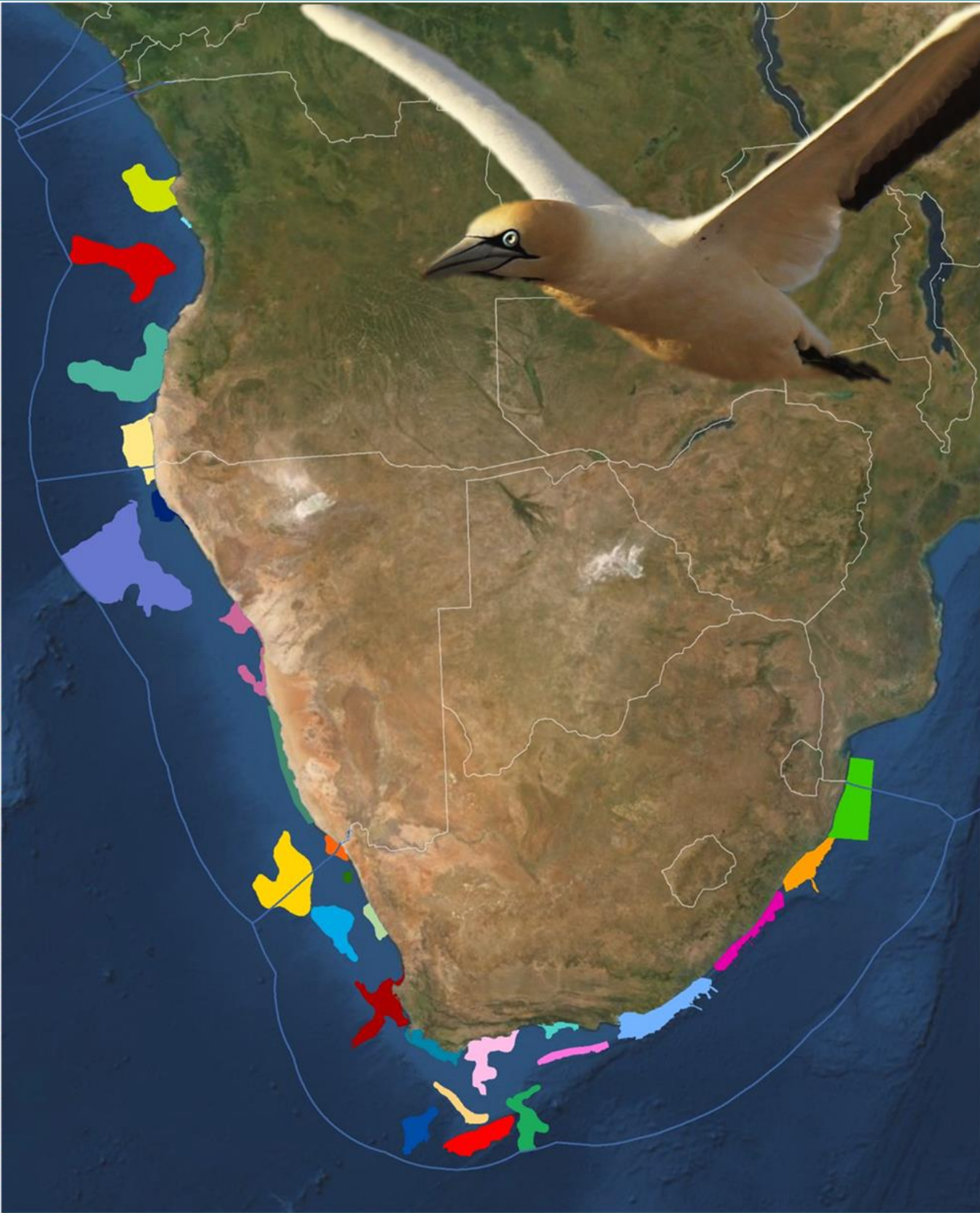


ECOLOGICALLY OR BIOLOGICALLY SIGNIFICANT MARINE AREAS

in the Benguela Current Large Marine Ecosystem



Namib Flyway
REVISED DESCRIPTION

Namib Flyway

Revised EBSA Description

General Information

Summary

The Namib Flyway is a highly productive area in the Benguela system that attracts large numbers of sea- and shorebirds, marine mammals, sea turtles and other fauna. It contains two marine Ramsar sites, six terrestrial Important Bird and Biodiversity Areas (IBAs), two proposed marine IBAs, and key spawning and nursery areas for some fish species. The upwelling cell off Lüderitz has its effect further north with the longshore drift and predominant onshore winds. Thus, primary production of the Benguela current is highest in the central regions of the Namibian coast, driven by delayed blooming. In summary, this area is highly relevant in terms of its importance for life-history stages of species, threatened, endangered or declining species and/or habitats, and biological productivity.

Introduction of the area

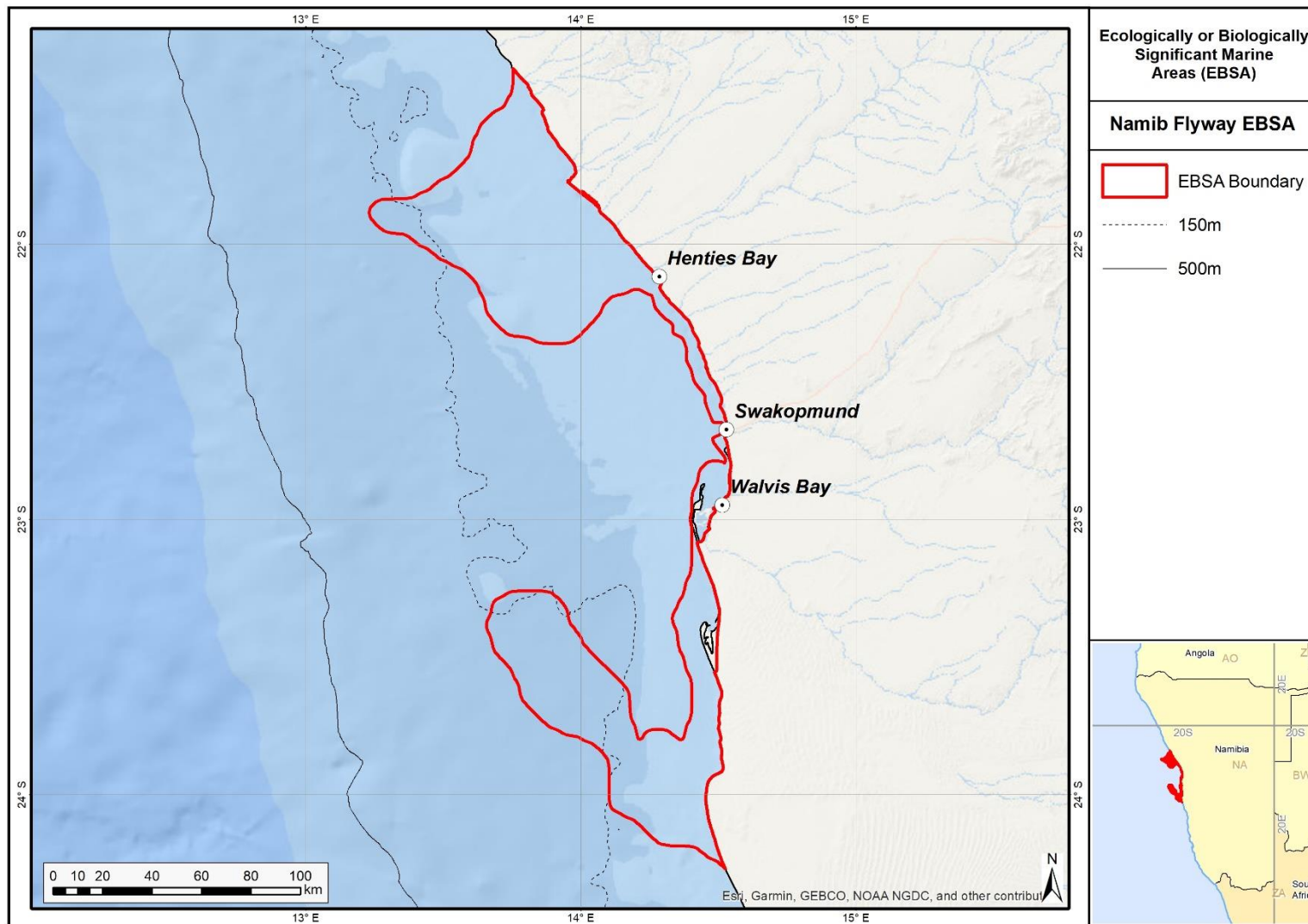
The main coastal features contain two sheltered bays (Walvis Bay and Sandwich Harbour), another north-facing but less sheltered bay (Conception Bay), three lagoons (Cape Cross lagoons, Swakop River Mouth Lagoon, and Walvis Bay Lagoon), one cape (Cape Cross) and one man-made shallow water habitat (Mile 4 salt works); the remaining coastline is high energy. The sheltered bays and shallow waters lead to warmer waters and higher productivity. There is a weak upwelling cell off Walvis Bay, which adds to the productivity. The area has been recognized as an important area by the United Nations Environment Programme, African Eurasian Migratory Waterbird Agreement; and the Convention on Migratory Species or “Bonn Convention”. BirdLife International has been funding a seabird breeding project in this area through its Rio Tinto BirdLife Partnership action fund. Two of Namibia’s five Ramsar sites (Walvis Bay and Sandwich Harbour) are included; both Ramsar sites are of international importance for resident bird species as well as resident and transient marine mammals, and constitute key refueling and roosting habitats for many species of migrating waterbirds. Of Namibia’s 19 IBAs, six border or fall in the area (viz., Cape Cross Lagoon, Namib-Naukluft Park, Mile 4 salt works, 30 km beach Walvis-Swakopmund, Walvis Bay and Sandwich Harbour). The area also encompasses key spawning and nursery areas of various fish species, including sardine and anchovy - important forage fish for a range of marine predators.

Since the original description and delineation, the boundary of this EBSA has been refined to improve precision, based on local knowledge of this area and its processes. The Namib Flyway comprises two foraging areas in the north and south of the EBSA, which are connected by a much narrower flyway corridor. Because this site comprises a collection of features and ecosystems that are connected by the same ecological processes, it is proposed as a Type 2 EBSA (sensu Johnson et al., 2018).

Description of the location

EBSA Region

South-Eastern Atlantic



Revised delineation of the Namib Flyway EBSA.

Description of location

The Namib Flyway EBSA extends from 18 km north of Cape Cross to 30 km south of Conception Bay, spanning about 380 km of coastline on the inshore area that borders the Dorob National Park, Cape Cross Seal Reserve and the Namib-Naukluft Park, roughly between latitudes 21 and 24 degrees South. The northern and southern parts extend offshore for up to 83 km, and the central portion is a narrow strip that extends no further than 7 km offshore. The entire area falls within the national jurisdiction of Namibia.

Feature description of the area

The coastline includes mixed rocky and sandy shoreline, which together with the adjacent marine inshore environment supports resident, Palearctic, Oceanic and intra-African migrant bird species. These include seabirds (e.g., terns, gulls, cormorants, gannets, shearwaters, albatrosses, petrels, skuas); shorebirds (e.g., plovers, sandpipers, turnstones, whimbrels, stints, oystercatchers, curlews, knots, godwits, avocets) and waterbirds (e.g., flamingos, ducks, grebes, coots, gallinules, herons). At least 17 threatened bird species occur in the area, either throughout the year or seasonally (Wearne & Underhill 2005, Simmons et al., 2015, IUCN 2016, SABAP_2 2017). Up to about 400,000 birds may be found during summer at Walvis Bay and Sandwich Harbour alone (Simmons 2002, Wearne & Underhill 2005). Cetaceans such as Bottlenose Dolphins, Heaviside's Dolphins and Southern Right Whales also breed in this area; the small local inshore population of Bottlenose Dolphins appears to be discrete, utilizing a core area between Cape Cross and Sandwich Harbour (Findlay et al., 1992, Elwen & Leeney, 2009). Humpback and Minke whales are common in the area, whereas other species like Fin Whales, beaked whales and other cetaceans also occur there occasionally (e.g. Findlay et al., 1992); however, detailed distribution and population data for most cetacean species in the area are lacking. Seven threatened fish and condricthian species have been recorded in the Namib Flyway area (OBIS 2017), and it is also an important foraging area for leatherback turtles (Shackelton 1993, De Padua Almeida et al., 2003). Four Cape Fur Seal breeding colonies exist at Cape Cross, Pelican Point, Sandwich Harbour and Conception Bay (Kirkman et al., 2013); and the area includes seal foraging hotspots (Skern-Mauritzen et al., 2009). Altogether, there are records for 247 species from this area (OBIS 2017).

The Namib Flyway also includes three Endangered ecosystem types (Central Namib Outer Shelf, Kuiseb Lagoon Coast and Kuiseb Mixed Shore), with the area being particularly important for Central Namib Outer Shelf and Kuiseb Lagoon Coast. These threat statuses were estimated by assessing the weighted cumulative impacts of various pressures (e.g., extractive resource use, pollution, development, and others) on each ecosystem type for Namibia (Holness et al., 2014; Table in Other relevant website address or attached documents section).

Feature conditions and future outlook of the proposed area

The terrestrial part of the area to the low water mark is protected in three national parks, namely Dorob National Park, Cape Cross Seal Reserve and Namib-Naukluft Park. The area has three towns and a village: the main harbour town of Namibia: Walvis Bay, in addition to Swakopmund and Henties Bay

and the village of Wlotzkasbaken. There is a political drive to expand the towns and village into the Dorob National Park irrespective of the biodiversity importance of the bordering terrestrial and coastal areas. This will require deploclamation. The marine component is partially protected by fishery management regulations such as a “no trawl zone” up to the 200-m depth contour; however, purse-seining activities in the area threaten already depleted local pelagic fish stocks on which a number of marine predators depend (e.g. Sherley et al., 2017). The area is under threat from a large-scale harbour expansion at Walvis Bay, a proposed industrial park, and seabed mining (e.g., for phosphates). Uncontrolled coastal development and off-shore oil exploration are additional threats. Climate change may alter productivity and therefore the area’s capacity to support the large number of animals that are dependent on this area (Roux 2003). Revision of the EBSA boundary has resulted in an improvement in the site’s overall naturalness because many areas of direct impact in the previous delineation are now excluded. Most of the EBSA area is now in a Good (87%) or fair ecological condition (9%) (Holness et al., 2014). Nevertheless, the area is likely to be significantly impacted by activities directly adjacent to the EBSA, and this assessment of condition is likely to be highly optimistic.

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Other relevant website address or attached documents

Summary of ecosystem types and threat status for Namib Flyway. Data from Holness et al. (2014).

Threat Status	Ecosystem type	Area (km ²)	Area (%)
Endangered	Central Namib Outer Shelf	2 041.2	19.9
	Kuiseb Lagoon Coast	148.8	1.4
	Kuiseb Mixed Shore	28.4	0.3
Least Threatened	Central Namib Inner Shelf	6 461.1	62.9
	Kuiseb Dissipative-Intermediate Sandy Beach	39.1	0.4
	Kuiseb Exposed Rocky Shore	0.03	0.0
	Kuiseb Inshore	1 361.6	13.2
	Kuiseb Intermediate Sandy Beach	148.8	1.4
	Kuiseb Reflective Sandy Beach	32.3	0.3
	Kuiseb Sandy Beach Sandy Beach	16.3	0.2
Least Threatened Total		8 059.2	78.4
Grand Total		10 277.6	100

Assessment of the area against CBD EBSA criteria

C1: Uniqueness or rarity **High**

Justification

This is the only high-productivity area featuring bays and lagoons on the Namibian coast apart from Lüderitz. It is also one of only two globally Important Bird and Biodiversity Areas in Africa that feature sandy bays and spits. A number of species that are endemic or near-endemic to the Benguela region occur here, including breeding residents such as the Damara Tern, Cape Cormorant and Heaviside's Dolphin (Sakko 1998; Simmons et al., 1998; Maartens 2003; Kemper et al., 2007; Elwen & Leeney 2009).

C2: Special importance for life-history stages of species **High**

Justification

The Namib Flyway is an important over-wintering area for several threatened bird species, such as Lesser and Greater Flamingos, Chestnut-banded Plovers and Black-necked Grebes. Numerous sea- and shorebird species, migratory species (Palearctic and intra-African birds), and resident species use the area for roosting and feeding. This area includes four Cape fur seal colonies, and turtle and cetacean breeding and foraging areas, and includes a small, discrete inshore population of Bottlenose Dolphins (Shackelton 1993; Sakko 1998; Simmons et al., 1998; De Padua Almeida et al., 2003; Maartens 2003; Kemper et al., 2007; Elwen & Leeney 2009; Kirkman et al., 2013; Simmons et al., 2015). It is also a key foraging area for recently fledged African Penguins originating from southern Namibia and the west coast of South Africa (Sherley et al., 2017). Furthermore, the area encompasses known spawning and

key nursery areas for several fish species, including sardine and silver kob (Holtzhausen et al., 2001; Hutchings et al., 2002).

C3: Importance for threatened, endangered or declining species and/or habitats **High**

Justification

Leatherback turtles from the Indian Ocean (regionally Critically Endangered), southwest Atlantic (regionally Critically Endangered), and southeast Atlantic (regionally Data Deficient) come to forage in the offshore waters off Walvis Bay and Sandwich Harbour, where certain jellyfish species occur in great numbers. Other globally threatened species like African Penguins, Cape, Bank and Crowned Cormorants, Damara Terns, Lesser Flamingos and Chestnut-banded Plovers (IUCN 2016) are attracted to this area's high productivity to forage and/or to breed (Shackelton 1993; Sakko 1998; De Padua Almeida et al., 2003; Kemper et al., 2007; Simmons et al., 2015; IUCN 2016). Seven threatened fish and condrictian species have been recorded in the area, including the Endangered *Lithognathus lithognathus*, *Argyrosomus hololepidotus*, and *Petrus rupestris*, and Vulnerable *Mustelus mustelus*, *Oxynotus centrina*, *Alopias vulpinus*, *Cetorhinus maximus* (OBIS 2017). Holness et al. (2014) identified three Endangered ecosystem types (Central Namib Outer Shelf, Kuiseb Lagoon Coast and Kuiseb Mixed Shore), with the area being particularly important for Central Namib Outer Shelf and Kuiseb Lagoon Coast.

C4: Vulnerability, fragility, sensitivity, or slow recovery **Medium**

Justification

This area is highly sensitive to hydrocarbon and other industrial pollution. Sheltered bays and lagoons are not able to dilute or flush pollutants out of the system easily (Shackelton 1993). Climate change, including a rise in sea surface temperatures, may contribute to an increased vulnerability of the habitats and species in the area (Roux 2003).

C5: Biological productivity **High**

Justification

The central Namibian coast is situated down-stream of the intensive Lüderitz upwelling cell, and it features sheltered bays; it thus boasts a high level of plankton production, which in turn provides a rich food source to other marine organisms. Migratory species are able to fatten up rapidly here to prepare for long journeys. Leatherback turtles, for example, come from as far as the Indian Ocean, Brazil and Gabon to forage in this area. The Namib Flyway also supports an important nursery area for sardine and other fish species and sustains the highest abundance of cetaceans and seals in relation to the rest of the Namibian coastline (Sakko 1998; Holtzhausen et al., 2001; Hutchings et al., 2002; Maartens 2003; Kemper et al., 2007).

C6: Biological diversity **Medium**

Justification

The area is characterized by significant habitat heterogeneity, which results in relatively high diversity of species, particularly waterbirds and marine mammals, in comparison to other areas along the Namibian shore (Shackelton 1993; Sakko 1998; Simmons et al., 1998; De Padua Almeida et al., 2003; Maartens 2003; Kemper et al., 2007). There are records for 247 different species from this area (OBIS 2017).

C7: Naturalness Medium

Justification

Coastal town developments and, more recently, the large-scale expansion of the Walvis Bay harbour have impacted the naturalness of the broader area and impacts are very likely to spill over into the EBSA footprint. The area has also experienced high fishing pressure in the past. Some coastal parts have also been modified for large-scale salt production, as well as for guano harvesting (Maartens 2003). The coastal area south of Sandwich Harbour, however, remains largely intact. Revision of the EBSA boundary has resulted in an improvement in the site's overall naturalness because many areas of direct impact in the previous delineation are now excluded. Most of the EBSA area is now in a Good (87%) or fair ecological condition (9%) (Holness et al., 2014). Nevertheless, because it is likely that spillover effects from adjacent development are significantly underestimated in the assessment of condition, the EBSA was ranked as Medium rather than High in terms of the naturalness criterion.

Status of submission

The Namib Flyway EBSA was recognized as meeting EBSA criteria by the Conference of the Parties. The revised description and boundaries still need to be submitted to COP for approval.

COP Decision

dec-COP-12-DEC-22

End of proposed EBSA revised description

Motivation for Revisions

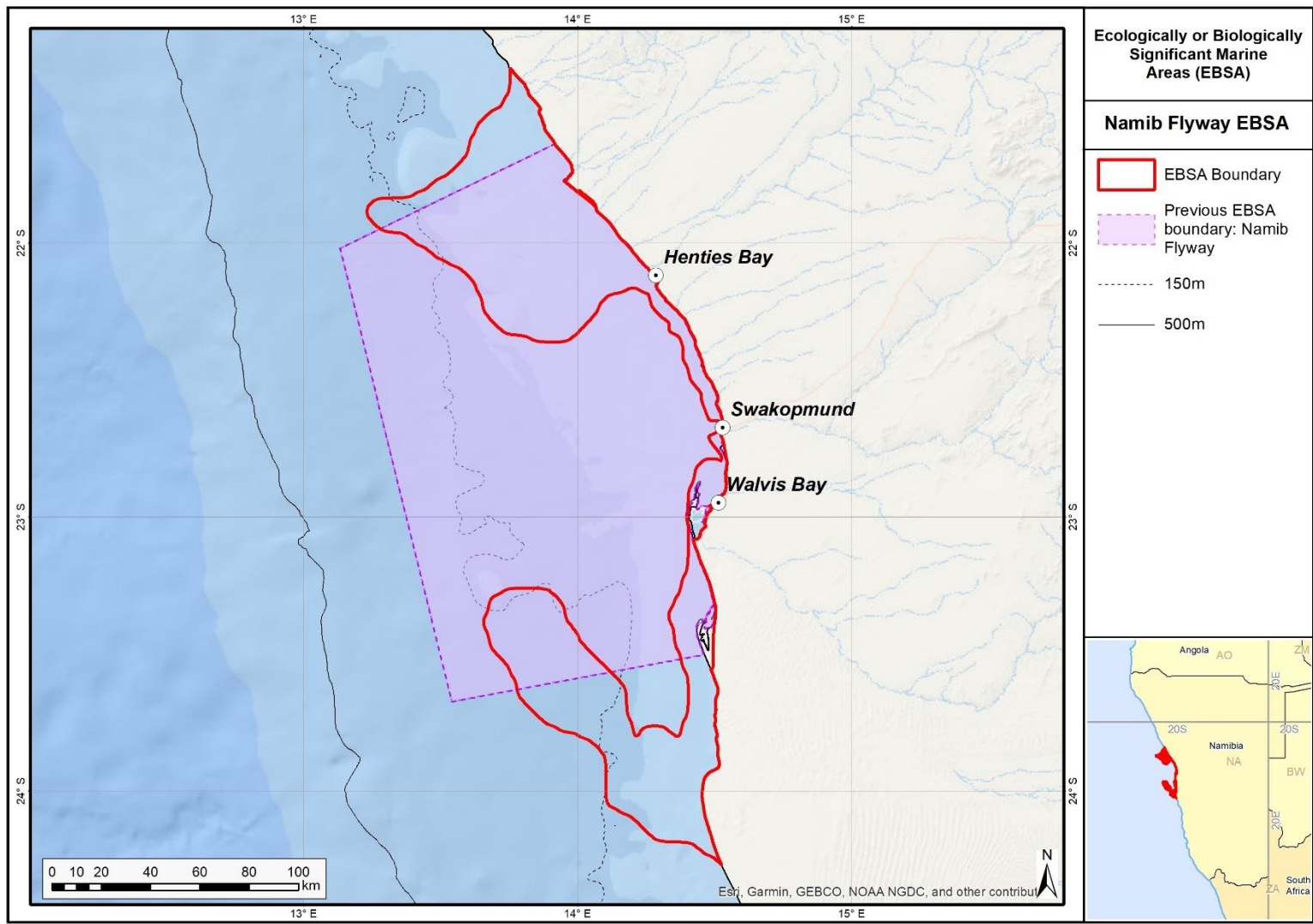
The EBSA description was updated substantially by searching for and including all relevant information from the latest research within the area. This resulted in the addition of 14 new references to the original description, including the latest biodiversity information from OBIS. A summary table of the represented habitats and their threat status was also included as supplementary information. Two criteria were upgraded by one category rank: Uniqueness and rarity was upgraded from Medium to High after consolidating the latest information, and Naturalness was upgraded from Low to Medium on the basis of the revised boundary, particularly because the heavily impacted areas were deliberately excluded in the new delineation.

The most important change to the EBSA was a significant refinement of the EBSA delineation. This was done to focus the EBSA more closely on the key biodiversity features that underlie its EBSA status to improve precision. The delineation process included an initial stakeholder workshop, a technical mapping process and a subsequent expert review workshop where boundary delineation options were finalised.

The delineation process used a combination of Systematic Conservation Planning (SCP) and Multi-Criteria Analysis methods. The key features used in the analysis were:

- Irreplaceable and near irreplaceable (i.e. very high selection frequency) sites, as well as primary and secondary focus areas identified in the SCP undertaken for the BCLME by Holness et al. (2014).
- Threatened Benthic and Coastal Ecosystems. The analysis focussed on the inclusion of the most threatened ecosystem types found in the area. These types are highlighted in the table in the Other relevant website address or attached documents section. Key threatened ecosystem types were the endangered Central Namib Outer Shelf, Kuiseb Lagoon Coast and Kuiseb Mixed Shore. Delineations and ecosystem threat status from Holness et al. (2014). The Endangered pelagic habitat (Ca14) was also included.
- Areas important for threatened and special species were included. The priority areas and buffer distances around colonies were from Holness et al. (2014). Note that the full extent of the buffer was not necessarily included in the EBSA. Features included in the analysis were:
 - African Penguin colonies and a 20km buffer.
 - Bank Cormorant, Cape Cormorant, White Breasted Cormorant and Crowned Cormorant colonies and a 40km buffer.
 - Gannet colonies with a 40km buffer.
 - High density and diversity bird sites.
 - Seal Colonies and a 20km buffer.
- Boundaries of Important Bird and Biodiversity Areas (IBA).
- Areas of high fish species diversity from the NansClim project (See Holness et al., 2014 for details).
- Areas of high relative naturalness identified in the SCP undertaken for the BCLME by Holness et al. (2014).
- Additional expert identified areas important for cetaceans (especially Atlantic bottlenose, dusky, and the Heaviside dolphins). These are particularly areas off Pelican Point and sub-tidal areas shallower than 50m water depths.

The multi-criteria analysis produced a value surface. The cut-off value (used to determine the spatial extent of the EBSA) was based on expert input and quantitative analysis of effective inclusion of the above features. This entailed taking an iterative parameter calibration-based approach whereby the spatial efficiency of the inclusion of the targeted features was evaluated. The approach aimed to identify a cut-off that most efficiently included prioritised features while minimizing the inclusion of impacted areas. The final boundaries shown in the map (Fig. 2) were validated in an expert workshop.



The original and revised boundaries of the Namib Flyway EBSA.