

Namibia's Coast

*ocean riches
and desert treasures*



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Tony Robertson
Alice Jarvis
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PREFACE

Countries with coastlines are endowed with a range of environmental, economic and aesthetic benefits which are unavailable to landlocked neighbours. These include bounties of marine resources, port gateways to and from the rest of the world, beach resorts, often pleasant weather and spectacular scenery. Qualities like these, and much more, can be found along the Namibian coast which stretches 1,570 kilometres between the Orange and Kunene Rivers.

There is much of value along the Namibian coast. However, the use of Namibia's coastal resources has had a somewhat chequered history. Fish, whales, seals and guano, were regarded as common property, available and free to all. People who did not take the whole resource lost out to those who did. Management of these resources was weak, indeed absent in many places over the years. Diamonds along the southern coast, as one of Namibia's most valuable financial assets, were quickly commandeered by one cartel. Public access to diamond areas along the southern coast was prohibited. Consequently, and perhaps perversely, this public exclusion from protected areas which has kept many stretches of the coastline out of reach of the local population has allowed much of it to remain relatively pristine.

The Namibian coast is a fascinating place with few equals in the world. There is the stark contrast between the biologically rich Benguela Current and the Namib Desert which is home to only a few hardy specialist organisms. People have trodden the coast over hundreds of thousands of years and it was along the coast that Namibians first came into contact and began trading with people from other continents. Nowadays, almost everyone lives in a handful of towns, leaving stretches of coast over hundreds of kilometres in length devoid of human life.

The current shape and elevation of the coast is similar to when it first formed some 132 million years ago as continental drift caused Namibia and South America to part ways. Many of the plants and animals in the Namib are found nowhere else in the world and are poorly known while many other coastal assets like diamonds, fish and tourism are widespread both regionally and internationally.

This profile of the Namibian coast was commissioned by the Namibian Coast Conservation and Management (NACOMA) project, implemented under the auspices of the Ministry of Environment & Tourism to develop and foster an Integrated Coastal Zone Management System for the coast. Funding for the book project was provided by the Global Environment Facility (GEF), the Government of the Republic of Namibia, and the authors. The principal aim of the book is to help

improve the management of the coast by providing information to a wide audience of managers, students, tourists, entrepreneurs, and the general public. It is also hoped that the book will contribute to an improved understanding and appreciation of the Namibian coast.

Most of the contents of this book have been drawn from the valuable research, debate and thinking of others that has been presented in a variety of publications. Two of these deserve particular acknowledgement: Mary Seely and John Pallett's *Namib. Secrets of a desert uncovered*, published in 2008 by Venture Publications in Windhoek, and Fergus Molloy and Tapio Reinikainen's *Namibia's Marine Environment*, published in 2003 by the Ministry of Environment & Tourism, also in Windhoek. Respectively, these two books deal with the two realms that make up our coast: the terrestrial Namib and the maritime Benguela Current.

In addition to these and other publications, we acknowledge the excellent work done by several institutions: the research units of the Ministry of Fisheries & Marine Resources in Swakopmund and Lüderitz, the Gobabeb research centre and the BCLME and BENEFIT programmes. Promise for further investigation and study is held by the recent establishment of the Benguela Current Commission.

Finally, we acknowledge the help of many people and organisations in the preparation of this book. Substantial contributions were made by Rod Braby, Louis Celliers, Jill Kinahan, Pat Morant, John Pallett, Craig Risien, Mary Seely and Gabi Schneider, as well as by the photographers listed on pages 188 - 189. Additional help was provided by Jon Barnes, Hu Berry, Tamsin Bowra, Peter Bridgeford, Nathalie Cadot, Vera De Cauwer, Katharina Dierkes, Ludmilla Doeses, Ayn Garises, Hashali Hamukwaya, Piet Heyns, Hillia Hitula, Cameron Kandjii, Ignatius Kauvee, Jessica Kemper, Anja Kreiner and the National Marine Information and Research Centre, Harold Kisting, Gerhild Kolling, Sonja Loots, Sepiso Mwangala and the Namibia Meteorological Services, John & Barbara Paterson, Carole Roberts, Andrea Pulfrich, JP Roux, Rob Simmons, Peter Tarr, Martha van Neel, David Uushona, Guido Van Langenhove and the Department of Water Affairs, Windhoek, Gunter von Schumann and John Ward.

While every effort has been made to make the text readable and accessible to as broad a public as possible, the use of certain technical terms was unavoidable. These are listed and defined in the Glossary on pages 190-191. The scientific Latin names of plants and animals are given on page 192. Many of the data sets on which maps and graphs are based can be downloaded from www.the-eis.com.

CONTENTS

CHAPTER ONE	
Introducing the Coast of Namibia	5
CHAPTER TWO	
Weather and Water.	21
CHAPTER THREE	
Foundations and Landshapes	47
CHAPTER FOUR	
The Living Coast	67
CHAPTER FIVE	
People of the Coast	111
CHAPTER SIX	
Economic Resources and Activities	135
CHAPTER SEVEN	
From the Past to the Future	167
References and endnotes	182
Photo and image credits	188
Glossary	190
Latin names	192

Produced by RAISON
Research and Information Services of Namibia
P O Box 1405, Windhoek, Namibia

First published in 2012

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Publisher: Directorate of Environmental Affairs,
Ministry of Environment and Tourism
www.met.gov.na

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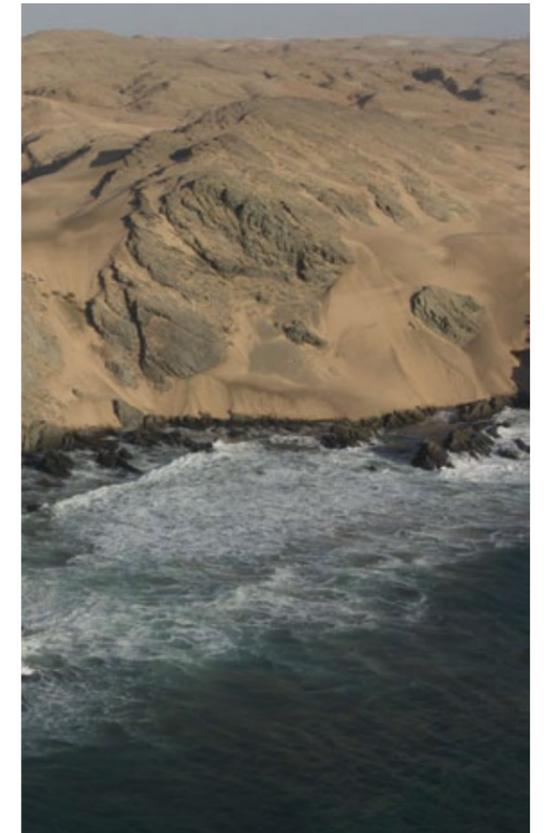
Printed by Intrepid Printers (Pty) Ltd - 6749

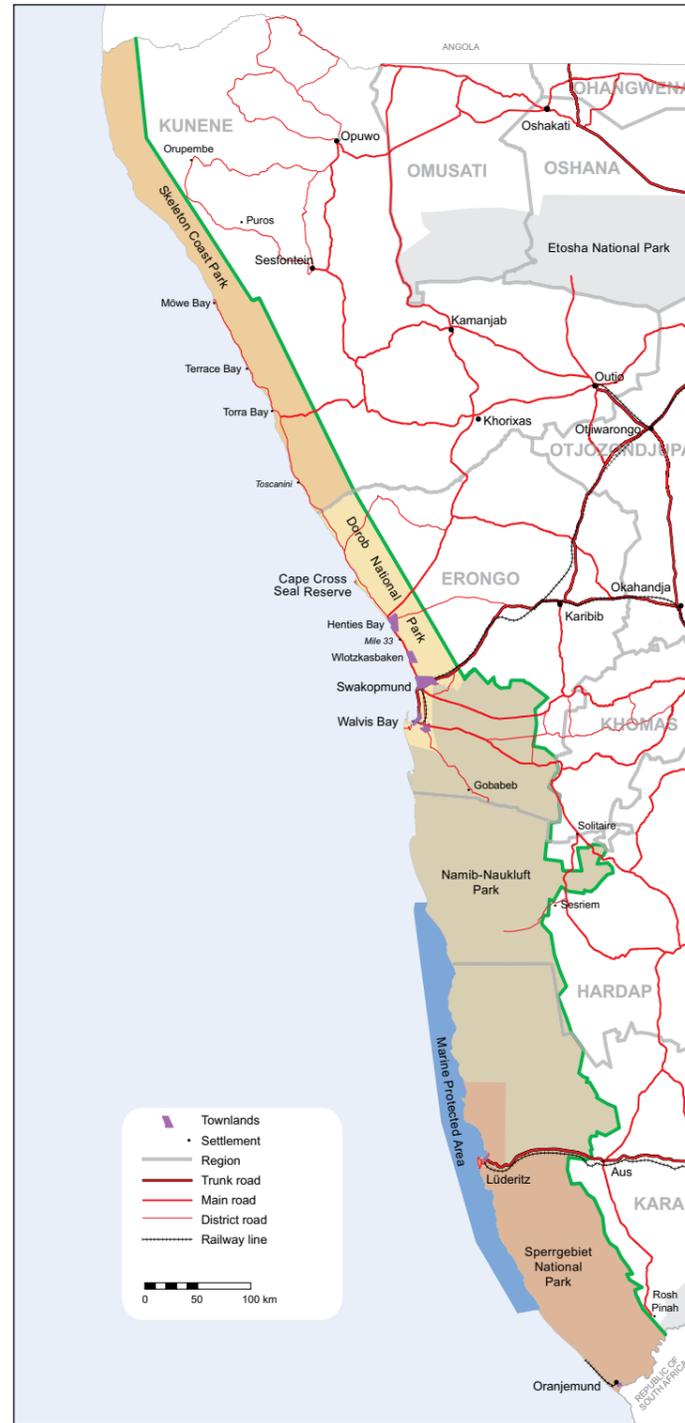
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ISBN: 978-99945-0-016-1

Introducing the Coast of Namibia

Rugged, sometimes bleak or forbidding, and largely uninhabited, the Namibian coast is a fascinating and complex mix of richness and paucity. The warm and dry Namib Desert stands in stark contrast to the cold waters of the Benguela current which is so biologically productive. In combination, the ocean and desert provide a harsh and spectacular environment that remains largely pristine.¹





At the interface of the earth's two great realms – the land and the sea – amazing combinations of life's diversity occur. It is along coasts that aquatic forms of life first emerged from the sea onto the shore and land about 400 million years ago. Coastlines are generally high energy, dynamic environments where tides and storms constantly alter the shape and form of the shore. Although the Namibian coast does not experience substantial tides, the high winds and storms that frequently bombard the shoreline ensure that it is continually changing. Climate change also has a major effect. Only 10,000 years ago Namibia's coastline was 120 metres lower than it is today, and rising sea levels due to global warming will affect the Namibian coast, in particular infrastructure placed close to the shore.

To the south, the Namibian coast begins at the mouth of the Orange River and stretches 1,570 kilometres north to the Kunene River mouth (Figure 1). How do we determine the eastern, onshore and western, offshore limits?

Figure 1 - opposite page. Major features and landmarks along the Namibian coast; those of a physical nature are shown on the right while those made by people are on the left.

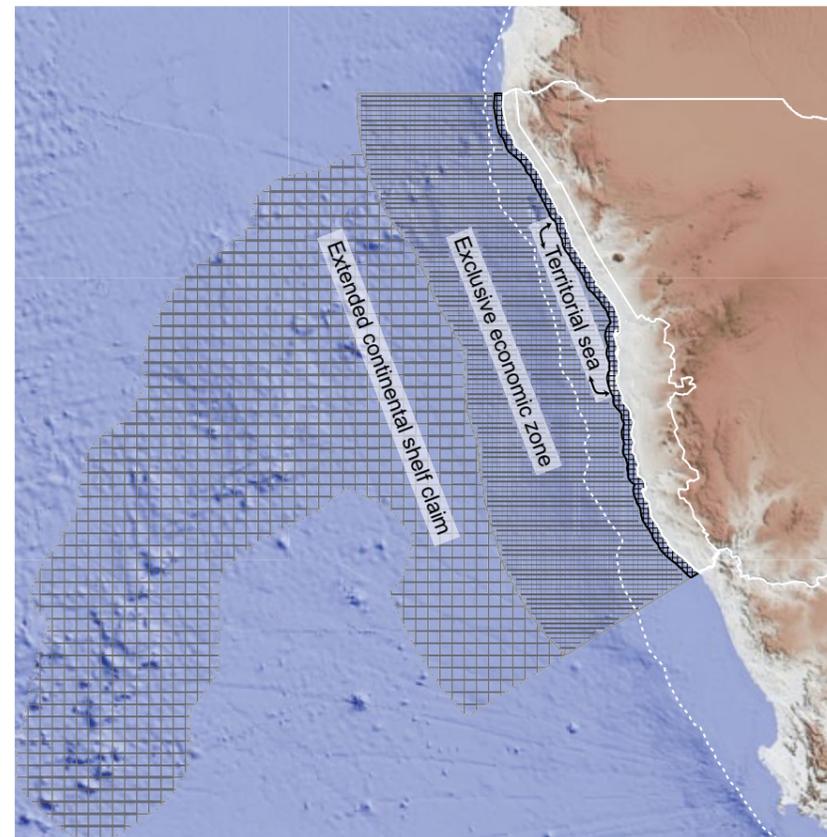


Coasts can be defined in a number of ways, but broadly they are those areas where the land influences the sea, and vice versa.² The level of influence is usually greatest at the actual shoreline and diminishes with distance away from it. Consequently, for the purposes of this book, we treat the coast as follows: on the marine side, the greatest emphasis is placed on proximity to the shore and less on areas at or beyond the continental shelf (Figure 2). Inland, we adopt the eastern boundary of the state protected areas as the limit of marine influence on the terrestrial environment (Figure 1).

The entire Namibian coast of some 1,570 kilometres is bounded by its only two perennial rivers: the Kunene River on the northern border with Angola and the Orange River, shown here, which marks Namibia's southern boundary with South Africa. In between, just a handful of ephemeral rivers occasionally flow to the ocean.

Figure 2. Namibia's territorial sea extends 12 nautical miles or 22.2 kilometres out from the average low tide line, but the exclusive economic zone, commonly known as the EEZ, extends 200 nautical miles (370.4 kilometres) offshore. Within this zone Namibia has exclusive rights to exploration and exploitation of marine resources.

In 2009, Namibia submitted a claim to the United Nations to include an extended continental shelf based on the morphology and geological characteristics of the sea bed. The area claimed is nearly the same as the total land area of the country. Interestingly, South Africa has claimed a narrower area off the Orange River than Namibia, while Angola has indicated that it may claim a greater area.³ The dashed white line indicates the continental shelf.



Interactions between the marine and terrestrial environments are largely confined to the frequent coastal fogs that move off the ocean and over the land. Unlike coastlines elsewhere in the world with estuaries, mangroves or major inputs from rivers, there is very little nutrient exchange between the two environments along the Namibian coast.

The marine and terrestrial environments are also very different. The marine system is cold, with a low number of species but its productivity and the biomass of plants and animals is extraordinarily high. By contrast, the land is hot and dry with low biomass but supports relatively high biodiversity. The sea maintains its temperature at a much more constant level than the terrestrial system. For example, temperatures vary on average between 5-7°Celsius per year in the Benguela's waters, whereas temperatures in the Namib can vary more than 30°Celsius in a day.

Human uses of the marine and terrestrial environments have also been very different. Marine living resources have been extensively harvested whereas comparatively few specifically coastal resources have been exploited on the land. Currently

the management of biological coastal resources is split between two ministries, Fisheries & Marine Resources on the one hand and Environment & Tourism on the other. While the marine environment has received little formal protection, the land has been extensively protected over many years (Figure 3, page 16), partly through mining and nature conservation legislation but also as a consequence of its geographical remoteness and inaccessibility.

The coast has an extremely long history of isolated and sporadic occupation by people attracted to the rich and nutritious food supply from the sea. However, the scarcity of fresh water has meant that the human population has always been small. Even today, less than 5% of Namibia's population lives within 100 kilometres of the sea, and most of them are in the five main urban centres right on the coast. Each of these towns – Henties Bay, Walvis Bay, Swakopmund, Lüderitz and Oranjemund – is an oasis, sandwiched between the inland desert and the Atlantic Ocean.



The oldest town is one of the few natural harbours, Walvis Bay. The first onshore European trading post was established there in 1844.⁴ Fresh water was locally available from wells in the Kuiseb River, and coastal inhabitants were willing to trade cattle, small stock and other commodities with seafarers. Walvis Bay is now the biggest coastal town, with a population of about 70,000. Port trade and fish processing are at the core of its economic activities.⁵



Walvis Bay is Namibia's main harbour and base for its marine fisheries industry. Alongside this hub of trade and business is a sanctuary renowned around the world for the tens of thousands of birds that live in the Bay. Few places in the world support such a juxtaposition of intense human activity and bird life.

Below and right: Swakopmund is one of Namibia's premier attractions for tourists. It is also the most popular single destination for Namibian holidaymakers. Its economy is now rapidly growing as a result of new prospects for uranium, with many people employed by mining and secondary industries making the town their home.



Since Walvis Bay had been annexed by the British in 1878, the German administration established Swakopmund in 1892 to provide the newly acquired colony of German South West Africa with its own harbour. A jetty was built with the intention of allowing ships to dock there, but in practice ships lay at anchor in deeper water and barges were used to transport goods and passengers to the jetty. The resident population of Swakopmund now numbers some 40,000 people, and its economy is based primarily on tourism, recreation and mining.



draught of less than 8.15 metres. Fish processing and the servicing of fishing fleets are the main economic activities in the town, which is home to about 19,000 people. Diamond mining and tourism are also important activities and zinc ore from Skorpion mine is exported through the port.

The first wooden shacks were erected at Oranjemund in 1936 as a centre for Consolidated Diamond Mines' (CDM) operations along the southern coast. The town remains a diamond mining town to which access is only by permit, and as a result has only about 9,000 residents.



Below and left: The diamond industry is based in Oranjemund where almost all residents are directly or indirectly dependent on the mining of these stones. The town is largely administered by the NamDeb mining company.



Lüderitz was founded in 1883 as a trading post. Although the bay is well-protected, its rocky seabed makes it unsuitable for large modern ships with a deep draught, although its new quay can accommodate ships up to 150 metres long and with a



Above and right: Much of Lüderitz's economy depends on fishing and diamond mining, and many of its residents are employed by factories that process fish, lobsters and oysters or by companies that service fishing boats or small-scale mining operations along the coast.



Henties Bay is a small community that serves the fishing/angling tourism industry. Originally a holiday camp site for a Kalkfeld farmer (by the name of Hentie van der Merwe) and his friends, the first erven were proclaimed in the riverbed in 1951. These could be rented only and no permanent structures were permitted. In 1966 the first erven were sold on the banks of the Omaruru River.⁶ The town has since grown slowly and now has about 4,500 residents.



Below and left: Henties Bay began as a campsite for fishermen about 60 years ago and has remained very much a mecca for fishing enthusiasts. Many elderly people have now retired in the town.





Above: About one hundred kilometres of beach terraces have been mined for diamonds between Oranjemund and Chameis Bay. The extent of mining can be explored in Google Earth, the coordinates 28.5 South and 16.3 East being a good place to start.

Below: Approximately 5% of Namibia's Gross Domestic Product (GDP) is obtained from the harvesting and processing of marine fish, as well as lobsters and crabs.



Each town, therefore, has its own peculiar origins, and even today their demography is unusual (see page 127). Few people who live in the coastal urban centres were born there, and most residents are immigrants from other parts of Namibia and elsewhere. The age structure of the four populations is also highly skewed, being dominated by people of working ages with few young or old people. All major economic activities that attract employees and their families to the coast are relatively new industries based on commodities and technologies that are not traditional to Namibia (see Chapter 6).

The only perennial rivers – the Kunene in the north and Orange in the south – are located on the extremities of the Namibian coast, and respectively form political borders with Angola and South Africa. The coastal environment in between is not suited to farming because of high evaporation rates, a lack of rain and the absence of fertile soils. As a result, most of the coastal environment has been left relatively unchanged and unscarred as it was for millions of years. In many areas, blemishes left by early industries have rusted away or been obliterated by the sands driven across the coastline by fierce winds.

Mining along the coast has contributed much to the Namibian economy, but it has also caused habitat degradation along portions of the coast. Most of this has been a result of onshore diamond mining between Oranjemund and Lüderitz. These deposits have been largely depleted and most diamond mining has shifted offshore. But new pressures may come from the uranium industry which is enjoying a strong resurgence with exploration efforts being directed at extensive deposits of uranium minerals in central western Namibia (see page 144). Mining in such a fragile environment needs careful consideration, control and monitoring.

The ports of Walvis Bay and Lüderitz support an important fishing industry which has seen several separate spurts of growth but also declines as a result of fish stocks collapsing (see page 148). Careful management is needed to rebuild the stocks and value they could offer the Namibian people.



The abundance of fish and other marine life is a consequence of the Benguela Current which influences, directly or indirectly, most aspects of the offshore and onshore environment. Cold water is swept northwards by the prevailing current and strong southerly winds that characterise the Namibian coast. Just offshore in the Lüderitz and Cape Frio areas, water very rich in nutrients wells up to the surface (see page 37). As primary producers, plants in the sunlit waters consume these nutrients and give rise to chains of further biological production that support such other consumers as microscopic animals, fish, seals, birds and people.

The Namib coast is a dynamic coast. Sea level changes are just one of many dynamic forces at work along the coast. Major changes occur in the position of sandy shorelines as winds and currents move sand northwards and inland (see page 56). Sea temperatures change seasonally in response to movements of the South Atlantic Anticyclone and intrusions of warm water driven south by the Angola Current. The oxygen concentration in the seawater periodically drops and there is the occasional release of toxic hydrogen sulphide from surface muds. These events can cause massive disruption to marine life. Inland, sand dunes are on the move from south to north, small barchan dunes shifting 20–50 metres each year, for example (see page 58).



In recent years, growing numbers of tourists have been attracted to its magic. Expansion of the tourism industry to cater for more foreign visitors and Namibians to enjoy the delights of the entire coast will do much to increase the value of the coast. This will give the coast's natural resources a more secure future, since the protected areas will have a clear purpose which also makes economic sense. But the use of coastal land must be done moderately and carefully so that its resources are not damaged, and past mistakes made in over-exploiting the marine resources are not repeated.



Above: The coast offers a great variety of attractions for tourists. Of all economic activities, tourism has grown much more rapidly than any others in recent years, and now contributes at least 14% to the country's GDP.

Namibia's coast means many contrasting things to different people – a home or holiday destination, a base for recreational activities, opportunities for wealth, a wilderness area or an untapped resource. Fulfilling these various demands is a delicate balancing act. Management of the Namib coast requires an understanding of its origins, the various environments and their associated biodiversity, its demography and economy. This book aims to address these issues by moving, chapter by chapter, between the physical, biological, human and economic environments of the coast.

The workings and influences of the climate and ocean on the coast are the focus of Chapter 2. In combination, they bring aridity to the Namib but also produce bountiful riches in the sea. Chapter 3 describes the shape and formation of the landscapes adjacent to the coast. The plants and animals of the coastal area are the subject of Chapter 4. A high proportion of plants and animals are unique to Namibia and their conservation is a priority. The history of the coast, its towns and people are discussed in Chapter 5. These chapters all provide background to Chapter 6 which reviews how coastal natural resources form the basis of economic activities that support the livelihoods of many people in Namibia. The final chapter provides a review of the coastal environment, the challenges it faces and ways of developing the coastal resources for the benefit of the people who live there while conserving the environment for future generations.

Distinctions between water and atmosphere are sometimes hard to fathom, such as when the skies above seemingly bear down on flooded coastal pans.



A HISTORY OF COASTAL CONSERVATION

Much of Namibia's coastline has been, and is still protected. However, the motives for the declaration of many of the protected areas years ago were generally not related to conservation in the sense that we understand today. The shapes, sizes and names of many of the protected areas have also changed over the years, often in confusing ways or for reasons now forgotten. The narrative below and sequence of maps in Figure 3 provides a summary of the changes to the conservation areas of the Namibian coast.⁷

The first game reserves in Namibia were proclaimed by the German administrators in 1907 and covered three areas, two of which (Game Reserves Numbers 2 and 3) were partly within the coastal Namib.⁸ Game Reserve Number 3 lay south-east of Swakopmund and originally covered some 8,000 square kilometres. Over the years it was gradually expanded into what is now the Namib-Naukluft Park. The first change came in 1968 when it was enlarged into the then Namib Desert Park. In the same year the Naukluft Mountain Zebra Park was proclaimed, which then covered only 200 square kilometres. After several land purchases and negotiations with Consolidated Diamond Mines, roughly half of Diamond Area 2 was merged in 1979 with the Namib and Naukluft Parks to form the Namib-Naukluft Park. In 1986 the remaining portion of Diamond Area 2 and a small part of Diamond Area 1 was added to the Park.



A wide variety of coastal and terrestrial habitats occur in the Namib-Naukluft Park. Covering some 50,000 square kilometres, this is the biggest park in Namibia. It includes Sandwich Harbour, an internationally important area for wetland birds. Most of the Namib's great expanse of sand dunes falls within this park. While the Naukluft Mountains are also in the Park they are some 150 kilometres inland and are not considered in this book.

Game Reserve Number 2 was the precursor to Etosha National Park as we know it today. This reserve was almost 80,000 square kilometres in size and included a vast area between the Hoarusib and Kunene Rivers. In 1958 the

Protected areas along the terrestrial part of the coast cover 97,600 square kilometres, which is almost 12% of the entire surface area of the country. The Marine Protected Area extends over another 9,555 square kilometres of ocean.



The Sperrgebiet National Park is gradually being opened to tourists after being off-limits since 1908.

Figure 3. A history of protected areas along the Namib coast, showing when and where the various game reserves, parks and recreational areas were proclaimed.

boundaries were greatly modified when the park area that stretched to the coast was shifted south to include the communal land area between the Hoarusib River and the gravel road now leading from the coast to the Springbokwasser gate of the Skeleton Coast Park. It was then that the name changed to Etosha Game Park. As a result of decisions made by the Odendaal Commission, the park became Etosha National Park and was shrunk in 1970 to its present shape and size of around 22,300 square kilometres.

The Sperrgebiet National Park was proclaimed in 2008, and covers about 21,600 square kilometres. Before this, the area was peculiarly protected as the 'forbidden zone', an area off-limits since the original colonial decree in 1908 to protect the interests of diamond mining companies. The exclusion of the public left the environment unscarred in places that were not mined. Falling within the winter rainfall region, the Park incorporates part of the Succulent Karoo Biome, now recognised by botanists as one of 34 biodiversity hotspots on Earth.

Prior to the end of 2010 the stretch of coastline between Swakopmund and the mouth of the Ugab River was not a park, but was designated in 1974 as the National West Coast Tourist Recreation Area (NWCTRA). In December 2010 Dorob National Park was proclaimed which includes the former NWCTRA and most of the former Walvis Bay enclave. This portion of the coast is popular with anglers and prior to its proclamation, was one of very few areas with open access to the general public. An outstanding natural feature of this portion of coast is the extensive lichen fields.

The tiny Cape Cross Seal Reserve is surrounded by the Dorob National Park. Established in 1968 to protect the largest mainland breeding colony of Cape Fur Seals in the world, the reserve also marks the spot where the first known European contact with Namibia was made in 1486 when Diego Cão erected a cross or padraão here.

The harvesting of seal pups and bulls in Cape Cross Seal Reserve and elsewhere remains controversial and often sparks protests from animal rights groups as well as debates about the sustainable management of seals and fish.



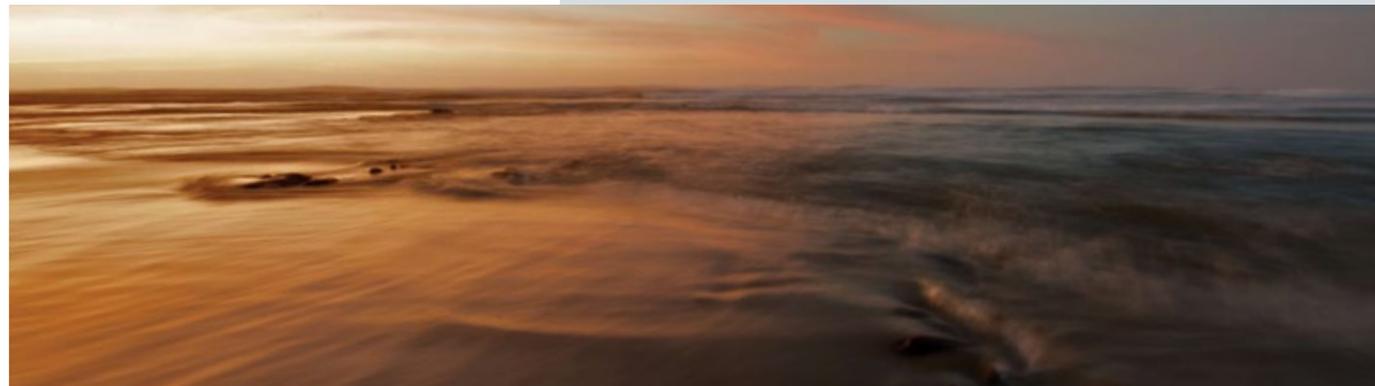


The gate at the ephemeral Ugab River to the Skeleton Coast Park, which stretches some 500 kilometres up to the perennial Kunene River in the north.

The northernmost protected area is the Skeleton Coast Park which extends from the mouth of the Ugab River to the Kunene River. Parts of this portion of the coast had originally been included in Game Reserve Number 2 and the subsequent Etosha Game Park (see above). The area between the Hoanib and the Kunene Rivers was established as the Skeleton Coast Park in 1971, and expanded to its present size when the stretch between the Hoanib and the Ugab Rivers was added in 1973. Today the park covers 16,800 square kilometres. Several ephemeral rivers that flow through the park from the wetter highlands form riparian oases, allowing animals such as desert elephant, lion and rhinos to extend much further west than would be otherwise possible. The park also adjoins eight communal conservancies and one tourist concession.

The offshore environment was afforded little protection in the past, but in 2009 Namibia's first Marine Protected Area was proclaimed. This encompasses an area stretching for 400 kilometres from Meob Bay to Chameis Bay, including the guano islands, rocky islets and surrounding areas to a distance of 30 kilometres offshore. Activities such as fishing and mining in this area are restricted, thus helping to preserve the biological riches of the southern Benguela. Prior to this proclamation, the islands were not formally protected, but access to them was restricted.

In total, Namibia's coastal protected areas now cover 97,600 square kilometres. This area adjoins two other national parks: the Richtersveld National Park in South Africa and the Iona National Park in Angola. Far reaching plans to create a single protected area stretching from Iona to the Richtersveld have been proposed. This would be one of the largest parks in the world, tentatively to be called the Namib-Skeleton Coast Park.



Key points

- The coast stretches 1,570 kilometres between the mouths of the Orange and Kunene Rivers: the only perennial rivers along Namibia's seaboard. This book focuses on the area up to the boundary of the protected areas to the east. To the west, greatest emphasis is placed on areas between the shore and continental shelf.
- Interactions between the marine and terrestrial environments are largely confined to coastal fogs that move from the ocean over the land. Unlike coastlines elsewhere in the world, there is little nutrient exchange between the two environments.
- The marine and terrestrial environments are very different: the sea is cold, has little biological diversity but very high biomass; the land is hot and dry, with little biomass but relatively high biodiversity.
- Human uses of the land and sea have been very different: marine animals and their products have been extensively harvested whereas only diamonds have been exploited to a significant degree on land. While the sea has had little formal protection, the land has been extensively protected for many years.
- Since 1907, separate areas along the coast have been given formal protection at different times. Protected areas now cover 97,600 square kilometres.
- Almost all coastal residents are clustered in five towns: Henties Bay, Walvis Bay, Swakopmund, Lüderitz and Oranjemund, each an oasis between the inland desert and the sea. Very few people live elsewhere. Most of the coastal environment thus remains relatively unscarred, as it has been for millions of years.
- Namibia's coast means many contrasting things to different people – a home or holiday destination, a base for recreational activities, opportunities for wealth, a wilderness area or an untapped resource. Fulfilling these various demands will require a delicate balancing act.



The padrão commemorating the landing at Cape Cross by the Portuguese explorer Diego Cão in 1486.