (chapters 4, 5);
- 3 Analysed existing time series for land-based top predators to establish trends in these time series for Cape Fur Seal *Arctocephalus pusillus pusillus* (chapters 6, 7), African Penguin *Spheniscus demersus* (chapters 8, 10, 11, 13), Leach's Storm Petrel *Oceanodroma leucorhoa* (chapter 26), Great White Pelican *Pelecanus onocrotalus* (chapter 16); Cape Gannet *Morus capensis* (chapter 17), four cormorants *Phalacrocorax* spp. (chapters 19, 20, 25), Kelp Gull *Larus dominicanus vetula* (chapters 21, 22, 25), other gulls and terns (Laridae) (chapters 25, 26);
- 4 Considered the impact of habitat on the breeding success of African Penguins (chapter 12);
- 5 Considered the effect of age and breeding status on the moult phenology of African Penguins in Namibia (chapter 14);
- 6 Considered variability in foraging behaviour and chick growth of Cape Gannets (chapter 18);
- 7 Considered the energetic requirements of two species of seabirds in the BCLME (chapters 15, 23);
- 8 Documented primary moult in Kelp Gulls (chapter 24);
- 9 Examined linkages between time series for top predators and fisheries data and environmental data, including carrying capacity, pollutants, predation and disease, and considered means of mitigating adverse influences (chapters 6, 7, 13, 17, 19, 25, 29, 30, 31, 32, 33, 34, 35);
- 10 Evaluated the utility of top predators for providing information useful for fisheries management in the BCLME (chapter 36, 37);
- 11 Investigated the usefulness of top predators in providing indices of ecosystem health in the BCLME (chapter 38);
- 12 Initiated new time series of information for top predators in the northern part of the BCLME region (chapters 39, 40, 41);
- 13 Tested the potential for use of satellite transmitters deployed on cormorants in the ecosystem monitoring programme (chapter 39) (such instruments had already been successfully deployed on seals, penguins and gannets);
- 14 Re-assessed the conservation status of land-breeding top predators in the BCLME (chapters 28, 42);
- 15 Promoted regional collaboration in monitoring of land-breeding top predators (chapter 39, 40, 41), as well as linkages with monitoring of top predators in the similar Humboldt system (chapter 43);
- 16 Identified those parameters for land-based top predators that are required to attain the objectives of the monitoring programme (chapters 46, 47) and described the most appropriate monitoring methods to be applied for monitoring (chapter 9, annexes 2, 3);
- 17 Formulated recommendations for an integrated ecosystem monitoring programme in the BCLME region, based on land-breeding top predators, and guidelines for interpreting data from the monitoring programme and incorporating its results in management at the ecosystem level (chapters 46, 47);
- 18 Provided experience for young scientists (chapter 44) as well as training in time-series analysis (chapter 45) and;
- 19 Considered available data bases relating to land-breeding top predators and made recommendations for maintaining a shared regional database (chapters 4, 5, 46, 47);
- 20 Resulted in 12 publications that appeared in peer-reviewed journals and 19 additional manuscripts that it is hoped will be published (chapter 48).