

ECOLOGICALLY OR BIOLOGICALLY SIGNIFICANT MARINE AREAS

in the Benguela Current Large Marine Ecosystem



NAMIBIA



Technical Report

Ecologically or Biologically Significant Marine Areas in the Benguela Current Large Marine Ecosystem

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Descriptions, status assessment and management recommendations for new and revised EBSAs in Namibia. Other existing EBSAs that extend beyond national jurisdiction are not covered by the review and remain unchanged.

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National-level EBSAs

Namibia



Revised EBSAs

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

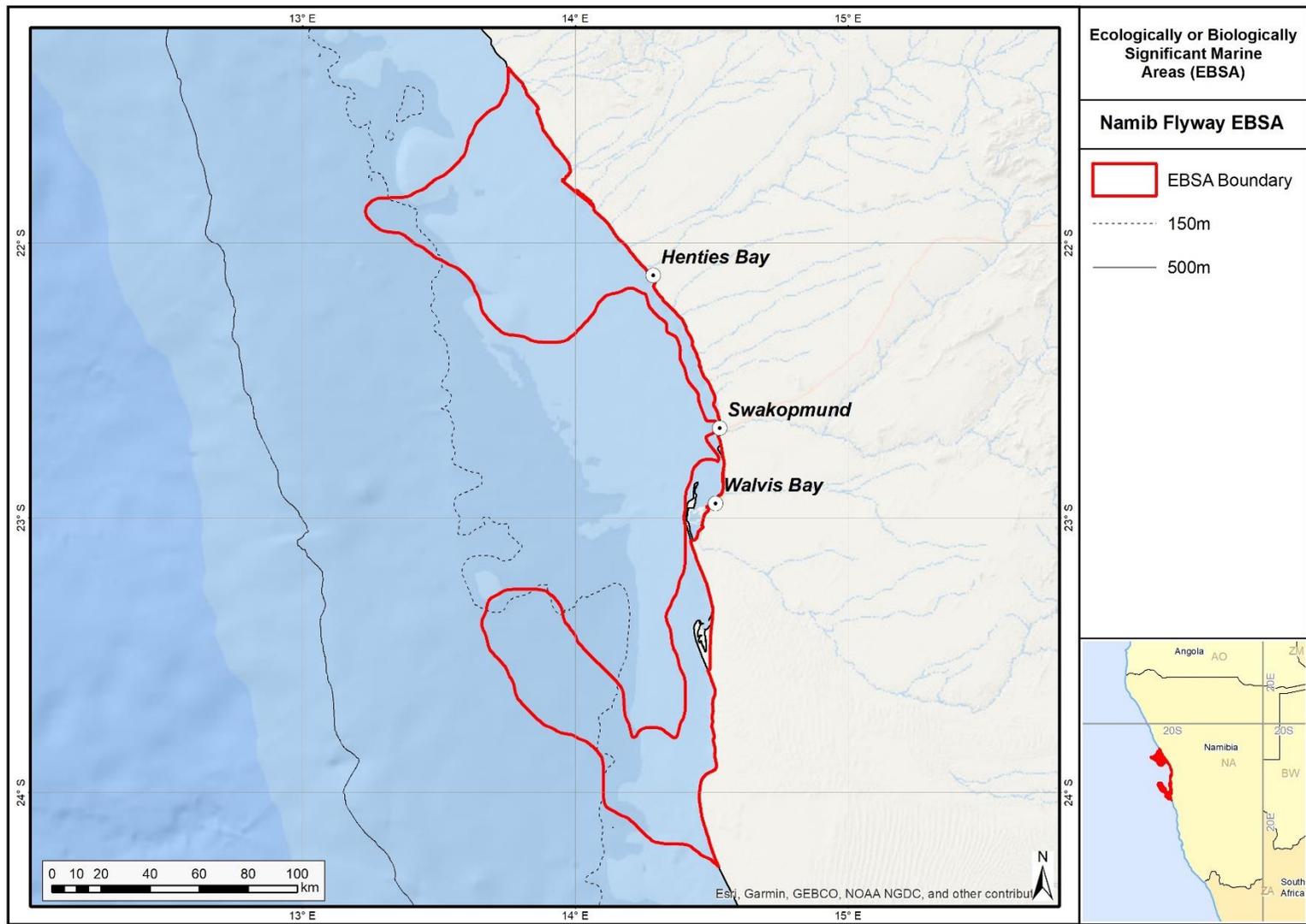
The main coastal features contain two sheltered bays (Walvis Bay and Sandwich Harbour), another north-facing but less sheltered bay (Conception Bay), three lagoons (Cape Cross lagoons, Swakop River Mouth Lagoon, and Walvis Bay Lagoon), one cape (Cape Cross) and one man-made shallow water habitat (Mile 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 have been submitted to the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) for consideration by the Conference of the Parties to the Convention on Biological Diversity.

COP Decision

dec-COP-12-DEC-22

End of proposed EBSA revised description

Motivation for Revisions

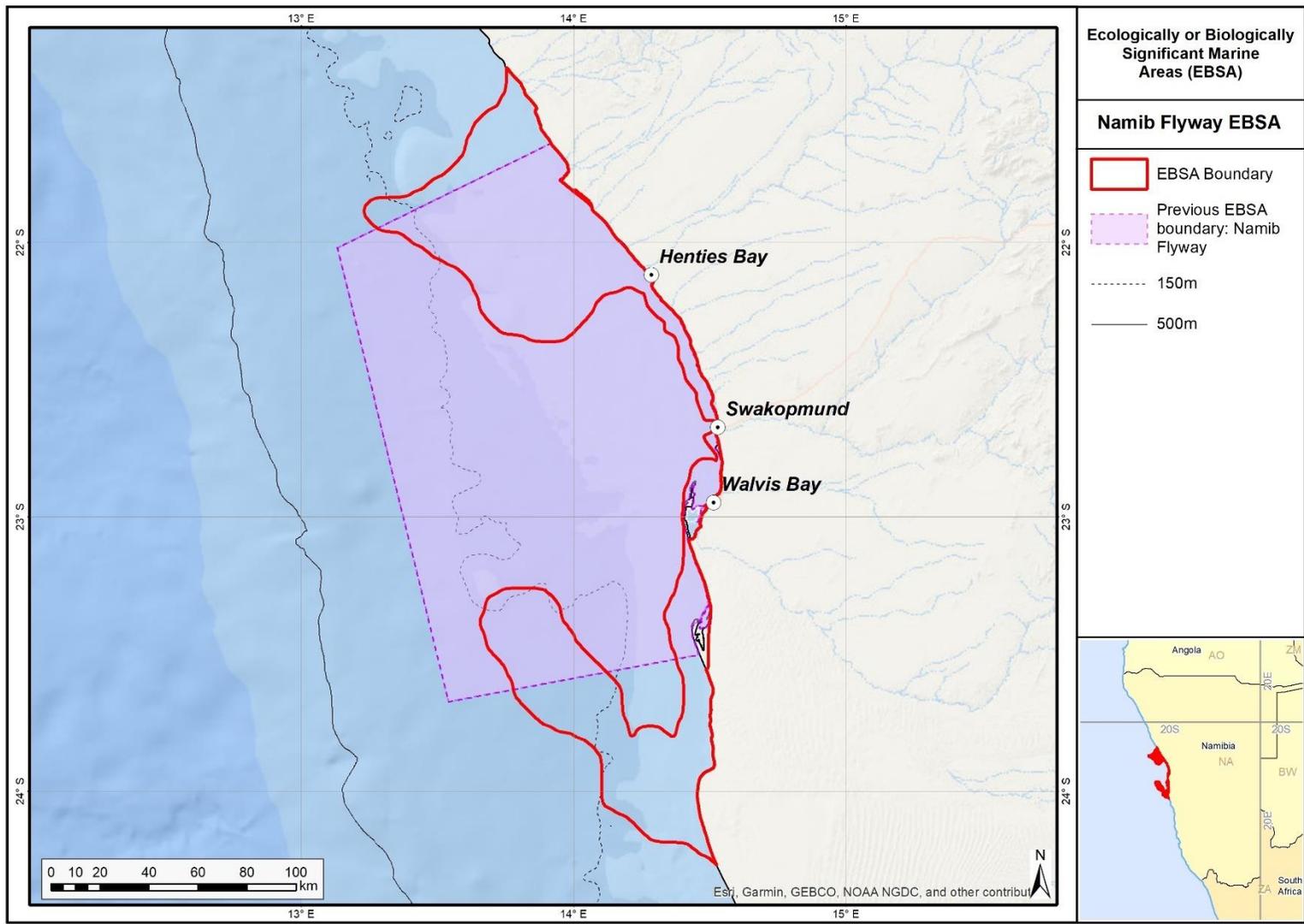
The EBSA description was updated substantially by searching for and including all relevant information from the latest research within the area. This resulted in the addition of 14 new references to the original description, including the latest biodiversity information from OBIS. A summary table of 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:

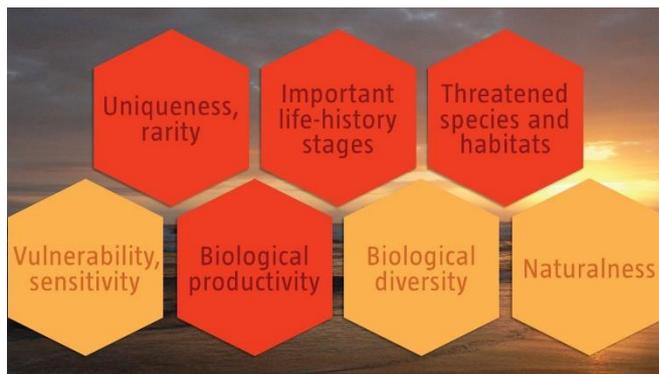
- Irreplaceable and near irreplaceable (i.e. very high selection frequency) sites, as well as primary and secondary focus areas identified in the SCP undertaken for the BCLME by Holness et al. (2014).
- Threatened Benthic and Coastal Ecosystems. The analysis focussed on the inclusion of the most threatened 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.

Status Assessment and Management Options

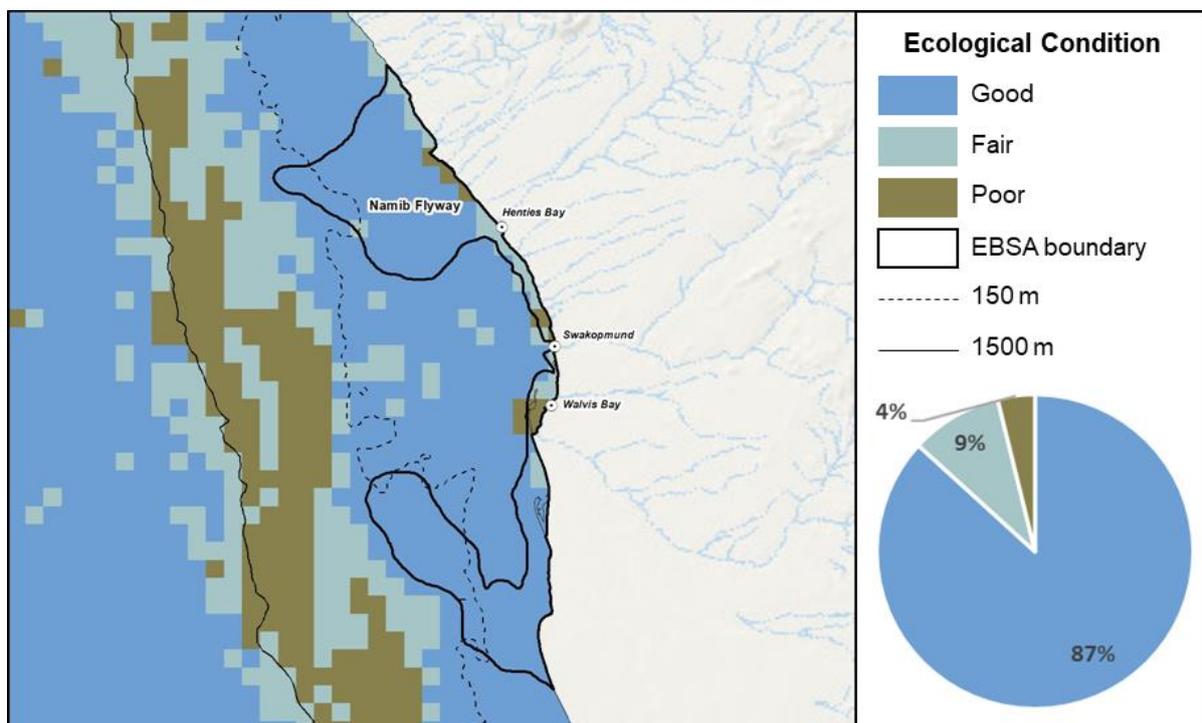


Namib Flyway is a highly productive area in the Benguela system that attracts large numbers of sea- and shorebirds, marine mammals, sea turtles and other fauna, many of which species are threatened. It also includes several Important Bird and Biodiversity Areas, and Ramsar sites, highlighting its importance for life history stages. It includes rare bays and lagoons on the Namibian coast.

EBSA criteria coloured by rank for Namib Flyway: red=high, orange=medium.

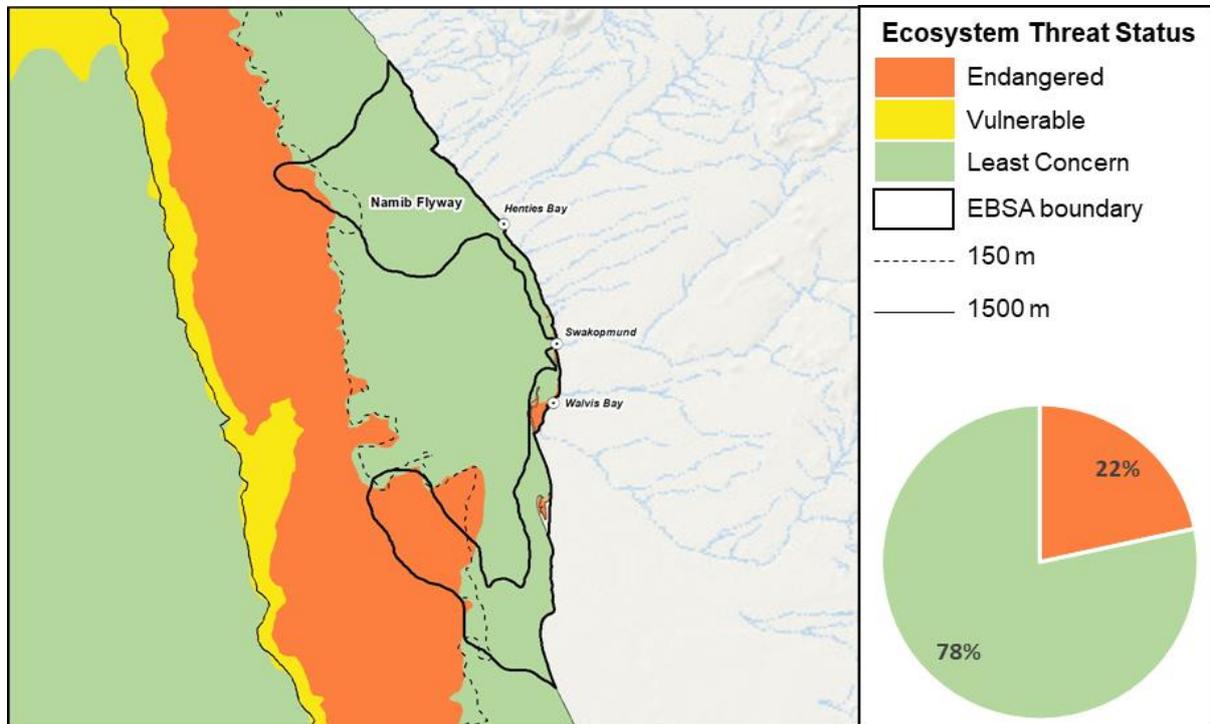
Ecological Condition, Threat Status, Current Protection and Key Features in the EBSA

Namib Flyway has many features and ecosystem types that need to be protected for the area to maintain the characteristics that give it its EBSA status. The criteria for which this EBSA ranks highly are: uniqueness and rarity; importance for life-history stages; importance for threatened species and habitats; and biological productivity. There are 10 ecosystem types represented, mostly including a variety of shore types (as well as lagoons), three of which are Endangered. The main coastal features are 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 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. It supports resident, Palearctic, Oceanic and intra-African migrant bird species, as well as several cetaceans, turtles, seals and fish.

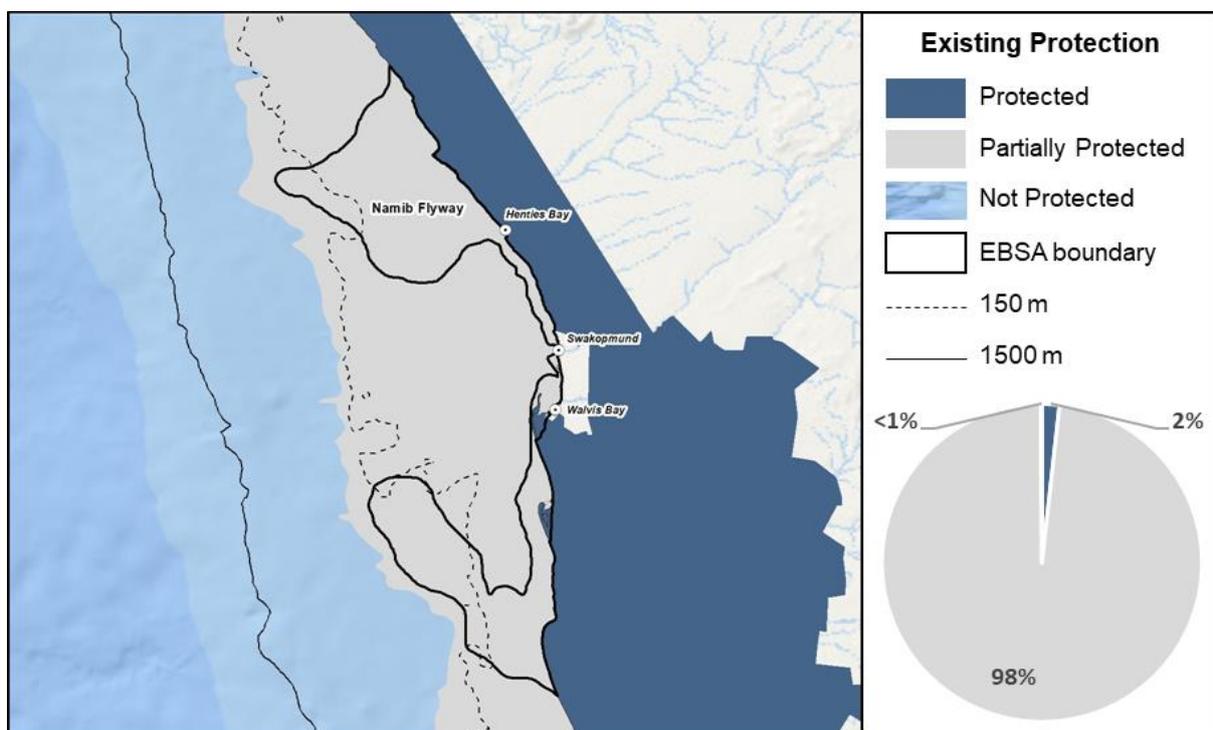


Namib Flyway proportion of area in each ecological condition category.

Namib Flyway is mostly in good ecological condition (87%), with most of the remaining area being in fair (9%) or poor (4%) ecological condition. Consequently, the bulk of the extent comprises seven ecosystem types that are Least Concern (78% of the EBSA extent), with a much smaller portion comprising three Endangered ecosystem types (22% of the EBSA extent) that is mostly deeper than 150 m. The Endangered ecosystem types include the Central Namib Outer Shelf, Kuiseb Lagoon Coast and Kuiseb Mixed Shore.



Namib Flyway proportion of area in each ecosystem threat status category.



Namib Flyway proportion of area in a Marine Protected Area (MPA).

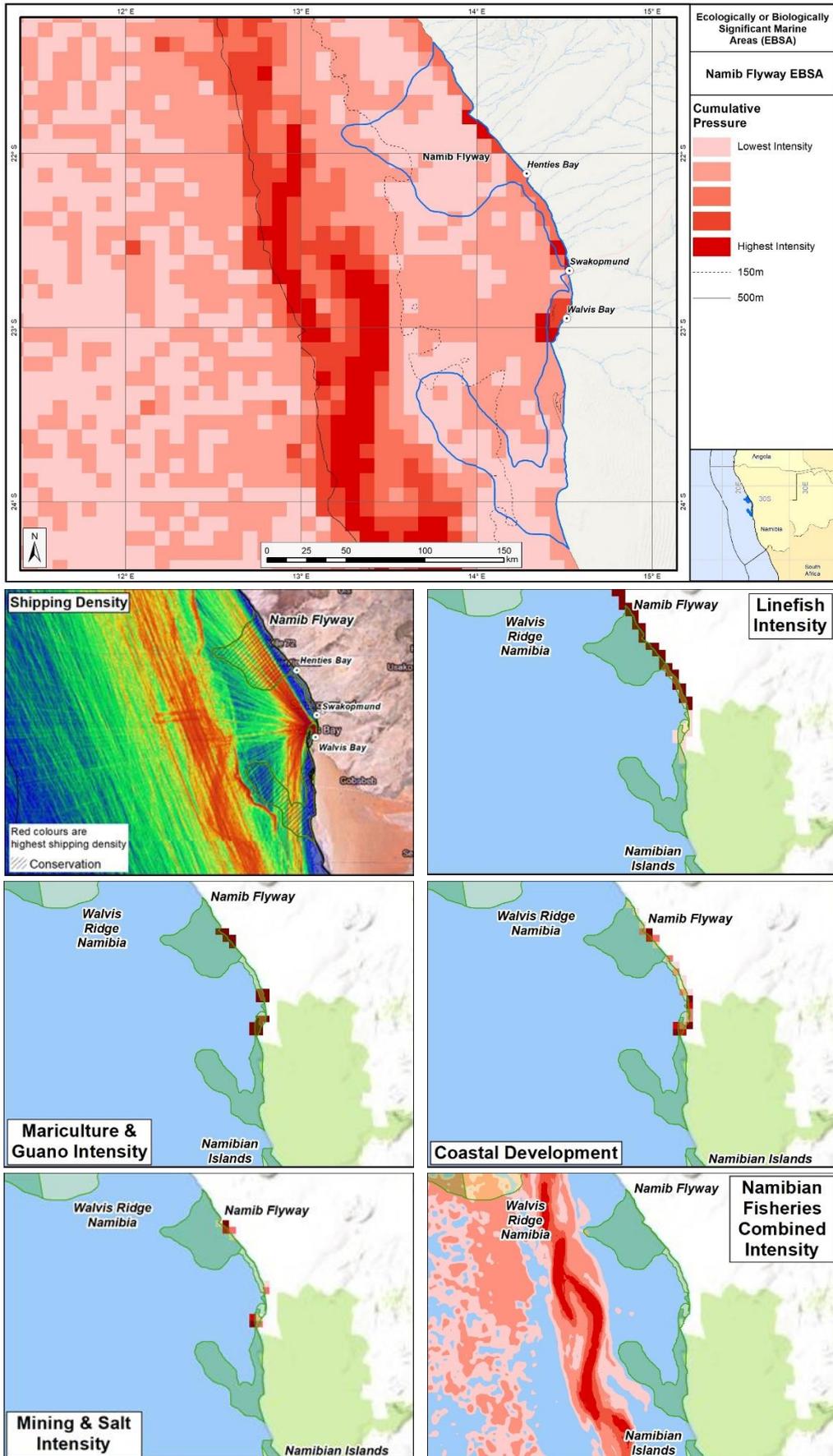
Despite the central sections of the EBSA being highly utilized for the major Walvis Bay port, almost the full extent of the EBSA falls within a Partial Protection area because it is within the shallow water trawling exclusion area. Some important coastal sites are Protected by the adjacent National Parks, especially Sandwich Harbour and Cape Cross, as well as portions of the Walvis Bay lagoon and Pelican Point wetlands adjacent to Walvis Bay. This comprises 2% of the EBSA extent.

Threat status, protection level and ecological condition of ecosystem types in the EBSA. Other key features are also listed.

Feature	Threat Status	Protection Level	Condition (%)		
			Good	Fair	Poor
Ecosystem Types					
Central Namib Inner Shelf	LC	MP	97.19	2.68	0.13
Central Namib Outer Shelf	EN	MP	100.00	0.00	0.00
Kuiseb Dissipative-Intermediate Sandy Beach	LC	WP	34.77	35.99	29.23
Kuiseb Exposed Rocky Shore	LC	WP	0.00	0.00	100.00
Kuiseb Inshore	LC	WP	36.06	46.59	17.35
Kuiseb Intermediate Sandy Beach	LC	WP	17.26	64.74	18.01
Kuiseb Lagoon Coast	EN	WP	28.35	10.62	61.03
Kuiseb Mixed Shore	EN	WP	0.00	52.44	47.56
Kuiseb Reflective Sandy Beach	LC	WP	33.92	54.35	11.73
Kuiseb Sandy Beach Sandy Beach	LC	WP	100.00	0.00	0.00
Other Features					
<ul style="list-style-type: none"> • Numerous Palearctic, Oceanic and intra-African migrant bird species • Turtles • Cetaceans • Seals 					

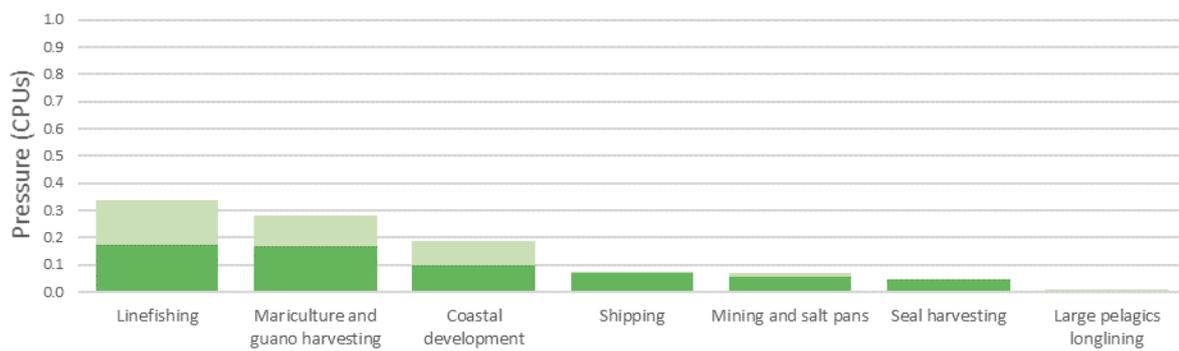
Relevant Pressures and Activities (impact, extent)

- There are 11 pressures present in this EBSA, of small pelagics fishing has the highest cumulative pressure profile.
- Key pressures in this EBSA that most directly impact the features for which the EBSA is described include: small pelagics fishing, linefishing, mariculture and coastal development. These activities will need to be managed particularly well in order to protect the biodiversity features and processes for which this EBSA is recognised, particularly in terms of support the large aggregations of birds.
- Activities in Namibia that are not present in this EBSA include: monkfish fishing, hake commercial trawling, crab and lobster harvesting, oil and gas activities, and tuna pole fishing.
- Note that this assessment of pressures is based on existing data. Where new, finer scale data have since become available, these are presented below (e.g., for shipping and combined fisheries) to enable more accurate recommendations for management of activities. Also, there are some emerging activities and activities for which no spatial data are available that are not included here, but are considered in the management recommendations for the EBSA, based on expert and industry information.



Map of cumulative pressure (top) and maps of the most important pressures (activities) in the EBSA and surrounds. Darker reds indicate higher pressure intensity.

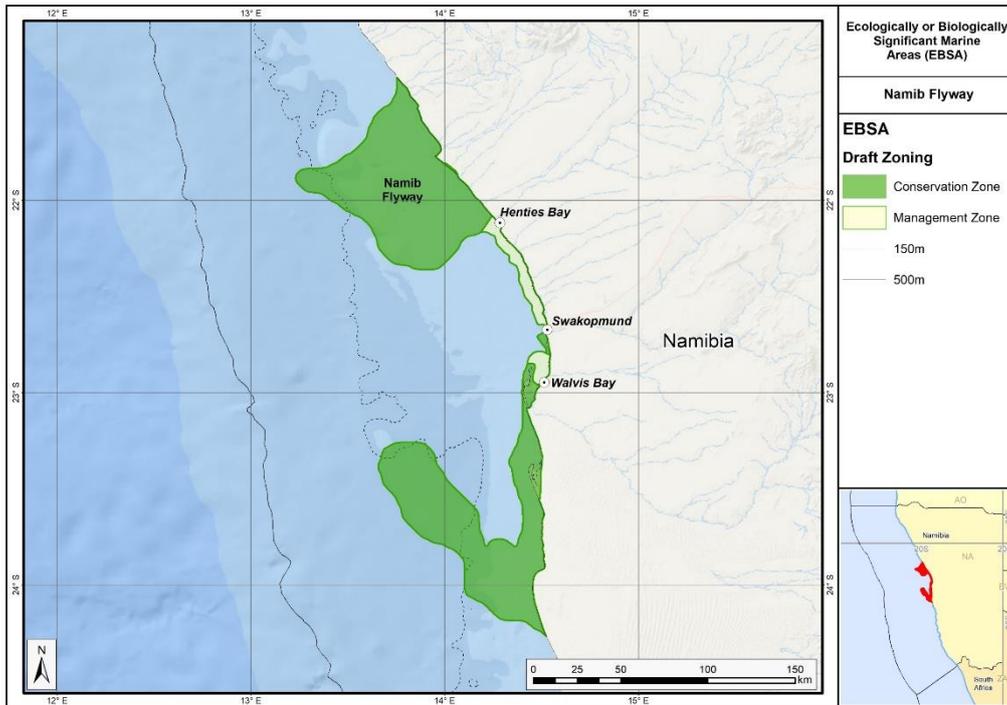
Relative impact of pressures within EBSA biodiversity zones ■ MPA ■ Conservation ■ Impact Management



Pressure (in arbitrary cumulative pressure units, CPUs) summed for each pressure in the EBSA, per proposed EBSA biodiversity zone, ranked left (highest) to right (lowest) by the overall relative importance of pressures in this EBSA. Note that large pelagics longlining comprises <1% of the EBSA pressure profile.

Management Interventions Needed for the EBSA

Improved place-based protection of EBSA features should be pursued. In support of this, the EBSA is divided into a Conservation Zone and an Impact Management Zone, both comprising several areas within the EBSA. The aim of the Conservation Zone is to secure core areas of key biodiversity features in natural / near-natural ecological condition. Strict place-based biodiversity conservation is thus directed at securing key biodiversity features in a natural or semi-natural state, or as near to this state as possible. Activities or uses that have significant biodiversity impacts should be prohibited. Where possible and appropriate these areas should be considered for formal protection e.g., Marine Protected Areas or other effective area-based conservation measures (OECM). The aim of the Impact Management Zone is to manage negative impacts on key biodiversity features where strict place-based measures are not practical or not essential. In this zone, the focus is management of impacts on key biodiversity features in a mixed-use area, with the objective to keep biodiversity features in at least a functional state. Activities or uses which have significant biodiversity impacts should be strictly controlled and/or regulated. Within this zone, there should be no increase in the intensity of use or the extent of the footprint of activities that have significant biodiversity impacts. Where possible, biodiversity impacts should be reduced. As far as possible, the Conservation Zone was designed deliberately to avoid conflicts with existing activities. Note that there are no marine protected areas in this EBSA; however, it borders the terrestrial Namib-Naukluft National Park and Dorob National Park, and there is partial protection of the coastal marine environment conferred through inshore trawl restrictions.



Proposed zonation of the EBSA into Conservation (dark green) and Impact Management (light green) Zones.

Protection of features in the rest of the Conservation Zone may require additional Marine Protected Area declaration/expansion. Other effective conservation measures should also be applied via Marine Spatial Planning to ensure that the existing activities/uses are appropriately controlled to ensure compatibility of activities with the environmental requirements for achieving the management objectives of the EBSA Conservation and Impact Management Zones. Further, no new pressures should be extended into the Conservation Zone, even if they currently occur in the Impact Management Zone of the EBSA.

Recommended compatibility (consent¹ or prohibited²) of activities currently present in the EBSA³ in the Conservation and Impact Management Zones

Uses (including activities and pressures)	Conservation Zone: EBSA areas requiring strictest protection	Impact Management Zone: Other EBSA Areas requiring some protection or place- specific management
Boat-based linefishing	Consent	Consent
Boat-based recreational fishing	Consent	Consent
Channel dredging	Prohibited	General
Ecotourism (regulated nature based and strictly controlled)	Primary	Primary
Mariculture	Consent	Consent
Military exercises and testing	Prohibited	Consent
Mining	Prohibited	Consent
Non-consumptive tourism and recreation	Consent	General
Petroleum extraction	Prohibited	Consent
Port anchorage areas	Prohibited	General
Ports (existing)	Prohibited	General
Ports (new development)	Prohibited	Consent
Renewable energy installations	Prohibited	Consent
Salt pans (existing)	Consent	Consent
Seismic surveys and mining exploration	Prohibited	Consent
Shipping lane	Prohibited	General
Shipping refuge (disabled ships)	Prohibited	Consent
Shore-based fishing	Consent	Consent
Shore-based recreational fishing	Consent	Consent
Small pelagics fishing	Prohibited	Consent
Undersea cables and pipelines	Consent	Consent
Wastewater discharge	Prohibited	Consent

¹Consent: An activity which can continue in this zone subject to specific regulation and control.

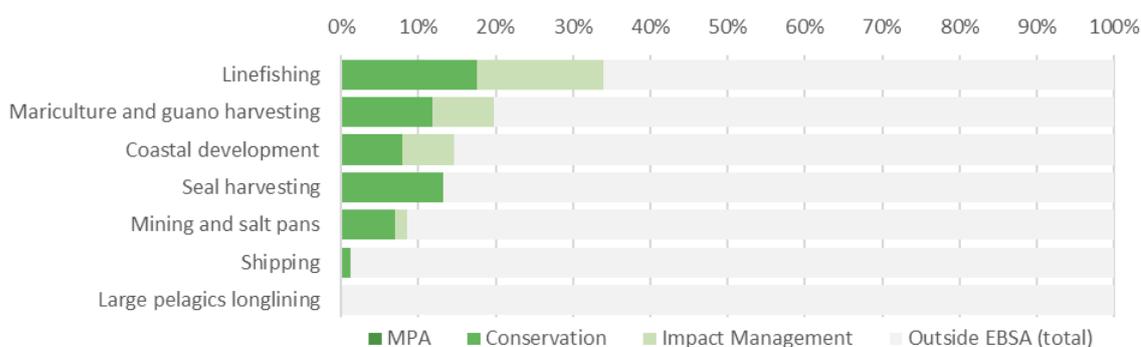
²Prohibited: An activity which is not allowed or should not be allowed because it is incompatible with maintaining the biodiversity objectives of the zone.

³Note that activities present in Namibia that are not relevant to the EBSA have been excluded from the table (e.g., the harvested species does not occur in the area; or the industry operates at a depth outside the depth range of the EBSA).

Furthermore, no new activities that can negatively impact the environment should be allowed in the EBSA, and some activities present in the EBSA do not need to be managed by EBSA zoning and can continue as per the current regulations. There are also some pressures on biodiversity features within the EBSA that originate from activities outside of these EBSA or beyond the jurisdiction of MSP. In support of maintaining the ecological integrity of and benefits delivered by the key biodiversity features, these other activities need to be appropriately managed by complementary initiatives.

Activities that are present but not managed by EBSA zones that can continue as per current regulations		
Shipping		
Activities that are currently not present in the EBSA and should be Prohibited in the future		
Ammunition and other dumping	Crab harvesting	Pelagic longlining
Benthic longlining	Dredge-spoil dumping	Rock lobster harvesting
Bottom trawling (general)	Midwater trawling (horse mackerel)	Salt pans (new)
Bottom trawling (freezer trawlers)		
Other activities beyond the jurisdiction of MSP that directly influence the ecological condition of the EBSA that should be managed appropriately under other appropriate legislation.		
Coastal development (e.g., implementation of appropriate setback lines)		
Coastal disturbance (e.g., formalising access points; rehabilitating degraded dunes; appropriate zoning of bathing and watercraft activities, etc)		
Mean annual runoff reduction (e.g., determining and implementing freshwater flow requirements and estuarine management plans)		

Activity Evaluation Per Zone: Zoning Feasibility



Proposed zonation of the EBSA, with the cumulative intensity footprint of activities within the EBSA (sorted highest to lowest) given relative to the national footprint of those activities to illustrate feasibility of management interventions.

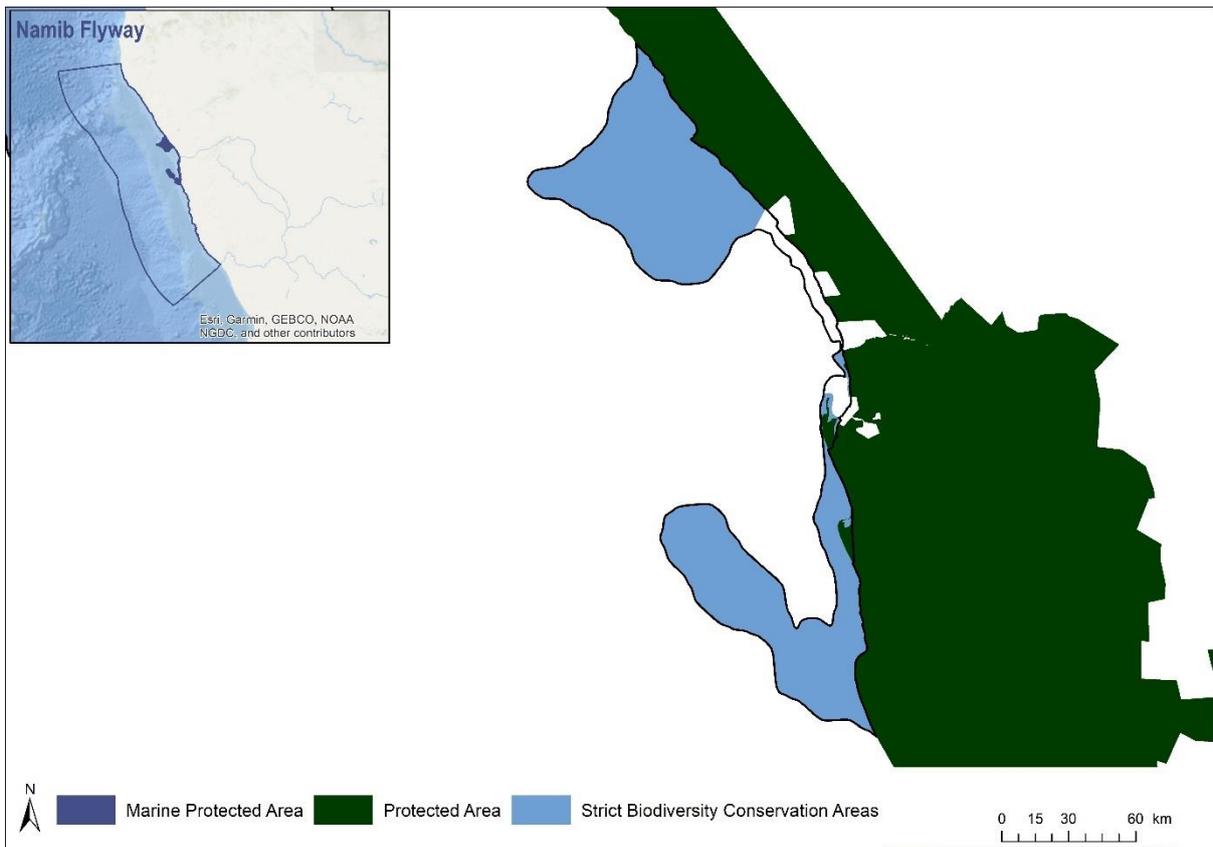
A third of the country’s linefishing takes place within this EBSA, split approximately equally between the Conservation and Impact Management Zones. Recognising the value of this industry, and the notable extent to which it occurs in the EBSA, it is recommended to continue as a Consent activity in both zones. Also, a fifth of the national mariculture and guano harvesting occurs within the EBSA. These activities are also permitted to continue subject to regulations and controls as a Consent activity in both EBSA zones. Only a fraction of the national pelagic longlining footprint is present in the EBSA, and thus it is recommended to be Prohibited in both zones. Shipping can continue in both the Conservation and Impact Management Zones under current general rules and legislation, however, there might need to be some control and regulation for shipping lanes in the Conservation Zone, where it is recommended to be a Consent activity. Other activities noted in the table of management recommendations above are either not currently present in the EBSA or are emerging activities; as far

as possible, these are accommodated in the EBSA, depending on their compatibility with the management objectives of the two zones. Thus, the EBSA zonation has no or minimal impact on the national footprint for the listed marine activities.

There are also several activities that are largely outside the EBSA but have downstream impacts to the biodiversity within the EBSA, e.g., from mean annual runoff reduction, coastal development, coastal disturbance, and wastewater discharge. The impacts should be managed, but principally fall outside the direct management and zoning of the EBSA. These existing activities are proposed as Consent activities for both EBSA zones, recognising that they should ideally be dealt with in complementary integrated coastal zone management in support of the EBSA. For example, investment in eradicating the alien invasive species could aid in improving the ecological condition of rocky and mixed shores, improving benefits for subsistence and recreational harvesting; and rehabilitation of degraded dunes and formalising access points could support improved habitat for nesting shorebirds, and enhanced benefits for coastal protection during storm surges. Similarly, improved estuary management through development of appropriate freshwater flow requirements, estuarine management plans and wastewater management regulations can improve the ecological condition of the surrounding marine environment, in turn, improving water quality and safe conditions for human recreation.

Management Recommendations for Marine Protected Areas

It is recommended that management is strengthened in the adjacent land-based protected areas. Potential MPA declaration within the EBSA should be explored to ensure that the features for which the EBSA was described receive adequate protection, with particular focus in the Strict Biodiversity Conservation Zone. See Future Process below for more details.

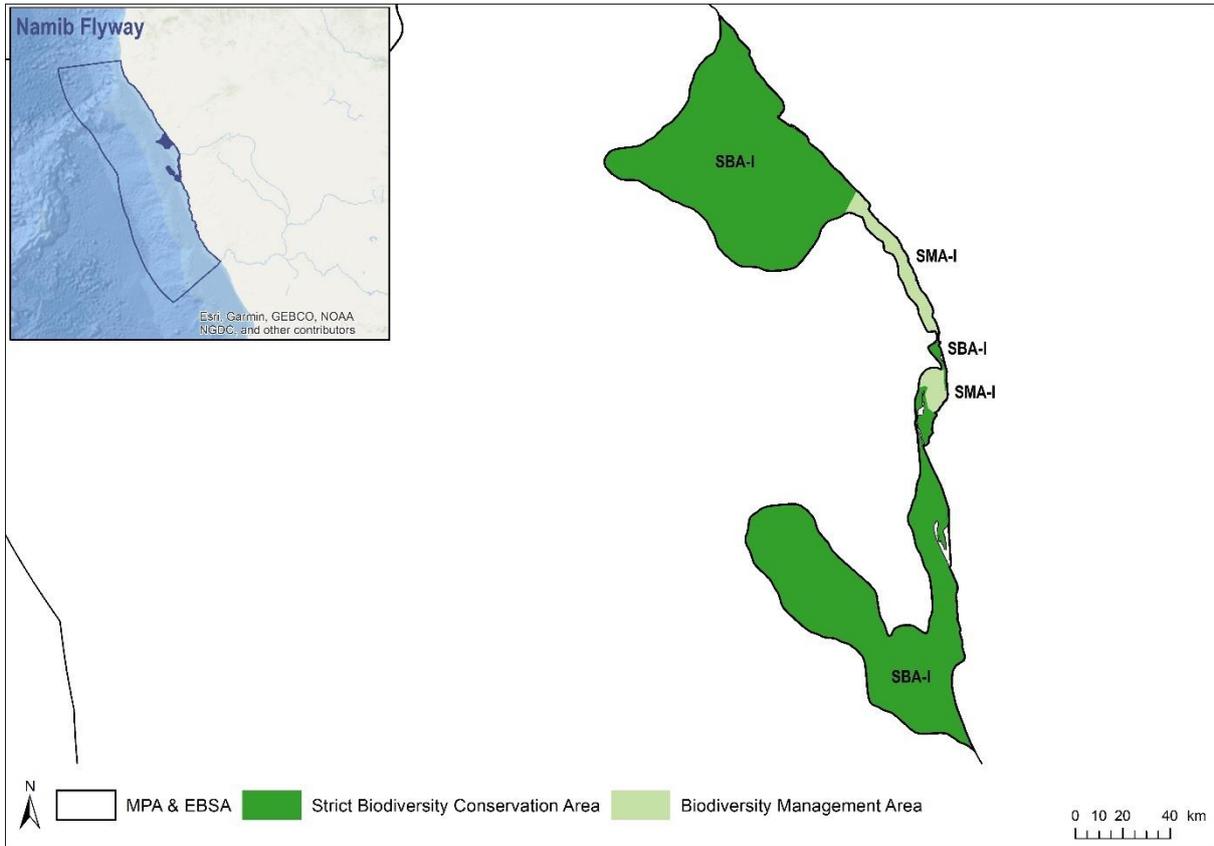


Marine and land-based protected areas (National Parks) in the area surrounding Namib Flyway (from UNEP-WCMC & IUCN, 2022), and the EBSA Strict Biodiversity Conservation Areas where potential MPA expansion within the EBSA should be focused.

Management Recommendations for Marine Spatial Planning

Proposed Zones

Following the initial management recommendations proposed for Namib Flyway, outlined above, the proposed zones and management recommendations are being taken up in the first marine area plan covering the central portion of the Namibian EEZ. The proposed biodiversity zones for the EBSA in MSP comprises two types: a Strict Biodiversity Conservation Area (SBA); and a Biodiversity Management Area (BMA). These have been further refined with specific subcategories within zones for Namib Flyway during the development of the central Marine Area Plan (Ministry of Fisheries and Marine Resources, 2022). The Strict Biodiversity Conservation Area has three subcategories (SBA-I, SBA-II, SBA-III) and the Biodiversity Management Area has two subcategories (BMA-I, BMA-II). The respective subcategories per zone are fundamentally the same, but differ in the features they contain and specific required adjustments in management recommendations. Only SBA-I and SMA-I are present in this EBSA. It is recommended that there is full implementation and operationalisation of these zones as part of MSP.



Proposed environmental protection zones for the Namib Flyway EBSA for inclusion in the central Marine Area Plan. (Data source: Ministry of Fisheries and Marine Resources, 2022)

Proposed Sea-Use Guidelines

As explained in the Management Interventions Needed for the EBSA above, all sea-use activities were listed and recommendations for management were provided according to the compatibility of the activities with the management objective of each of the proposed biodiversity zones. These have been refined for inclusion in the central Marine Area Plan, based on the biodiversity zone subcategories (Ministry of Fisheries and Marine Resources, 2022). It is recommended that these sea-use guidelines are implemented as part of the central Marine Area Plan.

Consent	Prohibited
Strict Biodiversity Conservation Areas (SBA-I)	
<ul style="list-style-type: none"> • Mariculture • Marine and coastal recreation and tourism • Development of new permanent infrastructure on the seabed, sea surface, in the water column or adjacent to the marine area • Commercial boat-based line fishing, • Effluent discharge 	<ul style="list-style-type: none"> • Bottom and midwater trawling • Crustacean trap-based harvesting of crab and rock lobster • Pelagic (and possible future benthic) longlining • Small pelagic fishing • Anchoring of ships, excluding vessels in distress • Bunkering • Navigational or expansion dredging and disposal of dredged material • Invasive geological resource exploration and exploitation activities • Development of new salt mining activities • Military training • Dumping of material dredged for maritime traffic purposes • Discharge of materials dredged during mining operations • New wastewater or desalination brine outfalls • Seaweed harvesting • Ballast water discharging¹ • Generation of renewable energy • Seaweed harvesting, • Ballast water discharge • Energy production
Biodiversity Management Areas (BMA-I)	
<ul style="list-style-type: none"> • Marine and coastal recreation and tourism activities • Development of new permanent infrastructure on the seabed, sea surface, in the water column or adjacent to the marine area • Geological exploration and exploitation • Effluent or desalination brine discharge • Bunkering (only within port limit) 	<ul style="list-style-type: none"> • Bottom and midwater trawling • Crustacean trap-based harvesting of crab and rock lobster • Pelagic (and possible future benthic) longlining • Development of new salt mining activities • Anchoring of ships, unless in designated priority anchorage and refuge areas • Dumping of material dredged for maritime traffic outside of designated spoil ground • Dumping at sea (for military purposes) • Recreational or commercial boat-based line fishing and shore-based recreational fishing in specific areas in accordance with existing regulations

Proposed management recommendations for activities with each of the different compatibility ratings:

- **General activities (compatible):** Activities should be allowed and regulated by current general rules. Notwithstanding, there should still be duty of care, possibly requiring monitoring and evaluation programmes, to avoid unintended cumulative impacts to the biodiversity features for which this area is recognised.
- **Consent activities (restricted compatibility):** A robust site-specific, context-specific assessment is required to determine the activity compatibility depending on the biodiversity features for which the site was selected. Particularly careful attention would need to be paid in areas containing irreplaceable to near-irreplaceable features where the activity may be more appropriately evaluated as not permitted. The ecosystem types in which the activities take place may also be a consideration as to whether or not the activity should be permitted, for example. Where it is permitted to take place, strict regulations and controls over and above the current general rules and legislation would be required to be put in place to avoid unacceptable impacts on biodiversity

¹ The discharge of ballast water outside port limits is done according to Regulation D-1 of the Ballast Water Convention and far in open sea (beyond 200 NM)

features. Examples of such regulations and controls include: exclusions of activities in portions of the zone; avoiding intensification or expansion of current impact footprints; additional gear restrictions; and temporal closures of activities during sensitive periods for biodiversity features.

- **Prohibited (not compatible):** The activity should not be permitted to occur in this area because it is not compatible with the management objective. If it is considered to be permitted as part of compromises in MSP negotiations, it would require alternative Strict Biodiversity Conservation Areas and/or offsets to be identified. However, if this is not possible, it is recommended that the activity remains prohibited within the Strict Biodiversity Conservation Area.

Research Needs

In addition to the general research needs (see EBSA Research Needs below), the increase of industrial activities in the area, particularly expansion of the port and anticipated flurry of hydrocarbon exploration and mining, warrants particular research focus on the myriad of threatened species that rely on the high productivity of this EBSA. Notably, knowledge of the presence and distribution of cetacean species is largely lacking, and yet these marine mammals are known to be affected by seismic surveys during hydrocarbon exploration. Similarly, the increased risk of marine vessels and animal collisions (as traffic through the expanded port increases) is also an issue for species like leatherback turtles, particularly because the Western Indian Ocean population (that partly use this EBSA as a foraging site) is listed as Critically Endangered. Knowing when and where these animals are in the EBSA will enable better spatial and temporal management of conflicting activities.

Future Process

The Namib Flyway is within the Central Namibian Marine Spatial Planning Core Area, which is the first Marine Area Plan being developed in Namibia. There needs to be full operationalisation and practical implementation of the proposed zoning in this Marine Area Plan, with gazetted management regulations following the proposed management recommendations outlined above. Possible MPA expansion within the EBSA should be explored, with relevant areas included into focus areas that can be considered further in a dedicated MPA expansion process with adequate and meaningful stakeholder engagement.

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UNEP-WCMC, IUCN, 2022. Protected Planet: The World Database on Protected Areas (WDPA) and World Database on Other Effective Area-based Conservation Measures (WD-OECM) [Online], September 2022. UNEP-WCMC and IUCN, Cambridge, UK. Available at: www.protectedplanet.net.

Ministry of Fisheries and Marine Resources, 2022. The Central Marine Spatial Plan of Namibia. Windhoek: Namibia.

Namibian Islands

Revised EBSA Description

General Information

Summary

The Namibian Islands are located offshore in the central region of the Benguela Current Large Marine Ecosystem (BCLME) within the intensive Lüderitz Upwelling Cell. These islands and their surrounding waters are described primarily in terms of their significance for life history stages of threatened seabird species. The islands are crucial seabird breeding sites within the existing Namibian Islands Marine Protected Area (NIMPA). The surrounding waters are also key foraging grounds for these seabirds for both the adults and as they provide for their chicks, and for Critically Endangered leatherbacks from the Western Indian Ocean that nest in South Africa. The boundaries of the NIMPA are largely based on the foraging ecology of key threatened, breeding seabirds. These features were used here too to expand the boundary of the Namibian Islands EBSA to include the full ecological and biological significance of the islands and adjacent marine environment, not just to represent the islands themselves.

Introduction of the area

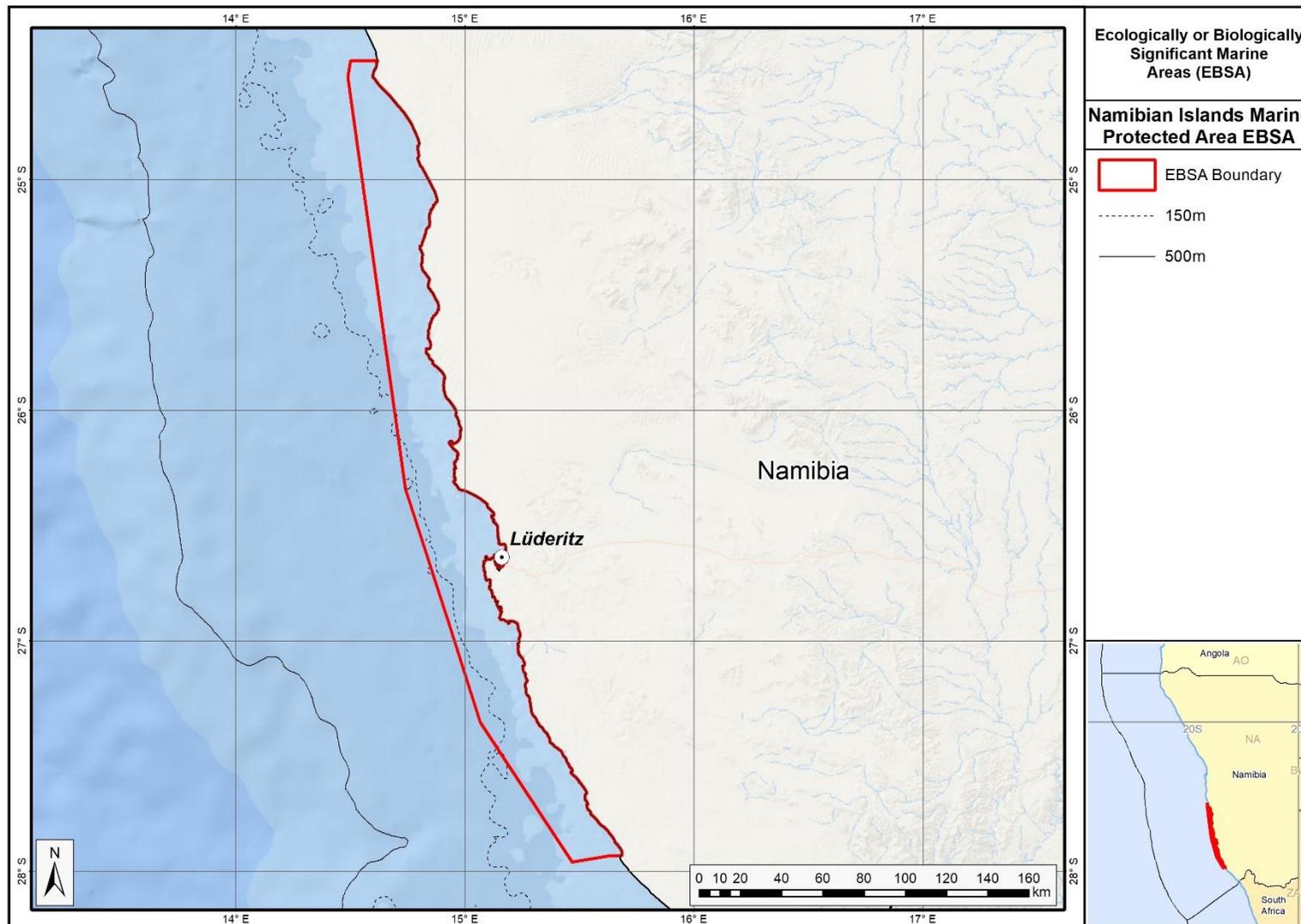
The Namibian Islands is a coastal EBSA that is located in the central region of the BCLME within the Lüderitz Upwelling Cell. This upwelling cell plays a significant role in regulating the biomass of fish stocks of central Namibia. Consequently, the islands and adjacent productive waters provide important breeding and foraging habitat for threatened seabirds and marine mammals, and includes important nursery grounds for the commercially important west coast rock lobster, *Jasus lalandii* (Currie et al., 2008). It is also recognized as a foraging site for regionally Critically Endangered leatherbacks from the Western Indian Ocean that nest in South Africa (Harris et al., 2017). Thus, although the focus of this EBSA is on seabird breeding and foraging, there are several other important species for which this site is important.

The key ecological value of this site was recognised prior to the EBSA process, and in 2009, the Namibian Ministry of Fisheries and Marine Resources (MFMR) gazetted the Namibian Islands Marine Protected Area (NIMPA). The NIMPA covers nearly 1 million ha of coastal waters that encompass all the natural seabird breeding islands in Namibia and the key supporting seabird foraging areas in the surrounding sea. It was later recognised that the original EBSA delineation had focussed on only the breeding islands, and had omitted the critical foraging grounds surrounding the islands that provide fish for the adult birds and as they provision for their chicks. Consequently, the EBSA boundary was revised to include the full extent of this significant ecological feature, following a similar delineation process to how the NIMPA was defined. 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 Namibian Islands EBSA.

Description of location

The original boundary of the Namibian Islands EBSA has been extended to include key seabird foraging areas, much like how the boundary of the NIMPA was defined. It extends alongshore about 400 km from Meob Bay to Chameis Bay and, on average, 30 km offshore from the high-water mark. It is located between the latitudes of 24°S and 28°S, within the national jurisdiction of Namibia.

Feature description of the area

The Namibian Islands EBSA is described for both benthic and pelagic features, primarily as a key breeding and foraging area for threatened seabirds, but also as breeding, nursery or foraging areas for several other species that are iconic, threatened or of commercial importance. Eleven seabird species breed on the islands, of which eight are endemic to southern Africa (Kemper et al., 2007). Of these, the African Penguin (*Spheniscus demersus*), Bank Cormorant (*Phalacrocorax neglectus*) and the Cape Cormorant (*P. capensis*) are listed as globally Endangered; the Cape Gannet (*Morus capensis*) is listed as globally Vulnerable and locally Critically Endangered (Simmons et al., 2015, IUCN 2016). The Namibian populations of African Penguins, Cape Gannets and Bank Cormorants breed exclusively within this EBSA. Productivity at this site is also particularly high because it is situated in the Lüderitz Upwelling Cell in the Benguela Current, which plays a significant role in regulating the biomass of fish stocks of central Namibia. However, the depletion of small pelagic fish stocks in the late 1960s through over-fishing, particularly in southern Namibia, has negatively impacted this area (Roux et al., 2013). This provides special justification for protecting this area to conserve the important threatened species that are so dependent on it.

In recognition of the ecological significance of this area, the design of the NIMPA took seabird tracking data into account to ensure inclusion of critical foraging areas of resident breeding birds (Ludynia et al., 2010a, 2012). Three rock lobster sanctuaries, one linefish sanctuary and key calving areas of southern right whales were also included (Currie et al., 2008). This site is a foraging area for regionally Critically Endangered leatherbacks from the Western Indian Ocean that nest in South Africa (Harris et al., 2017). The NIMPA, which adjoins the Namib-Naukluft and Tsau//Khaeb national parks on the landward side, is sectioned into zones of increasing protection levels, with the highest protection status afforded to the islands. Six of the islands are also designated as Important Bird and Biodiversity Areas (IBAs; Simmons et al., 2015). Altogether, 140 species have been recorded in the EBSA (OBIS 2017).

Feature conditions and future outlook of the proposed area

A lack of quality food poses the greatest threat to seabird populations breeding on Namibia's islands (Ludynia et al., 2010b, Simmons et al., 2015). The collapse of sardine stocks in the 1960s and anchovy populations in the 1990s (Roux et al., 2013), both significant prey species, threaten the viability of African Penguin, Cape Gannet and Cape Cormorant populations in particular. The recovery of small pelagic fish stocks in southern Namibia is therefore crucial to the continued survival of these species. The coast is vulnerable to marine pollution, especially oil spills, and even a small oil spill at a key breeding site such as Mercury Island could put a significant proportion of the global population of

African Penguin, Cape Gannets and/or Bank Cormorants at risk. Namibia's National Oil Spill Contingency Plan is currently being updated, and a process to draft the Oil Spill Sensitivity Mapping is underway for improved monitoring and prevention. Breeding habitat degradation and associated disturbance (e.g. from guano harvesting) has further rendered breeding seabirds, particularly African Penguins and Cape Gannets, at risk. An increasing emphasis on marine mining, including inshore and coastal mining south of Lüderitz may pose additional threats to seabirds, rock lobsters and marine mammals, such as prey displacement and modification of key marine habitats.

Holness et al. (2014) estimated habitat threat status by assessing the weighted cumulative impacts of various pressures (e.g., extractive resource use, pollution, development and others) on each ecosystem type for Namibia (Table in Other relevant website address or attached documents section). The results identified small areas of two Critically Endangered ecosystem types (*viz.* the Namaqua Intermediate Sandy Beach and Namaqua Reflective Sandy Beach) within the Namibian Islands EBSA. The Critically Endangered status implies that very little ($\leq 20\%$) of the total area of these habitats are in natural/pristine condition, and it is expected that important components of biodiversity pattern have been lost and that ecological processes have been heavily modified. Furthermore, one Endangered ecosystem type (*viz.* the Kuiseb Mixed Shore) and three Vulnerable ecosystem types (*viz.* the Lüderitz Outer Shelf, Namaqua Exposed Rocky Shore, and Namaqua Inshore) were identified. In particular, the Namibian Islands EBSA is very important for the Lüderitz Outer Shelf, Namaqua Inshore and Kuiseb Mixed Shore ecosystem types. Overall, Holness et al. (2014) classified 91% of the Namibian Islands area as being in good condition, which is consistent with the inclusion of the entire area in the NIMPA as part of the EBSA's boundary revision.

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Other relevant website address or attached documents

Summary of ecosystem types and threat status for the Namibian Islands EBSA. Data from Holness et al. (2014).

Threat Status	Ecosystem type	Area (km ²)	Area (%)
Critically Endangered	Namaqua Intermediate Sandy Beach	2.1	0.0
	Namaqua Reflective Sandy Beach	0.3	0.0
Endangered	Kuiseb Mixed Shore	10.1	0.1
Vulnerable	Lüderitz Outer Shelf	706.7	7.4
	Namaqua Exposed Rocky Shore	3.6	0.0
	Namaqua Inshore	62.6	0.7
Least Threatened	Central Namib Inner Shelf	1 074.8	11.3
	Kuiseb Dissipative-Intermediate Sandy Beach	3.2	0.0
	Kuiseb Exposed Rocky Shore	3.1	0.0
	Kuiseb Inshore	586.0	6.2
	Kuiseb Intermediate Sandy Beach	40.1	0.4
	Kuiseb Reflective Sandy Beach	13.1	0.1
	Lüderitz Dissipative Sandy Beach	4.7	0.0
	Lüderitz Dissipative-Intermediate Sandy Beach	4.3	0.0
	Lüderitz Exposed Rocky Shore	42.6	0.4
	Lüderitz Inner Shelf	4 654.8	49.0
	Lüderitz Inshore	356.2	3.8
	Lüderitz Intermediate Sandy Beach	40.8	0.4
	Lüderitz Island	1 331.5	14.0
	Lüderitz Lagoon Coast	3.2	0.0
	Lüderitz Mixed Shore	35.0	0.4
	Lüderitz Reflective Sandy Beach	13.5	0.1
	Lüderitz Sheltered Rocky Shore	4.1	0.0
	Lüderitz Very Exposed Rocky Shore	1.0	0.0
	Namaqua Dissipative-Intermediate Sandy Beach	7.6	0.1
	Namaqua Inner Shelf	486.0	5.1
Namaqua Mixed Shore	0.2	0.0	
Grand Total		9 491.1	100.0

Assessment of the area against CBD EBSA criteria

C1: Uniqueness or rarity **High**

Justification

The entire Namibian population of African Penguins (25% of the global population), Cape Gannets (11%) and Bank Cormorants (89%) breed in the EBSA (Kemper et al., 2007, Ludynia et al., 2012). Cape Gannets breed on only six islands globally; three of these are in Namibia, all of which form part of the EBSA. Of the eleven seabird species that breed on the islands, eight are endemic to southern Africa (Kemper et al., 2007).

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

Justification

The islands (and two coastal caves) support the entire Namibian breeding populations of three threatened seabird species. Due to their inaccessibility by terrestrial predators, these sites offer safe breeding and moulting habitat (Kemper 2006, Kemper et al., 2007). Breeding penguins and cormorants forage almost exclusively within the boundaries of the EBSA; breeding gannets have larger foraging ranges, but core feeding activities take place within the EBSA (Ludynia et al., 2010a, 2012). In Namibia, the majority of calving sites for Southern Right Whales (a species that was nearly hunted to extinction in Namibia and has only recently returned to Namibian waters to breed) fall within the EBSA (Roux et al., 2001). Namibian Islands also provides crucial breeding and feeding habitat to a large proportion of the global population of Heaviside's dolphins at the centre of its distribution (Roux et al., 2001). Furthermore, the extensive kelp beds between Sylvia Hill and Chameis Bay provide important habitat for rock lobsters, including juveniles, immature and egg-bearing females (Currie et al., 2008). Leatherbacks from the Western Indian Ocean also use the EBSA as a foraging ground (Harris et al., 2017).

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

Justification

The Namibian Islands EBSA constitute crucial breeding habitat for several seabird species endemic to the southern African region, including the globally Endangered African Penguin, Cape Cormorant and Bank Cormorant, as well as the locally Critically Endangered Cape Gannet (Simmons et al., 2015). The breeding populations of these species continue to decline globally, and certainly the depletion, and lack of recovery, of small pelagic fish stocks (e.g., sardine, anchovy) in southern Namibia continue to play a key role in the decline of these species locally (IUCN 2016). Also, some regionally Critically Endangered leatherback turtles from the Western Indian Ocean that nest in South Africa use this area as a foraging ground (Harris et al., 2017). Furthermore, the Namibian Islands EBSA includes important threatened habitats (Holness et al., 2014). These include two Critically Endangered ecosystem types (Namaqua Intermediate Sandy Beach and Namaqua Reflective Sandy Beach), one Endangered type (Kuiseb Mixed Shore), and three Vulnerable types (Lüderitz Outer Shelf, Namaqua Exposed Rocky Shore, Namaqua Inshore; Table in the Other relevant website address or attached documents section.).

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

Justification

Breeding seabirds, particularly penguins, are vulnerable to extreme environmental events such as heat waves or severe storms, in part because the nesting habitat has been modified by historic and, to a limited extent, more recent guano harvesting. This may be exacerbated further by the effects of climate change (Griffiths et al., 2005; Kemper et al., 2007). Sea-level rise will threaten the existence and/or spatial extent of the low-lying islands (Roux 2003). In addition, the lack of good-quality small pelagic prey (because of stock depletion followed by a lack of recovery) has led to degraded seabird foraging habitats. These habitats may be further degraded through increasing marine mining activities and coastal industrialization, as well as changes in climate (including warm-water and/or low-oxygen events) in the vicinity of the islands and in key foraging areas.

C5: Biological productivity **Medium**

Justification

The Namibian Islands EBSA is situated within the intensive Lüderitz Upwelling Cell, which induces high levels of productivity and thus abundant fish and higher trophic level populations. However, the depletion of small pelagic fish stocks in the late 1960s through over-fishing, particularly in southern Namibia, has resulted in a degraded marine ecosystem (Roux et al., 2013), characterized by a decrease in productivity and changes in the overall trophic function in this area.

C6: Biological diversity **Low**

Justification

As a cold-water and predominantly sandy-bottomed marine environment, the northern Benguela Current ecosystem is considered relatively poor in biological diversity compared to more tropical or substrate-diverse marine ecosystems. However, the coastline and near-shore waters along which the EBSA is situated are characterized by both rocky and sandy substrates, which support a limited (and poorly studied) array of micro- and macroscopic benthos, including seaweeds and invertebrate species (Sakko 1998, Harris et al., 1998). The biodiversity in the inter-tidal zones of the islands tends to be greater than elsewhere in the area, possibly due to high nutrient input from seabird guano. Altogether, 140 species have been recorded in the EBSA (OBIS 2017).

C7: Naturalness **High**

Justification

The islands themselves have been modified from their pristine states through anthropogenic impacts such as intensive guano scraping activities on the islands (Griffiths et al., 2005). However, the area overall is in good and improving condition, and is fully included in the Marine Protected Area. The surrounding marine environment is well within the Namibian 200 m no-trawl protection zone. Purse-seining is prohibited within the EBSA (as per NIMPA regulations) in order to encourage the recovery

of small pelagic fish stocks that are vital to the area's ecosystem health and functioning. A commercial and recreational lobster fishery is located along the southern coast of Namibia. Coastal development and marine mining in the area have been limited but are expected to expand. Although there have been significant historical impacts (especially on the islands specifically) and there are regional risks from adjacent areas, 91% of the Namibian Islands EBSA was classified as being in good condition, based on current levels of impacting activities (Holness et al., 2014). This is consistent with the inclusion of the entire area in the NIMPA as part of the EBSA's boundary revision.

Status of submission

The Namibian Islands EBSA was recognized as meeting EBSA criteria by the Conference of the Parties. The revised description and boundaries have been submitted to the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) for consideration by the Conference of the Parties to the Convention on Biological Diversity

COP Decision

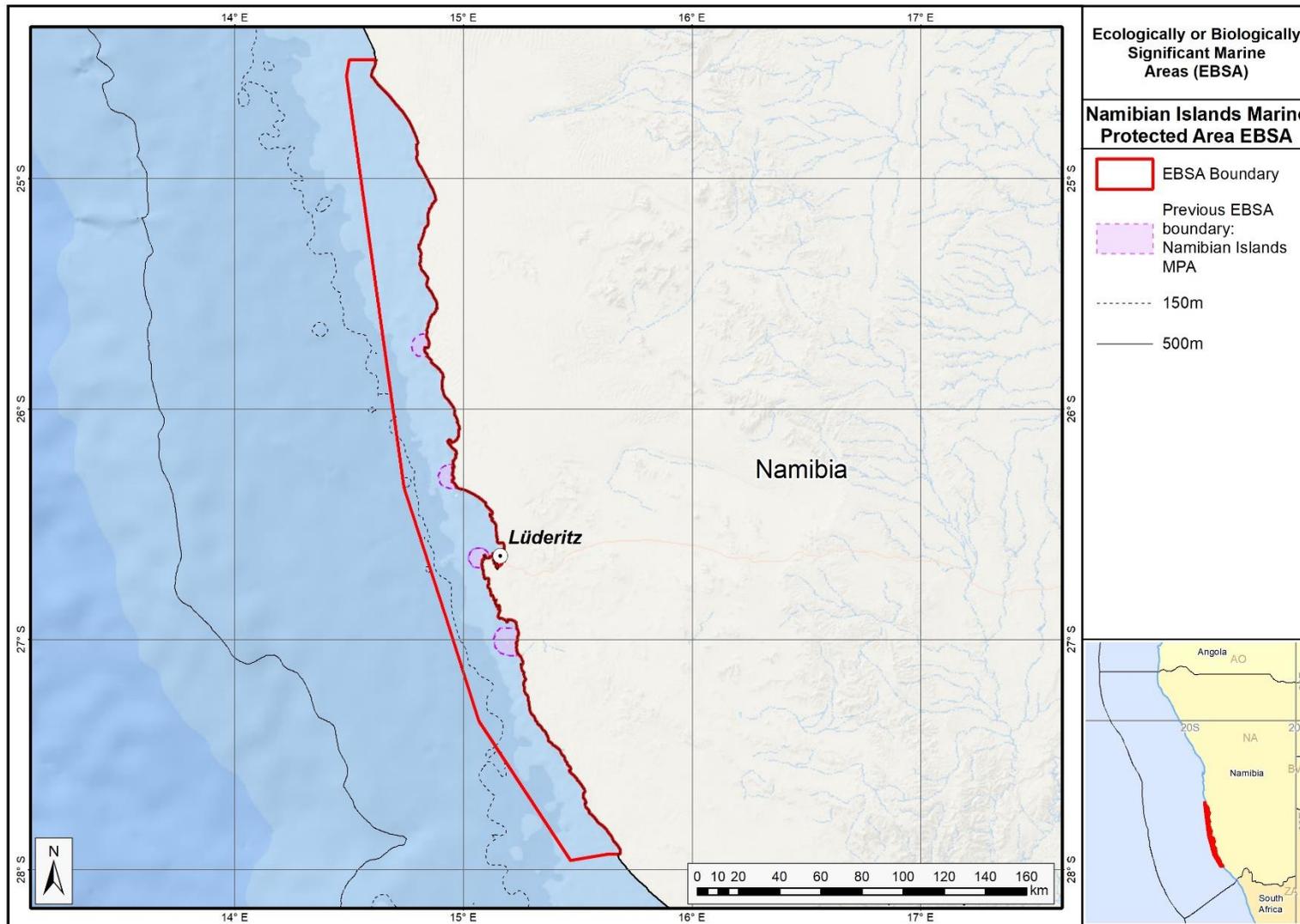
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End of proposed EBSA revised description

Motivation for Revisions

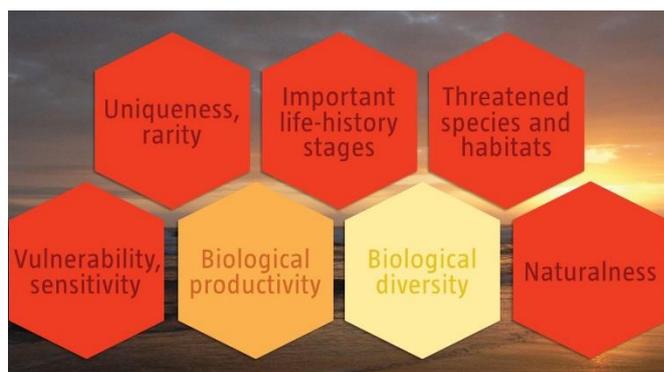
The main change was to include the previously omitted important bird foraging areas surrounding the islands, which also represent foraging, breeding and nursery areas for other significant species. A robust process was used in the delineation of the NIMPA (e.g. consideration of foraging distances of key species and ecological process areas around the islands - see Currie et al., 2008 for specifics). This scientific and technical process was combined with the public, political and administrative processes required for gazettement of protected areas. Therefore, the boundary of the original EBSA has been extended to include key foraging areas, such that it now matches that of the NIMPA boundary.

Eleven new references were added to the Namibian Islands EBSA description, as part of an updated literature search for relevant information. Following the description update, two criteria were upgraded in ranks, largely due to the change in the EBSA boundary, which now spans the full extent of the Namibian Islands MPA. Uniqueness and rarity were upgraded from Low to High (especially linked to the inclusion of large portions of the global range of species, such as bank cormorant, and full inclusion of the Namibian Islands), and Naturalness was upgraded from Medium to High.



The original and revised boundaries of the Namibian Islands EBSA.

Status Assessment and Management Options

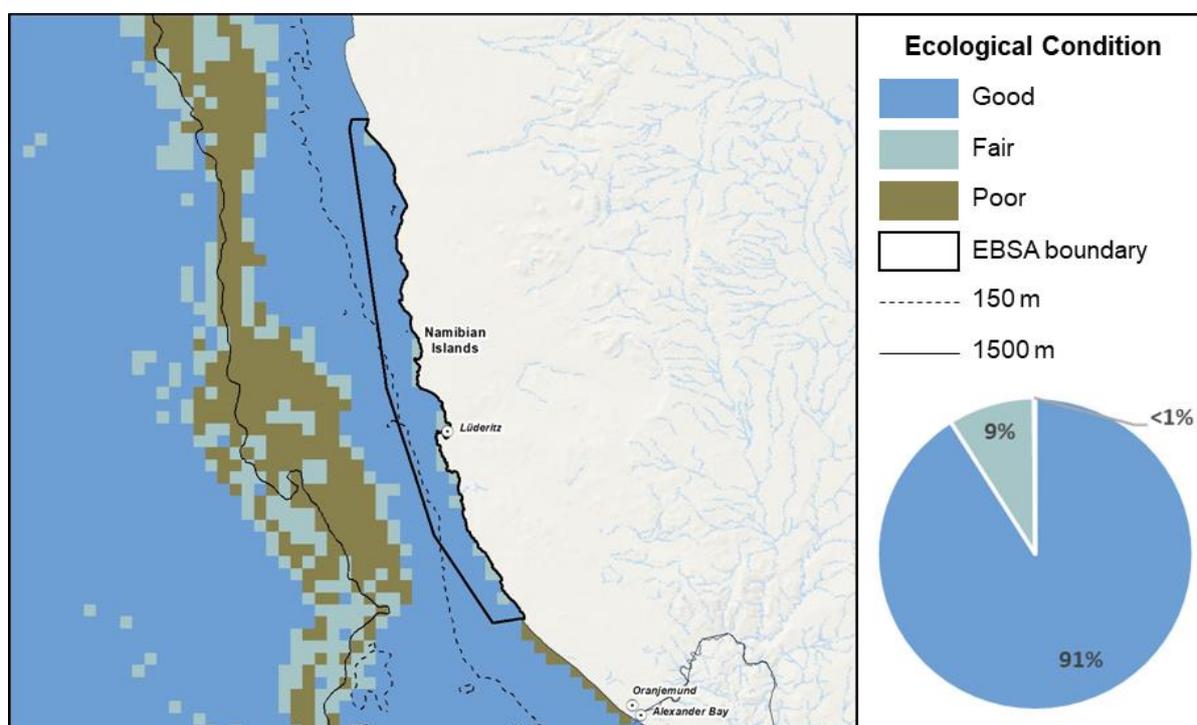


Namibian Islands comprises key islands and adjacent coastal habitat that provide key breeding and foraging areas for a number of threatened top predators, especially African penguins, cormorants and Cape gannets. It is situated in the Lüderitz Upwelling Cell, so productivity is high, also supporting foraging turtles and cetaceans, although historically depleted fish stocks are still recovering. It is entirely within in the Namibian Islands MPA.

EBSA criteria coloured by rank for Namibian Islands: red=high, orange=medium, yellow=low.

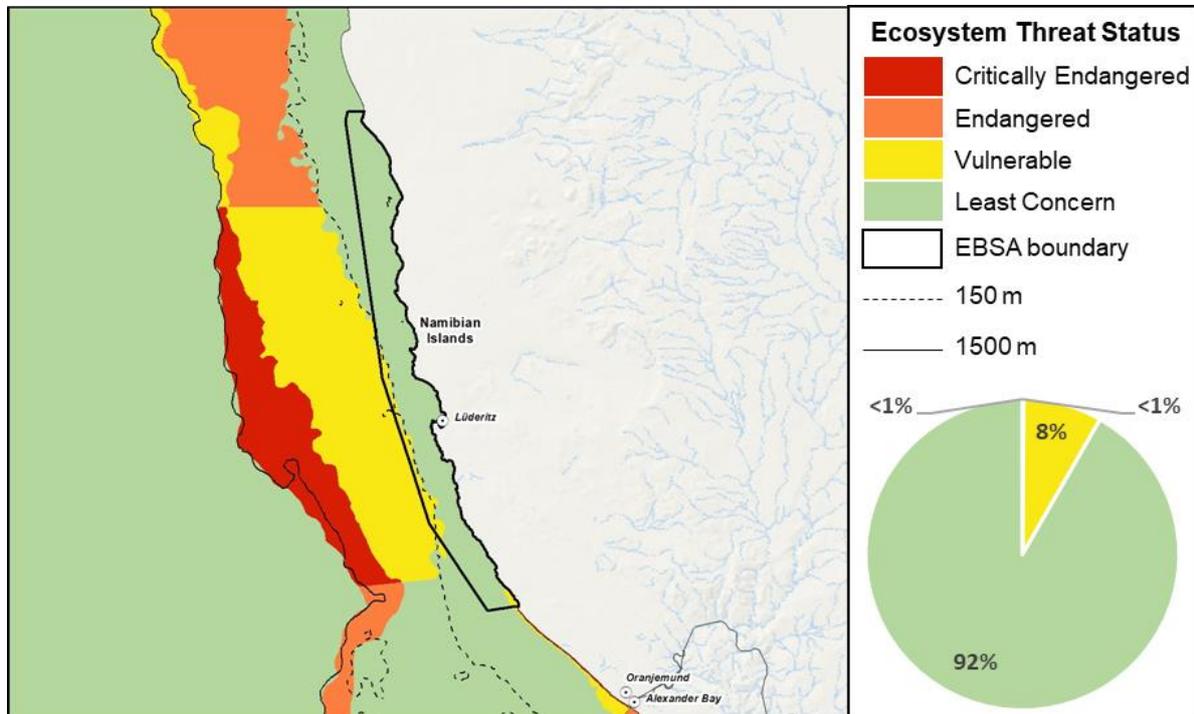
Ecological Condition, Threat Status, Current Protection and Key Features in the EBSA

Namibian Islands has many features and ecosystem types that need to be protected for the area to maintain the characteristics that give it its EBSA status. The criteria for which this EBSA ranks highly are: uniqueness and rarity; importance for life-history stages; importance for threatened species and habitats; vulnerability and sensitivity; and naturalness. There are 27 ecosystem types represented, six of which are threatened, including two Critically Endangered types: Namaqua Intermediate Sandy Beach and Namaqua Reflective Sandy Beach; one Endangered type: Kuiseb Mixed Shore and three Vulnerable types. Productivity is particularly high in this area because it is within the intensive Lüderitz Upwelling Cell. The islands are crucial seabird breeding sites within the existing Namibian Islands Marine Protected Area (NIMPA). The surrounding waters are also key foraging grounds for these seabirds for both the adults and as they provide for their chicks, and for Critically Endangered leatherbacks from the Western Indian Ocean that nest in South Africa.

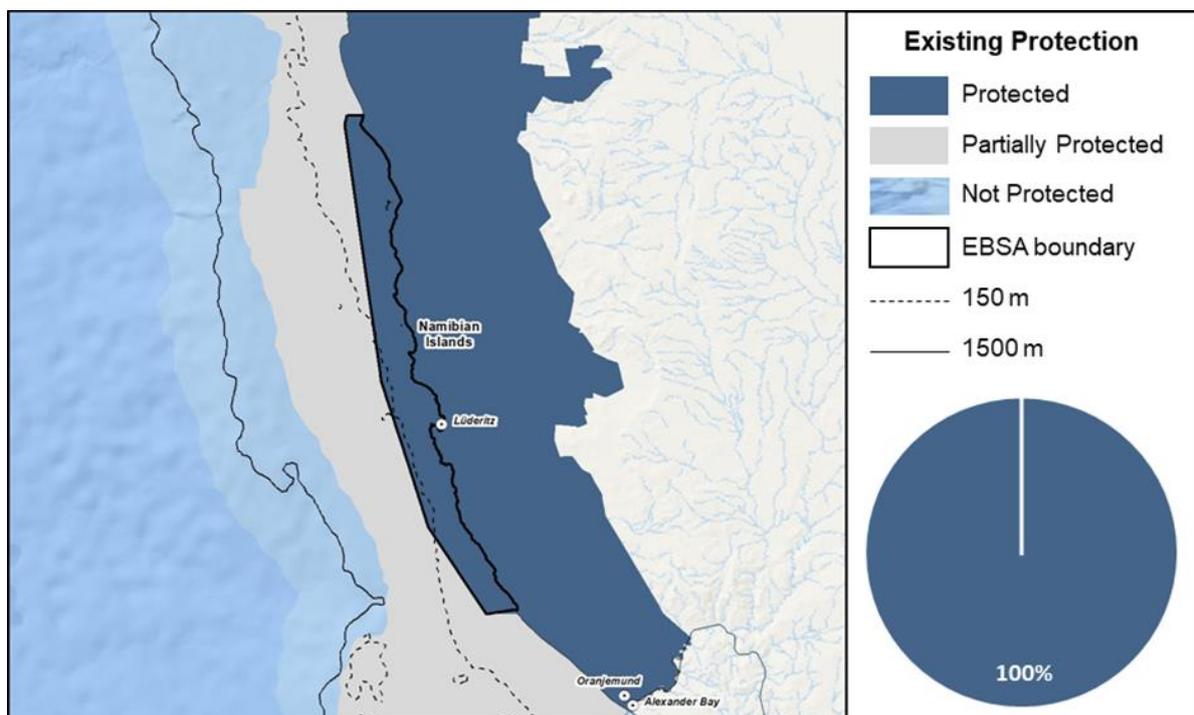


Namibian Islands proportion of area in each ecological condition category.

Namibian Islands is largely in good ecological condition (96%), with only 4% in fair ecological condition, largely as a result of the protection afforded by NIMPA. Consequently, 21 of the 27 ecosystem types within the area are Least Concern, comprising 92% of the EBSA extent. The three Vulnerable ecosystem types (Lüderitz Outer Shelf, Namaqua Exposed Rocky Shore, and Namaqua Inshore) comprise 8% of the EBSA extent, with the Endangered Kuiseb Mixed Shore and Critically Endangered Namaqua Intermediate Sandy Beach and Namaqua Reflective Sandy Beach comprising <2% of the EBSA.



Namibian Islands proportion of area in each ecosystem threat status category.



Namibian Islands proportion of area in a Marine Protected Area (MPA).

The delineation of Namibian Islands matches that of NIMPA, such that 100 of the EBSA is protected. The adjacent terrestrial area is also protected in the Sperrgebiet and Namib-Naukluft National Parks. Consequently, 24 of the 27 ecosystem types are Well Protected, and the other three are Moderately Protected.

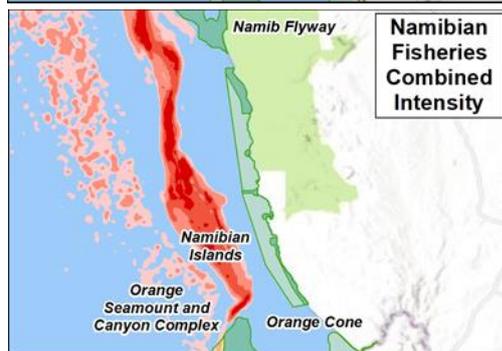
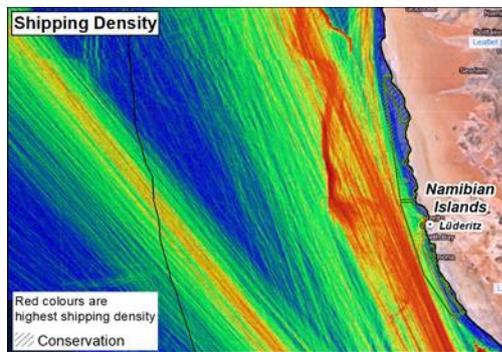
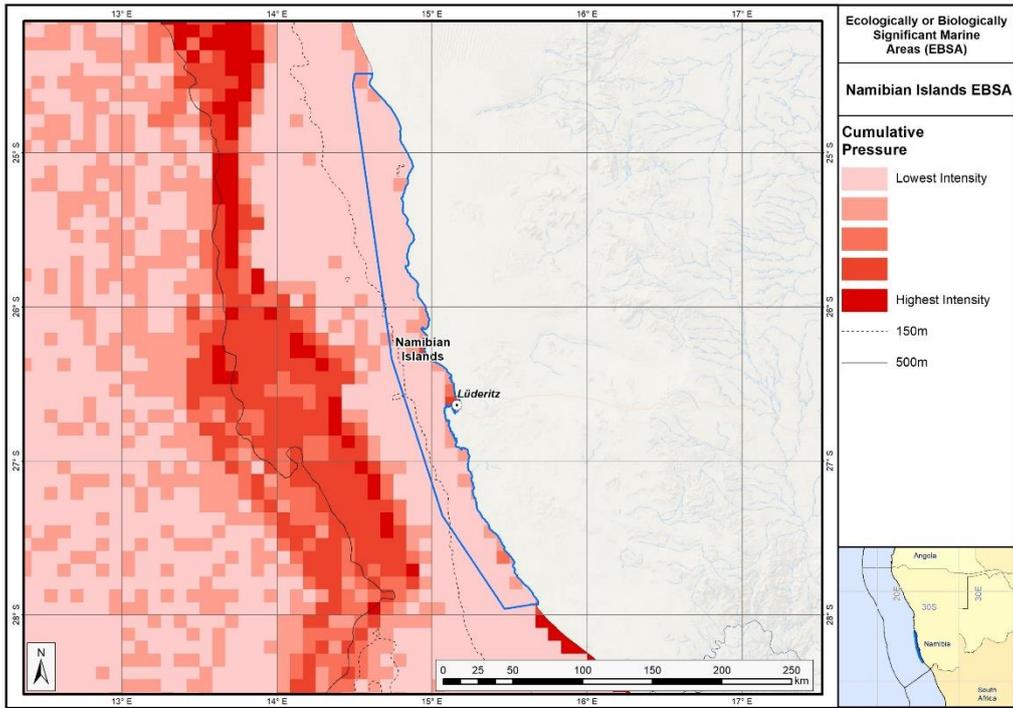
Threat status, protection level and ecological condition of ecosystem types in the EBSA. Other key features are also listed.

Feature	Threat Status	Protection Level	Condition (%)		
			Good	Fair	Poor
Ecosystem Types					
Central Namib Inner Shelf	LC	MP	100.00	0.00	0.00
Kuiseb Dissipative-Intermediate Sandy Beach	LC	WP	100.00	0.00	0.00
Kuiseb Exposed Rocky Shore	LC	WP	100.00	0.00	0.00
Kuiseb Inshore	LC	WP	90.03	9.97	0.00
Kuiseb Intermediate Sandy Beach	LC	WP	85.32	14.68	0.00
Kuiseb Mixed Shore	EN	WP	100.00	0.00	0.00
Kuiseb Reflective Sandy Beach	LC	WP	100.00	0.00	0.00
Lüderitz Dissipative Sandy Beach	LC	WP	46.98	53.02	0.00
Lüderitz Dissipative-Intermediate Sandy Beach	LC	WP	80.82	19.18	0.00
Lüderitz Exposed Rocky Shore	LC	WP	69.14	30.86	0.00
Lüderitz Inner Shelf	LC	WP	96.58	3.42	0.00
Lüderitz Inshore	LC	WP	72.39	27.61	0.00
Lüderitz Intermediate Sandy Beach	LC	WP	62.82	36.36	0.82
Lüderitz Island	LC	WP	70.66	29.17	0.18
Lüderitz Lagoon Coast	LC	WP	0.00	100.00	0.00
Lüderitz Mixed Shore	LC	WP	60.92	35.98	3.10
Lüderitz Outer Shelf	VU	MP	100.00	0.00	0.00
Lüderitz Reflective Sandy Beach	LC	WP	52.56	47.44	0.00
Lüderitz Sheltered Rocky Shore	LC	WP	22.94	72.26	4.80
Lüderitz Very Exposed Rocky Shore	LC	WP	100.00	0.00	0.00
Namaqua Dissipative-Intermediate Sandy Beach	LC	WP	77.06	22.94	0.00
Namaqua Exposed Rocky Shore	VU	WP	43.98	51.46	4.55
Namaqua Inner Shelf	LC	MP	88.06	11.94	0.00
Namaqua Inshore	VU	WP	84.35	13.24	2.42
Namaqua Intermediate Sandy Beach	CR	WP	47.61	9.62	42.77
Namaqua Mixed Shore	LC	WP	74.78	25.22	0.00
Namaqua Reflective Sandy Beach	CR	WP	0.00	0.00	100.00
Other Features					
<ul style="list-style-type: none"> • Breeding seabirds • Foraging turtles and cetaceans • Rock lobster nursery ground / sanctuary • Linefish sanctuary 					

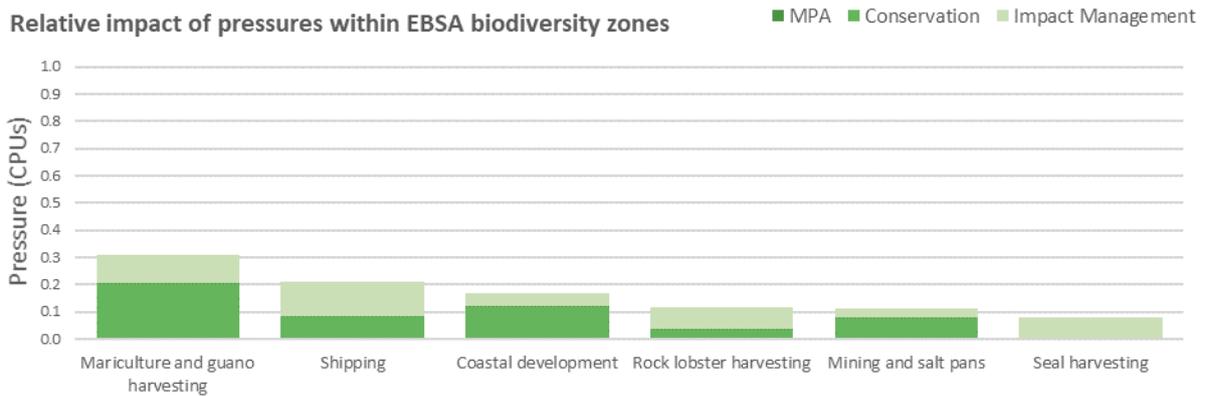
- Key calving areas of southern right whales
- Kelp beds
- Upwelling cell

Relevant Pressures and Activities (impact, extent)

- There are six major pressures present in this EBSA, of which mariculture and guano harvesting has the highest cumulative pressure profile.
- Key pressures in this EBSA that most directly impact the features for which the EBSA is described include: mariculture and guano harvesting, shipping, coastal development, lobster harvesting, seal harvesting, and mining and salt pans.
- Activities in Namibia that are not present in this EBSA include: large pelagics longlining, tuna pole fishing, midwater trawling (horse mackerel), orange roughy trawling, monkfish fishing, commercial hake trawling, crab harvesting, and oil and gas activities. Small pelagics fishing historically took place but is no longer an active industry in Namibia.
- Note that this assessment of pressures is based on existing data. Where new, finer scale data have since become available, these are presented below (e.g., for shipping and combined fisheries) to enable more accurate recommendations for management of activities. Also, there are some emerging activities and activities for which no spatial data are available that are not included here, but are considered in the management recommendations for the EBSA, based on expert and industry information.



Map of cumulative pressure (top) and maps of the five most important pressures (activities) in the EBSA and surrounds. Darker reds indicate higher pressure intensity.



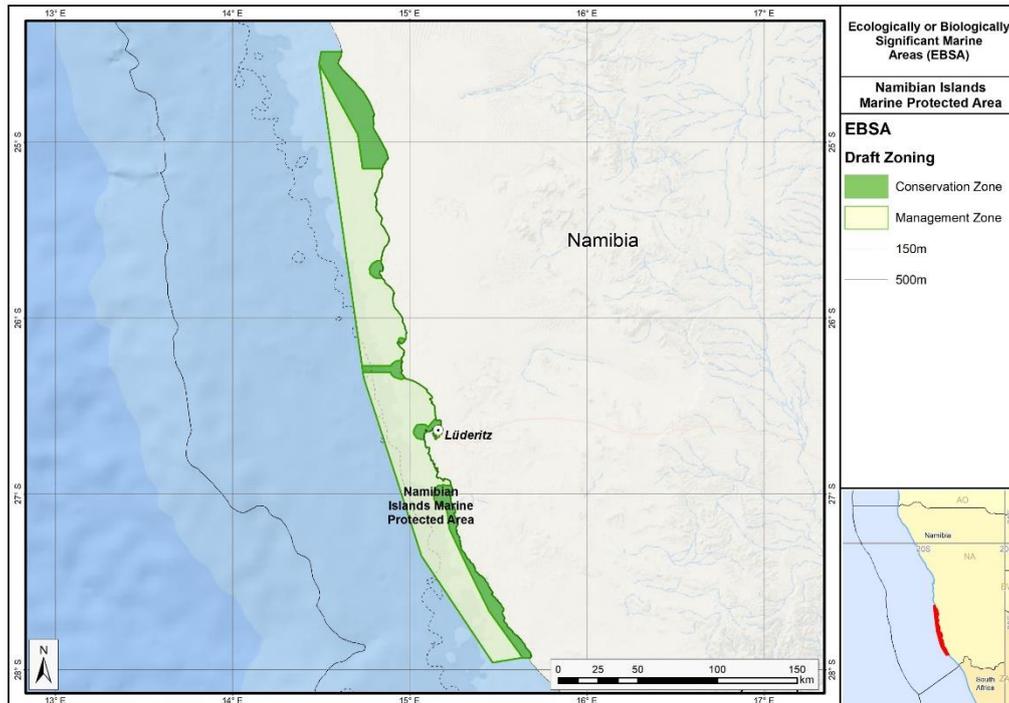
Pressure (in arbitrary cumulative pressure units, CPUs) summed for each pressure in the EBSA, per proposed EBSA biodiversity zone, ranked left (highest) to right (lowest) by the overall relative importance of pressures in this EBSA.

Management Interventions Needed for the EBSA

Improved place-based protection of EBSA features should be pursued. In support of this, the EBSA is divided into a Conservation Zone and an Impact Management Zone, both comprising several areas within the EBSA. The aim of the Conservation Zone is to secure core areas of key biodiversity features in natural / near-natural ecological condition. Strict place-based biodiversity conservation is thus directed at securing key biodiversity features in a natural or semi-natural state, or as near to this state as possible. Activities or uses that have significant biodiversity impacts should be prohibited. Where possible and appropriate these areas should be considered for formal protection e.g., Marine Protected Areas or other effective area-based conservation measures (OECM). The aim of the Impact Management Zone is to manage negative impacts on key biodiversity features where strict place-based measures are not practical or not essential. In this zone, the focus is management of impacts on key biodiversity features in a mixed-use area, with the objective to keep biodiversity features in at least a functional state. Activities or uses which have significant biodiversity impacts should be strictly controlled and/or regulated. Within this zone, there should be no increase in the intensity of use or the extent of the footprint of activities that have significant biodiversity impacts. Where possible, biodiversity impacts should be reduced.

As far as possible, the Conservation Zone was designed deliberately to avoid conflicts with existing activities. The entire EBSA also falls under the protection of the Namibian Islands Marine Protected Area (NIMPA), with gazetted regulations available at the link below. Note that the proposed EBSA management recommendations are intended to inform a possible revision of these management regulations for NIMPA.

Namibian Islands MPA [https://www.lac.org.na/laws/annoREG/Marine%20Resources%20Act%2027%20of%202000%20-%20Regulations%202012-316%20\(annotated\).pdf](https://www.lac.org.na/laws/annoREG/Marine%20Resources%20Act%2027%20of%202000%20-%20Regulations%202012-316%20(annotated).pdf)



Proposed zonation of the EBSA into Conservation (dark green) and Impact Management (light green) Zones. MPAs are overlaid in blue hatching.

Management regulations within the EBSA/MPA should also be applied to ensure that the existing activities/uses are appropriately controlled to ensure compatibility of activities with the environmental requirements for achieving the management objectives of the EBSA Conservation and Impact Management Zones. Further, no new pressures should be extended into the Conservation Zone, even if they currently occur in the Impact Management Zone of the EBSA.

Recommended compatibility (consent¹ or prohibited²) of activities currently present in the EBSA³ in the Conservation and Impact Management Zones

Uses (including activities and pressures)	Conservation Zone: EBSA areas requiring strictest protection	Impact Management Zone: Other EBSA Areas requiring some protection or place-specific management
Boat-based linefishing	Prohibited	Consent
Boat-based recreational fishing	Prohibited	Consent
Channel dredging	Prohibited	General
Ecotourism (regulated, nature based, and strictly controlled)	Primary	Primary
Mariculture	Consent	Consent
Military exercises and testing	Prohibited	Consent
Mining	Prohibited	Consent
Non-consumptive tourism and recreation	Consent	General

Petroleum extraction	Prohibited	Consent
Port anchorage areas	Prohibited	General
Ports (existing)	Prohibited	General
Ports (new development)	Prohibited	Consent
Renewable energy installations	Prohibited	Consent
Rock lobster harvesting	Prohibited	Consent
Seismic surveys and mining exploration	Prohibited	Consent
Shore-based fishing	Prohibited	Consent
Shore-based recreational fishing	Prohibited	Consent
Shipping lane	Consent	General
Shipping refuge (disabled ships)	Prohibited	Consent
Undersea cables and pipelines	Consent	Consent
Wastewater discharge	Prohibited	Consent

¹Consent: An activity which can continue in this zone subject to specific regulation and control.

²Prohibited: An activity which is not allowed or should not be allowed because it is incompatible with maintaining the biodiversity objectives of the zone.

*Not present in zone.

~Activity Prohibited but present in zone; need to confirm whether this needs to be kept, changed to Consent, or zone boundary changed.

³Note that activities present in Namibia that are not relevant to the EBSA have been excluded from the table (e.g., the harvested species does not occur in the area; or the industry operates at a depth outside the depth range of the EBSA).

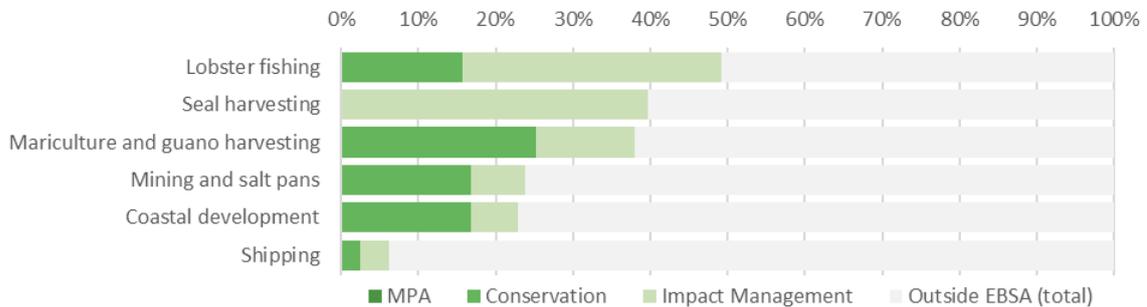
Furthermore, no new activities that can negatively impact the environment should be allowed in the EBSA, and some activities present in the EBSA do not need to be managed by EBSA zoning and can continue as per the current regulations. There are also some pressures on biodiversity features within the EBSA that originate from activities outside of these EBSA or beyond the jurisdiction of MSP. In support of maintaining the ecological integrity of and benefits delivered by the key biodiversity features, these other activities need to be appropriately managed by complementary initiatives.

Recommendations for other activities outside the EBSA or the MSP management jurisdiction.

Activities that are present but not managed by EBSA zones that can continue as per current regulations		
Shipping		
Activities that are currently not present in the EBSA and should be Prohibited in the future		
Ammunition and other dumping	Crab harvesting	Pelagic longlining
Benthic longlining	Dredge-spoil dumping	Salt pans
Bottom trawling (general, wet, freezer)	Midwater trawling (horse mackerel)	Small pelagics fishing
Other activities beyond the jurisdiction of MSP that directly influence the ecological condition of the EBSA that should be managed appropriately under other appropriate legislation.		
Coastal development (e.g., implementation of appropriate setback lines)		
Coastal disturbance (e.g., formalising access points; rehabilitating degraded dunes; appropriate zoning of bathing and watercraft activities, etc)		

Mean annual runoff reduction (e.g., determining and implementing freshwater flow requirements and estuarine management plans)

Activity Evaluation Per Zone: Zoning Feasibility



Proposed zonation of the EBSA, with the cumulative intensity footprint of activities within the EBSA (sorted highest to lowest) given relative to the national footprint of those activities to illustrate feasibility of management interventions.

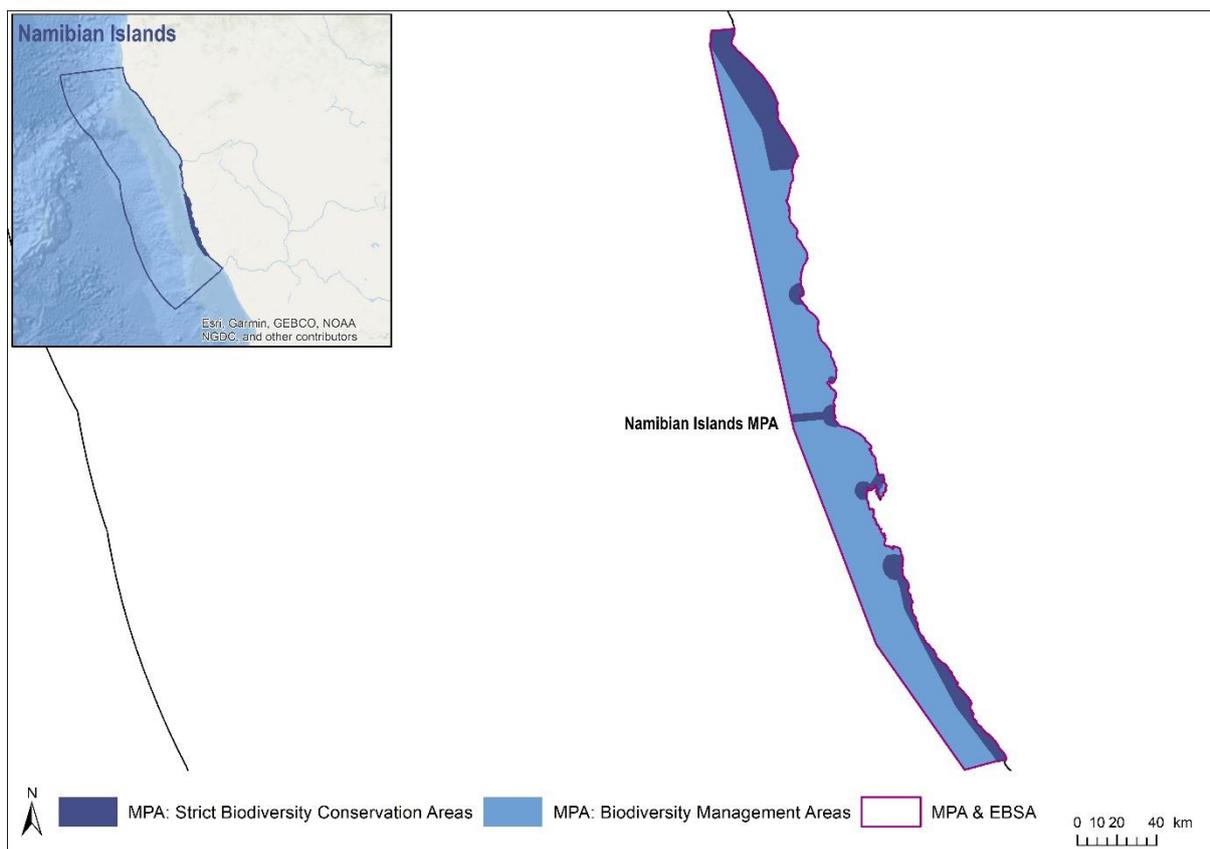
Namibian Islands is a key area for five of the six activities that are present, with substantial portions of their respective national footprints occurring within the EBSA. Most notably, almost half of the country’s lobster harvesting takes place in Namibian Islands, mostly in the Impact Management Zone where it is recommended to continue as a Consent activity. It is recommended to be Prohibited in the Conservation Zone. Almost 40% of the country’s seal harvesting takes place in the Impact Management Zone of this EBSA. It is therefore recommended to continue as a Consent activity, but is recommended to be Prohibited in the Conservation Zone. Similarly, almost 40% of Namibia’s mariculture and guano harvesting take place in the EBSA. They are both recommended to continue in both the Conservation and Impact Management Zones as a Consent activity. Mining is a destructive activity that is not consistent with the management objectives of the Conservation Zone, and it thus recommended to be Prohibited in that zone. Recognising the economic importance of the activity, it accommodated for in the Impact Management Zone where it is recommended to continue as a Consent activity. Shipping is recommended to continue under current general rules and legislation; however, there might need to be some additional controls and regulations for shipping lanes and ship refuges. Other activities noted in the table of management recommendations above are either not currently present in the EBSA or are emerging activities; as far as possible, these are accommodated in the EBSA, depending on their compatibility with the management objectives of the two zones. Thus, the EBSA zonation has no or minimal impact on the national footprint for the listed marine activities.

There are also several activities that are largely outside the EBSA but have downstream impacts to the biodiversity within the EBSA, e.g., from mean annual runoff reduction, coastal development, coastal disturbance, and wastewater discharge. The impacts should be managed, but principally fall outside the direct management and zoning of the EBSA. These existing activities are proposed as Consent activities for both EBSA zones, recognising that they should ideally be dealt with in complementary integrated coastal zone management in support of the EBSA. For example, investment in eradicating the alien invasive species could aid in improving the ecological condition of rocky and mixed shores,

improving benefits for subsistence and recreational harvesting; and rehabilitation of degraded dunes and formalising access points could support improved habitat for nesting shorebirds, and enhanced benefits for coastal protection during storm surges. Similarly, improved estuary management through development of appropriate freshwater flow requirements, estuarine management plans and wastewater management regulations can improve the ecological condition of the surrounding marine environment, in turn, improving water quality and safe conditions for human recreation.

Management Recommendations for Marine Protected Areas

It is recommended that management is strengthened in the Namibian Islands MPA by implementing the proposed zoning for the Namibian Islands EBSA. This includes enhanced management in particular parts of the MPA/EBSA (i.e., within the MPA: Strict Biodiversity Conservation Areas). See Future Process below for more details.



Proposed biodiversity zones for the Namibian Islands EBSA, which are also the proposed zones for the Namibian Islands MPA.

Management Recommendations for Marine Spatial Planning

Proposed Zones

As indicated above, the proposed biodiversity zones for the Namibian Islands EBSA in MSP comprises two types: a Strict Biodiversity Conservation Area (SBA); and a Biodiversity Management Area (SMA). Following the initial management recommendations proposed for Namibian Islands, outlined above, these proposed zones and management recommendations are being taken up for the northern portion of the MPA/EBSA in the first marine area plan covering the central portion of the Namibian

EEZ (Ministry of Fisheries and Marine Resources, 2022). The southern portion of the MPA/EBSA will be included in the southern Marine Area Plan that is not yet underway. The two zones for environmental protection that were originally proposed have been further refined with specific subcategories within zones during the development of the central Marine Area Plan. The Strict Biodiversity Conservation Area has three subcategories (SBA-I, SBA-II, SBA-III) and the Biodiversity Management Area has two subcategories (BMA-I, BMA-II) (Ministry of Fisheries and Marine Resources, 2022). The respective subcategories per zone are fundamentally the same, but differ in the features they contain and specific required adjustments in management recommendations. Only SBA-II, SBA-III and BMA-II are present in this EBSA. It is recommended that there is full implementation and operationalisation of these zones as part of MSP, and as part of strengthening MPA management in NIMPA.



Proposed biodiversity zones for the Namibian Islands EBSA and MPA for inclusion in the central Marine Area Plan. (Data source: Ministry of Fisheries and Marine Resources, 2022).

Proposed Sea-Use Guidelines

As explained in the Management Interventions Needed for the EBSA above, all sea-use activities were listed and recommendations for management were provided according to the compatibility of the activities with the management objective of each of the proposed biodiversity zones. These have been refined for inclusion in the central Marine Area Plan, based on the biodiversity zone subcategories (Ministry of Fisheries and Marine Resources, 2022). It is recommended that these sea-use guidelines are implemented in the northern part of the EBSA/MPA as part of the central Marine Area Plan, and

as part of strengthening MPA management in NIMPA. In the southern part of the EBSA/MPA, it is recommended that the sea-use guidelines, as proposed in the Management Interventions Needed in the EBSA above, are implemented as part of the southern Marine Area Plan, and as part of strengthening MPA management in NIMPA.

Proposed sea-use guidelines for the northern portion of the Namibian Islands EBSA/MPA in the central Marine Area Plan (Ministry of Fisheries and Marine Resources, 2022).

Consent	Prohibited
Strict Biodiversity Conservation Areas (SBA-II)	
<ul style="list-style-type: none"> • Marine and coastal recreation and tourism • Development of new permanent infrastructure on the seabed, sea surface, in the water column or adjacent to the marine area 	<ul style="list-style-type: none"> • Bottom and midwater trawling • Crustacean trap-based harvesting of crab, rock lobster • Pelagic (and possible future benthic) longlining • Small pelagic fishing • Mariculture • Commercial or recreational fishing (boat-based or shore-based) • Anchoring of ships, excluding vessels in distress • Navigational or expansion dredging and disposal of dredged material • Invasive geological resource exploration and exploitation activities • Development of new salt mining activities • Military training • Bunkering • Dumping at sea (for military purposes) • Dumping of material dredged for maritime traffic purposes • Discharge of materials dredged during mining operations • New wastewater, effluent or desalination brine outfalls • Seaweed harvesting • Ballast water discharge • Generation of renewable energy
Strict Biodiversity Conservation Areas (SBA-III)	
<ul style="list-style-type: none"> • Marine and coastal recreation and tourism • Development of new permanent infrastructure on the seabed, sea surface, in the water column or adjacent to the marine area • Commercial boat-based line fishing • Effluent discharge • Geological resources exploitation 	<ul style="list-style-type: none"> • Bottom and midwater trawling • Crustacean trap-based harvesting of crab, rock lobster • Pelagic (and possible future benthic) longlining • Small pelagic fishing • Mariculture • Commercial or recreational fishing (boat-based or shore-based) • Anchoring of ships, excluding vessels in distress • Bunkering • Navigational or expansion dredging and disposal of dredged material (except for mining purposes under specific conditions), • Geological resource exploitation activities • Development of new salt mining activities • Military training • Dumping at sea • New wastewater, effluent or desalination brine outfalls • Seaweed harvesting • Ballast water discharge • Generation of renewable energy
Biodiversity Management Area (BMA-II)	

<ul style="list-style-type: none"> • Marine and coastal recreation and tourism • Development of new permanent infrastructure on the seabed, sea surface, in the water column or adjacent to the marine area • Geological resource exploration and exploitation • Effluent or desalination brine discharge 	<ul style="list-style-type: none"> • Bottom and midwater trawling • Crustacean trap-based harvesting of crab • Pelagic (and possible future benthic) longlining • Small pelagic fishing • Development of new salt mining activities • Bunkering • Anchoring of ships, excluding vessels in distress • Dumping at sea (for military purposes) • Dumping of material dredged for maritime traffic purposes
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Proposed management recommendations for activities with each of the different compatibility ratings:

- **General activities (compatible):** Activities should be allowed and regulated by current general rules. Notwithstanding, there should still be duty of care, possibly requiring monitoring and evaluation programmes, to avoid unintended cumulative impacts to the biodiversity features for which this area is recognised.
- **Consent activities (restricted compatibility):** A robust site-specific, context-specific assessment is required to determine the activity compatibility depending on the biodiversity features for which the site was selected. Particularly careful attention would need to be paid in areas containing irreplaceable to near-irreplaceable features where the activity may be more appropriately evaluated as not permitted. The ecosystem types in which the activities take place may also be a consideration as to whether or not the activity should be permitted, for example. Where it is permitted to take place, strict regulations and controls over and above the current general rules and legislation would be required to be put in place to avoid unacceptable impacts on biodiversity features. Examples of such regulations and controls include: exclusions of activities in portions of the zone; avoiding intensification or expansion of current impact footprints; additional gear restrictions; and temporal closures of activities during sensitive periods for biodiversity features.
- **Prohibited (not compatible):** The activity should not be permitted to occur in this area because it is not compatible with the management objective. If it is considered to be permitted as part of compromises in MSP negotiations, it would require alternative Strict Biodiversity Conservation Zones and/or offsets to be identified. However, if this is not possible, it is recommended that the activity remains prohibited within the Strict Biodiversity Conservation Zone.

Research Needs

There are no specific research needs for this EBSA over and above those listed for all EBSAs in general (see EBSA Research Needs below). Ongoing research and monitoring of key species within the Namibian Islands Marine Protected Area should be undertaken as part of reserve management to ensure effective management of the MPA. In particular, detailed knowledge of the spatial foraging ecology of the key seabird species currently at risk is imperative to understand comprehensively and to monitor.

Future Process

The most important future process in Namibian Islands is to strengthen effective management in the Namibian Islands MPA through full operationalisation and practical implementation of the proposed

zoning and management regulations indicated above as part of the MPA and MSP processes in southern Namibia. Further, sufficient research and monitoring need to take place to ensure:

- The status of key species and ecosystems within the MPA are better understood.
- Conflicting activities are appropriately zoned both within and outside of the MPA.
- The conservation effectiveness of the MPA is monitored on an ongoing basis to support appropriate adaptive management.

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Ministry of Fisheries and Marine Resources, 2022. The Central Marine Spatial Plan of Namibia. Windhoek: Namibia

New EBSAs

Cape Fria

Proposed EBSA Description

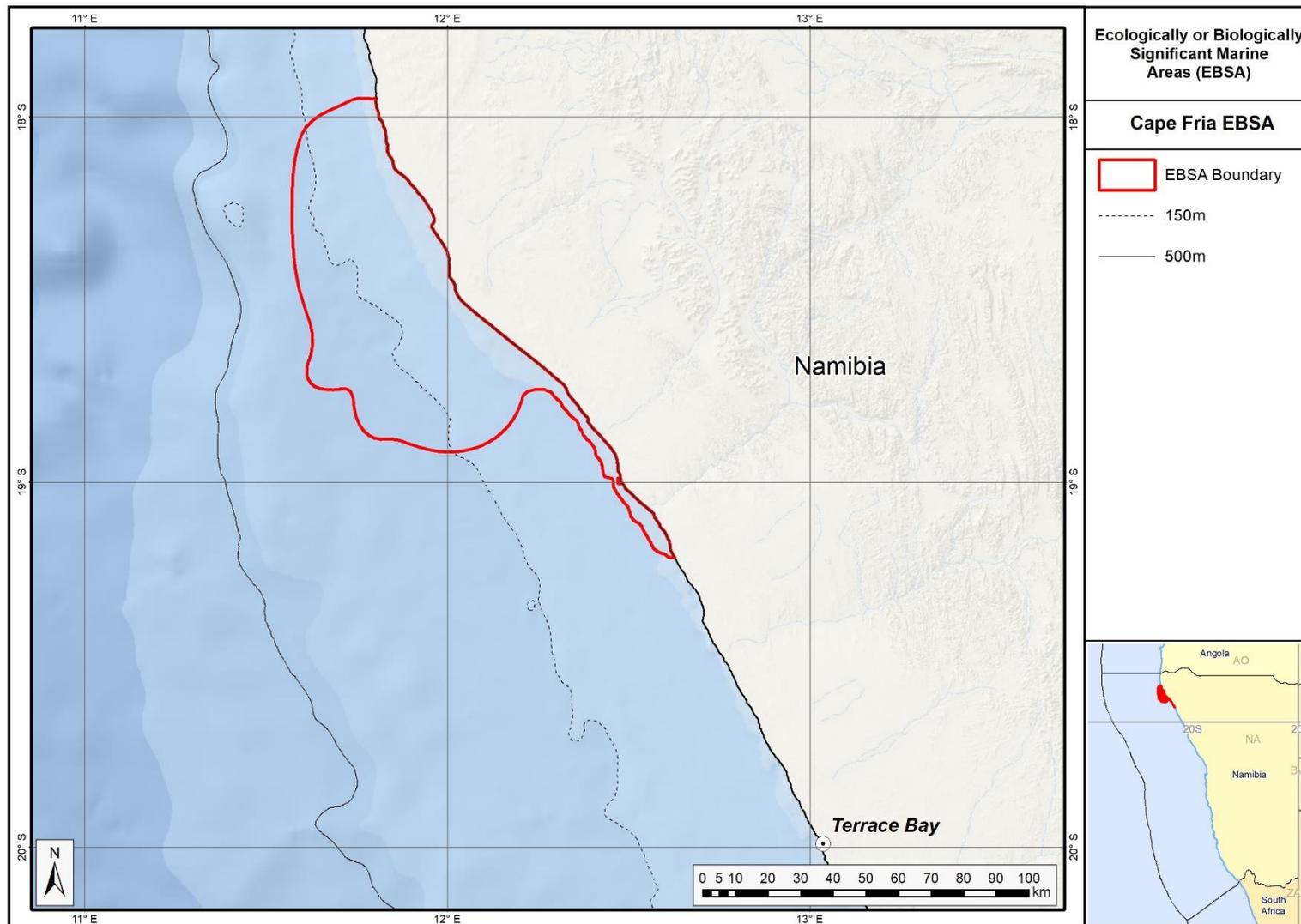
Abstract

Cape Fria is a coastal EBSA in northern Namibia, 50 km south of the border with Angola. The EBSA encompasses Cape Fria itself, and Angra Fria: a small, prominent bay to the north. Here, the continental shelf is at its narrowest in Namibia, and there is an intense upwelling cell, second only to that found at Lüderitz, which enhances local productivity. Consequently, several top predators use this area as a foraging ground. The EBSA thus extends 100 km along the shore, and 40 km offshore to depths of <250 m in the north (where seals forage) and 5 km offshore in the south (where Damara Terns forage). The upwelling cell also marks the northern boundary of the Benguela Current. Therefore, Cape Fria falls within a biogeographic transition zone, with a relatively high local biodiversity because it comprises species at both the northern and southern limits of their distributions. There is evidence that the area is critical for aggregations of almost the entire global population of Damara Tern, a Benguela System endemic, during specific periods of the year. It is also an important breeding site for Cape fur seals. Given its remote location, the coast is in relatively pristine condition, but may be threatened by industrial development in the future.

Introduction

Cape Fria, also known as Cape Frio, is located along the northern Namibian coast, adjacent to the Skeleton Coast Park. This site was not included in the initial set of EBSAs proposed for Namibia because: it was identified only during a gap analysis of the Namibian EBSA network; local knowledge of the Damara Tern aggregations (see below) was not available at the original South Eastern Atlantic EBSA Workshop in 2013 (UNEP/CBD/RW/EBSA/SEA/1/4); and data and information on the area are both relatively limited because it is so remote. During the gap analysis, it was determined that Cape Fria is a separate EBSA from the Namibe EBSA (previously named: Kunene-Tigres), rather than an extension of it, because it is centred around a separate upwelling cell that is not connected to the upwelling cell that enhances productivity in Namibe.

The Cape Fria EBSA lies at the northern limit of the Benguela Current, possibly influenced by the Angola-Benguela Frontal Zone, and thus within the transition zone between the temperate and sub-tropical bioregions. The larger component extends 40 km offshore, and includes inshore waters on the narrowest portion of the Namibian shelf, spanning a depth range of 0-250 m. It also includes a narrower coastal extension for approximately 60 km alongshore to the south, and approximately 5 km offshore. The unusual shape of this EBSA reflects the foraging ranges of different species that are responding to the upwelling-driven productivity. The broad northern portion is the foraging range of Cape fur seals, because that area supports an important breeding Cape fur seal colony. The narrower southern portion represents the foraging range of Damara Terns that rest on the adjacent shore. Interestingly, this EBSA appears to contain almost the entire global population of Damara Tern on a seasonal basis. Cape Fria EBSA also includes important threatened benthic shelf habitats. This site comprises a collection of features and ecosystems that are connected by the same ecological processes, but some features (e.g., the Damara Tern aggregations) are ephemeral; therefore, it is proposed as a Type 2/3 EBSA (*sensu* Johnson et al., 2018).



Proposed delineation of the Cape Fria EBSA.

Description of the location

EBSA Region

South-Eastern Atlantic

Location

Cape Fria is located about 50 km south of the border between Namibia and Angola. The main body of the Cape Fria EBSA extends 40 km offshore and 100 km along the coast, while an additional section of inshore habitat extends alongshore for approximately 60 km southwards and has a width of approximately 5 km offshore. It lies entirely within Namibia's national jurisdiction.

Feature description of the proposed area

The Cape Fria EBSA includes coastal and nearshore elements, and thus described for both benthic and pelagic features. It was identified in a gap analysis (using a systematic conservation planning approach) as an important inshore focus area for conservation of biodiversity features that are not yet sufficiently represented in the existing Namibian EBSA and marine protected area network (Holness et al., 2014). Local habitat heterogeneity is relatively high in this area, with 17 ecosystem types identified (Holness et al., 2014; Table in the Other relevant website address or attached documents section). Two of these habitats are Endangered: Central Namib Outer Shelf and Kunene Outer Shelf, with the EBSA being particularly important for the latter. In addition, a small portion of the Vulnerable Kunene Shelf Edge ecosystem type is also found within the Cape Fria EBSA. These threat statuses were determined 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 the Other relevant website address or attached documents section).

Importantly, productivity offshore of Cape Fria is high because it is the site of the second-most intensive upwelling cell in Namibia. Here upwelling is driven both by wind and bottom topography because the site is at the narrowest portion of the continental shelf (Sakko, 1998); further, the wind shadow and poleward currents also contribute to phytoplankton blooms (Jury, 2017). This elevated productivity is at the heart of the EBSA, because it consequently forms a key foraging area for several top predators. The Cape Fria coast supports an important breeding site for Cape fur seals, *Arctocephalus pusillus pusillus*, with an increasing local population, compared to largely declining populations in southern Namibia (Kirkman et al., 2012). These seals spend time foraging in the northern portion of the EBSA. Cape Fria also supports several species of shore- and seabirds, including over-wintering Palarctic migrant bird species. Most notably, there is evidence that Cape Fria may contain, either seasonally or episodically, almost the entire global population of Damara Tern, *Sternula balaenarum*, a vulnerable species, endemic to the Benguela System (Braby et al., 1992). The focus area appears to be an annual congregation site prior to the flock migrating northwards. It has been suggested that this is likely to be linked to high food availability, i.e., a high-energy coastline with a presumably reliable food source that is available at night and within about 5 km of the shore. Damara Terns forage more in the southern portion of the EBSA, closer to the shore compared to that of the seals.

Although bird diversity and abundance are fairly low at Cape Fria (Tarr & Tarr, 1987), it may support a relatively high local biodiversity overall because it is situated within the transition zone between the temperate and sub-tropical bioregions (Sakko 1998). Consequently, the communities at Cape Fria

comprise species from both bioregions at the northern and southern limits of their respective distributions. This includes various linefish and other commercially important species, such as deep-water hake (Holtzhausen et al., 2001, Kirchner et al., 2011), large-eye dentex (*Dentex macrophthalmus*), thinlip splitfin (*Synagrops microlepis*), longfin bonefish (*Pterothrissus belloci*) and the African mud shrimp (*Soleonocera africana*; Bianchi et al., 1999).

Feature condition and future outlook of the proposed area

Cape Fria and surrounds is a remote coastal area adjacent to the Skeleton Coast National Park. The focus area is inaccessible to the public, with only limited tourism permitted in the area, and consequently, this area is near-pristine. According to data from Holness et al. (2014) nearly 90% of the area is classified as being in good condition, with almost all of the remaining area classified as being in fair ecological condition. Inshore and coastal habitats are in particularly good condition and are effectively well protected as a result of their remote location and the terrestrial Skeleton Coast National Park. However, pending plans to build an industrial port and associated infrastructure at Cape Fria or Angra Fria (Paterson, 2007) could potentially impact this. Onshore and offshore prospecting and mining (i.e., diamonds, oil, precious metals) is minimal at present but is expected to occur in the future.

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Other relevant website address or attached documents

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

Threat Status	Ecosystem type	Area (km ²)	Area (%)
Endangered	Central Namib Outer Shelf	243.0	5.0
	Kunene Outer Shelf	1 342.5	27.8
Vulnerable	Kunene Shelf Edge	3.8	0.1
Least Threatened	Central Namib Inner Shelf	829.4	17.2
	Kunene Exposed Rocky Shore	0.3	0.0
	Kunene Inner Shelf	1 551.1	32.2
	Kunene Inshore	275.4	5.7
	Kunene Intermediate Sandy Beach	61.0	1.3
	Kunene Mixed Shore	6.3	0.1
	Kunene Reflective Sandy Beach	1.9	0.0
	Hoanib Dissipative-Intermediate Sandy Beach	9.8	0.2
	Hoanib Dissipative Sandy Beach	7.0	0.1
	Hoanib Exposed Rocky Shore	0.4	0.0
	Hoanib Inshore	445.4	9.2
	Hoanib Intermediate Sandy Beach	38.4	0.8
	Hoanib Mixed Shore	7.9	0.2
Hoanib Sheltered Rocky Shore	0.03	0.00	
Grand Total		4 823.8	100.0

Assessment of the area against CBD EBSA Criteria

CBD EBSA Criteria (Annex I to decision IX/20)	Description (Annex I to decision IX/20)	Ranking of criterion relevance
Uniqueness or rarity	Area contains either (i) unique (“the only one of its kind”), rare (occurs only in few locations) or endemic species, populations or communities, and/or (ii) unique, rare or distinct, habitats or ecosystems; and/or (iii) unique or unusual geomorphological or oceanographic features.	Medium
<p><i>Explanation for ranking</i></p> <p>Cape Fria is both unique and rare for several reasons. It falls within a transition zone between the temperate and sub-tropical bioregions, and includes a relatively rare upwelling cell, second in intensity only to the Lüderitz upwelling cell. Further, a systematic conservation planning assessment (that was undertaken as a gap analysis) identified Cape Fria as an important inshore focus area for place-based conservation of biodiversity features that were not yet sufficiently represented in the existing Namibian EBSA and marine protected area network (Holness et al., 2014). Portions of this focus area were always required to meet biodiversity conservation targets, and hence it can be considered to be “irreplaceable”. Finally, existing evidence indicates that the area may either seasonally or episodically contain almost the entire global population of Damara Tern, <i>Sternula balaenarum</i>, a Benguela System endemic species (Braby et al., 1992). The area appears to be an annual congregation area prior to the flock migrating northwards. It has been suggested that this is likely to be a congregation area linked to high food availability, i.e., a high-energy coastline with a presumably reliable food source that is available at night and within about 5 km of the shore.</p>		
Special importance for life-history stages of species	Areas that is required for a population to survive and thrive.	High
<p><i>Explanation for ranking</i></p> <p>Cape Fria is an important site for Cape fur seals, which, although it was only relatively recently established as a breeding colony, supports an increasing seal population (Kirkman et al., 2012). This site also exhibits strong terrestrial links because the expanding seal colony supports an expanding population of the Endangered Lappet-faced Vulture, <i>Torgos tracheliotos</i> (Braby, pers. comm.). The Cape Fria EBSA is also an overwintering site for Palearctic waders, although at fairly low densities (Tarr & Tarr, 1987). Further, as noted previously, Cape Fria hosts almost the entire global population of Damara Tern either seasonally or episodically, in what seems to be an annual congregation area prior to the flock migrating northwards (Braby et al., 1992). It is likely that this is linked to high food availability at the site, i.e., a high-energy coastline with a presumably reliable food source that is available at night, and within about 5 km of the shore. Finally, Cape Fria is a transition zone between</p>		

the cool, temperate southern areas that are influenced by the Benguela current, and a more subtropical climate to the north of Namibia (Tarr 1987), and thus may possibly be an important area for adaptation to climate change and range shifts. This is supported by the fact that the area constitutes the northern or southern limit for a number of fish species (Bianchi et al., 1999; Holtzhausen et al., 2001; Kirchner et al., 2011).

Importance for threatened, endangered or declining species and/or habitats	Area containing habitat for the survival and recovery of endangered, threatened, declining species or area with significant assemblages of such species.	High
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Explanation for ranking

The Cape Fria EBSA contains two Endangered ecosystem types: Central Namib Outer Shelf and Kunene Outer Shelf, with the area being particularly important for the latter. In addition, a small portion of the Vulnerable Kunene Shelf Edge ecosystem type is found in this EBSA. As noted previously, the site is also important for the Vulnerable Damara Tern, *Sternula balaenarum* (Braby et al., 1992), and for Cape fur seals that seem to be generally declining in abundance at rookeries in southern Namibia but increasing here (Kirkman et al., 2014).

Vulnerability, fragility, sensitivity, or slow recovery	Areas that contain a relatively high proportion of sensitive habitats, biotopes or species that are functionally fragile (highly susceptible to degradation or depletion by human activity or by natural events) or with slow recovery.	Data Deficient
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Explanation for ranking

There is no information to guide ranking the EBSA on this criterion. It could possibly be ranked low because the conditions are unstable and unpredictable, preventing very vulnerable species from persisting (Sakko 1998). However, it could also be argued that the Cape Fria upwelling cell is vulnerable to impacts from climate change.

Biological productivity	Area containing species, populations or communities with comparatively higher natural biological productivity.	High
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Explanation for ranking

There is an upwelling cell at Cape Fria that enhances local productivity (Sakko, 1998). Upwelling is year-round, but is intensified in winter and early spring (Hutchings et al., 2006; Jury, 2017). It is driven both by wind and bottom topography because the Namibian continental shelf is at its

narrowest around Cape Fria (Sakko, 1998); further, the wind shadow and poleward currents also contribute to the phytoplankton blooms (Jury, 2017). This upwelling cell is second in intensity only to the Lüderitz upwelling cell, and the high productivity here that underpins the top predator foraging areas is at the heart of this site's value as an EBSA.

Biological diversity	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.	Medium
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Explanation for ranking

Shorebird and coastal seabird diversity and density are relatively low in the focus area (Ryan et al., 1984; Tarr & Tarr, 1987). However, the Cape Fria focus area may be an area of high sub-tidal and coastal biodiversity because it is at the transition between temperate and sub-tropical biogeographic regions, with communities comprising species at their southern and northern bioregional limits (Sakko 1998). It is possible that this is enhanced by high productivity from the Cape Fria upwelling cell, and the close proximity to the Walvis Ridge, which has high habitat heterogeneity. The speculated higher biodiversity in the area could be locally important because Namibia generally has low marine species richness (Sakko 1998). Local habitat heterogeneity is also high, with 17 habitats represented within the EBSA.

Naturalness	Area with a comparatively higher degree of naturalness as a result of the lack of or low level of human-induced disturbance or degradation.	High
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Explanation for ranking

Cape Fria is a remote coastal area adjacent to the Skeleton Coast Park. The focus area is inaccessible to the public, with only limited tourism permitted in the area, and because of this, is currently near-pristine.

Status of submission

The description of Cape Fria has been submitted to the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) for consideration by the Conference of the Parties to the Convention on Biological Diversity.

COP Decision

Not yet submitted.

End of proposed EBSA revised description

Motivation for Submission

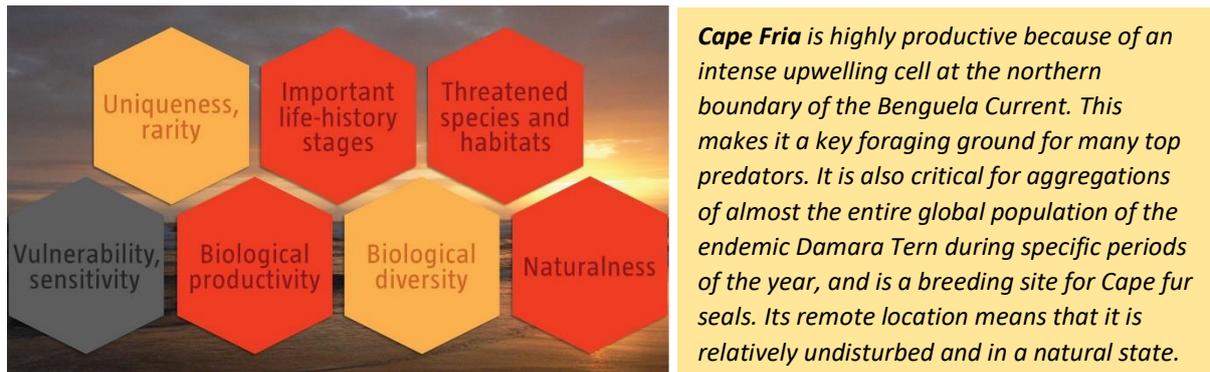
The Cape Fria area was identified in a gap analysis as one of the two highest priority potential EBSA areas (along with Walvis Ridge Namibia) screened by the national EBSA process (including review of the spatial data from Holness et al. (2014) and inputs from expert workshops). The candidate EBSA was screened against the CBD criteria. Initial assessments indicated that it warranted inclusion. A final delineation and evaluation process was then undertaken, which resulted in the current description of the EBSA.

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 and the Kunene Outer Shelf, and the vulnerable Kunene Shelf Edge. Delineations and ecosystem threat status from Holness et al. (2014).
- 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.
- Areas of high relative naturalness identified in the SCP undertaken for the BCLME by Holness et al. (2014).
- Additional expert identified areas important for key bird species (especially Damara Tern, see Braby et al., 1992).

The multi-criteria analysis resulted in a value surface. The cut-off value (used to determine the 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 below were validated in an expert workshop.

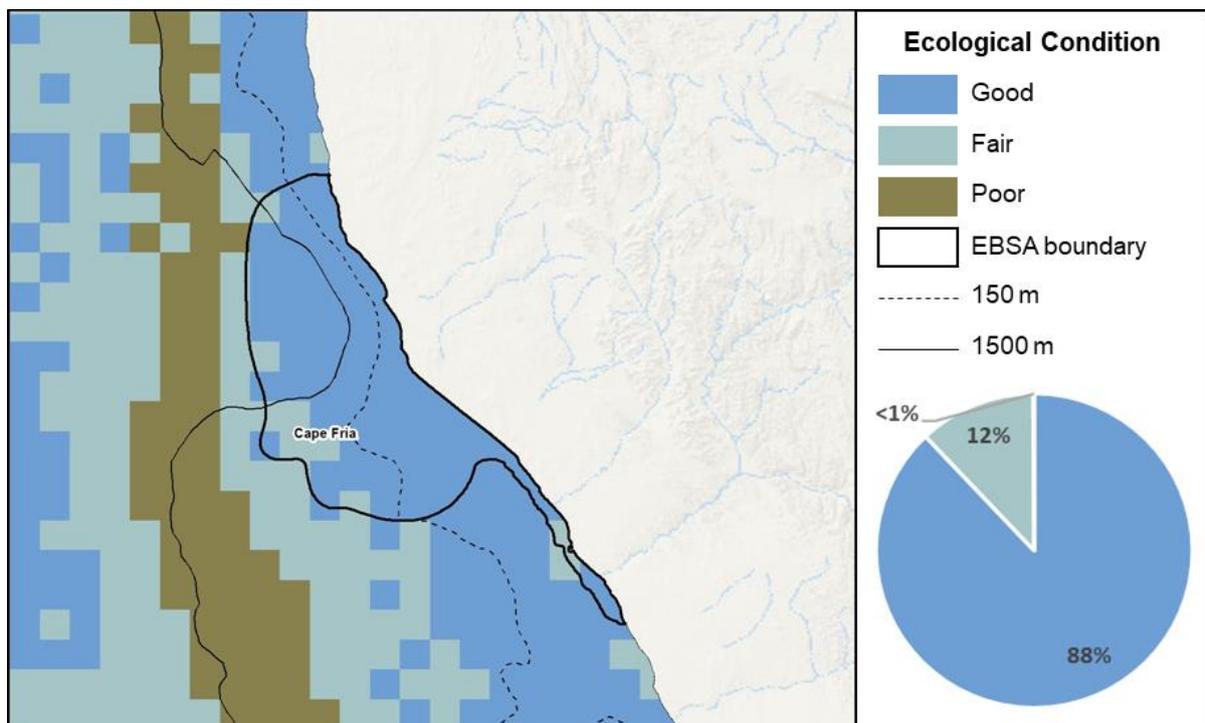
Status Assessment and Management Options



EBSA criteria coloured by rank for Cape Fria: red=high, orange=medium, grey=data deficient.

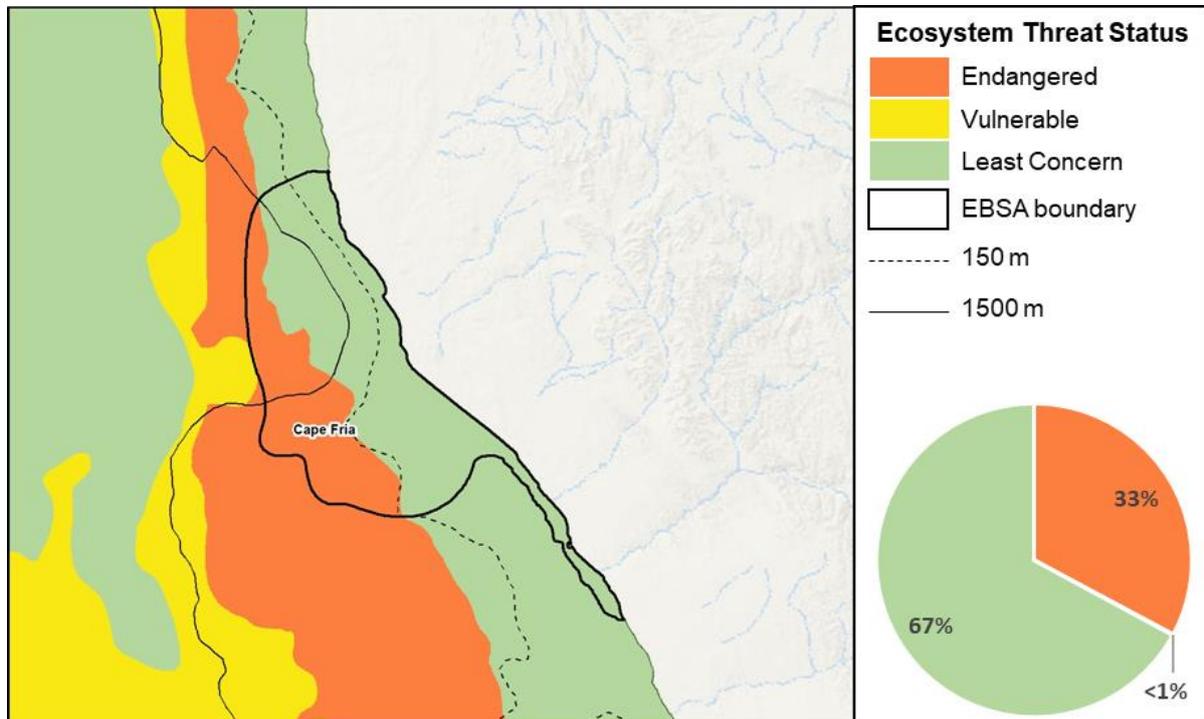
Ecological Condition, Threat Status, Current Protection and Key Features in the EBSA

Cape Fria has multiple ecological features and ecosystem types that need to be protected for the area to maintain the characteristics that give it its EBSA status. The criteria for which this EBSA ranks highly are: importance for life-history stages; importance for threatened species and habitats; biological productivity, and naturalness. There are 17 ecosystem types represented, including two Endangered types: the Central Namib Outer Shelf and Cunene Outer Shelf. The upwelling cell also marks the northern boundary of the Benguela Current, thus falling within the biogeographic transition zone, with a relatively high local biodiversity because communities comprise species at both the northern and southern limits of their distributions. The area is critical for aggregations of almost the entire global population of Damara Tern during specific periods of the year; is an important breeding site for Cape fur seals; and is an important foraging area for both species. Given its remote location, the coast is in relatively pristine condition, but may be threatened by industrial development in the future.

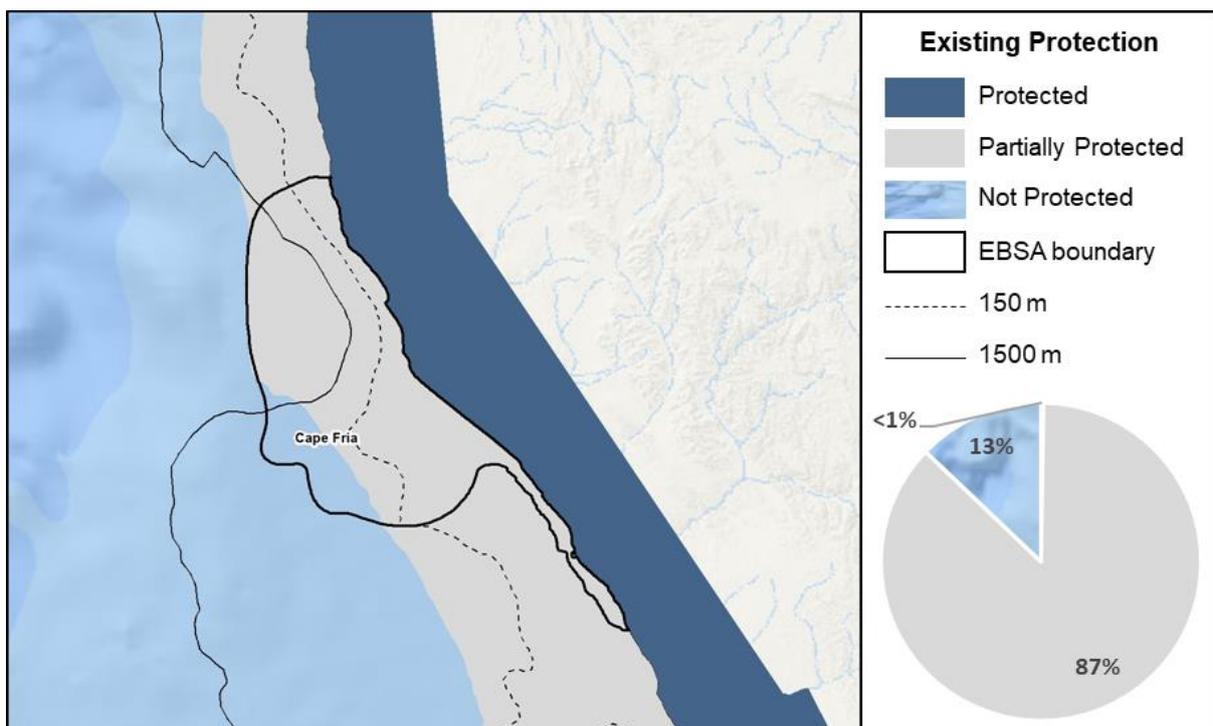


Cape Fria proportion of area in each ecological condition category.

The Cape Fria EBSA is in good (88%) to fair (12%) ecological condition, with <1% in poor ecological condition. Consequently, 14 of the 17 ecosystem types in the area are Least Concern, comprising 67% of the EBSA extent. Three ecosystem types are threatened, including two Endangered types (Central Namib Outer Shelf and Cunene Outer Shelf) comprising 33% and the EBSA, and one Vulnerable type (Cunene Shelf Edge) that makes up <1% of the EBSA.



Cape Fria proportion of area in each ecosystem threat status category.



Cape Fria proportion of area in a Marine Protected Area (MPA).

There are no MPAs in the area, however, Cape Fria and surrounds is a remote coastal area adjacent to the Skeleton Coast National Park, which affords <1% protected to some of the seashore ecosystem types. Most of the EBSA (87%) is partially protected through inshore trawl restrictions. Nevertheless, only one ecosystem type (Cunene Shelf Edge) is Not Protected, the rest are either Moderately Protected (7 types) or Well Protected (9 types).

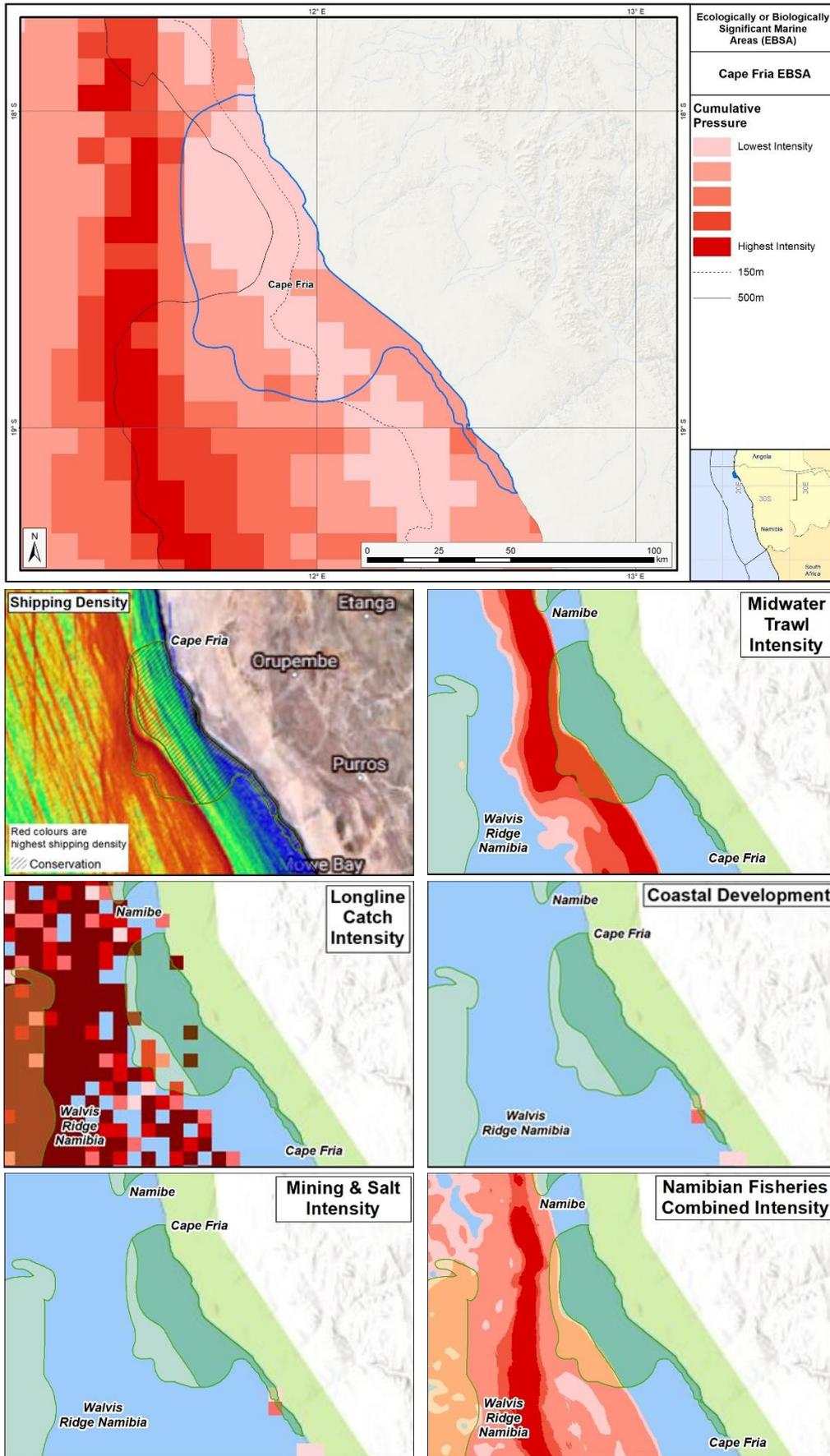
Threat status, protection level and ecological condition of ecosystem types in the EBSA. Other key features are also listed.

Feature	Threat Status	Protection Level	Condition (%)		
			Good	Fair	Poor
Ecosystem Types					
Central Namib Inner Shelf	LC	MP	100.00	0.00	0.00
Central Namib Outer Shelf	EN	MP	81.59	18.41	0.00
Cunene Exposed Rocky Shore	LC	MP	100.00	0.00	0.00
Cunene Inner Shelf	LC	MP	96.77	3.23	0.00
Cunene Inshore	LC	MP	100.00	0.00	0.00
Cunene Intermediate Sandy Beach	LC	WP	100.00	0.00	0.00
Cunene Mixed Shore	LC	WP	100.00	0.00	0.00
Cunene Outer Shelf	EN	MP	68.32	31.32	0.36
Cunene Reflective Sandy Beach	LC	WP	100.00	0.00	0.00
Cunene Shelf Edge	VU	NP	8.89	91.11	0.00
Hoanib Dissipative Sandy Beach	LC	WP	96.30	3.70	0.00
Hoanib Dissipative-Intermediate Sandy Beach	LC	WP	53.04	46.96	0.00
Hoanib Exposed Rocky Shore	LC	WP	95.75	4.25	0.00
Hoanib Inshore	LC	MP	88.51	11.49	0.00
Hoanib Intermediate Sandy Beach	LC	WP	96.00	4.00	0.00
Hoanib Mixed Shore	LC	WP	91.28	8.72	0.00
Hoanib Sheltered Rocky Shore	LC	WP	0.00	100.00	0.00
Other Features					
<ul style="list-style-type: none"> • Damara Terns • Cape fur seals • Diverse and abundant assemblages of fish • Upwelling cell 					

Relevant Pressures and Activities (impact, extent)

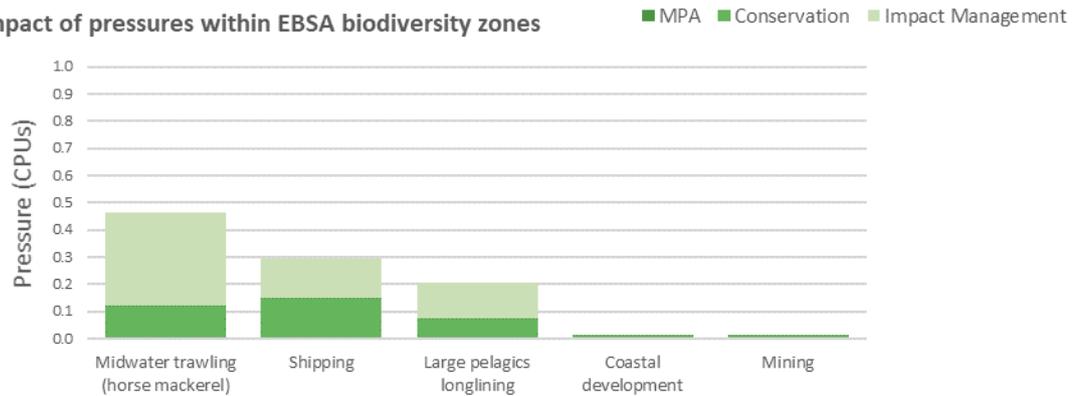
- There are five major pressures present in the EBSA, with the highest cumulative pressure in the southern coastal portion of the EBSA, and offshore on the shelf edge.
- Key pressures that most directly impact the features for which the EBSA is described include: midwater trawling (horse mackerel), shipping, large pelagic longlining, coastal development and mining. The former three activities contribute most to the pressure profile of the EBSA, most of which activity is in the Impact Management Zone. Note that small pelagics fishing used to be a key pressure in this area, but is no longer an active industry in Namibia.

- Note also that this assessment of pressures is based on existing data. Where new, finer scale data have since become available, these are presented below (e.g., for shipping and combined fisheries) to enable more accurate recommendations for management of activities. Also, there are some emerging activities and activities for which no spatial data are available that are not included here, but are considered in the management recommendations for the EBSA, based on expert and industry information.



Map of cumulative pressure (top) and maps of the most important pressures (activities) in the EBSA and surrounds. Darker reds indicate higher pressure intensity.

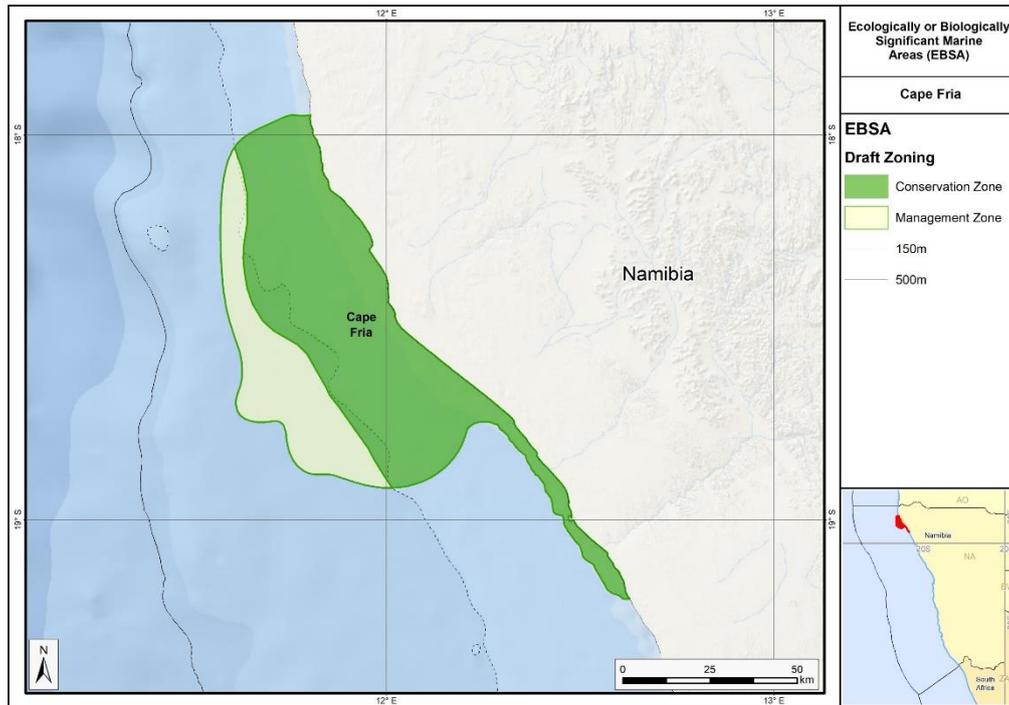
Relative impact of pressures within EBSA biodiversity zones



Pressure (in arbitrary cumulative pressure units, CPUs) summed for each pressure in the EBSA, per proposed EBSA biodiversity zone, ranked left (highest) to right (lowest) by the overall relative importance of pressures in this EBSA.

Management Interventions Needed for the EBSA

Improved place-based protection of EBSA features should be pursued. In support of this, the EBSA is divided into a Conservation Zone and an Impact Management Zone, both comprising several areas within the EBSA. The aim of the Conservation Zone is to secure core areas of key biodiversity features in natural / near-natural ecological condition. Strict place-based biodiversity conservation is thus directed at securing key biodiversity features in a natural or semi-natural state, or as near to this state as possible. Activities or uses that have significant biodiversity impacts should be prohibited. Where possible and appropriate these areas should be considered for formal protection e.g., Marine Protected Areas or other effective area-based conservation measures (OECM). The aim of the Impact Management Zone is to manage negative impacts on key biodiversity features where strict place-based measures are not practical or not essential. In this zone, the focus is management of impacts on key biodiversity features in a mixed-use area, with the objective to keep biodiversity features in at least a functional state. Activities or uses which have significant biodiversity impacts should be strictly controlled and/or regulated. Within this zone, there should be no increase in the intensity of use or the extent of the footprint of activities that have significant biodiversity impacts. Where possible, biodiversity impacts should be reduced. As far as possible, the Conservation Zone was designed deliberately to avoid conflicts with existing activities. Note that there are no marine protected areas in this EBSA; however, it borders the terrestrial Skeleton National Park, and there is partial protection of the coastal marine environment conferred through inshore trawl restrictions.



Proposed zonation of the EBSA into Conservation (dark green) and Impact Management (light green) Zones.

Protection of features in the rest of the Conservation Zone may require additional Marine Protected Area declaration/expansion. Other effective conservation measures should also be applied via Marine Spatial Planning to ensure that the existing activities/uses are appropriately controlled to ensure compatibility of activities with the environmental requirements for achieving the management objectives of the EBSA Conservation and Impact Management Zones. Further, no new pressures should be extended into the Conservation Zone, even if they currently occur in the Impact Management Zone of the EBSA.

Recommended compatibility (consent¹ or prohibited²) of activities currently present in the EBSA³ in the Conservation and Impact Management Zones

Uses (including activities and pressures)	Conservation Zone: EBSA areas requiring strictest protection	Impact Management Zone: Other EBSA Areas requiring some protection or place-specific management
Bottom trawling (freezer trawlers)	Prohibited	Consent
Bottom trawling (general)	Prohibited	Consent
Ecotourism (regulated nature based and strictly controlled)	Primary	Primary
Midwater trawling (horse mackerel)	Prohibited~	Consent
Military exercises and testing	Prohibited	Consent
Mining	Prohibited	Consent
Non-consumptive tourism and recreation	Consent	General

Petroleum extraction	Prohibited	Consent
Renewable energy installations	Prohibited	Consent
Seismic surveys and mining exploration	Prohibited	Consent
Shipping lane	Prohibited	General
Undersea cables and pipelines	Consent	Consent

¹Consent: An activity which can continue in this zone subject to specific regulation and control.

²Prohibited: An activity which is not allowed or should not be allowed because it is incompatible with maintaining the biodiversity objectives of the zone.

~Activity Prohibited but present in zone; need to confirm whether this needs to be kept, changed to Consent, or zone boundary changed.

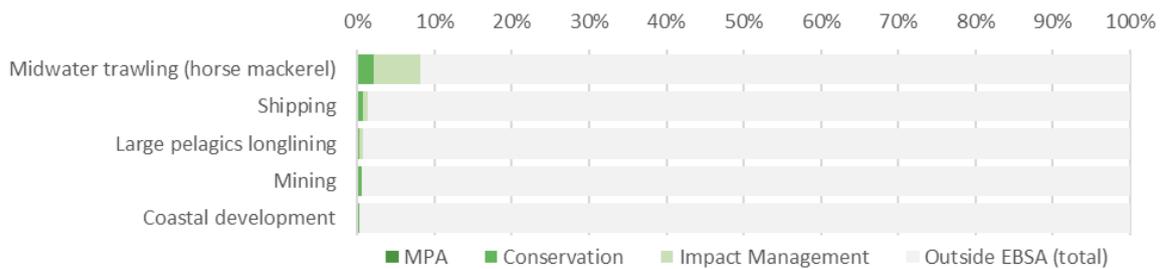
³Note that activities present in Namibia that are not relevant to the EBSA have been excluded from the table (e.g., the harvested species does not occur in the area; or the industry operates at a depth outside the depth range of the EBSA).

Furthermore, no new activities that can negatively impact the environment should be allowed in the EBSA, and some activities present in the EBSA do not need to be managed by EBSA zoning and can continue as per the current regulations. There are also some pressures on biodiversity features within the EBSA that originate from activities outside of these EBSA or beyond the jurisdiction of MSP. In support of maintaining the ecological integrity of and benefits delivered by the key biodiversity features, these other activities need to be appropriately managed by complementary initiatives.

Recommendations for other activities outside the EBSA or the MSP management jurisdiction.

Activities that are present but not managed by EBSA zones that can continue as per current regulations		
Shipping		
Activities that are currently not present in the EBSA and should be Prohibited in the future		
Ammunition and other dumping	Dredge-spoil dumping	Salt pans
Benthic longlining	Mariculture	Shipping refuge (disabled ships)
Boat-based linefishing	Pelagic longlining	Shore-based fishing
Boat-based recreational fishing	Ports	Small pelagics fishing
Channel dredging	Port anchorage areas	Wastewater discharge
Crab harvesting	Rock lobster harvesting	
Other activities beyond the jurisdiction of MSP that directly influence the ecological condition of the EBSA that should be managed appropriately under other appropriate legislation.		
Coastal development (e.g., implementation of appropriate setback lines)		
Coastal disturbance (e.g., formalising access points; rehabilitating degraded dunes; appropriate zoning of bathing and watercraft activities, etc)		
Mean annual runoff reduction (e.g., determining and implementing freshwater flow requirements and estuarine management plans)		

Activity Evaluation Per Zone: Zoning Feasibility



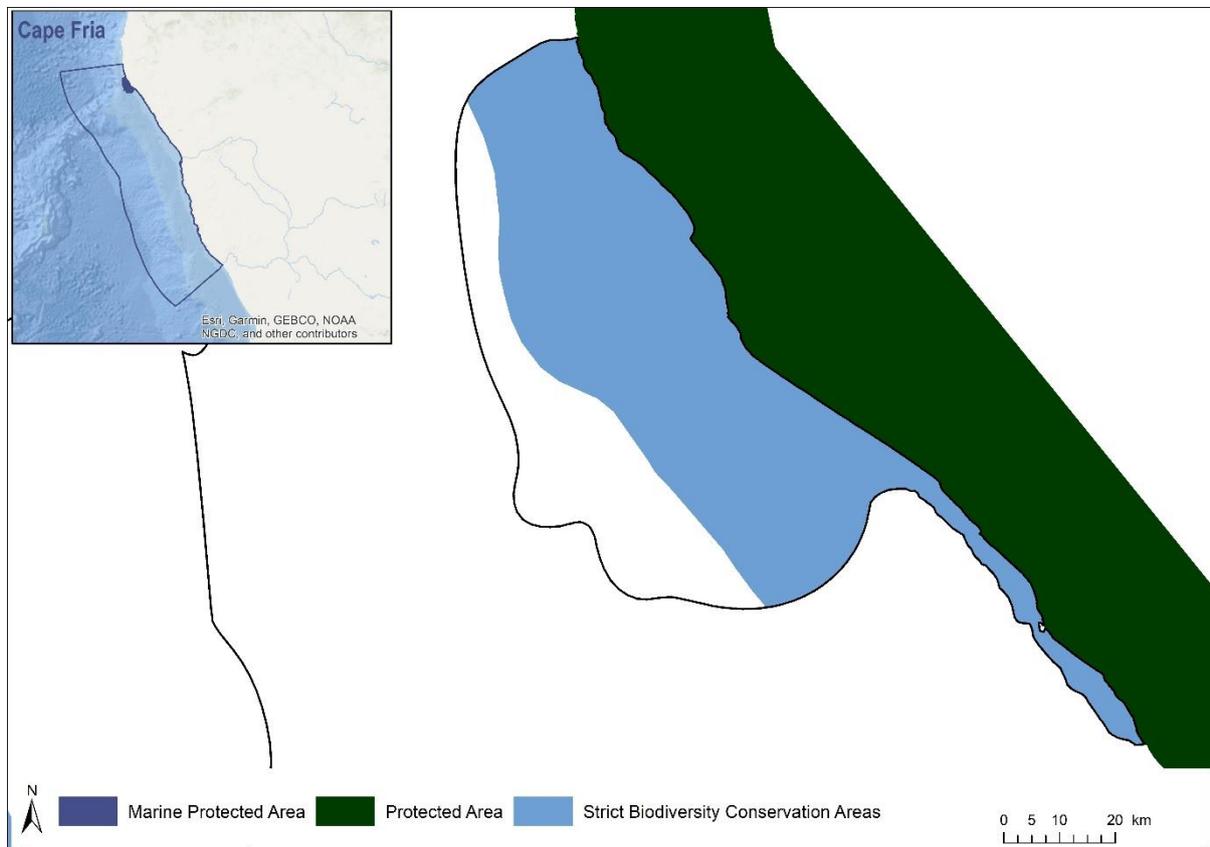
Proposed zonation of the EBSA, with the cumulative intensity footprint of activities within the EBSA (sorted highest to lowest) given relative to the national footprint of those activities to illustrate feasibility of management interventions.

All activities have <10% of their national footprint within the EBSA, the greatest of which is for midwater trawling (horse mackerel). This is a non-destructive fishery and is recommended to continue as a Consent activity in the Impact Management Zone, however, it is recommended to be Prohibited in the Conservation Zone. The other activities have a much smaller proportion of their national footprint in the EBSA (<1.5%). Pelagic longlining is also a non-destructive fishery, but has high bycatch; it is therefore recommended to continue in the Impact Management Zone, but to be Prohibited in the Conservation Zone. Mining is currently active in the Conservation Zone. This may be as a result of poor data resolution and the exact footprint needs confirmation because this activity is not compatible with the management objectives of the Conservation Zone, and is thus recommended to be Prohibited. Shipping is recommended to continue under current general rules and legislation. Other activities noted in the table of management recommendations above are either not currently present in the EBSA or are emerging activities; as far as possible, these are accommodated in the EBSA, depending on their compatibility with the management objectives of the two zones. Thus, the EBSA zonation has no or minimal impact on the national footprint for the listed marine activities.

There are also several activities that are largely outside the EBSA but have downstream impacts to the biodiversity within the EBSA, e.g., from mean annual runoff reduction, coastal development, coastal disturbance, and wastewater discharge. The impacts should be managed, but principally fall outside the direct management and zoning of the EBSA. These existing activities should ideally be dealt with in complementary integrated coastal zone management in support of the EBSA. For example, rehabilitation of degraded dunes and formalising access points could support improved habitat for nesting shorebirds, and enhanced benefits for coastal protection during storm surges. Similarly, improved estuary management through development of appropriate freshwater flow requirements, estuarine management plans and wastewater management regulations can improve the ecological condition of the surrounding marine environment, in turn, improving water quality and safe conditions for human recreation in support of the proposed expansion of ecotourism. It is also recommended to consider developing and implementing Biodiversity Management Plans for the iconic/top predator species, e.g., seals and Damara Terns, in support of securing the biodiversity features for which the EBSA is recognised, where these are not already in place.

Management Recommendations for Marine Protected Areas

It is recommended that management is strengthened in the adjacent land-based protected areas. Potential MPA declaration within the EBSA should be explored to ensure that the features for which the EBSA was described receive adequate protection, with particular focus in the Strict Biodiversity Conservation Zone. See Future Process below for more details.



Marine and land-based protected areas (National Parks) in the area surrounding Cape Fria (from UNEP-WCMC & IUCN, 2022), and the EBSA Strict Biodiversity Conservation Areas where potential MPA expansion within the EBSA should be focused.

Management Recommendations for Marine Spatial Planning

Proposed Zones

The management recommendations proposed for Cape Fria, outlined above, should be taken up in the marine area plan covering the northern portion of the Namibian EEZ. The proposed biodiversity zones for the EBSA in MSP comprises two types: a Strict Biodiversity Conservation Zone; and a Biodiversity Management Zone. It is recommended that there is full implementation and operationalisation of these zones as part of MSP.

Proposed Sea-Use Guidelines

As explained in the Management Interventions Needed for the EBSA above, all sea-use activities were listed and recommendations for management were provided according to the compatibility of the

activities with the management objective of each of the proposed biodiversity zones. It is recommended that the sea-use guidelines, as proposed above, are implemented as part of the northern Marine Area Plan.

Proposed management recommendations for activities with each of the different compatibility ratings:

- **General activities (compatible):** Activities should be allowed and regulated by current general rules. Notwithstanding, there should still be duty of care, possibly requiring monitoring and evaluation programmes, to avoid unintended cumulative impacts to the biodiversity features for which this area is recognised.
- **Consent activities (restricted compatibility):** A robust site-specific, context-specific assessment is required to determine the activity compatibility depending on the biodiversity features for which the site was selected. Particularly careful attention would need to be paid in areas containing irreplaceable to near-irreplaceable features where the activity may be more appropriately evaluated as not permitted. The ecosystem types in which the activities take place may also be a consideration as to whether or not the activity should be permitted, for example. Where it is permitted to take place, strict regulations and controls over and above the current general rules and legislation would be required to be put in place to avoid unacceptable impacts on biodiversity features. Examples of such regulations and controls include: exclusions of activities in portions of the zone; avoiding intensification or expansion of current impact footprints; additional gear restrictions; and temporal closures of activities during sensitive periods for biodiversity features.
- **Prohibited (not compatible):** The activity should not be permitted to occur in this area because it is not compatible with the management objective. If it is considered to be permitted as part of compromises in MSP negotiations, it would require alternative Strict Biodiversity Conservation Zones and/or offsets to be identified. However, if this is not possible, it is recommended that the activity remains prohibited within the Strict Biodiversity Conservation Zone.

Research Needs

There is fairly limited research that has been conducted in the area. Consequently, there are many gaps to fill in terms of understanding the biodiversity patterns and ecological processes within this EBSA area (including the phenomenon of the Damara tern aggregations). Further, without having better information on the local species present, there is currently no information from which the vulnerability of the site can be ranked. Knowing the current vulnerability will be key to determining which pressures the site is likely able to withstand. These gaps can all be filled as part of addressing the general research needs (see EBSA Research Needs below).

Future Process

Proposed zoning needs to be included in the northern MSP when undertaken.

References

UNEP-WCMC, IUCN, 2022. Protected Planet: The World Database on Protected Areas (WDPA) and World Database on Other Effective Area-based Conservation Measures (WD-OECM) [Online],

Walvis Ridge Namibia

Proposed EBSA Description

General Information

Summary

The Walvis Ridge Namibia EBSA lies contiguous to the Walvis Ridge EBSA in the high seas. Together, these two EBSAs span the full extent of the significant hotspot track (seamount chain formed by submarine volcanism) that comprises the aseismic Walvis Ridge and the Guyot Province. This unique feature forms a submarine ridge running north-east to south-west from the Namibian continental margin to Tristan da Cunha and Gough islands at the southern Mid-Atlantic Ridge. The Walvis Ridge Namibia EBSA encompasses the globally rare connection of a hotspot track to continental flood basalt in the Namibian EEZ. Given the high habitat heterogeneity associated with the complex benthic topography, it is likely that the area supports a relatively higher biological diversity, and is likely to be of special importance to vulnerable sessile macrofauna and demersal fish associated with seamounts. Productivity in the Namibian portion of Walvis Ridge is also particularly high because of upwelling resulting from the interaction between the geomorphology of the feature and the nutrient-rich, north-flowing Benguela Current. Although there are fisheries operating over Walvis Ridge in northern Namibia, the EBSA focus area is currently in good condition.

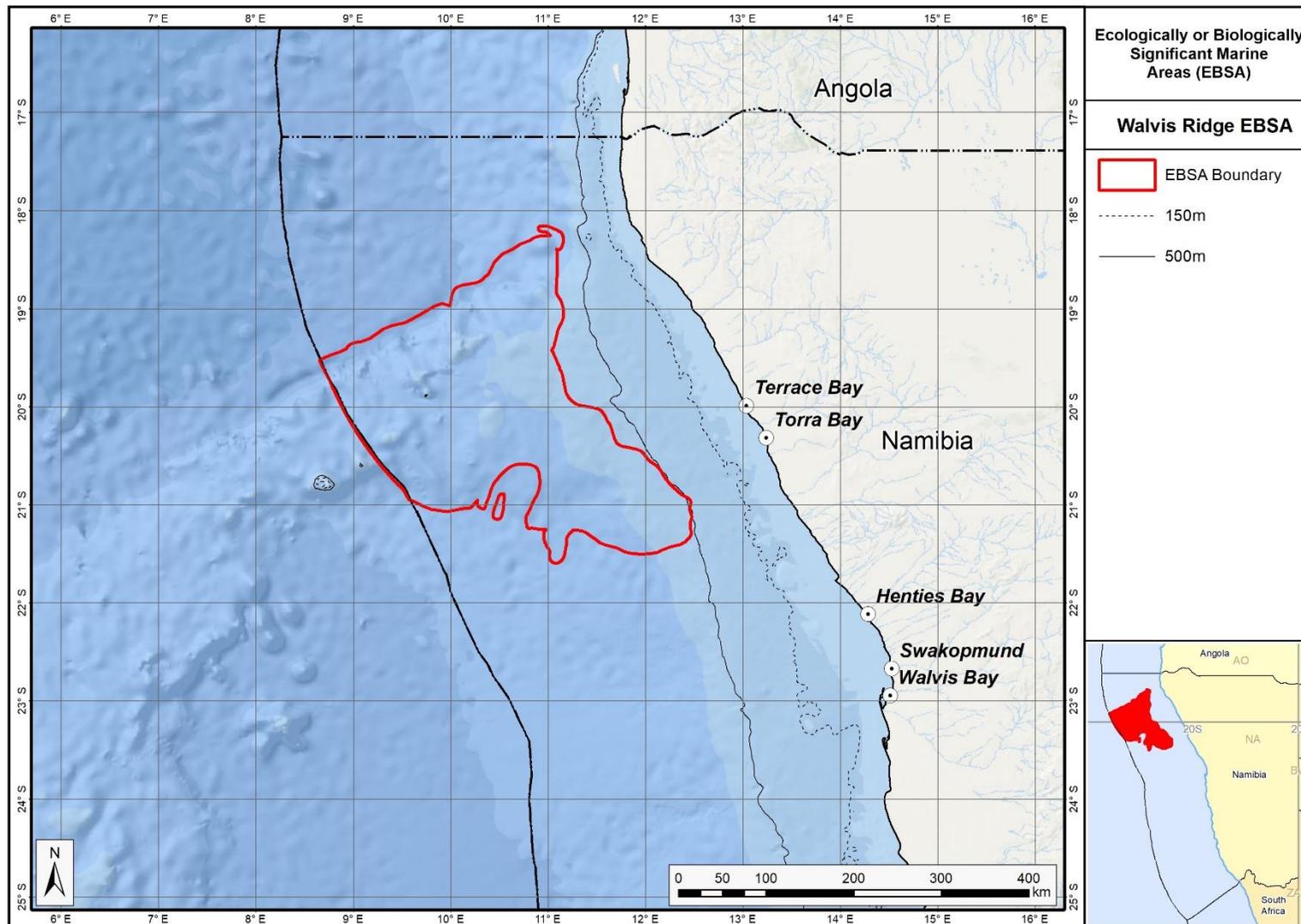
Introduction of the area

The aseismic Walvis Ridge is a seamount chain formed by hotspot submarine volcanism, some of which are guyots, that is connected to a continental flood basalt province in northern Namibia. The ridge presents a barrier between North Atlantic Deep Water to the north and Antarctic Bottom Water to the south. The surface oceanographic regime is the South Atlantic Subtropical Gyre bounded by the productive waters of the Benguela Current System and the Subtropical Convergence Zone. The feature described here is depth-bound around the 4000-m isobath, and contains significant areas within the likely vertical extent of near-surface zooplankton migration (1000 m). Although biologically significant, data from research cruises are patchy and variable, however the greater area is known to support a high diversity of seabirds, some of which are threatened. Further, the steep slopes and seamounts that are characteristic of the ridge likely support enhanced primary production, abundance and species richness. Because this site comprises a complex 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



Proposed boundaries of the Walvis Ridge Namibia EBSA.

Description of location

The Walvis Ridge extends obliquely (NE-SW) across the south east Atlantic Ocean from the northern Namibian shelf (18°S) to the Tristan da Cunha island group at the Mid-Atlantic Ridge (38°S). The part of the ridge that lies beyond national jurisdiction is included in the existing Walvis Ridge EBSA that has its north eastern boundary at the Namibian EEZ. The proposed Walvis Ridge Namibia EBSA is contiguous with this high seas EBSA, spanning only that portion of the ridge within Namibia's national jurisdiction. Given the global rarity of the connection between a hotspot track and the continental flood basalt province, it is imperative that the full extent of this feature is encompassed within an EBSA, including the portion in the Namibian EEZ.

Area Details

Feature description of the area

Walvis Ridge is both a benthic and water column feature: it is a chain of seamounts that individually and collectively constitute an ecologically and biologically significant deep-sea feature, as also recognized by the Census of Marine Life project (CenSeam: <http://censeam.niwa.co.nz>). Walvis Ridge also includes a number of deep-sea features in addition to the seamounts and guyots, such as steep canyons, embayments formed by massive submarine slides, trough-like structures, a graben, abyssal plains, and a fossilized cold-water coral reef mound community (GEOMAR 2014). Based on these physical features, the ridge can be divided into three sections (GEOMAR 2014). The portion of the ridge within the proposed EBSA forms part of the northern section, which extends SW from the Namibian shelf, with a steep NW scarp, ridge-type seamounts, and guyots with rift arms (GEOMAR 2014).

The high habitat heterogeneity supports moderately diverse biological communities, including benthic macrofauna such as brachiopods, sponges, octocorals, deep-water hexacorals, gastropods, bivalves, polychaetes, bryozoans, cirriped crustaceans, basket stars, ascidians, isopods and amphipods (GEOMAR 2014). Presumably this diversity extends along the full extent of the ridge, and into the Namibian portion. Productivity seems to increase from SW to NE along Walvis Ridge, with sediment organic carbon and the abundance and diversity of phytoplankton communities increasing towards the Namibian shelf, likely reflecting patterns of nutrient transport and upwelling in the north-flowing Benguela Current that are more intense closer to the African continent (GEOMAR 2014).

This EBSA was not included in the original South Eastern Atlantic Workshop that was held in 2013 (UNEP/CBD/RW/EBSA/SEA/1/4) because it was highlighted only in a gap analysis of the national and regional EBSA networks, using systematic conservation planning (Holness et al., 2014). Further, new information has since become available following a recent research cruise (GEOMAR 2014), which has added certainty of the significance of the features. The EBSA boundary links tightly to important benthic features comprising the ridge (produced by combining GEBCO data with that from www.bluehabitats.org; see Harris et al., 2014, and data from Holness et al., 2014). Those features that are continuous with the ridge, as well as isolated hills that are in close proximity are included. The EBSA also includes areas with a high selection frequency in the regional gap analysis (Holness et al., 2014), which suggests that they are irreplaceable areas in the region.

Feature conditions and future outlook of the proposed area

The Walvis Ridge EBSA is primarily recognized as a geological feature but the biota in the area could be vulnerable to fishing (e.g., orange roughy; SEAFO report in FAO Statistical Area 47). The fisheries within the Namibian EEZ are managed by Namibia's Ministry of Fisheries and Marine Resources. Oil exploration has already taken place within the EBSA, namely Welwitschia-1 well, which was drilled in 2014 at 20°11'9.79"S, 11°19'3.27"E. Although it was found to be dry, future drilling activities in the area are likely. The EBSA is largely in good condition, though some impacted areas exist on the far eastern edge (Holness et al., 2014).

The Walvis Ridge and Walvis Ridge Namibia EBSAs should ideally be merged because they both represent the same feature; however, the former is in the high seas and the latter is under national jurisdiction. Consequently, this merger will depend on international processes around EBSAs that span across country EEZs and ABNJ. It is thus recommended that ABNJ and BBNJ processes are engaged to understand the link between these two EBSAs and how they might be merged in the future.

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Other relevant website address or attached documents

Summary of ecosystem types and threat status for Walvis Ridge Namibia. Data from Holness et al. (2014).

Threat Status	Ecosystem type	Area (km ²)	Area (%)
Vulnerable	Central Namib Shelf Edge	18,113	26.1
	Kunene Shelf Edge	6,458	9.3
Least Threatened	Kunene Abyss	5,920	8.5
	Kunene Lower Slope	8,664	12.5
	Kunene Seamount	3,818	5.5
	Kunene Upper Slope	2,298	3.3
	Namib Abyss	383	0.6
	Namib Lower Slope	16,573	23.9
	Namib Seamount	2,290	3.3
	Namib Upper Slope	4,931	7.1
Grand Total		69,448	100.0

Additional Information

Additional criteria: BirdLife Important Bird Areas Criteria (BirdLife 2009, 2010) A1 Regular presence of threatened species; A4ii >1% of the global population of a seabird.

Assessment of the area against CBD EBSA criteria

C1: Uniqueness or rarity **High**

Justification

As the only extensive seamount chain off of the Mid-Atlantic Ridge in the Southeast Atlantic, the Walvis Ridge is a unique geomorphological feature. It is also one of the few hotspot tracks on earth that connects to continental flood basalt. This rare connection falls within the Walvis Ridge Namibia EBSA.

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

Justification

Seamount chains may facilitate connectivity between individual seamounts over extensive distances. The varied topography and geomorphology support demersal fish resources (based on demersal fisheries records in locations shallower than 2000 m). The varied bathymetry dictates the distribution area and provides significant habitat for benthic-pelagic species (e.g., hotspots for orange roughy), and is also likely to do so for epi-pelagics (Clark et al., 2007, Rogers and Gianni, 2010). These seamounts are significant habitats for cold-water corals and sponges (Zibrowius and Gili, 1990; GEOMAR 2014). Thus, the Walvis Ridge is of special importance for sessile macrofauna and for demersal fish associated with seamounts (FAO FIRMS species distribution maps) (<http://firms.fao.org>). It includes parts of the foraging areas for globally threatened seabirds, such as the Tristan Albatross (*Diomedea dabbenena*), Wandering Albatross (*Diomedea exulans*) and Atlantic Yellow-nosed Albatross (www.seabirdtracking.org). The series of seamounts provides a potential stepping stone feature for organisms from coast to mid ocean (e.g., dispersion of the benthic octopod, *Scaevargus unicolor*; Sanchez and Alvarez, 1988).

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

Justification

Bluefin and big-eye tuna occur in the area (e.g., FishBase), and orange roughy hotspots within the area are known (SEAFO information). Several threatened seabird species also use the Namibian portion of the Walvis Ridge for foraging, e.g., the endangered Atlantic Yellow-nosed Albatross (www.seabirdtracking.org; BirdLife International, 2017).

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

Justification

Habitat-forming sessile megafauna are fragile and vulnerable to bottom contact fishing gears and slow to recover from damage. Habitat prediction models and observational data (Durán Muñoz et al., 2012, GEOMAR 2014, Perez et al., 2012) indicate presence of cold-water corals and sponges, and other delicate fauna such as basket and feather stars (see also the OBIS database for species records: <http://www.iobis.org/explore/#/area/351>). Based on empirical evidence (e.g., observations from Spanish/Namibian cruises on the Valdivia Bank, and along the whole ridge; GEOMAR 2014) the

seamounts and deep-sea features along the Walvis Ridge have sensitive habitats, biotopes and species, justifying high criterion ranking.

C5: Biological productivity Medium

Justification

Productivity appears to increase from SW to NE along the Walvis Ridge, as seen in the sediment organic carbon load, and abundance and diversity of plankton that both increase closer to the Namibian shelf (GEOMAR 2014). Several seamounts also extend into the photic zone and may have enhanced primary production. Significant areas are within the likely vertical range of epipelagic zooplankton migration (Jacobs and Bett, 2010).

C6: Biological diversity Medium

Justification

Data on biological diversity associated with the Walvis Ridge are limited, however there are some data on seabirds, fish, and benthic mega-, macro- and meiofauna (see Perez et al., 2012 for a review, and GEOMAR 2014), including 17 922 records of 907 species listed on the OBIS database (OBIS 2017). Observations and the range of habitats created by the seamount chain and immediately adjacent abyssal area suggest comparatively higher diversity of ecosystems, habitats, communities, and species. This has been confirmed to some extent through bathymetric/geological surveys and biological sampling of the benthos, which revealed a variety of benthic macrofauna (GEOMAR 2014). Presumably the comparatively higher biodiversity associated with this geological feature extends into the Namibian portion of the ridge that comprises the Namibian EBSA focus area.

C7: Naturalness High

Justification

Human influence along the Walvis Ridge is largely historic, fisheries were and are mainly confined to seamount summits (SEAFO information, Clark et al., 2007, and relevant papers cited in Perez et al., 2012), and oil exploration drilling has been limited to date. Apart from seamounts that are likely to have been impacted by bottom-fishing, the remainder of the area is considered to have a high degree of naturalness. The EBSA focus area is largely in good condition, though some impacted areas exist on the far eastern edge (Holness et al., 2014).

Status of submission

The description of Walvis Ridge Namibia has been submitted to the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) for consideration by the Conference of the Parties to the Convention on Biological Diversity.

COP Decision

Not yet submitted.

End of proposed EBSA revised description

Motivation for Submission

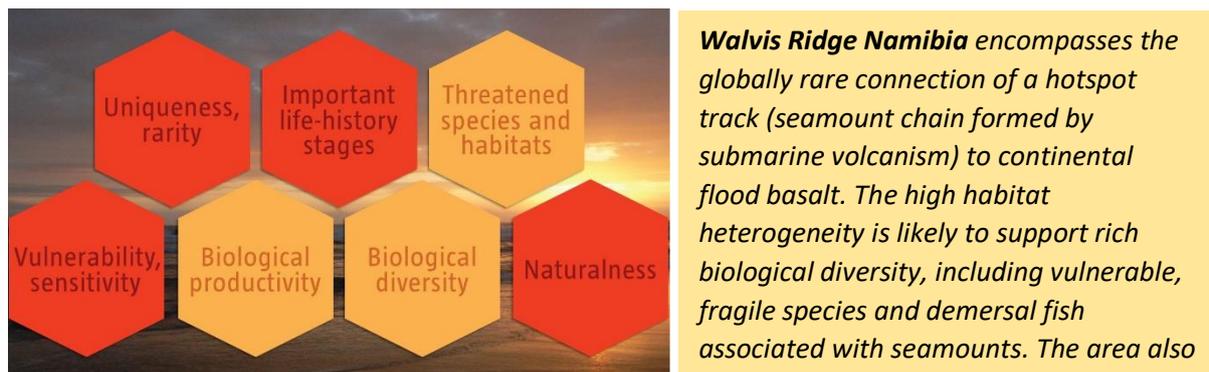
The Namibian portion of the Walvis Ridge was considered by the Namibian Government to be one of the highest priority potential areas screened in its national EBSA process. The original intent was to extend and revise the existing high seas Walvis Ridge EBSA to include the adjacent sections in the Namibian EEZ. Ecologically and physically the Walvis Ridge is clearly a single feature which does not stop at the Namibian EEZ boundary. The Walvis Ridge system is a unique geomorphological feature with important biodiversity values. Given the global rarity of the connection between the hotspot track and continental flood basalt province, it was seen as imperative that the full extent of this feature was encompassed within the EBSA. Hence, a process was initiated by the Namibian government with the South East Atlantic Fisheries Organisation (SEAFO), which is the intergovernmental fisheries science and management body responsible for the high seas area within which the Walvis Ridge is partially located. However, it became clear that this process was not politically feasible within reasonable timelines. Therefore, the Namibian government is pursuing the recognition of the portion of the Walvis Ridge which falls within the Namibian EEZ as a separate but complementary EBSA to the existing Walvis Ridge EBSA. It remains the intent to secure a single unified EBSA should this become possible in the future.

The original high seas EBSA description was revised and updated with the latest research and biodiversity information from OBIS. Consequently, six new references were included. Following revision of the boundary, and an updated literature search, three criteria have been upgraded. Vulnerability, fragility and sensitivity, and Naturalness have both been upgraded from Medium to High, and Biological productivity has been upgraded from Data Deficient to Medium.

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

- Key features from GEBCO data, global benthic geomorphology mapping (www.bluehabitats.org, Harris et al., 2014), and data from BCC spatial mapping project (Holness et al., 2014). The main features included were areas of complex habitat heterogeneity, including steep slopes, canyons, embayments formed by massive submarine slides, trough-like structures, a graben, abyssal plains, and shallow summits of seamounts and guyots.
- Areas with a high selection frequency in the regional spatial prioritization to meet biodiversity targets efficiently, as well as include key geomorphological features of the Ridge (Holness et al., 2014).
- Features that are continuous with the Ridge, as well as isolated hills that are in close proximity were included.

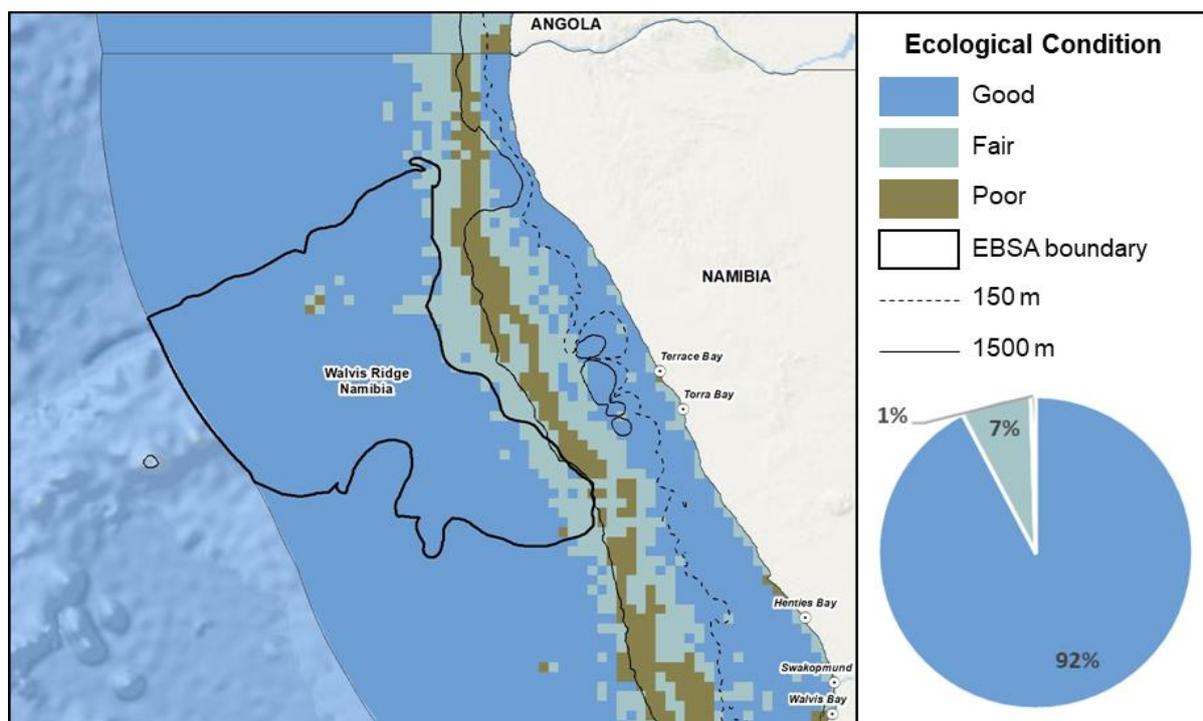
Status Assessment and Management Options



EBSA criteria coloured by rank for Walvis Ridge Namibia: red=high, orange=medium.

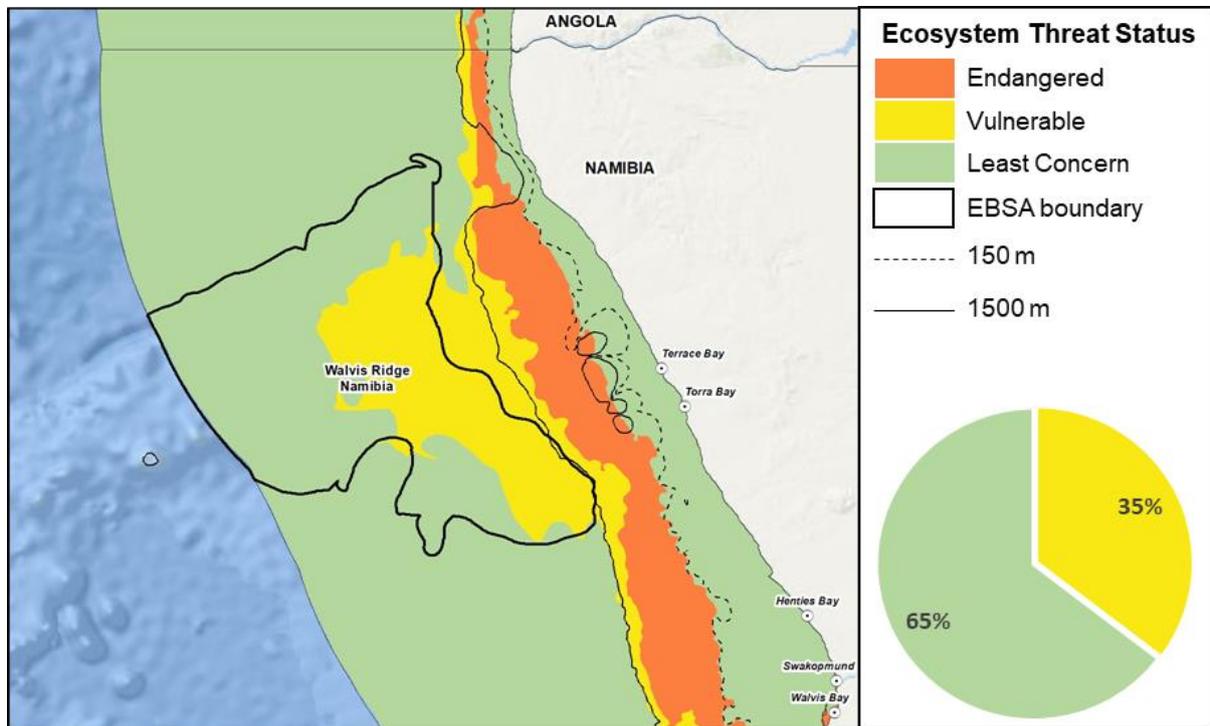
Ecological Condition, Threat Status, Current Protection and Key Features in the EBSA

Walvis Ridge Namibia has multiple ecological features and different ecosystem types that need to be protected for the area to maintain the characteristics that give it its EBSA status. The criteria for which this EBSA ranks highly are: uniqueness and rarity; importance for life-history stages; vulnerability and sensitivity; and naturalness. There are 10 ecosystem types represented, including two Vulnerable types (Central Namib Shelf Edge and Cunene Shelf Edge). Walvis Ridge Namibia encompasses the globally rare connection of a hotspot track to continental flood basalt. Given the high habitat heterogeneity associated with the complex benthic topography, it is likely that the area supports a relatively higher biological diversity and is likely to be of special importance to vulnerable sessile macrofauna and demersal fish associated with seamounts. Productivity in the Namibian portion of Walvis Ridge is also relatively high because of upwelling.

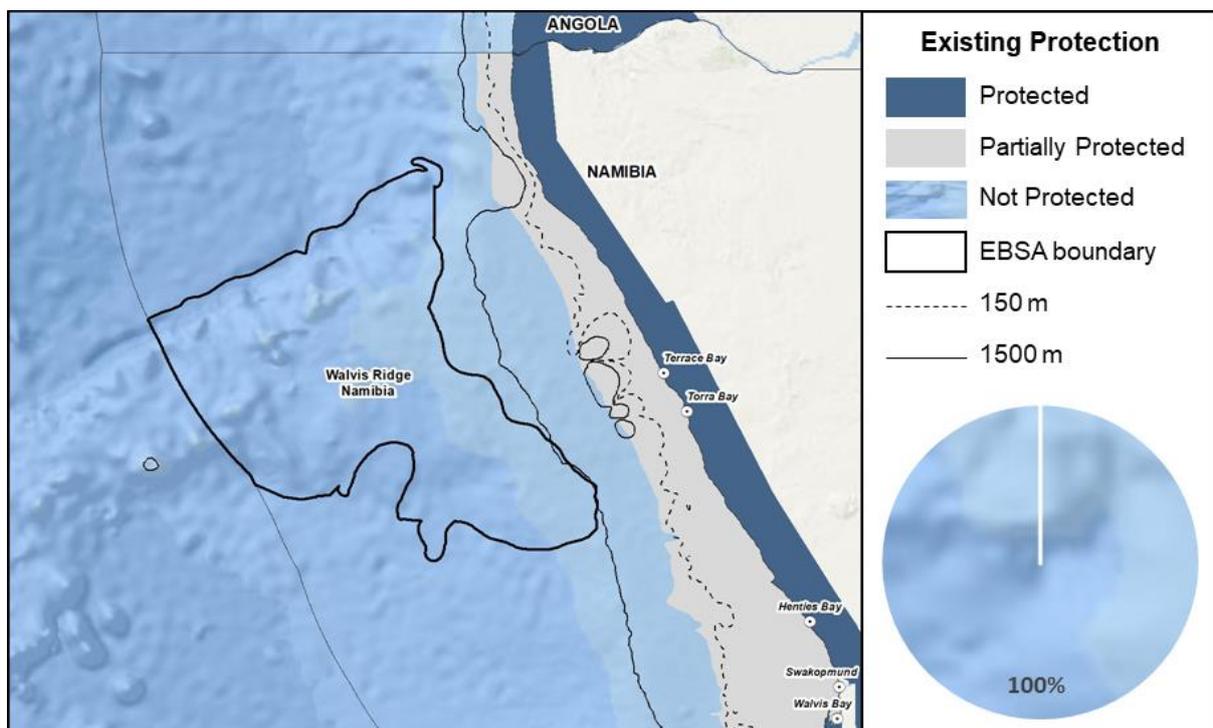


Walvis Ridge Namibia proportion of area in each ecological condition category.

Walvis Ridge Namibia is in good (92%) to fair (7%) ecological condition, with only 1% in poor ecological condition. Consequently, all but two ecosystem types are Least Concern, comprising 65% of the EBSA extent. The two Vulnerable ecosystem types (Central Namib Shelf Edge and the Cunene Shelf Edge) comprise the other third of the area (35%). Currently, there are no MPAs in Walvis Ridge Namibia, and consequently, all ecosystem types are Not Protected.



Walvis Ridge Namibia proportion of area in each ecosystem threat status category.



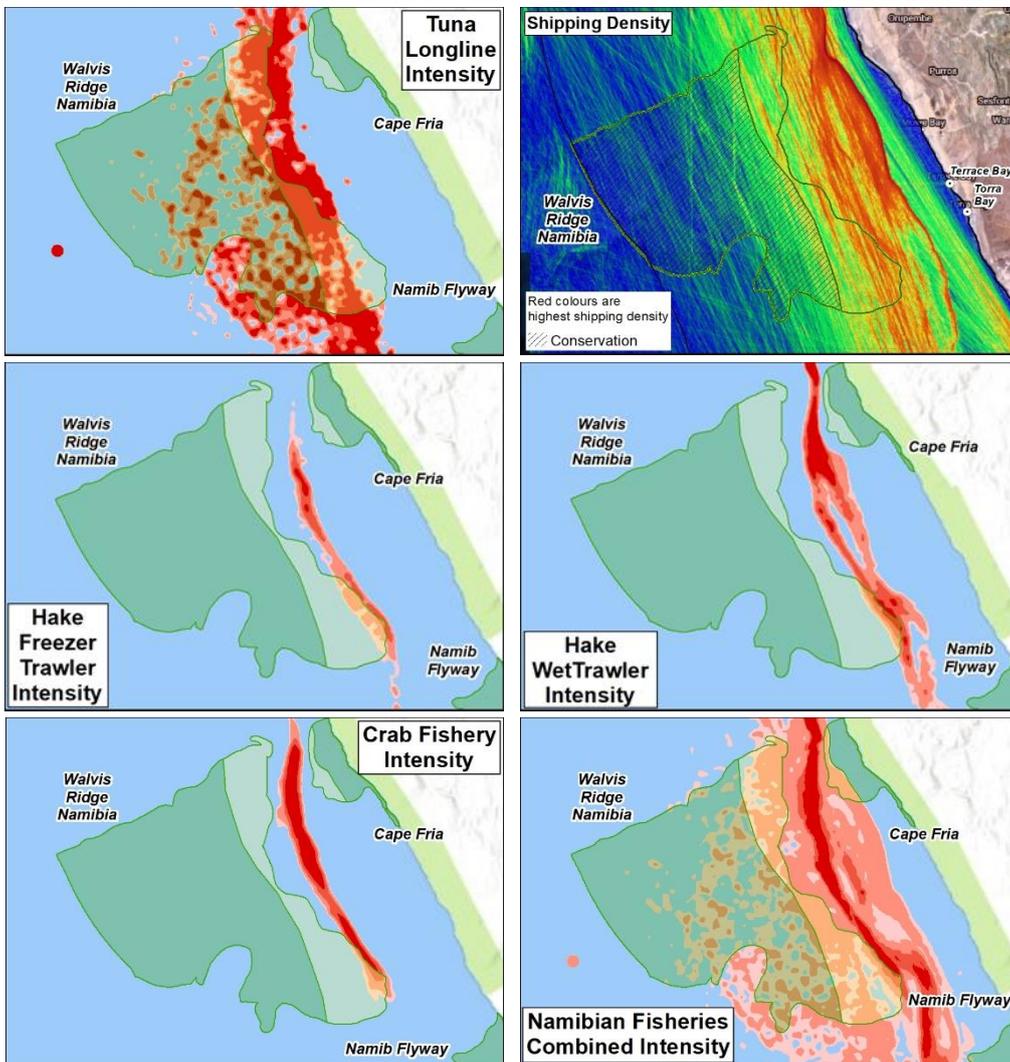
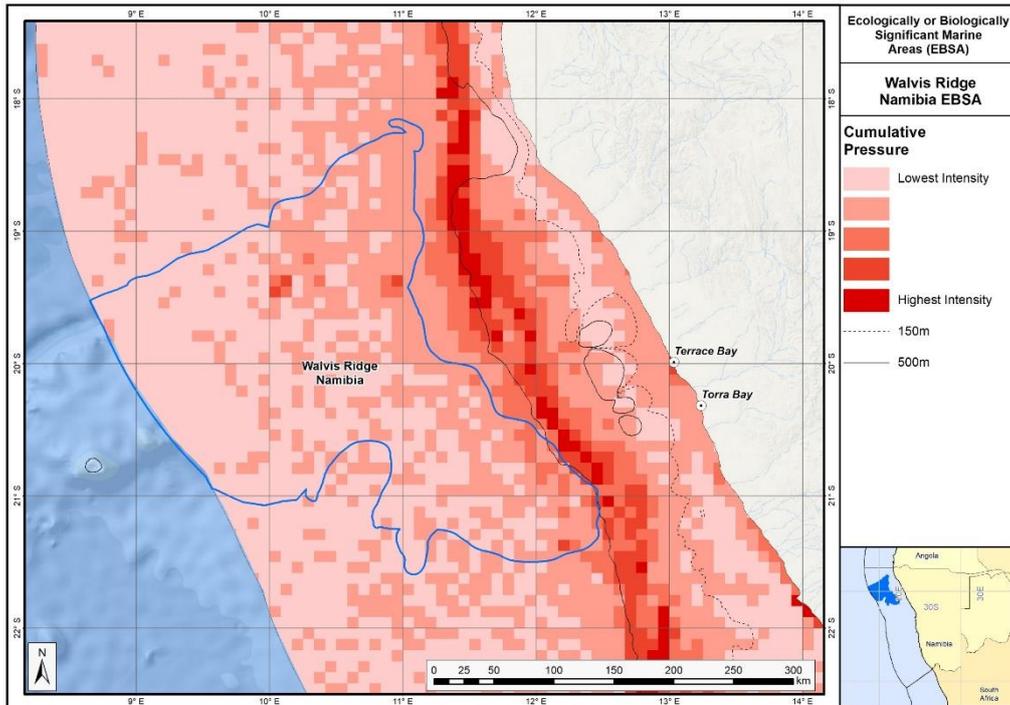
Walvis Ridge Namibia proportion of area in a Marine Protected Area (MPA).

Threat status, protection level and ecological condition of ecosystem types in the EBSA. Other key features are also listed.

Feature	Threat Status	Protection Level	Condition (%)		
			Good	Fair	Poor
Ecosystem Types					
Central Namib Shelf Edge	VU	NP	100.00	0.00	0.00
Cunene Abyss	LC	NP	95.22	4.78	0.00
Cunene Lower Slope	LC	NP	85.56	10.18	4.26
Cunene Seamount	LC	NP	88.68	11.32	0.00
Cunene Shelf Edge	VU	NP	89.24	10.76	0.00
Cunene Upper Slope	LC	NP	100.00	0.00	0.00
Namib Abyss	LC	NP	100.00	0.00	0.00
Namib Lower Slope	LC	NP	100.00	0.00	0.00
Namib Seamount	LC	NP	97.19	1.19	1.62
Namib Upper Slope	LC	NP	100.00	0.00	0.00
Other Features					
<ul style="list-style-type: none"> • Sessile macrofauna and demersal fish associated with seamounts • Orange Roughy • Seabirds 					

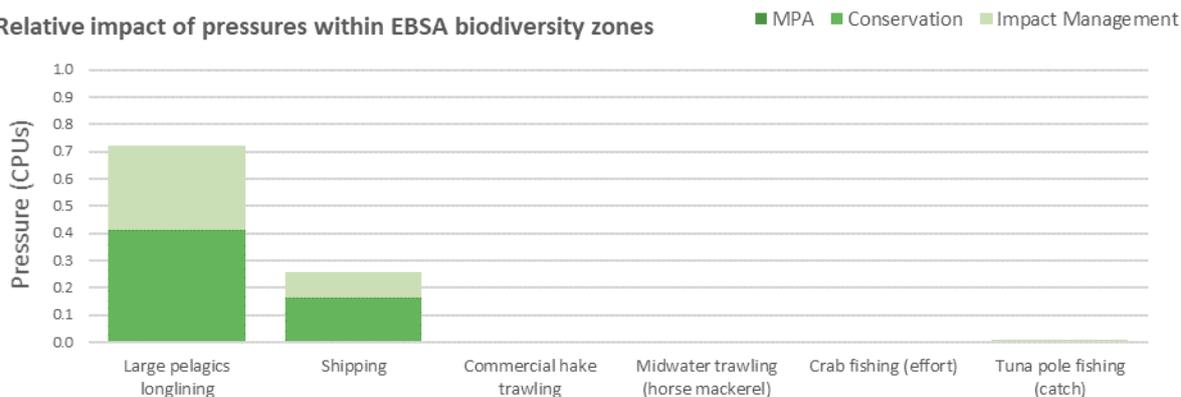
Relevant Pressures and Activities (impact, extent)

- There are six pressures present in this EBSA, of which large pelagic longline (tuna longline), covers the largest portion and has the highest cumulative pressure profile. Shipping is the only other major pressure, with hake trawling (freezer and wet), crab harvesting and tuna pole fishing also present, but only in a very small proportion of the EBSA. The EBSA delineation has largely avoided intense fishing areas, particularly on the shelf edge.
- Most of the activities take place within the proposed Impact Management Zone, except for shipping and pelagic longlining that have a notable footprint in the Conservation Zone.
- As a deep-water EBSA, inshore pressures such as seal harvesting, mariculture, coastal development, and ports are not present.
- Note that small pelagics fishing used to be present in this area, but is no longer an active industry in Namibia; similarly, trawling for Orange Roughy used to take place in this EBSA but the species is now commercially extinct and the fishery no longer operates in Namibia.
- Note also that this assessment of pressures is based on existing data. Where new, finer scale data have since become available, these are presented below (e.g., for shipping and combined fisheries) to enable more accurate recommendations for management of activities. Also, there are some emerging activities and activities for which no spatial data are available that are not included here, but are considered in the management recommendations for the EBSA, based on expert and industry information.



Map of cumulative pressure (top) and maps of the most important pressures (activities) in the EBSA and surrounds. Darker reds indicate higher pressure intensity.

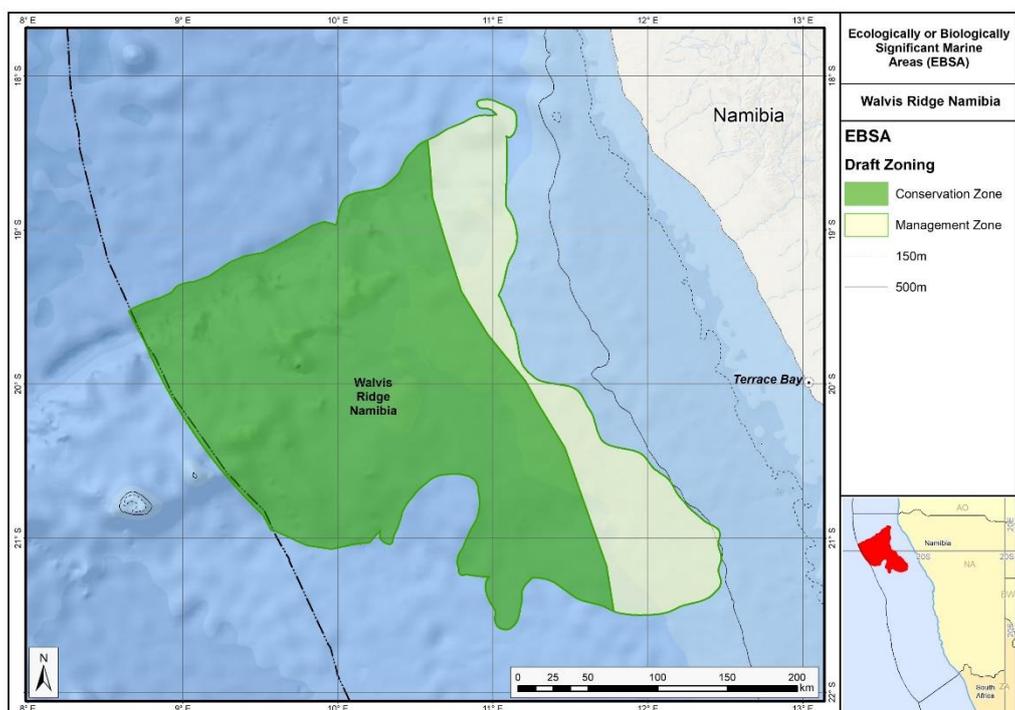
Relative impact of pressures within EBSA biodiversity zones



Pressure (in arbitrary cumulative pressure units, CPUs) summed for each pressure in the EBSA, per proposed EBSA biodiversity zone, ranked left (highest) to right (lowest) by the overall relative importance of pressures in this EBSA. Note that pressures from commercial hake trawling to tuna pole fishing each comprise <1% of the EBSA pressure profile.

Management Interventions Needed for the EBSA

Improved place-based protection of EBSA features should be pursued. In support of this, the EBSA is divided into a Conservation Zone and an Impact Management Zone, both comprising several areas within the EBSA. The aim of the Conservation Zone is to secure core areas of key biodiversity features in natural / near-natural ecological condition. Strict place-based biodiversity conservation is thus directed at securing key biodiversity features in a natural or semi-natural state, or as near to this state as possible. Activities or uses that have significant biodiversity impacts should be prohibited. Where possible and appropriate these areas should be considered for formal protection e.g., Marine Protected Areas or other effective area-based conservation measures (OECM). The aim of the Impact Management Zone is to manage negative impacts on key biodiversity features where strict place-based measures are not practical or not essential. In this zone, the focus is management of impacts on key biodiversity features in a mixed-use area, with the objective to keep biodiversity features in at least a functional state. Activities or uses which have significant biodiversity impacts should be strictly controlled and/or regulated. Within this zone, there should be no increase in the intensity of use or the extent of the footprint of activities that have significant biodiversity impacts. Where possible, biodiversity impacts should be reduced. As far as possible, the Conservation Zone was designed deliberately to avoid conflicts with existing activities. Note that there are no marine protected areas in this EBSA.



Proposed zonation of the EBSA into Conservation (dark green) and Impact Management (light green) Zones.

Protection of features in the rest of the Conservation Zone may require additional Marine Protected Area declaration/expansion. Other effective conservation measures should also be applied via Marine Spatial Planning to ensure that the existing activities/uses are appropriately controlled to ensure compatibility of activities with the environmental requirements for achieving the management objectives of the EBSA Conservation and Impact Management Zones. Further, no new pressures should be extended into the Conservation Zone, even if they currently occur in the Impact Management Zone of the EBSA.

Recommended compatibility (consent¹ or prohibited²) of activities currently present in the EBSA³ in the Conservation and Impact Management Zones

Uses (including activities and pressures)	Conservation Zone: EBSA areas requiring strictest protection	Impact Management Zone: Other EBSA Areas requiring some protection or place- specific management
Crab harvesting	Prohibited	Consent
Bottom trawling (wet)	Prohibited	Consent
Bottom trawling (freezer)	Prohibited	Consent
Ecotourism (regulated nature based and strictly controlled)	Primary	Primary
Midwater trawling (horse mackerel)	Prohibited	Consent
Military exercises and testing	Prohibited	Consent
Mining	Consent	Consent
Non-consumptive tourism and recreation	Consent	General

Pelagic longlining	Consent	Consent
Petroleum extraction	Consent	Consent
Renewable energy installations	Prohibited	Consent
Seismic surveys and mining exploration	Consent	Consent
Shipping lane	Consent	General
Tuna pole fishing	Consent	Consent
Undersea cables and pipelines	Consent	Consent

¹Consent: An activity which can continue in this zone subject to specific regulation and control.

²Prohibited: An activity which is not allowed or should not be allowed because it is incompatible with maintaining the biodiversity objectives of the zone.

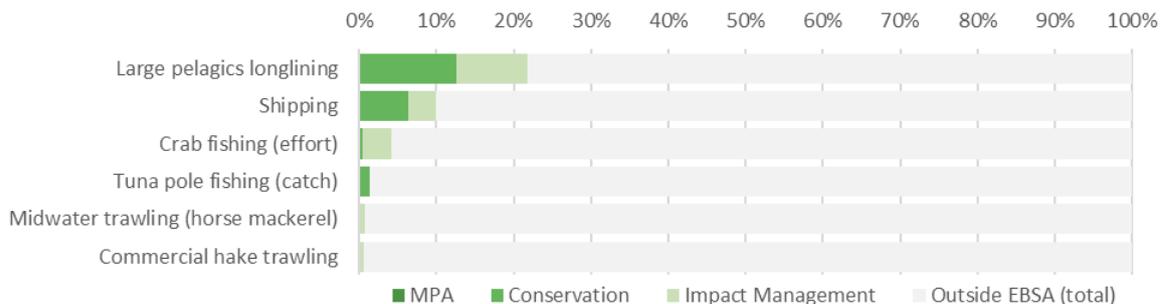
³Note that activities present in Namibia that are not relevant to the EBSA have been excluded from the table (e.g., the harvested species does not occur in the area; or the industry operates at a depth outside the depth range of the EBSA).

Furthermore, no new activities that can negatively impact the environment should be allowed in the EBSA, and some activities present in the EBSA do not need to be managed by EBSA zoning and can continue as per the current regulations. There are also some pressures on biodiversity features within the EBSA that originate from activities outside of these EBSA or beyond the jurisdiction of MSP. In support of maintaining the ecological integrity of and benefits delivered by the key biodiversity features, these other activities need to be appropriately managed by complementary initiatives.

Recommendations for other activities outside the EBSA or the MSP management jurisdiction.

Activities that are present but not managed by EBSA zones that can continue as per current regulations		
Shipping		
Activities that are currently not present in the EBSA and should be Prohibited in the future		
Ammunition and other dumping	Dredge-spoil dumping	Salt pans
Benthic longlining	Mariculture	Shipping refuge (disabled ships)
Boat-based linefishing	Ports	Shore-based fishing
Boat-based recreational fishing	Port anchorage areas	Small pelagics fishing
Channel dredging	Rock lobster harvesting	Wastewater discharge

Activity Evaluation Per Zone: Zoning Feasibility

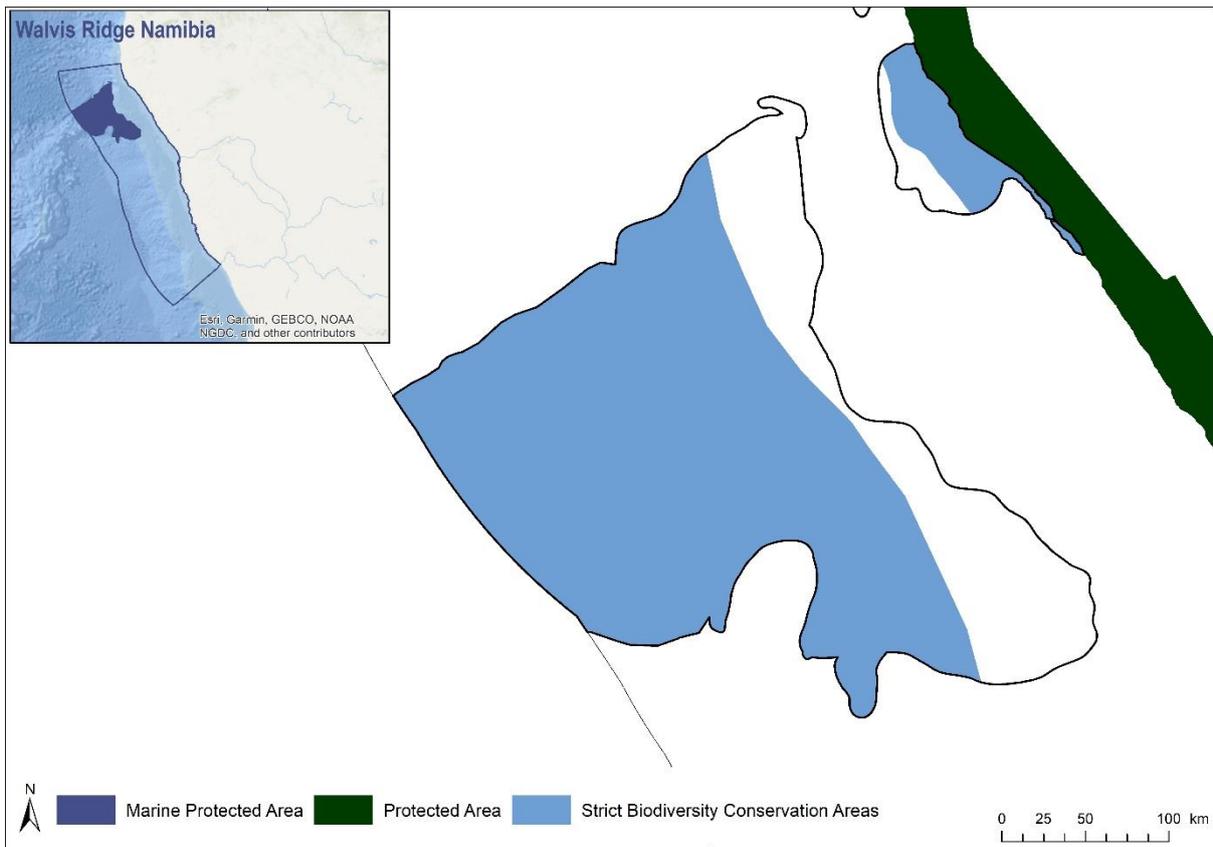


Proposed zonation of the EBSA, with the cumulative intensity footprint of activities within the EBSA (sorted highest to lowest) given relative to the national footprint of those activities to illustrate feasibility of management interventions.

Pelagic longlining in Walvis Ridge Namibia comprises more than a fifth (22%) of the national footprint of this activity, where it is split almost equally between the Conservation and Impact Management Zones. Given its economic importance and that it is a non-destructive fishery, it is therefore recommended that it is a Consent activity in both EBSA zones, recognising that bycatch mitigation is key for this activity to remain compatible with the management objectives of the EBSA, especially in the Conservation Zone. The other fisheries have a very small component of their respective national footprints (<5%) in the EBSA. Crab harvesting and midwater trawling (horse mackerel) are non-destructive fisheries and are recommended to be Prohibited in the Conservation Zone and Consent in the Impact Management Zone. Tuna pole fishing is a selective fishery, and is therefore recommended to be a Consent activity in both zones. Shipping can continue in both the Conservation and Impact Management Zones under current general rules and legislation, however, there might need to be some control and regulation for shipping lanes in the Conservation Zone, where it is recommended to be a Consent activity. Other activities noted in the table of management recommendations above are either not currently present in the EBSA or are emerging activities; as far as possible, these are accommodated in the EBSA, depending on their compatibility with the management objectives of the two zones. Thus, the EBSA zonation has no or minimal impact on the national footprint for the listed marine activities.

Management Recommendations for Marine Protected Areas

Potential MPA declaration within the EBSA should be explored to ensure that the features for which the EBSA was described receive adequate protection, with particular focus in the Strict Biodiversity Conservation Zone. See Future Process below for more details.



There are no marine or land-based protected areas (National Parks) in the area surrounding Walvis Ridge Namibia (from UNEP-WCMC & IUCN, 2022). Potential MPA expansion within the EBSA should be focused in the EBSA Strict Biodiversity Conservation Areas.

Management Recommendations for Marine Spatial Planning

Proposed Zones

The management recommendations proposed for Walvis Ridge Namibia, outlined above, should be taken up in the marine area plan covering the northern portion of the Namibian EEZ. The proposed biodiversity zones for the EBSA in MSP comprises two types: a Strict Biodiversity Conservation Zone; and a Biodiversity Management Zone. It is recommended that there is full implementation and operationalisation of these zones as part of MSP.

Proposed Sea-Use Guidelines

As explained in the Management Interventions Needed for the EBSA above, all sea-use activities were listed and recommendations for management were provided according to the compatibility of the activities with the management objective of each of the proposed biodiversity zones. It is recommended that the sea-use guidelines, as proposed above, are implemented as part of the northern Marine Area Plan.

Proposed management recommendations for activities with each of the different compatibility ratings:

- **General activities (compatible):** Activities should be allowed and regulated by current general rules. Notwithstanding, there should still be duty of care, possibly requiring monitoring and evaluation programmes, to avoid unintended cumulative impacts to the biodiversity features for which this area is recognised.
- **Consent activities (restricted compatibility):** A robust site-specific, context-specific assessment is required to determine the activity compatibility depending on the biodiversity features for which the site was selected. Particularly careful attention would need to be paid in areas containing irreplaceable to near-irreplaceable features where the activity may be more appropriately evaluated as not permitted. The ecosystem types in which the activities take place may also be a consideration as to whether or not the activity should be permitted, for example. Where it is permitted to take place, strict regulations and controls over and above the current general rules and legislation would be required to be put in place to avoid unacceptable impacts on biodiversity features. Examples of such regulations and controls include: exclusions of activities in portions of the zone; avoiding intensification or expansion of current impact footprints; additional gear restrictions; and temporal closures of activities during sensitive periods for biodiversity features.
- **Prohibited (not compatible):** The activity should not be permitted to occur in this area because it is not compatible with the management objective. If it is considered to be permitted as part of compromises in MSP negotiations, it would require alternative Strict Biodiversity Conservation Zones and/or offsets to be identified. However, if this is not possible, it is recommended that the activity remains prohibited within the Strict Biodiversity Conservation Zone.

Research Needs

Given the extent of Walvis Ridge, and how far it runs into the high seas, research on this feature is largely limited to collaborative cruises that combine physical and biological sampling, usually over a small area. Despite the numerous species records, only a fraction of the EBSA has been sampled, and any new information and data on the system advance our knowledge and understanding of Walvis Ridge. Research should possibly be prioritised in areas where activities are potentially interacting, or will likely interact, negatively with key biodiversity features, e.g., fishing overlaps with known or presumed vulnerable, fragile ecosystems, or threatened species. However, large-scale research in understanding the role of this outstanding feature in the global geophysical processes (including oceanic and climatic processes) will also be key to unlocking future predictions under different climate change scenarios. Alignment between the research and management of the Namibian EEZ and the high seas portions of the Walvis Ridge system will be critical for long-term sustainability. (See also EBSA Research Needs below).

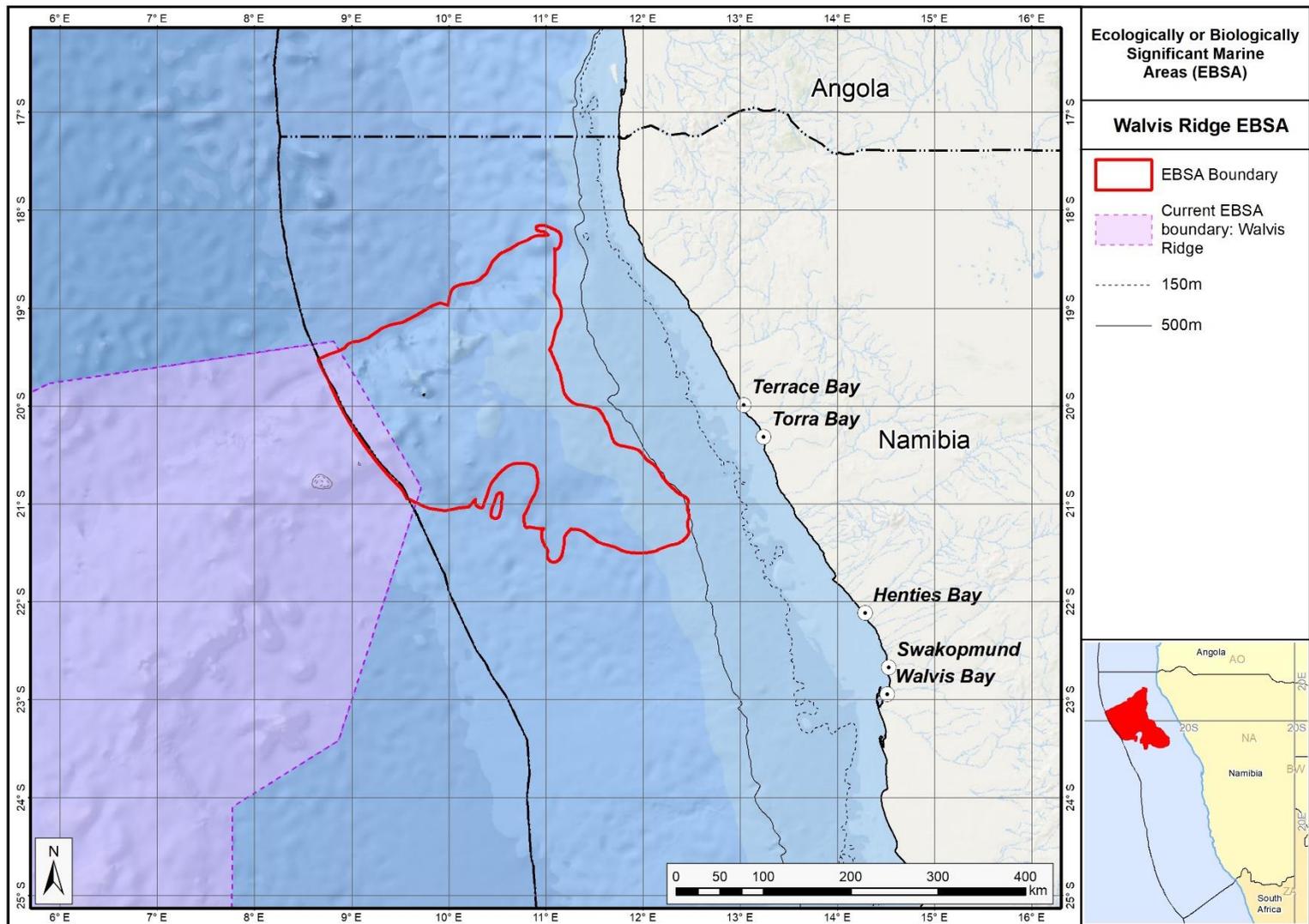
Future Process

Proposed zoning needs to be included in the northern MSP when undertaken.

It remains the intent to secure a single unified EBSA incorporating the Walvis Ridge Namibia and the existing high seas Walvis Ridge EBSA. The delineation of the Walvis Ridge Namibia EBSA is more precise than the delineation of the existing high seas Walvis Ridge EBSA; which results in a much closer alignment between the EBSA boundary and the underlying features it represents along the Ridge. If the Walvis Ridge Namibia EBSA and the high seas Walvis Ridge EBSA are to be aligned in the future, it will be necessary to update the boundaries of the integrated EBSA.

References

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The proposed Walvis Ridge Namibia EBSA in relation to the existing high seas Walvis Ridge EBSA.

Transboundary EBSAs

Revised EBSAs

Namibe (Formerly Kunene-Tigres)

Revised EBSA Description

General Information

Summary

Namibe is a trans-boundary area shared by Namibia and Angola. The EBSA is a modification, and extension of the original Kunene-Tigres EBSA. The Kunene River, its mouth and associated wetland influence the salinity, sediment and productivity within the Tigres Island-Bay complex about 50 km north of the river mouth. This link, underpinning elevated local productivity, is a regionally unique feature. However, the original EBSA delineation also included but overlooked the presence of shelf-incising canyons and seamounts in EBSA footprint, which also contribute to elevated productivity and foraging habitat. New information since the initial description has facilitated a northward extension of the EBSA to include adjacent canyons and seamounts, as well as the full extent of the coastline of Iona National Park. In short, Namibe comprises a highly diverse collection of species and habitats in very close proximity, many of which are also threatened, with unique and other features that promote high productivity. In turn this drives importance of the area for supporting the life-histories of key species, such as providing foraging, breeding and resting habitats for seals, fish, turtles, and migratory and resident birds.

Introduction of the area

Adjacent to the arid, mostly uninhabited, and remote 100 km of the southern Angolan coastline is an area of limited geographic but notable ecological prominence. Tigres Island and adjacent bay are a remnant of the pre-1970s peninsula formed by sediment discharged from the Kunene River. These features form a rare coastal wetland that plays an important role in the life cycles of many marine and terrestrial fauna (Simmons et al., 2006, Paterson 2007). The predominantly sandy island, measuring ~6 km at its widest point and ~22 km in length, has withstood the weathering effects of the Atlantic since the breaching of the isthmus in 1973, and has become an important site for a number of migratory and resident aquatic fauna (Morant 1996b, Simmons et al., 2006, Dyer 2007, Meÿer 2007). Approximately 50 km south of Tigres Island is an ecologically significant natural marine-freshwater feature: the Kunene River mouth. Although discharge volumes are erratic, this sub-tropical, perennial river may discharge up to 30 million m³ of fresh water per day into the sea. This has pronounced physicochemical influences on the adjacent marine habitat (sublittoral to littoral coastal region) to an extent of ~100 km from the river mouth, mostly northwards, but also southwards during certain times of the year and during abnormal climatic events, such as Benguela Niños (Simmons et al., 1993, Shillington 2003). A lagoon extends 2 km south from the river mouth (Simmons et al., 1993). These features provide foraging, roosting and breeding habitat for a range of fauna, including sea- and shorebirds (Braine 1990, Simmons et al., 1993, Anderson et al., 2001, Dyer 2007, Simmons 2010), marine and freshwater reptiles (Griffin & Channing 1991, Simmons et al., 1993, Griffin 1994, Carter & Bickerton 1996, Griffin 2002), crustaceans (Carter & Bickerton 1996), marine and freshwater fish species (Simmons et al., 1993, Hay et al., 1997, Fishpool & Evans 2001, Holtzhausen 2003), as well as resident (Meÿer 2007) and transient marine mammals (Paterson 2007). In this region the presence of the Cape Fur Seal (*Arctocephalus pusillus*) is verified. This species is strongly associated with the cooler

waters of the Benguela Current ecosystem and, therefore, its distribution extends to the western coast of southern Africa to the south of Angola. *A. pusillus* are most common in southern Angola, where there is a large colony in Tigres Bay (Morais et al., 2006). Weir (2013) found that this was the most common marine mammal species in the Benguela region but rarely seen in the northern-most regions. This confirms the link between the northern Angolan section of the EBSA and the Namibian sections.

The revised boundary for this EBSA now includes the full extent of the coastline of the adjacent Iona National Park, which is an Important Bird and Biodiversity Area that similarly supports migratory and resident birds in this area. Further, since the original description, a regional map of marine ecosystems has become available for Namibia and Angola (Holness et al., 2014). It was then noted that the original Kunene-Tigres EBSA contained seamounts and canyons that were also likely contributing to the elevated productivity that underpins the key foraging areas for the species noted above. Therefore, the EBSA was extended northward to include adjacent seamounts and canyons that were in close proximity to Tigres Island and adjacent to the Iona National Park IBA. The southern boundary was also refined to improve precision based on the new habitat map. The habitats that are influenced by the Kunene River, i.e., those formed from terrigenous sediments flowing out of the river, are now included in their full extent. Furthermore, the real extent of the Kunene Estuary, on which this whole EBSA depends, is now included to improve precision over the much smaller representation of the estuary in the original boundary. Namibe is thus proposed as a Type 2 EBSA (sensu Johnson et al., 2018) because it comprises a collection of features and ecosystems that are connected by the same ecological processes.

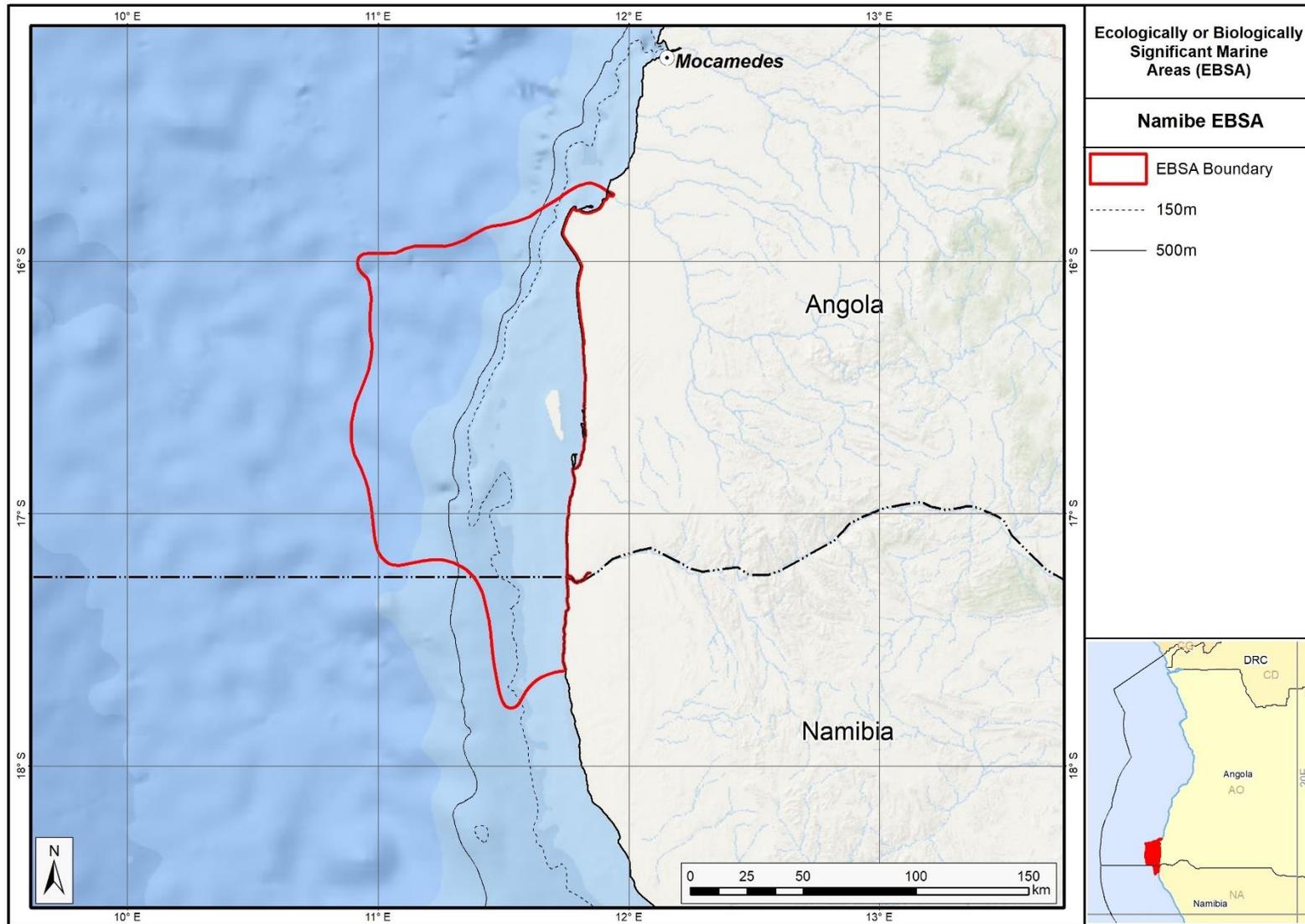
Description of the location

EBSA Region

South-Eastern Atlantic

Description of location

The delineated area extends along the shore approximately 170 km north of the Kunene mouth into southern Angola (to the northern boundary of Iona National Park at Curoca River), and 40 km south of the Kunene mouth into northern Namibia. The maximum offshore extent is approximately 100 km, although the Namibian section extends only 40 km offshore. The EBSA includes the Tigres Bay lagoon and approximately 12 km of the Kunene estuary. Namibe is well within the national jurisdictions of the two neighbouring countries it straddles (i.e., Angola and Namibia), with >80% of the area falling within Angolan jurisdiction. In Namibia, this EBSA borders the Skeleton Coast National Park; and in Angola it borders the Iona National Park. It has a total area of approximately 15,000km².



Revised boundary of the Namibe EBSA.

Feature description of the area

Namibe comprises a rich diversity of features, species and habitats. The southern portion includes the Kunene estuary and surrounding river-influenced ecosystems, with the bulk of the influence from the river (freshwater, sediment and nutrients) transported north, connecting to Tigres Island and Tigres Bay in Angola. The surrounding ecosystems also include canyons and seamounts that contribute to the productivity and diversity in the EBSA. Tigres Bay is approximately 11 km at its widest point (northern region of Tigres Bay) and ~8.5 km at its narrowest point (southern limit of Tigres Island from the mainland), with a longitudinal extent of ~60 km.

Surveys of the area have recorded 26 bird species with abundances of around 13000 individuals (Simmons et al., 1993, Simmons et al., 2006, Simmons 2010). Several bird species breed on Tigres Island or along the bay (including globally threatened Cape Cormorants and Damara Terns, and locally threatened Great White Pelicans and Caspian Terns; Simmons et al., 2006; Dyer 2007; Simmons 2010) and Cape fur seals breed on the island (Meÿer 2007). The Kunene River mouth and adjacent marine habitat supports a lower bird density (~4000 individuals) than does Tigres Bay, but a higher species richness, and serves as a refuelling and resting area for Palearctic migrant bird species (Simmons et al., 1993). At least 119 bird species have been recorded at the Kunene River mouth (Paterson 2007), and there are records of 381 species in the EBSA area, of which 2 are Critically Endangered, 3 are Endangered, and 9 are Vulnerable (OBIS, 2017). Iona National Park in Angola is an Important Bird and Biodiversity Area. Furthermore, the Kunene-Namib area is known to support the largest density of green turtles in Namibia (Griffin & Channing 1991; Simmons et al., 2006), with olive ridleys also present. In addition, there are many species of fish, sharks and cetaceans in the area, some of which are threatened, that breed and/or forage in this EBSA (Hay et al., 1997, Holtzhausen 2003, Paterson 2007).

Habitat heterogeneity is high, with 15 habitats present in the EBSA. These include representation of two threatened ecosystem types: the Endangered Kunene Outer Shelf, and Vulnerable Kunene Shelf Edge. These threat statuses were determined by assessing the weighted cumulative impacts of various pressures (e.g., extractive resource use, pollution, development and others) on each ecosystem type for Namibia and Angola (Table in the Other relevant website address or attached documents section; Holness et al., 2014).

Feature conditions and future outlook of the proposed area

Due to the remoteness of the Namibe focus area, limited human impacts (apart from current mining/prospecting) on the marine and coastal areas have resulted in this area being relatively pristine. However, threats to the pristine nature of this ecologically important area include industrial interests upstream of the Kunene River mouth (including proposals to dam the river for power generation) and recent increases in fishing, mining and tourism interests on both sides of the Kunene River mouth (Simmons et al., 1993, Paterson 2007). The Namibian portions of the area are generally in good condition, although most of the Angolan area is in fair ecological condition, primarily due to the high intensity of artisanal and commercial fishing taking place there (Holness et al., 2014). Consequently, 63% of the overall area has been identified as being in fair ecological condition, and 25% in good condition.

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Assessment of the area against CBD EBSA criteria

C1: Uniqueness or rarity High

Justification

The Namibe area is unique in the sense that it is the only sheltered, predominantly marine, sandy bay with a link to a perennial river for a 1500 km stretch along the Namibian coast and a 200 km stretch along the Angolan coast (Simmons et al., 2006). Being both geographically and biologically isolated, this area is ranked amongst the most threatened in Namibia (Simmons et al., 1993, Carter and Bickerton 1996, Barnard and Curtis 1998, Bethune 1998, De Moor et al., 2000) and supports reptilian fauna unique to Southern Africa (Kolberg & Simmons 1998). Furthermore, the Kunene wetland is globally unique as it is the only freshwater input area that is located adjacent to an upwelling cell, viz. the Kunene upwelling cell, and wedged within the longitudinal range of a warm-cold water frontal system, i.e., the Angola-Benguela frontal system (Lutjeharms & Meeuwis 1987, Paterson 2007).

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

Justification

The Namibe wetlands serve as resting grounds for Palearctic migratory birds that use the area to build up energy reserves during their seasonal migrations (Simmons et al., 1993). The area (particularly Tigres Island) also serves as the breeding site for several bird species (Simmons et al., 2006, Simmons 2010). In addition to a colony of Cape fur seals, a number of other marine mammals (in particular Heaviside's dolphins, long-finned pilot whales, bottlenose dolphins, beaked whales and Atlantic humpback dolphins) have also been recorded in the general area (Dyer 2007, Paterson 2007). However, little research has been done on cetaceans there, and they are currently considered to be only transient visitors to the area (Paterson 2007). Namibe is very important for green turtles, with high densities of these animals known to occur in the area, which also represents the southern-most distribution of the species along the African west coast (Carr & Carr 1991, Griffin and Channing 1991, Carter & Bickerton 1996, Branch 1998, Griffin 2002, Fretey 2001, Paterson 2007). Furthermore, Namibe is an important spawning area for many marine fish species found along the northern and central Namibian coast (Hay et al., 1997, Holtzhausen 2003).

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

Justification

The EBSA contains portions of two threatened habitats, assessed by determining the weighted cumulative impacts of various pressures (e.g., extractive resource use, pollution, development and others) on each ecosystem type for Namibia and Angola (Table in the Other relevant website address or attached documents section; Holness et al., 2014): the Endangered Kunene Outer Shelf, and Vulnerable Kunene Shelf Edge. Further, the Kunene-Tigres area (including the island, the bay, the river mouth and adjacent marine environment) supports threatened and/or regionally endemic bird species – in particular the Great White Pelican: *Pelecanus onocrotalus*, Cape Cormorant: *Phalacrocorax capensis*, Lesser Flamingo: *Phoeniconaias minor*, African Black Oystercatcher: *Haematopus moquini*, Hartlaub's Gull: *Chroicocephalus hartlaubii*, Caspian Tern: *Hydroprogne caspia* and Damara Tern: *Sternula balaenarum* (Barnard & Curtis 1998, Anderson et al., 2001, Simmons et al., 2006, Simmons et al., 2015). Cetaceans that are endemic to the region (e.g., Heaviside's dolphin: *Cephalorhynchus heavisidii*), or are threatened (e.g., the Vulnerable sperm whale, *Physeter microcephalus*; OBIS 2017) also make use of this area during their life cycles (Paterson 2007). Other threatened species in the area include the fish and chondrichthian species: *Squatina oculata* and *Squatina aculeate* (Critically Endangered); *Argyrosomus hololepidotus*, *Rostroraja alba*, and *Sphyrna lewini* (Endangered); and *Thunnus obesus*, *Mustelus mustelus*, *Rhinobatos albomaculatus*, *Oxynotus centrina*, *Oreochromis macrochir*, and *Centrophorus squamosus* (Vulnerable; OBIS, 2017). The resident

edible freshwater prawn: *Macrobrachium vollehovenii* is also believed to be geographically, ecophysiological and morphologically distinct here due to the physical characteristics of the Kunene River mouth (Carter and Bickerton 1996, Patterson 2007). Large aggregations of green turtles, *Chelonia mydas*, found in the area further support the significance of the area in relation to this EBSA criterion; Vulnerable olive ridley turtles, *Lepidochelys olivacea*, are also present. This criterion is ranked as medium because the cetaceans listed are probably non-resident here, and there are other areas along the Namibian coast that are considered more important in terms of supporting threatened and endemic bird species.

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

Justification

The EBSA is largely underpinned by the influence of the Kunene River. Consequently, there is a moderate level of vulnerability and sensitivity to disturbance because changes to the freshwater outflow could result in significant changes to the ecosystems it influences by altering sediment delivery, salinity and nutrient concentrations. The vulnerability of the site to changes in productivity is, in part, buffered by the numerous other features that also contribute to productivity in the area, including the upwelling cell and the seamounts and canyons. The Kunene wetlands are believed to be vulnerable to environmental change mainly as a result of anthropogenic stress from activities such as fishing, mining and industrial development (Schneider & Miller 1992; Simmons et al., 1993; De Moor et al., 2000; Paterson 2007). The species at the site include turtles, cetaceans, sharks, seals and birds that are sensitive to declines in population abundance, and would be slow to recover from impacts.

Historically, dams constructed along the upper reaches of the Kunene River (six in total) have not had significant negative impacts on the flow characteristics of the river and naturalness of the adjacent wetland (Paterson 2007). This may be linked to the fact that the six dams have never been in operation at the same time due to structural damages sustained during the historic civil unrest in the region. This, however, may change as there is a proposal for a new hydroelectric dam to be built in the vicinity of the Epupa Falls (Dentlinger 2005), and potential still exists for the renovation of the existing six dams (Paterson 2007). Limited fishing occurs in the area that poses threats to vulnerable species such as green turtles (which are often targeted by small military contingents near the Kunene River mouth) and marine mammals, which can get entangled in gillnets used by the fishers on the Angolan side of the border (Paterson 2007). On the Namibian side, diamond mining poses a threat to the area; prospecting taking place some 10 km south of the Kunene River mouth (Schneider & Miller 1992; Paterson 2007). There has also been a proposal for a deepwater harbour at one of two locations (viz. Cape Fria or Angra Fria), which are located roughly 160 and 130 km south of the Kunene River mouth, respectively (Paterson 2007). There have also been calls for the investigation of aquaculture viability at the Kunene River mouth, focusing on the edible freshwater prawn that is resident to the area (Paterson 2007). Furthermore, limited tourism interests are already established on the Namibian side and with tourism gaining momentum on the Angolan side, this industry could also pose a threat to the naturalness of the area if not properly regulated (Simmons et al., 2006, Paterson 2007).

C5: Biological productivity High

Justification

The Namibe area is considered to be productive due to its unique geographical location. It is situated within the moderately strong Kunene Upwelling Cell, within the longitudinal range of the Angolan-

Benguela frontal system (Lutjeharms & Meeuwis 1987, Paterson 2007), and at the mouth of one of only two perennial rivers in Namibia. The nutrients carried by the Benguela Current are supplemented by nutrient inputs from the Kunene River, providing a rich food supply that supports a diverse fish community in the area (Paterson 2007). In addition, the EBSA contains ecosystems that are characteristically associated with relatively higher productivity, including wetlands, seamounts and canyons. Jointly, this collection of productive features results in a site of high productivity that in turn provides foraging areas for several species, including seals, birds and turtles that breed or rest in the coastal areas (e.g., Simmons et al., 2006; Dyer 2007; Simmons 2010), as well as supporting many fish species that spawn in the area (Paterson 2007).

C6: Biological diversity High

Justification

Habitat heterogeneity in Namibe is high, with 15 distinct ecosystem types present in the EBSA (Holness et al., 2014). The Namibe wetlands also support a high diversity of species, including terrestrial, freshwater and marine fauna (Paterson 2007). Over and above freshwater and marine reptiles (e.g., Nile soft-shelled terrapin, Nile crocodile, green turtle and Nile monitor), and cetaceans, the area also supports a large colony of Cape fur seals (Griffin & Channing 1991, Simmons et al., 1993, Carter & Bickerton 1996, Patterson 2007). The Kunene river mouth is also one of Namibia's most diverse bird areas, with a total of at least 119 bird species (including 8 resident waders, 22 palearctic waders, 32 wetland-, 19 marine- and 38 non-wetland bird species; Ryan et al., 1984, Braine 1990, Simmons et al., 1993, Anderson et al., 2001, Paterson 2007). In terms of ichthyofauna, 65 freshwater fish species (five of which are endemic to the area) and 19 marine fish species have been recorded in Namibe (Hay et al., 1997, Holtzhausen 2003, Paterson 2007).

C7: Naturalness Medium

Justification

In Namibia, human impacts on the Namibe area have been limited due to its remoteness. However, historic and current fishing activities, combined with dam construction, mining and prospecting activities in and around the area have had some impacts on the local naturalness (Simmons et al., 1993, De Moor et al., 2000, Paterson 2007). Much of the Angolan area was identified as being in fair ecological condition by Holness et al. (2014) largely due to the high intensity of artisanal and commercial fishing. Consequently, overall 63% of the area is in fair ecological condition and 25% in good condition.

Other relevant website address or attached documents

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

Threat Status	Ecosystem Type	Area (km ²)	Area (%)
Endangered	Cunene Outer Shelf	919.6	6%
Vulnerable	Cunene Shelf Edge	601.9	4%
	Tombua Estuarine Shore	3.8	0%
	Tombua Inshore	56.6	0%
	Tombua Mixed Shore	0.5	0%
	Tombua Reflective Sandy Beach	22.1	0%
	Tombua Sheltered Rocky Shore	2.4	0%
Least Threatened	Cunene Dissipative-Intermediate Sandy Beach	11.6	0%
	Cunene Estuarine Shore	6.2	0%
	Cunene Inner Shelf	2,220.9	15%
	Cunene Inshore	655.8	4%
	Cunene Intermediate Sandy Beach	56.6	0%
	Cunene Island	860.6	6%
	Cunene Lagoon Coast	5.1	0%
	Cunene Low-energy Reflective Sandy Beach	14.3	0%
	Cunene Lower Slope	3,720.9	25%
	Cunene Mixed Shore	28.5	0%
	Cunene Reflective Sandy Beach	57.6	0%
	Cunene Shelf	2,443.9	16%
	Cunene Upper Slope	3,112.2	21%
	Namibe Shelf	148.4	1%
	Namibe Shelf Edge	61.4	0%
	Namibe Upper Slope	25.9	0%
	Tombua Intermediate Sandy Beach	5.7	0%
	Tombua Low-energy Reflective Sandy Beach	12.8	0%
Grand Total		15,055.4	100%

Status of submission

The Kunene – Tigres EBSA was recognized as an area meeting EBSA criteria that were considered by the Conference of the Parties. The revised name, description and boundaries have been submitted to the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) for consideration by the Conference of the Parties to the Convention on Biological Diversity

COP Decision

dec-COP-12-DEC-22

End of proposed EBSA revised description

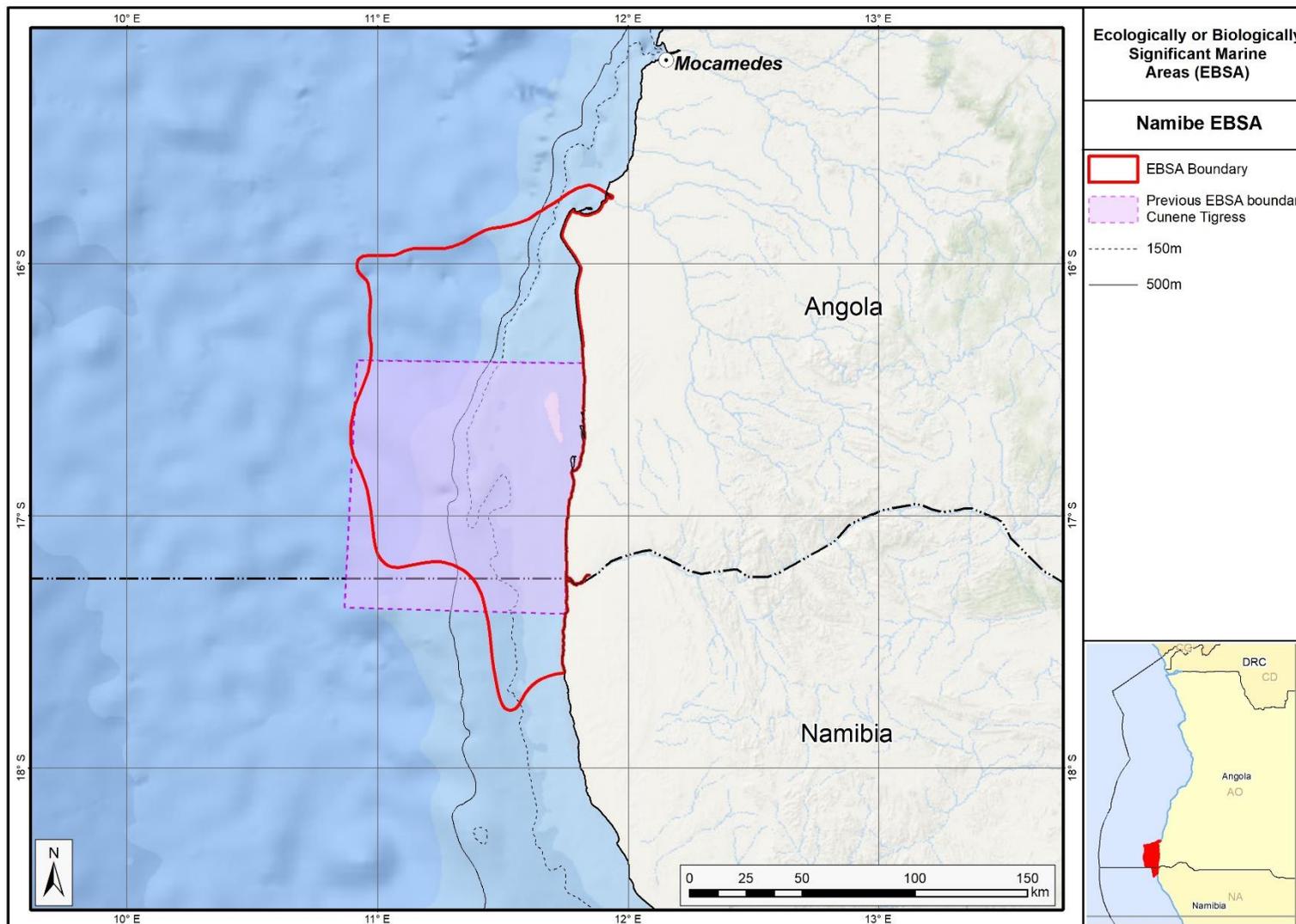
Motivation for Revisions

Revisions to the Namibian portion of the EBSA are largely a slight refinement of the boundaries, editing and formatting of the description, updates on references, and addition of some quantitative data from the from the BCC spatial mapping project (Holness et al., 2014). The original EBSA description was revised and updated with the latest research and biodiversity information from OBIS. The changes in Angola are more significant and are linked to the extension of the boundary to match that of the terrestrial Iona National Park and include significant offshore features such as canyons and seamounts. The overall motivation for the EBSA and the criteria ranks remain largely the same. The proposed name change from Kunene-Tigres to Namibe reflects the change in overall geographical footprint of the EBSA.

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

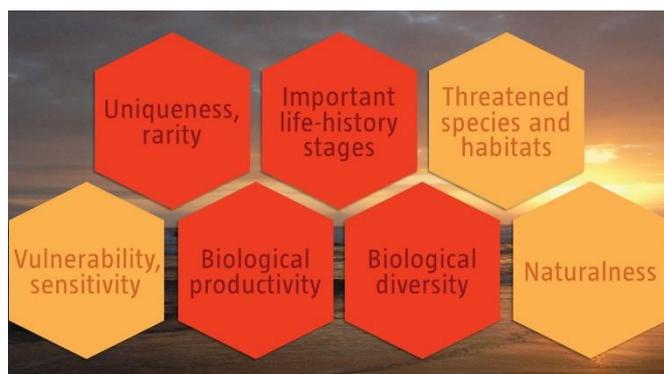
- Threatened Benthic and Coastal Ecosystems. The analysis focussed on the inclusion of the most threatened ecosystem types found in the area. These types are highlighted in the table in the Other relevant website address or attached documents section. Key threatened ecosystem types were the endangered Cunene Outer Shelf, and numerous vulnerable types including Cunene Shelf Edge, Tombua Estuarine Shore, Tombua Inshore, Tombua Mixed Shore, Tombua Reflective Sandy Beach and Tombua Sheltered Rocky Shore. Delineations and ecosystem threat status from Holness et al. (2014).
- Areas of high relative naturalness identified in the SCP undertaken for the BCLME by Holness et al. (2014).
- Key physical features such as canyons, areas in proximity to islands, and some small seamounts from the BCC spatial mapping project (Holness et al., 2014), GEBCO data, and global benthic geomorphology mapping (www.bluehabitats.org, Harris et al., 2014).
- 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).
- Some additional manual editing of the northern boundary of the EBSA was undertaken to align with the boundaries of Iona National Park.

The revised boundaries of the EBSA were validated at a series of national (in both Angola and Namibia) and regional (BCC) meetings.



The revised Namibe EBSA in relation to the original Kunene-Tigres EBSA.

Status Assessment and Management Options

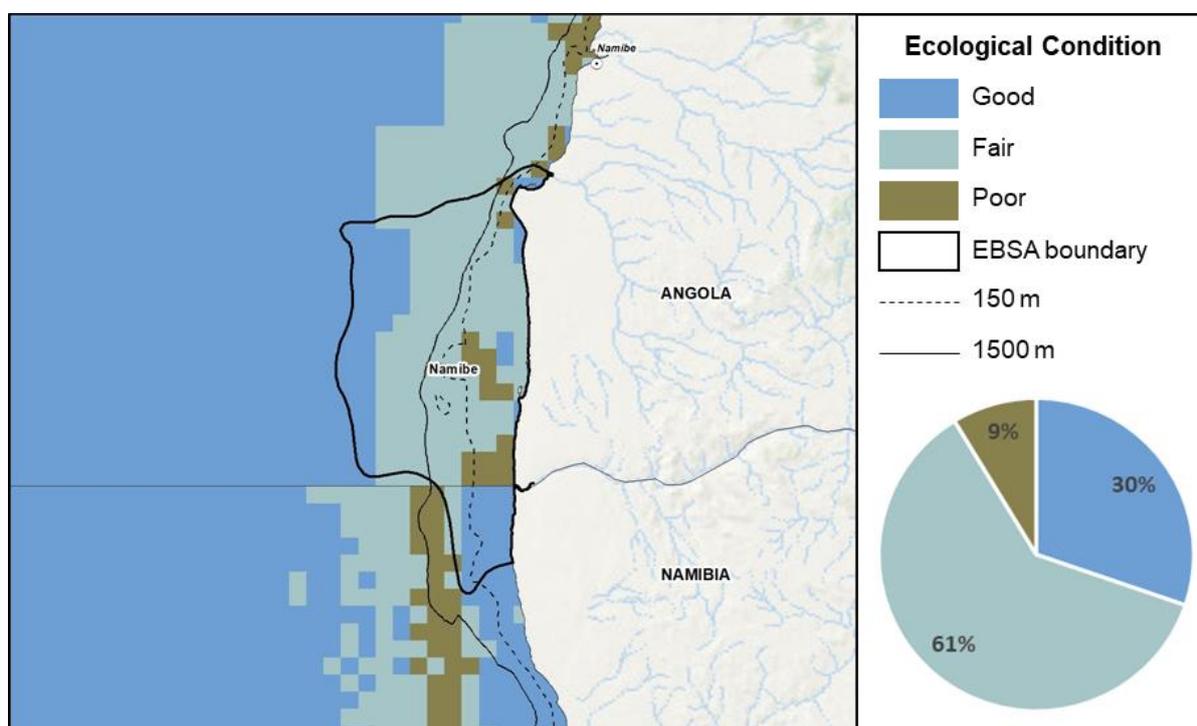


Namibe is a transboundary area of elevated productivity resulting from the outflow of the Kunene River into the ocean, a lagoon at the river mouth, seamounts, canyons, and the Tigres island-bay complex – all unique or rare features. It comprises a highly diverse collection of species and habitats in very close proximity, many of which are also threatened. The EBSA also supports key life-history stages of many species.

EBSA criteria coloured by rank for Namibe: red=high, orange=medium.

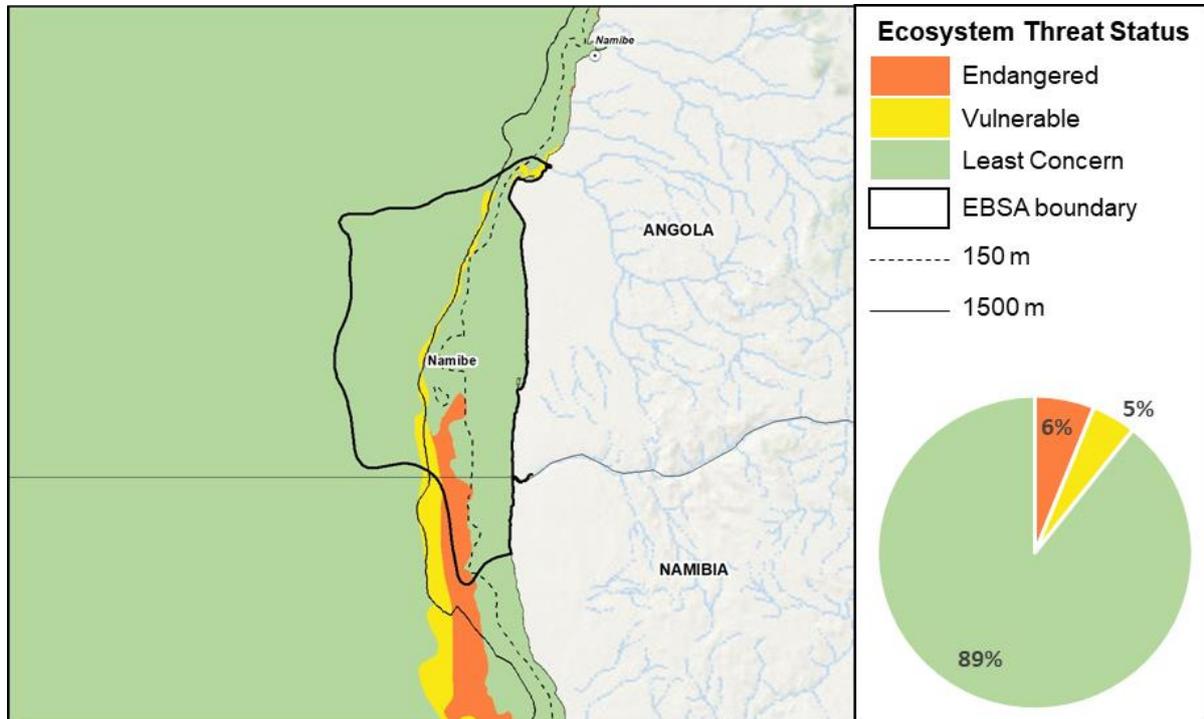
Ecological Condition, Threat Status, Current Protection and Key Features in the EBSA

Namibe is a transboundary EBSA between Angola and Namibia that has a myriad of features and ecosystem types that need to be protected for the area to maintain the characteristics that give it its EBSA status. The criteria for which this EBSA ranks highly are: uniqueness and rarity; importance for life-history stages; biological productivity; and biological diversity. There are nine different ecosystems represented which includes various shore and shelf types, and the EBSA includes key features such as the Kunene River mouth and associated lagoon, the Tigres Island-Bay complex, seamounts and canyons. Namibe comprises a highly diverse collection of species and habitats in very close proximity, many of which are also threatened, with unique and other features that promote high productivity. In turn this drives importance of the area for supporting the life-histories of key species, such as providing foraging, breeding and resting habitats for seals, fish, turtles, and migratory and resident birds.

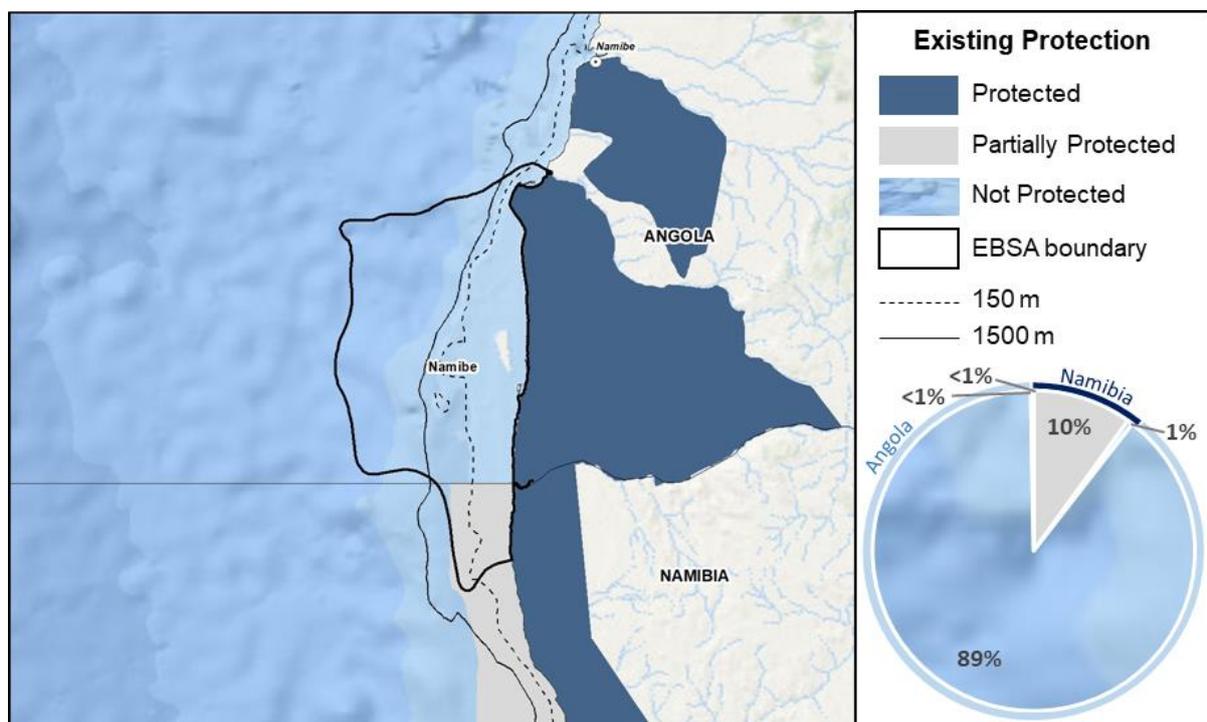


Namibe proportion of area in each ecological condition category.

Namibe is in good (30%) to fair (61%) ecological condition, with only 9% considered to be in poor ecological condition. Seven of the nine ecosystem types represented are Least Concern, which comprise 89% of the EBSA extent. There are two threatened ecosystem types: the Endangered Cunene Outer Shelf and Vulnerable Cunene Shelf Edge that respectively comprise 6% and 5% of the EBSA. These are located on the outer shelf to shelf edge between -150 m and -1500 m, mainly in the south. Five ecosystem types are Well Protected, three are Moderately Protected, and one is Not Protected.



Namibe proportion of area in each ecosystem threat status category.



Namibe proportion of area in a Marine Protected Area (MPA).

There are no MPAs in the area; however, the entire EBSA extent is contiguous with terrestrial reserves in both countries: Iona National Park in Angola, and Skeleton Coast National Park in Namibia. The majority of the EBSA is not protected (89%), but there is partial protection through inshore trawl restrictions in the Namibian section of the EBSA (10% of the EBSA extent).

Threat status, protection level and ecological condition of ecosystem types in the EBSA. Other key features are also listed.

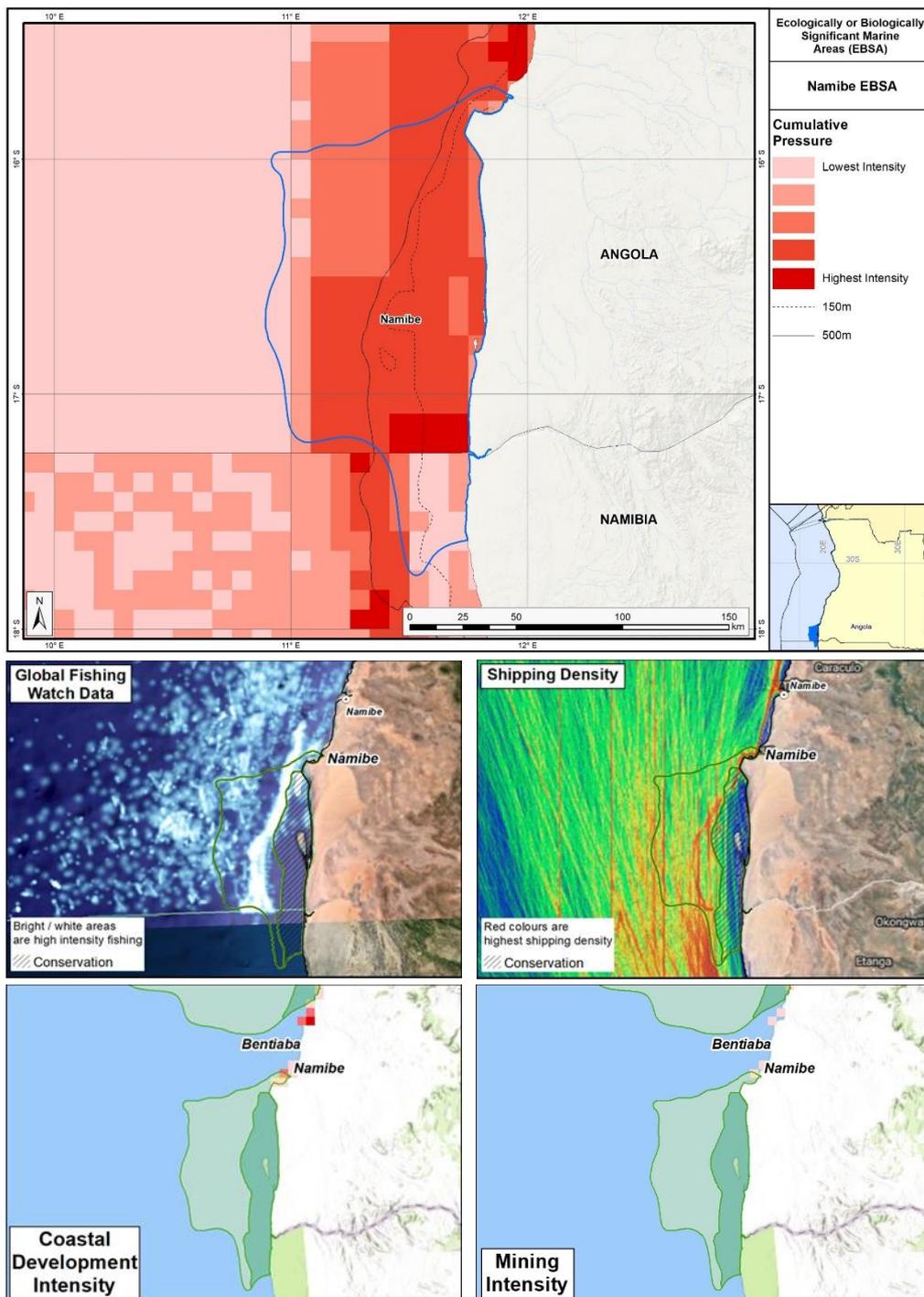
Feature	Threat Status	Protection Level	Condition (%)		
			Good	Fair	Poor
Ecosystem Types					
Cunene Dissipative-Intermediate Sandy Beach	LC	WP	100.00	0.00	0.00
Cunene Estuarine Shore	LC	WP	100.00	0.00	0.00
Cunene Inner Shelf	LC	MP	99.82	0.18	0.00
Cunene Inshore	LC	MP	100.00	0.00	0.00
Cunene Intermediate Sandy Beach	LC	WP	100.00	0.00	0.00
Cunene Mixed Shore	LC	WP	100.00	0.00	0.00
Cunene Outer Shelf	EN	MP	47.10	46.29	6.60
Cunene Reflective Sandy Beach	LC	WP	100.00	0.00	0.00
Cunene Shelf Edge	VU	NP	0.00	0.00	100.00
Other Features					
<ul style="list-style-type: none"> • Coastal wetlands associated with the Tigres Island-Bay complex • Numerous bird species • Lagoon associated with the Kunene River mouth • Cape fur seals • Turtles • Cetaceans • Fish spawning areas • Kunene Upwelling Cell 					

Given that this is a transboundary EBSA shared between Angola and Namibia, the analysis of pressures and EBSA management is done separately per country to account for the differences in types of pressures and national management options. The following sections are thus repeated, first for Angola and then Namibia.

Relevant Pressures and Activities (impact, extent): Angola

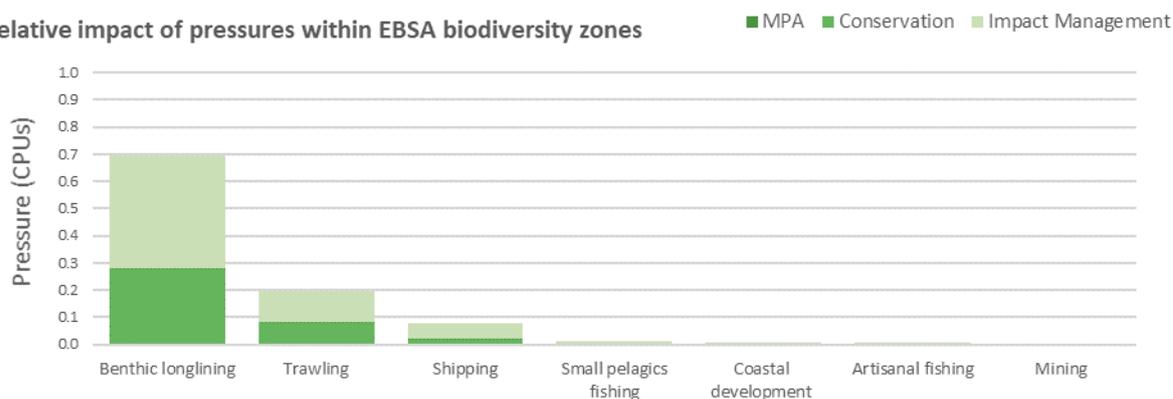
- There are 12 pressures present in this EBSA, of which shipping is the only one that covers the entire EBSA extent.
- Of these 12 pressures, seven are present in the Angolan portion of the EBSA, including: benthic longlining, trawling, shipping, small pelagics fishing, coastal development, artisanal fishing and mining, with the highest cumulative pressure intensity just north of the Kunene River mouth. The footprint of these activities is largely in the Impact Management Zone. Benthic longlining and trawling have the highest pressure profile in the EBSA.

- These seven activities will need to be managed particularly well in order to protect the estuarine habitat for associated birds, and offshore ecosystem types, nursery habitats, and fish assemblages for which this EBSA is recognised. Given the critical role of the estuary in Namibe, activities upstream of the estuary will also need to be managed, e.g., to limit impacts of flow reduction caused by damming and abstraction, but this is beyond the scope of EBSA management and MSP.
- Activities that take place in Angola but are not present in the EBSA include: pelagic longlining, oil and gas activities.



Map of cumulative pressure (top) and maps of the four most important pressures (activities) in the EBSA and surrounds. Darker reds indicate higher pressure intensity.

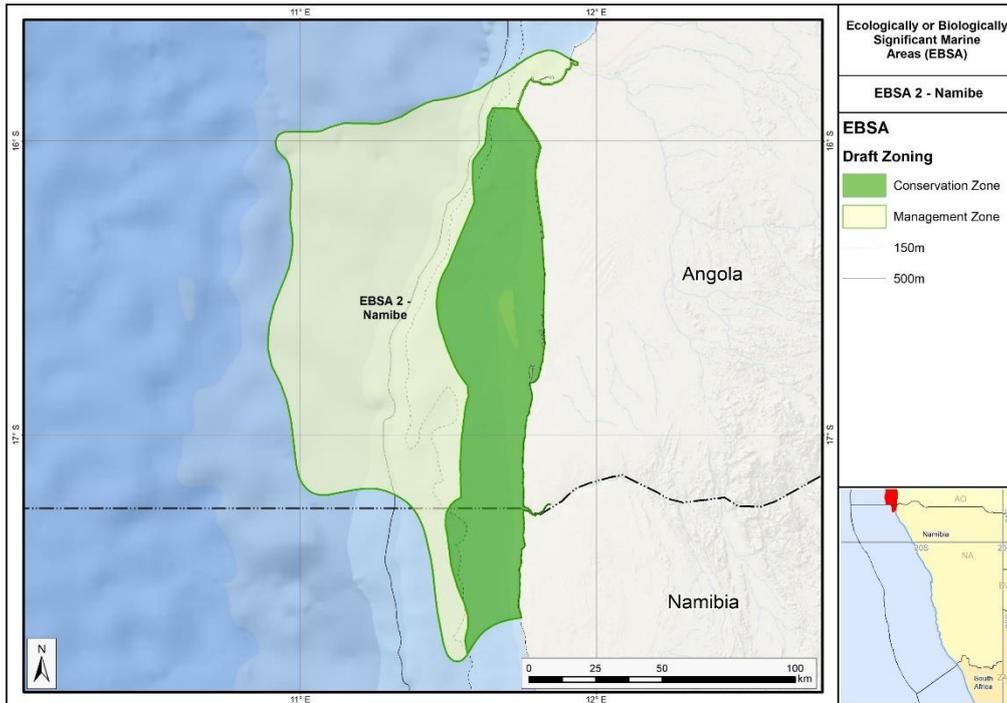
Relative impact of pressures within EBSA biodiversity zones



Pressure (in arbitrary cumulative pressure units, CPUs) summed for each pressure in the EBSA, per proposed EBSA biodiversity zone, ranked left (highest) to right (lowest) by the overall relative importance of pressures in this EBSA. Note that pressures from coastal development to mining each comprise <1% of the EBSA pressure profile.

Management Interventions Needed for the EBSA

Improved place-based protection of EBSA features should be pursued. In support of this, the EBSA is divided into a Conservation Zone and an Impact Management Zone, both comprising several areas within the EBSA. The aim of the Conservation Zone is to secure core areas of key biodiversity features in natural / near-natural ecological condition. Strict place-based biodiversity conservation is thus directed at securing key biodiversity features in a natural or semi-natural state, or as near to this state as possible. Activities or uses that have significant biodiversity impacts should be prohibited. Where possible and appropriate these areas should be considered for formal protection e.g., Marine Protected Areas or other effective area-based conservation measures (OECM). The aim of the Impact Management Zone is to manage negative impacts on key biodiversity features where strict place-based measures are not practical or not essential. In this zone, the focus is management of impacts on key biodiversity features in a mixed-use area, with the objective to keep biodiversity features in at least a functional state. Activities or uses which have significant biodiversity impacts should be strictly controlled and/or regulated. Within this zone, there should be no increase in the intensity of use or the extent of the footprint of activities that have significant biodiversity impacts. Where possible, biodiversity impacts should be reduced. As far as possible, the Conservation Zone was designed deliberately to avoid conflicts with existing activities.



Proposed zonation of the EBSA into Conservation (dark green) and Impact Management (light green) Zones.

Protection of features in the Conservation Zone may require additional Marine Protected Area declaration/expansion. Other effective conservation measures should also be applied via Marine Spatial Planning to ensure that the existing activities/uses are appropriately controlled to ensure compatibility of activities with the environmental requirements for achieving the management objectives of the EBSA Conservation and Impact Management Zones. Further, no new pressures should be extended into the Conservation Zone, even if they currently occur in the Impact Management Zone of the EBSA.

Recommended compatibility (consent¹ or prohibited²) of activities currently present in the EBSA³ in the Conservation and Impact Management Zones

Uses (including activities and pressures)	Conservation Zone: EBSA areas requiring strictest protection	Impact Management Zone: Other EBSA Areas requiring some protection or place-specific management
Artisanal fishing	Consent	Consent
Trawling	Prohibited [^]	Consent
Benthic longlining	Prohibited [^]	Consent
Mining	Prohibited [^]	Consent
Small pelagics fishing	Prohibited [^]	Consent

¹Consent: An activity which can continue in this zone subject to specific regulation and control.

²Prohibited: An activity which is not allowed or should not be allowed because it is incompatible with maintaining the biodiversity objectives of the zone.

[^]Not present in zone.

[^]Need to check whether activity is legitimately present in the Conservation Zone or if it is artificially present because of the coarse data resolution; if legitimately present, Consent or revise zone to exclude activity in some cases; if no, Prohibited.

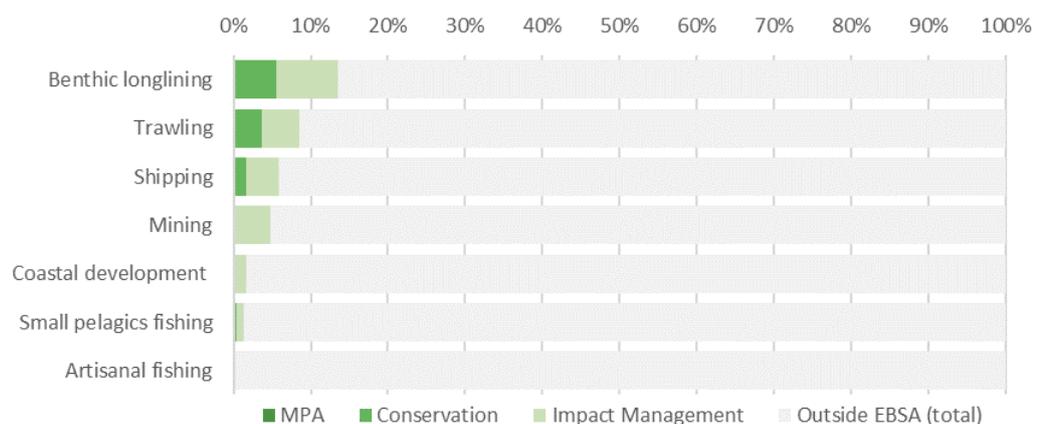
³Note that activities present in Angola that are not relevant to the EBSA have been excluded from the table (e.g., the harvested species does not occur in the area; or the industry operates at a depth outside the depth range of the EBSA).

Furthermore, no new activities that can negatively impact the environment should be allowed in the EBSA, and some activities present in the EBSA do not need to be managed by EBSA zoning and can continue as per the current regulations. There are also some pressures on biodiversity features within the EBSA that originate from activities outside of these EBSA or beyond the jurisdiction of MSP. In support of maintaining the ecological integrity of and benefits delivered by the key biodiversity features, these other activities need to be appropriately managed by complementary initiatives.

Recommendations for other activities outside the EBSA or the MSP management jurisdiction.

Activities that are present but not managed by EBSA zones that can continue as per current regulations	
Shipping	
Activities that are currently not present in the EBSA and should be Prohibited in the future	
Oil and gas activities	Pelagic longlining
Other activities beyond the jurisdiction of MSP that directly influence the ecological condition of the EBSA that should be managed appropriately under other appropriate legislation.	
Coastal development (e.g., implementation of appropriate setback lines)	
Coastal disturbance (e.g., formalising access points; rehabilitating degraded dunes; appropriate zoning of bathing and watercraft activities, etc)	
Mean annual runoff reduction (e.g., determining and implementing freshwater flow requirements and estuarine management plans)	
Biodiversity Management Plans (possibly including monitoring programmes) for the seals, turtles, cetaceans, and potentially some of the birds	

Activity Evaluation Per Zone: Zoning Feasibility



Proposed zonation of the EBSA, with the cumulative intensity footprint of activities within the EBSA (sorted highest to lowest) given relative to the national footprint of those activities to illustrate feasibility of management interventions.

Confirmation is required from the fishing and mining sectors as to the precise footprint of the activities that, in turn, could affect the management recommendations. In principle, the non-destructive fishing practices (benthic longlining and small pelagics fishing) are recommended to be Consent activities in the zones where they are currently present, and Prohibited in the zones where they are not currently present. Accommodating these activities is most important for benthic longlining because almost 15% of the national footprint of this activity is within the EBSA. For destructive fishing, i.e., trawling, this activity is not compatible with the management objectives of the EBSA Conservation Zone and it is recommended to be Prohibited. If it is currently present in the Conservation Zone, it is recommended that the zone boundary be modified to accommodate the activity in the Impact Management Zone, where it is recommended to be a Consent activity. Note that less than 10% of the national trawling footprint is present in the EBSA. Mining is also a destructive activity, and is similarly recommended to be Prohibited in the Conservation Zone and permitted as a Consent activity in the Impact Management Zone if it currently is present in that zone. Acknowledging the contribution of artisanal fishing to coastal households in the area surrounding the EBSA, this activity is accommodated in the EBSA zonation and is recommended to continue in both EBSA zones as a Consent activity. Note that artisanal fishing in the EBSA comprises only a very small proportion of the national footprint. Shipping is recommended to continue under current general rules and legislation. Thus, the EBSA zonation has no or minimal impact on the national footprint for the listed marine activities.

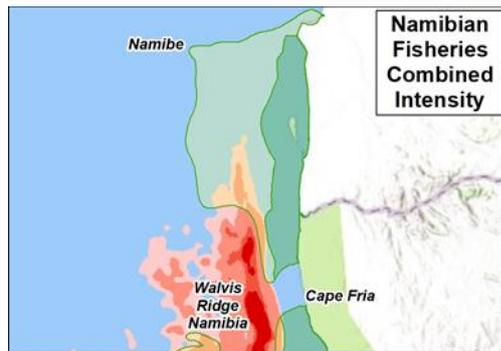
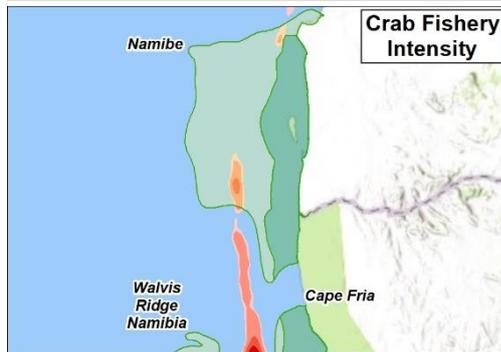
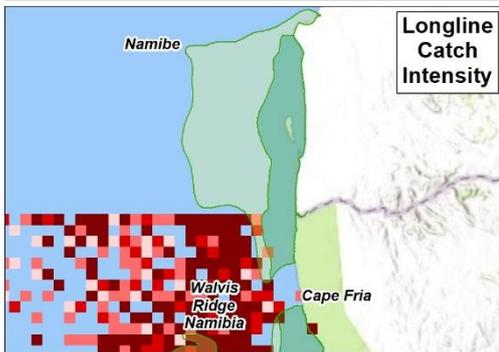
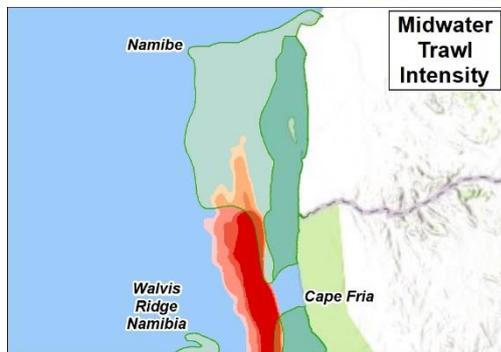
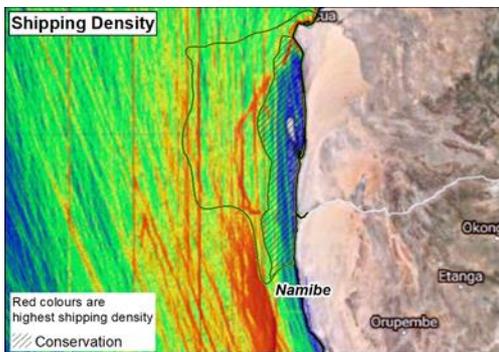
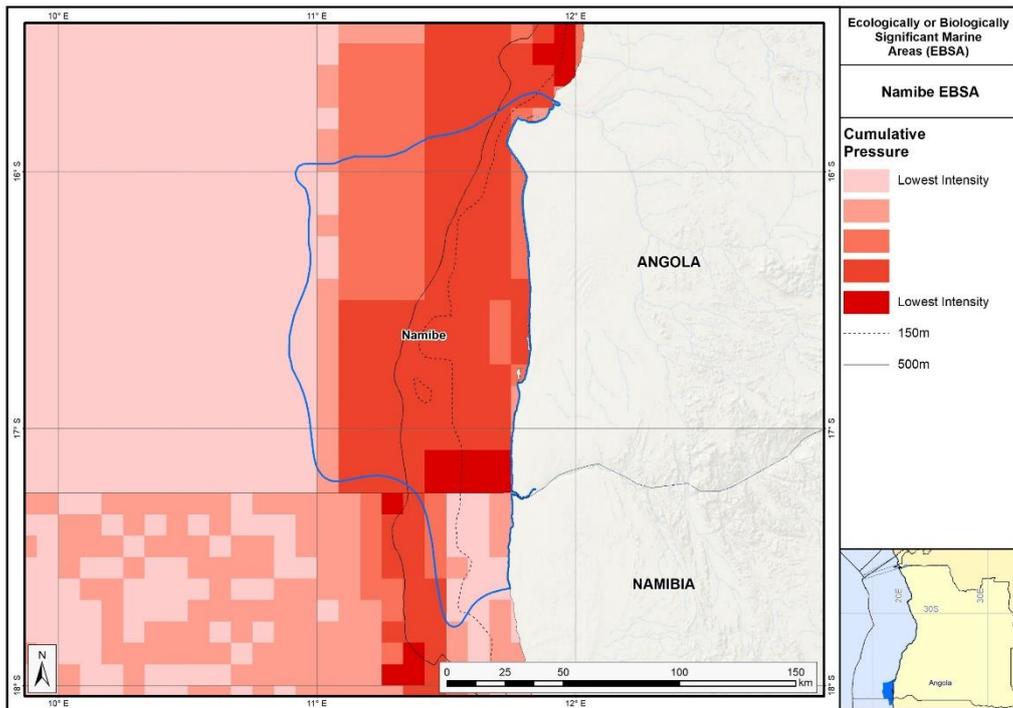
There are also several activities that are largely outside the EBSA but have downstream impacts to the biodiversity within the EBSA, e.g., from mean annual runoff reduction, coastal development, coastal disturbance, and wastewater discharge. The impacts should be managed, but principally fall outside the direct management and zoning of the EBSA. These existing activities are proposed as Consent activities for both EBSA zones, recognising that they should ideally be dealt with in complementary integrated coastal zone management in support of the EBSA. For example, rehabilitation of degraded dunes and formalising access points could support improved habitat for nesting shorebirds, and enhanced benefits for coastal protection during storm surges. Similarly, improved estuary management through development of appropriate freshwater flow requirements, estuarine management plans and wastewater management regulations can improve the ecological condition of the surrounding marine environment, in turn, improving water quality and safe conditions for human recreation. It is also recommended to consider developing and implementing Biodiversity Management Plans for the iconic/top predator species, e.g., seals, turtles, cetaceans and some of the seabirds and shorebirds in support of securing the biodiversity features for which the EBSA is recognised, where these are not already in place.

Relevant Pressures and Activities (impact, extent): Namibia

- Of the 12 pressures present in this EBSA, five are present in the Namibian portion, including: shipping, midwater trawling (horse mackerel), pelagic longlining, commercial hake trawling, and crab harvesting, with the highest cumulative pressure intensity on the shelf edge. The footprint of these activities is largely in the Impact Management Zone, with higher intensities of fishing and shipping outside of the EBSA.
- These activities will need to be managed particularly well in order to protect the estuarine habitat for associated birds and offshore ecosystem types, nursery habitats, and fish assemblages for which this EBSA is recognised. Given the critical role of the estuary in Namibe, activities upstream

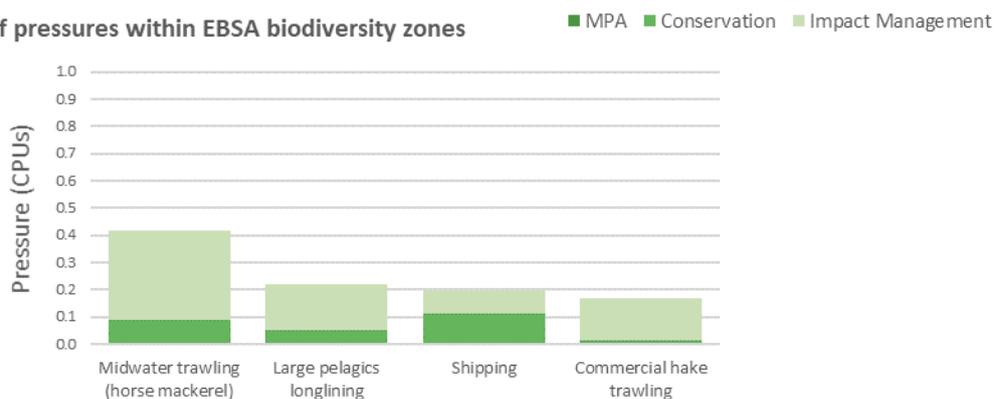
of the estuary will also need to be managed, e.g., to limit impacts of flow reduction caused by damming and abstraction, but this is beyond the scope of EBSA management and MSP.

- Activities that take place in Namibia but are not present in the EBSA include: mining and salt mining, coastal development, monkfish fishing, line fishing, lobster harvesting, mariculture, oil and gas activities, tuna pole fishing, and seal harvesting. Note that small pelagics fishing used to be a key pressure in this area, but is no longer an active industry in Namibia.
- Note also that this assessment of pressures is based on existing data. Where new, finer scale data have since become available, these are presented below (e.g., for shipping and combined fisheries) to enable more accurate recommendations for management of activities. Also, there are some emerging activities and activities for which no spatial data are available that are not included here, but are considered in the management recommendations for the EBSA, based on expert and industry information.



Map of cumulative pressure and maps of the six most important pressures (activities) in the EBSA and surrounds. Darker reds indicate higher pressure intensity.

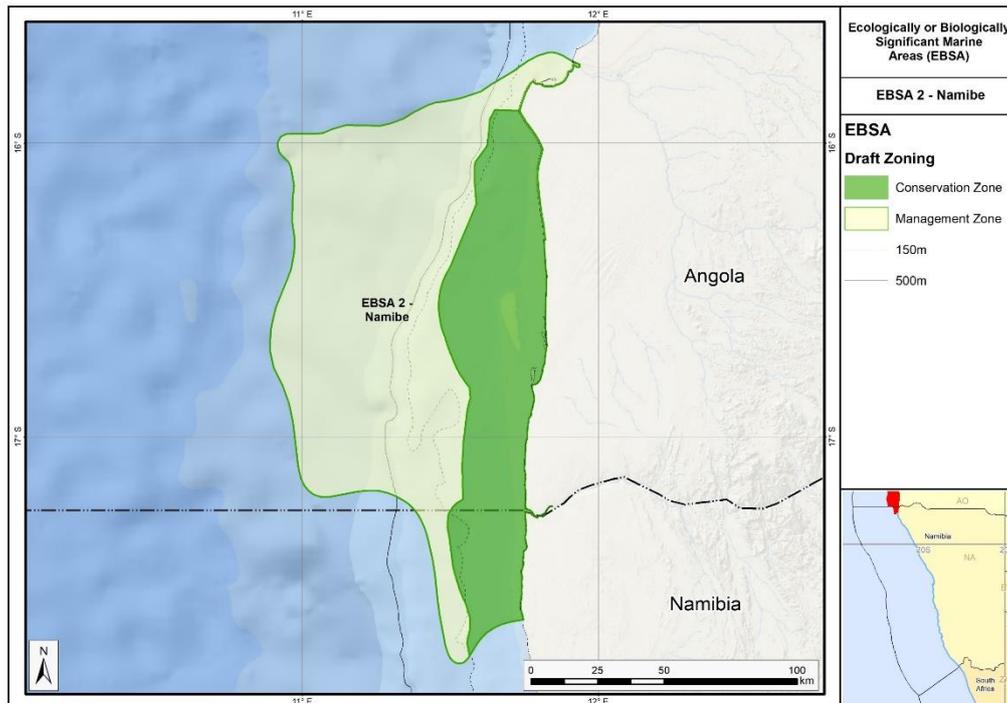
Relative impact of pressures within EBSA biodiversity zones



Pressure (in arbitrary cumulative pressure units, CPUs) summed for each pressure in the EBSA, per proposed EBSA biodiversity zone, ranked left (highest) to right (lowest) by the overall relative importance of pressures in this EBSA.

Management Interventions Needed for the EBSA

Improved place-based protection of EBSA features should be pursued. In support of this, the EBSA is divided into a Conservation Zone and an Impact Management Zone, both comprising several areas within the EBSA. The aim of the Conservation Zone is to secure core areas of key biodiversity features in natural / near-natural ecological condition. Strict place-based biodiversity conservation is thus directed at securing key biodiversity features in a natural or semi-natural state, or as near to this state as possible. Activities or uses that have significant biodiversity impacts should be prohibited. Where possible and appropriate these areas should be considered for formal protection e.g., Marine Protected Areas or other effective area-based conservation measures (OECM). The aim of the Impact Management Zone is to manage negative impacts on key biodiversity features where strict place-based measures are not practical or not essential. In this zone, the focus is management of impacts on key biodiversity features in a mixed-use area, with the objective to keep biodiversity features in at least a functional state. Activities or uses which have significant biodiversity impacts should be strictly controlled and/or regulated. Within this zone, there should be no increase in the intensity of use or the extent of the footprint of activities that have significant biodiversity impacts. Where possible, biodiversity impacts should be reduced. As far as possible, the Conservation Zone was designed deliberately to avoid conflicts with existing activities. Note that there are no marine protected areas in this EBSA; however, in Namibia it borders the terrestrial Skeleton National Park, and there is partial protection of the coastal marine environment conferred through inshore trawl restrictions.



Proposed zonation of the EBSA into Conservation (dark green) and Impact Management (light green) Zones.

Protection of features in the Conservation Zone may require additional Marine Protected Area declaration/expansion. Other effective conservation measures should also be applied via Marine Spatial Planning to ensure that the existing activities/uses are appropriately controlled to ensure compatibility of activities with the environmental requirements for achieving the management objectives of the EBSA Conservation and Impact Management Zones. Further, no new pressures should be extended into the Conservation Zone, even if they currently occur in the Impact Management Zone of the EBSA.

Recommended compatibility (consent¹ or prohibited²) of activities currently present in the EBSA³ in the Conservation and Impact Management Zones

Uses (including activities and pressures)	Conservation Zone: EBSA areas requiring strictest protection	Impact Management Zone: Other EBSA Areas requiring some protection or place-specific management
Ecotourism (regulated nature based and strictly controlled)	Primary	Primary
Midwater trawling (horse mackerel)	Prohibited~	Consent
Military exercises and testing	Prohibited	Consent
Mining	Prohibited	Consent
Non-consumptive tourism and recreation	Consent	General
Petroleum extraction	Prohibited	Consent

Renewable energy installations	Prohibited	Consent
Seismic surveys and mining exploration	Prohibited	Consent
Shipping lane	Prohibited	General
Undersea cables and pipelines	Consent	Consent

¹Consent: An activity which can continue in this zone subject to specific regulation and control.

²Prohibited: An activity which is not allowed or should not be allowed because it is incompatible with maintaining the biodiversity objectives of the zone.

~Activity Prohibited but present in zone; need to confirm whether this needs to be kept, changed to Consent, or zone boundary changed.

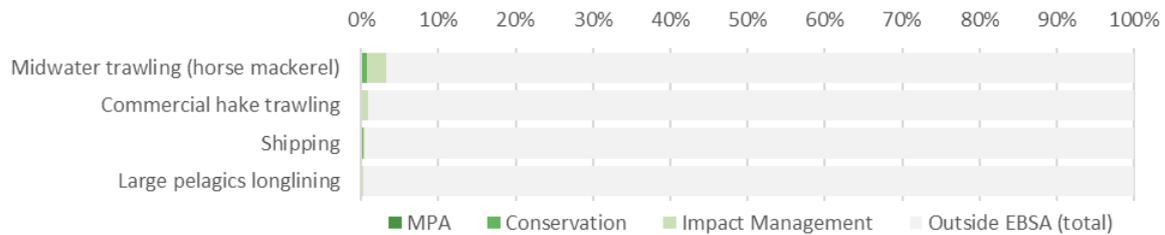
³Note that activities present in Namibia that are not relevant to the EBSA have been excluded from the table (e.g., the harvested species does not occur in the area; or the industry operates at a depth outside the depth range of the EBSA).

Furthermore, no new activities that can negatively impact the environment should be allowed in the EBSA, and some activities present in the EBSA do not need to be managed by EBSA zoning and can continue as per the current regulations. There are also some pressures on biodiversity features within the EBSA that originate from activities outside of these EBSA or beyond the jurisdiction of MSP. In support of maintaining the ecological integrity of and benefits delivered by the key biodiversity features, these other activities need to be appropriately managed by complementary initiatives.

Recommendations for other activities outside the EBSA or the MSP management jurisdiction.

Activities that are present but not managed by EBSA zones that can continue as per current regulations		
Shipping		
Activities that are currently not present in the EBSA and should be Prohibited in the future		
Ammunition and other dumping	Crab harvesting	Rock lobster harvesting
Benthic longlining	Dredge-spoil dumping	Salt pans
Boat-based linefishing	Mariculture	Shipping refuge (disabled ships)
Boat-based recreational fishing	Pelagic longlining	Shore-based fishing
Bottom trawling (general, freezer, wet)	Port anchorage areas	Small pelagics fishing
Channel dredging	Ports	Wastewater discharge
Other activities beyond the jurisdiction of MSP that directly influence the ecological condition of the EBSA that should be managed appropriately under other appropriate legislation.		
Coastal development (e.g., implementation of appropriate setback lines)		
Coastal disturbance (e.g., formalising access points; rehabilitating degraded dunes; appropriate zoning of bathing and watercraft activities, etc)		
Mean annual runoff reduction (e.g., determining and implementing freshwater flow requirements and estuarine management plans)		
Biodiversity Management Plans (possibly including monitoring programmes) for the seals, turtles, cetaceans, and potentially some of the birds		

Activity Evaluation Per Zone: Zoning Feasibility



Proposed zonation of the EBSA, with the cumulative intensity footprint of activities within the EBSA (sorted highest to lowest) given relative to the national footprint of those activities to illustrate feasibility of management interventions.

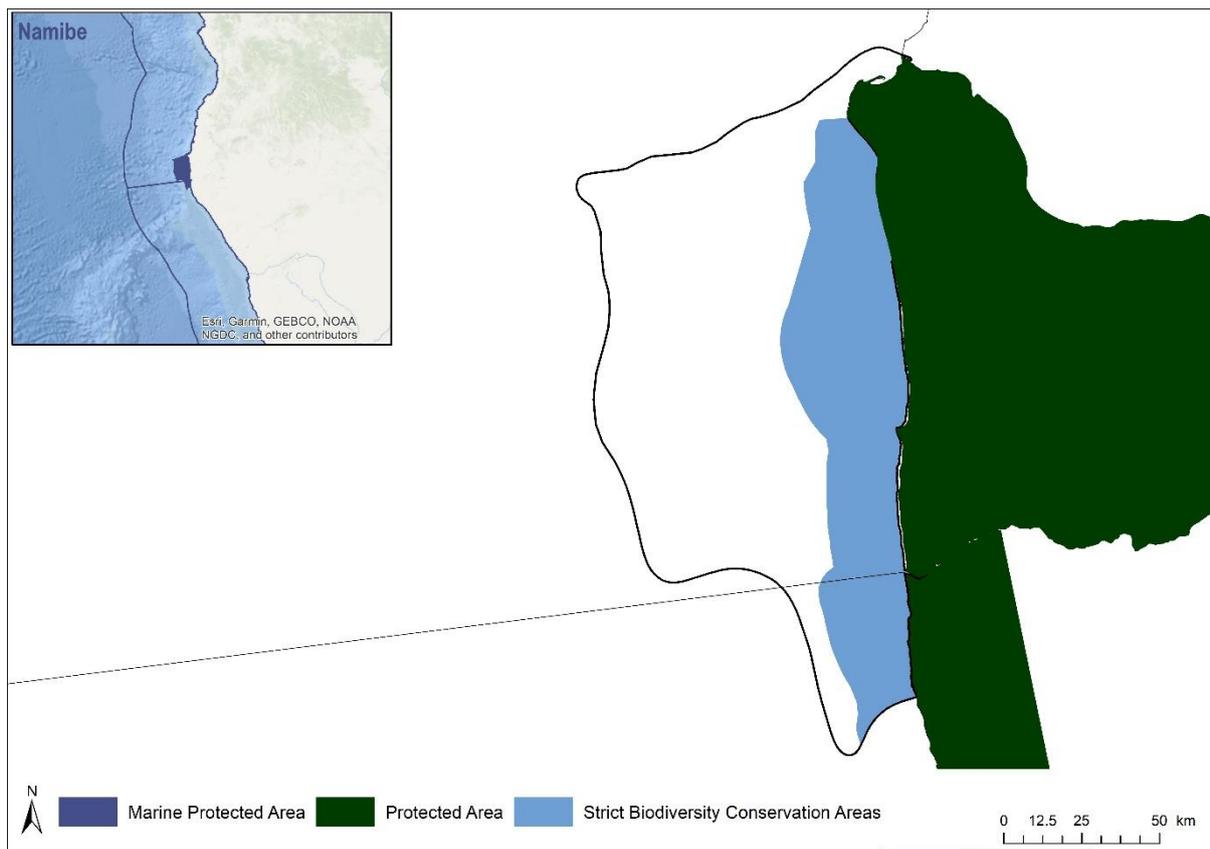
The activities present in the EBSA all have a very small proportion of their national footprint within the EBSA. The greatest of these is for midwater trawling, which still comprises <5% of the national footprint. This activity is present in both zones, and is recommended to be a Consent activity in the Impact Management Zone, but Prohibited in the Conservation Zone. Large pelagics longlining is also a non-destructive fishery; however, it has high bycatch. Therefore, it is also recommended to be a Consent activity in the Impact Management Zone, where the greater amount of activity is present, and Prohibited in the Conservation Zone. Trawling is a destructive fishing practice and is therefore recommended to be Prohibited in both zones because it is not consistent with the management objectives of the EBSA. Notwithstanding, all of these activities are shown to be present in both EBSA zones; confirmation of the recommendation of Prohibited for these activities in the Conservation Zone is suggested, with alternative options to amend the Conservation Zone boundaries or to recommend that the activities are Consent in the Conservation Zone. Further, although not included in the pressure assessment, crab harvesting is also recognised as present in the Impact Management Zone. It is currently recommended to be Prohibited in the EBSA, although it is suggested to get confirmation of this recommendation and possibly to allow it as a Consent activity. Shipping is recommended to continue under current general rules and legislation. Other activities noted in the table of management recommendations above are either not currently present in the EBSA or are emerging activities; as far as possible, these are accommodated in the EBSA, depending on their compatibility with the management objectives of the two zones. Thus, the EBSA zonation has no or minimal impact on the national footprint for the listed marine activities.

There are also several activities that are largely outside the EBSA but have downstream impacts to the biodiversity within the EBSA, e.g., from mean annual runoff reduction, coastal development, coastal disturbance, and wastewater discharge. The impacts should be managed, but principally fall outside the direct management and zoning of the EBSA. These existing activities should ideally be dealt with in complementary integrated coastal zone management in support of the EBSA. For example, rehabilitation of degraded dunes and formalising access points could support improved habitat for nesting shorebirds, and enhanced benefits for coastal protection during storm surges. Similarly, improved estuary management through development of appropriate freshwater flow requirements, estuarine management plans and wastewater management regulations can improve the ecological condition of the surrounding marine environment, in turn, improving water quality. It is also recommended to consider developing and implementing Biodiversity Management Plans for the iconic/top predator species, e.g., seals, turtles, cetaceans and some of the seabirds and shorebirds in

support of securing the biodiversity features for which the EBSA is recognised, where these are not already in place.

Management Recommendations for Marine Protected Areas

It is recommended that management is strengthened in the adjacent land-based protected areas in both Angola and Namibia. Potential MPA declaration within the EBSA should be explored to ensure that the features for which the EBSA was described receive adequate protection, with particular focus in the Strict Biodiversity Conservation Zone. Ideally, MPA expansion should be transboundary. See Future Process below for more details.



Marine and land-based protected areas (National Parks) in the area surrounding Namibe (from UNEP-WCMC & IUCN, 2022), and the EBSA Strict Biodiversity Conservation Areas where potential MPA expansion within the EBSA should be focused.

Management Recommendations for Marine Spatial Planning

Proposed Zones

The management recommendations proposed for Namibe, outlined above, should be taken up in the Marine Area Plans covering the southern portion of the Angolan EEZ and the northern portion of the Namibian EEZ. The proposed biodiversity zones for the EBSA in MSP comprises two types: a Strict Biodiversity Conservation Zone; and a Biodiversity Management Zone. It is recommended that there is full implementation and operationalisation of the proposed zones as part of MSP, noting that

ongoing regional alignment is important because this is a transboundary EBSA. Currently, the MSP focus in both countries is not on the Marine Area Plans relevant to this EBSA. When these plans are developed, there could be some refinement of the biodiversity zones, as seen in the Namib Flyway and Namibian Islands EBSAs.

Proposed Sea-Use Guidelines

As explained in the Management Interventions Needed for the EBSA above, all sea-use activities were listed and recommendations for management were provided according to the compatibility of the activities with the management objective of each of the proposed biodiversity zones. As part of the regional alignment processes, the sea-use guidelines for both countries have advanced the initial recommendations proposed above. For example, where various aspects of an activity have a different impact on the environment, these were reflected separately, e.g., impacts from petroleum exploration are different to those from production. It is recommended that the sea-use guidelines, as proposed below, are implemented as part of the respective Marine Area Plans in Angola and Namibia.

Sea-use guidelines for Namibe in Angola. List of all sea-use activities, grouped by their broad Marine Spatial Planning (MSP) Zones, and categorised according to their compatibility with the management objective of the Strict Biodiversity Conservation Area and Biodiversity Impact Management Area. Activity compatibility is given as Y = yes, compatible, R = restricted compatibility, or N = not compatible. Marine Protected Areas will be managed according to their gazetted regulations.

Associated MSP Zones	Uses (including activities and pressures)	Uses (including activities and pressures) Usos (incluindo actividades e pressões)	Biodiversity Zone/Zona de Biodiversidade: Conservação/Conservação	Biodiversity Zone/Zona de Biodiversidade: Impact Management/Gestão de Impacto	Activity already present in the EBSA / Actividades presentes na área da EBSA
Biodiversity	Conservation activities (including MPA expansion)	Actividades de conservação (incluindo a expansão de AMC)	Y	R	Y
Marine Tourism	Visiting beach, recreation, non-motorised water sports	Visitas à praia, recreação, desportos aquáticos não motorizados (surf, snorkling, mergulho, etc)	Y	Y	Y
	Ecotourism (regulated nature based and strictly controlled)	Ecoturismo (natureza regulamentada e estritamente controlada)	R	Y	Y
	Recreational boat-based linefishing	Pesca à linha em barco de recreio	R	Y	Y
Heritage Conservation	Shipwrecks / Abandoned boats	Naufrágios /Barcos abandonados	N	N	Y
Commercial Fishing	Longline	Palangre	N	R	Y
	Pelagic trawling (surface)	Arrasto Pelágico (superfície)	N	N	N
	Pelagic longline	Palangre pelágico	N	R	Y
	Pelagic seine fishing (small pelagic) - Small pelagics fishing	Pesca de cerco pelágico (pequenos pelágicos)	N	R	Y

Associated MSP Zones	Uses (including activities and pressures)	Uses (including activities and pressures) Usos (incluindo actividades e pressões)	Biodiversity Zone/Zona de Biodiversidade: Conservação/Conservação	Biodiversity Zone/ Zona de Biodiversidade: Impact Management/Gestão de Impacto	Activity already present in the EBSA / Actividades presentes na área da EBSA
	Crustacean harvesting	Pesca de caranguejo	R	R	Y
	Demersal trawling (bottom)	Arrasto demersal (fundo)	N	N	N
Small Scale Fishing	Subsistence fishing / Artisanal fishing (trawl limitation)	Pesca de subsistência / Pesca artesanal (limitação da arte de arrasto)	R	R	Y
Mariculture	Mariculture	Maricultura	R	R	N
	Mining	Mineração	N	R	N
	Salt extraction (existing - man made)	Extracção de sal (existente - feito pelo Homem)	N	NA	N
	Salt extraction (new - man made)	Extracção de sal (novo - feito pelo Homem)	N	NA	NA
Petroleum	Seismic surveys	Levantamentos sísmicos	N	R	Y
	Oil and gas production	Produção de petróleo e gás	N	R	N
Renewable Energy	Renewables energies (wind)	Energias renováveis (eólica)	N	N	N
Military	Military exercises and testing	Exercícios e testes militares	N	N	Y
Ammunition Dumping	Ammunition dumping and others	Munição e outros despejos	N	N	Y
Maritime Transport	Navigation corridors (designated areas in and around ports)	Corredores de navegação (áreas designadas dentro e ao redor dos portos)	R	Y	Y
	Shipping lanes (general ship navigation)	Frete (navegação geral de navios)	N	Y	Y
	Shipping refuge (temporarily disabled ships)	Refúgio de navegação (navios temporariamente desactivados)	N	N	N
	Bunkering at Sea	Abastecimento no mar	N	R	N
	Ports (existing, anchorage and new infrastructure in port zone)	Portos (existente, ancoradouro e nova infraestrutura na zona portuária)	N	NA	N
	Ports (new)	Portos (novo)	N	NA	N
	Channel dredging	Dragagem de canal	N	NA	N
	Dredge-spoil dumping (port channel dredging)	Despejo de dragagem (dragagem do canal do porto)	N	NA	N
Underwater Infrastructure	Cables and pipelines (undersea)	Cabos e ductos submarinos	R	R	Y
Land-based Infrastructure	Coastal Development - NEW (jetty, sea walls, breakwater)	Desenvolvimento costeiro - NOVO (cais, quebra-mar)	R	NA	NA
Disposal Zone	Wastewater	Águas residuais	N	NA	N

Sea-use guidelines for Namibe in Namibia. List of all sea-use activities, grouped by their broad Marine Spatial Planning (MSP) Zones, and categorised according to their compatibility with the management objective of the Strict Biodiversity Conservation Area and Biodiversity Impact Management Area. Activity compatibility is given as Y = yes, compatible, R = restricted compatibility, or N = not compatible. Marine Protected Areas (MPA) will be managed according to their gazetted regulations.

Broad MSP Zone	Activities	MPA	Strict Biodiversity Conservation Area	Biodiversity Management Area
Biodiversity	Conservation activities (including MPA expansion)	Sea-use activities as per gazetted MPA regulations	Y	Y
Marine Tourism	Non-consumptive tourism and recreation		R	Y
	Ecotourism (regulated nature based and strictly controlled)		R	Y
	Recreational fishing (includes shore and recreational skiboat based)		R	Y
Heritage Conservation	Heritage sites		Y	Y
Commercial Fishing	Commercial Linefishing (e.g., snoek 20-m vessels)		R	Y
	Benthic longlining (e.g., hake, kingklip) (Not current activity)		R	Y
	Midwater trawling (Horse Mackerel)		R	Y
	Pelagic longlining		R	Y
	Commercial Pelagic Purse-seine (small pelagics) fishing		R	Y
	Crustacean trap-based harvesting (crabs)		R	Y
	Crustacean trap-based harvesting (rock lobster)		R	Y
	Bottom trawling (non-freezer)		N	R
	Bottom trawling (freezer trawlers)		N	R
	Small-scale Fishing		Shore-based fishing (subsistence, artisanal)	R
Mariculture	Mariculture		N	R
Mining	Mineral resource extraction (mining)		N	R
	Salt extraction (existing - man made)		R	R
	Salt extraction (new - man made)		N	R
Petroleum	Seismic surveys and mining exploration		R	R
	Petroleum extraction		N	R
Renewable Energy	Renewables (e.g. offshore wind, wave, solar)		N	R
Military	Military exercises and testing		N	R
Ammunition Dumping	Ammunition and other dumping		N	N
Maritime Transport	Shipping lane (designated lanes in and around ports)		N	Y
	Shipping (General ship movements)		Y	Y
	Shipping refuge (temporarily disabled ships)		N	R
	Bunkering at Sea		N	R
	Ports (existing, anchorage and new infrastructure in port zone)		N	Y
	Ports (new)		N	R
	Channel dredging	N	R	
	Dredge-spoil dumping (port channel dredging)	N	R	
Underwater Infrastructure	Cables and pipelines (undersea)	R	Y	
Land-based Infrastructure	Coastal Development - NEW (jetty, sea walls, breakwater etc.)	N	R	
Disposal	Wastewater and treated effluent discharge - existing (including desalination)	R	R	
	Wastewater and treated effluent discharge - new (including desalination)	N	R	

Proposed management recommendations for activities with each of the different compatibility ratings:

- **Compatible:** Activities should be allowed and regulated by current general rules. Notwithstanding, there should still be duty of care, possibly requiring monitoring and evaluation programmes, to avoid unintended cumulative impacts to the biodiversity features for which this area is recognised.
- **Restricted compatibility:** A robust site-specific, context-specific assessment is required to determine the activity compatibility depending on the biodiversity features for which the site was selected. Particularly careful attention would need to be paid in areas containing irreplaceable to near-irreplaceable features where the activity may be more appropriately evaluated as not permitted. The ecosystem types in which the activities take place may also be a consideration as to whether or not the activity should be permitted, for example. Where it is permitted to take place, strict regulations and controls over and above the current general rules and legislation would be required to be put in place to avoid unacceptable impacts on biodiversity features. Examples of such regulations and controls include: exclusions of activities in portions of the zone; avoiding intensification or expansion of current impact footprints; additional gear restrictions; and temporal closures of activities during sensitive periods for biodiversity features.
- **Not compatible:** The activity should not be permitted to occur in this area because it is not compatible with the management objective. If it is considered to be permitted as part of compromises in MSP negotiations, it would require alternative Strict Biodiversity Conservation Zones and/or offsets to be identified. However, if this is not possible, it is recommended that the activity remains prohibited within the Strict Biodiversity Conservation Zone.

Research Needs

There are no specific research needs for this EBSA in addition to those for all EBSAs (see EBSA Research Needs below). However, filling these research needs is especially emphasised; given the remote nature of the area, it remains largely poorly understood (except for the Kunene Estuary). Much more baseline research and ongoing monitoring is needed to ensure that the key features of the EBSA are well managed. Further research will also be necessary to support the appropriate zoning and management of any additional marine protection in southern Angola.

Future Process

Angola's preliminary national Marine Spatial Plan (Republic of Angola, 2022a), which incorporates the outcomes of the pilot central area (Republic of Angola et al., 2019), was approved in February 2023. This effectively formalizes the EBSA conservation and impact management zones as the national biodiversity zones for the MSP. The Conservation areas of the EBSA are being taken forward as the core of an emerging national MPA network. Particularly in Namibe, the key immediate issue is expanding marine protection in southern Angola, ideally with a transboundary extension into Namibia. This is being facilitated through ongoing regional alignment through the BCC.

Discussions and progress are underway, with advanced stakeholder consultation, including regarding refining the zoning and boundaries, and detailed sea use within the EBSA in southern Angola (Republic of Angola, 2021, 2022b). This is on track to become Angola's first MPA.

The key steps that need to be taken for this EBSA include:

- Finalising the required stakeholder process, boundaries, zones, and sea uses
- Formal gazetting as an MPA
- Resourcing MPA management, management plans, and staffing

- Monitoring and evaluating the outcomes

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Orange Seamount and Canyon Complex (formerly Orange Shelf Edge)

Revised EBSA Description

General Information

Summary

The Orange Seamount and Canyon Complex occurs at the western continental margin of South Africa and Namibia, spanning the border between the two countries. On the Namibian side, it includes Tripp Seamount and a shelf-indenting canyon. The EBSA comprises shelf and shelf-edge habitat with hard and unconsolidated substrates, including at least eleven ecosystem types. According to recent threat status assessments of coastal and marine habitat in South Africa and Namibia, three ecosystem types represented in the EBSA are threatened, one of which is Endangered and another two that are Vulnerable. However, the area is one of few places where these threatened ecosystem types are in relatively natural/pristine condition. Based on an analysis of long-term trawl-survey data, the Orange Seamount and Canyon Complex is a persistent hotspot of demersal fish biodiversity, which may be a result of the local habitat heterogeneity. In summary, this area is highly relevant in terms of the following EBSA criteria: 'Importance for threatened, endangered or declining species and/or habitats', 'Biological diversity' and 'Naturalness'.

Introduction of the area

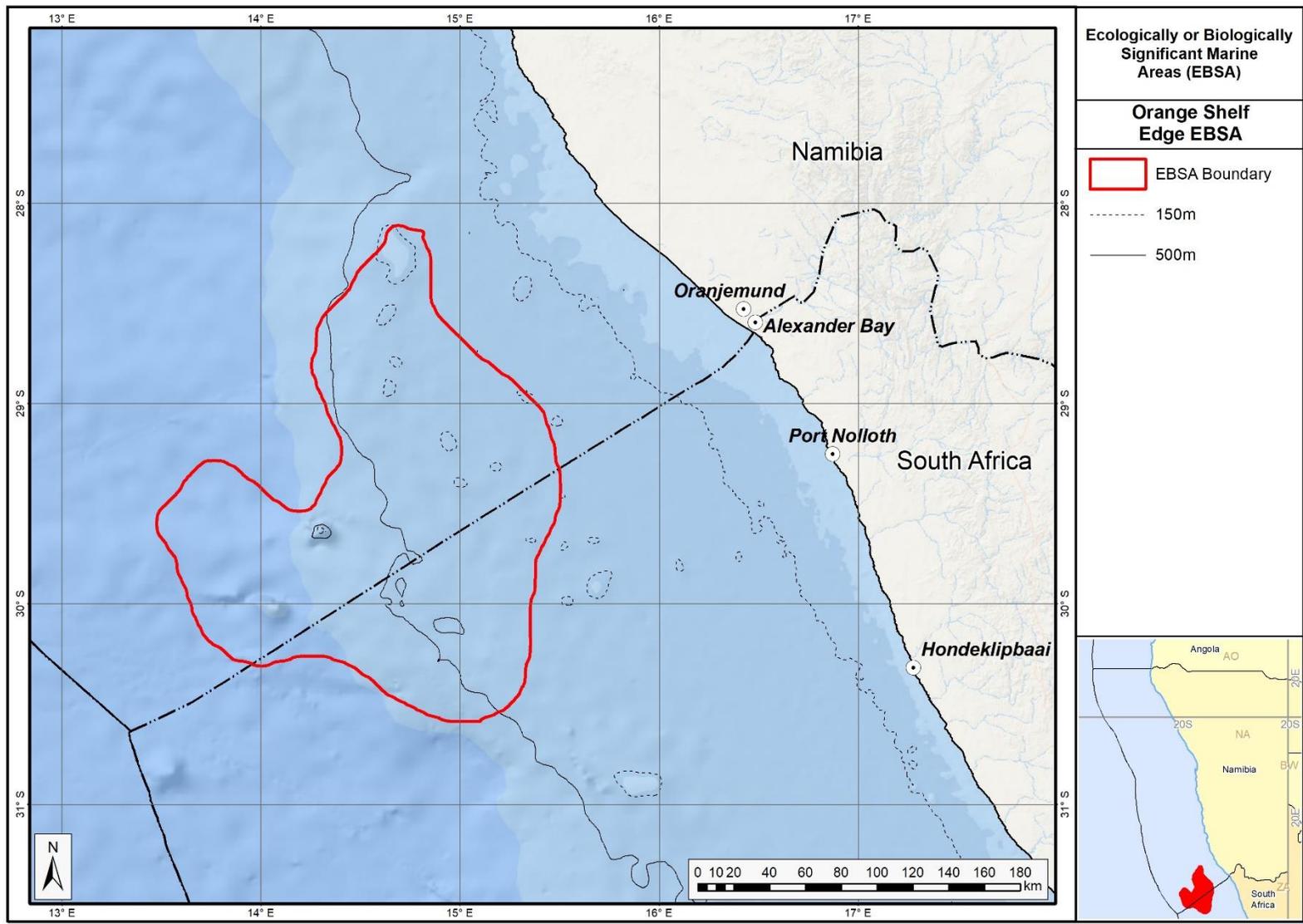
The area occurs at the outer shelf and shelf edge of the western continental margin of South Africa and Namibia, spanning the border between the two countries. It includes hard and unconsolidated (sand) shelf and shelf edge benthic habitat at depths of approximately 350-1200 m on the South African side (Sink et al., 2012, 2019). On the Namibian side, it includes Tripp seamount and a shelf-indenting submarine canyon, providing a heterogeneous habitat (Holness et al., 2014). The pelagic environment in the area is characterized by medium productivity, cold to moderate Atlantic temperatures (SST mean = 18.3 °C) and moderate chlorophyll levels related to the eastern limit of the Benguela upwelling on the outer shelf (Lagabrielle 2009).

Since the original description and delineation, the boundary of this EBSA has been revised largely because of new evidence that has emerged after South Eastern Atlantic Workshop to identify EBSAs in 2013 (UNEP/CBD/RW/EBSA/SEA/1/4). A new map of Namibian Ecosystem Types has been generated, and the new boundary builds on existing (SA) and new (Namibia) spatial assessment and prioritisation (Holness et al., 2014; Sink et al., 2012, 2019). These new datasets, and others (e.g., GEBCO Compilation Group 2019; Harris et al., 2014; Kirkman et al., 2013) have facilitated more accuracy in the boundary definition such that the EBSA now better represents the underlying features that make this site regionally significant for threatened species and habitats and diverse assemblages, in a highly natural area. Orange Seamount and Canyon Complex is thus proposed as a Type 2 EBSA (sensu Johnson et al., 2018) because it comprises a collection of features and ecosystems that are connected by the same ecological processes.

Description of the location

EBSA Region

South-Eastern Atlantic



Revised delineation of the Orange Seamount and Canyon Complex EBSA.

Description of location

The area occurs at the outer shelf and shelf edge of the western continental margin of South Africa and Namibia, spanning the border between the two countries. It is entirely within the national jurisdiction of the two countries.

Area Details

Feature description of the area

The area includes a high diversity of shelf and shelf-edge habitats with hard or unconsolidated (sand) substrates (Sink et al., 2012, 2019; Holness et al., 2014). It includes eleven ecosystem types that have been identified for South Africa and Namibia (Sink et al., 2019; Holness et al., 2014). On the Namibian side, it includes Tripp seamount and a shelf-indenting canyon. The pelagic environment of the area is characterized by medium productivity, cold to moderate temperatures, and moderate chlorophyll levels related to the limit of the Benguela upwelling on the outer shelf (Lagabriele 2009).

The area has been subjected to annual demersal fish trawl surveys conducted by the Department of Agriculture, Forestry and Fisheries (now Department of Environment, Forestry and Fisheries) of South Africa (see Atkinson et al., 2011 for details), and under the Nansen Programme in Namibia (see Jonsen and Kathena 2012 for details). Based on spatial modeling of nearly 30 years of distribution and abundance data from these surveys, Kirkman et al., (2013) identified a persistent hotspot of species richness for demersal fish species that coincides with part of the area. This may be related to the local habitat heterogeneity, including the presence of a shelf-indenting submarine canyon and the close proximity of a seamount. Generally, however, seamounts and canyons in the region have been poorly studied (Sink et al., 2011).

Feature conditions and future outlook of the proposed area

Sink et al., (2012, 2019) estimated the threat status of coastal and marine habitats in South Africa by assessing the cumulative impacts of various pressures (e.g., extractive resource use, pollution and others) on each ecosystem type. This analysis was extended to Namibia by Holness et al. (2014). The EBSA has a lot of natural habitat, although there are some portions that have been moderately modified, largely because this area has been subjected to relatively little extractive resource use (e.g., fishing, mining) pressure, and is relatively remote from sources of pollution. Overall, the assessments of Sink et al. (2019) and Holness et al. (2014) classified 73% of the Orange Seamount and Canyon Complex area as being in good condition, with an additional 18% being in fair condition.

Previously, the Orange Seamount and Canyon Complex area was identified by Majiedt et al. (2013) as one of six marine 'primary focus areas' for spatial protection in South Africa, with the good condition of threatened habitats and the relative absence of anthropogenic pressures as the major drivers of this selection. This has resulted in two portions of the EBSA being proclaimed as marine protected areas. On the Namibian side, the assessment of Holness et al. (2014) identified the Namibian portions of the EBSA as being of high priority for place-based conservation measures. Tripp seamount on the Namibian side of the border is the location of a productive pelagic pole-and-line tuna fishery (FAO 2007). Although no research is currently planned for this area, it is recommended for this EBSA, particularly towards informing appropriate spatial management of this site.

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Other relevant website address or attached documents

Summary of ecosystem types and threat status for the Orange Seamount and Canyon Complex. Data from Sink et al., 2019 and Holness et al., 2014.

Threat Status	Ecosystem Type	Area (km ²)	Area (%)
Endangered	Namaqua Shelf Edge	3065.9	10.5
Vulnerable	Southern Benguela Rocky Shelf Edge	751.7	2.6
	Southern Benguela Sandy Shelf Edge	1780.6	6.1
Least Concern	Southeast Atlantic Lower Slope	139.9	0.5
	Southeast Atlantic Mid Slope	993.1	3.4
	Southeast Atlantic Upper Slope	2133.3	7.3
	Southern Benguela Sandy Outer Shelf	3003.1	10.3
	Namaqua Outer Shelf	8702.9	29.7
	Namib Lower Slope	4315.1	14.7
	Namib Seamount	393.1	1.3
	Namib Upper Slope	3988.7	13.6
Grand Total		29267.4	100.0

Assessment of the area against CBD EBSA criteria

C1: Uniqueness or rarity **Low**

Justification

Neither the benthic nor pelagic ecosystem types that are known to occur in the area are unique to the area (Sink et al., 2011).

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

Justification

Elsewhere it has been shown that seamounts, shelf breaks and submarine canyons (all of which occur in the EBSA) constitute important foraging habitats for pelagic-feeding vertebrates such as seabirds, cetaceans and large fish species, including migratory species, which exploit elevated primary production and high standing stocks of zooplankton, fish, and other organisms at these features (Dearden and Topelko 2005, Sydeman et al., 2006, Morato et al., 2008). Generally, however, seamounts and canyons in the region have been poorly studied (Sink et al., 2011).

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

Justification

Threat status assessments of ecosystem types by Sink et al. (2012, 2019) and Holness et al., (2014) highlighted several threatened ecosystem types that are represented in the EBSA. Threatened ecosystem types include the Endangered Namaqua Shelf Edge and Vulnerable Southern Benguela Rocky Shelf Edge and Southern Benguela Sandy Shelf Edge. This implies that, although there are sufficient areas of intact biodiversity of these habitats to meet the conservation targets, there has been habitat degradation and some loss of ecosystem processes. The importance of the area for the conserving the threatened ecosystem types represented in the Orange Seamount and Canyon Complex was emphasized by Majiedt et al. (2013) and Holness et al. (2014).

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

Justification

The threatened status of three ecosystem types (Sink et al., 2012, 2019) implies that degradation and some loss of ecosystem processes has been associated with these ecosystem types in other areas, and therefore that they are vulnerable to the effects of human activities. Seamounts, submarine canyons and the shelf break, all of which occur in the area, are all vulnerable and sensitive ecosystems (FAO 2009). Seamount communities are particularly vulnerable to human activities (e.g. trawling) due to intrinsic biological factors that are characteristic of seamount-associated species (e.g. slow growth rate, late maturation), with the likelihood of very long time scales of recovery if damaged (Gjerde & Breide, 2003, Clark et al., 2006).

C5: Biological productivity **Medium**

Justification

The area is at the eastern limit of the Benguela upwelling region (Hutchings et al., 2009), where the pelagic environment is characterized by medium productivity, and moderate chlorophyll levels (Lagabrielle 2009). However, shelf edge environments (e.g. Springer et al., 1996, Piatt et al., 2006, Coleman et al., 2011), seamounts (e.g. Moore et al., 2002, Pitcher et al., 2011) and submarine canyons (e.g. de Leo et al., 2010, McClain and Barry 2010), all of which occur in the proposed area, are associated with elevated productivity and biomass levels, spanning several trophic levels. Tripp

seamount on the Namibian side of the border supports a productive pole-and-line tuna fishery (FAO 2007).

C6: Biological diversity **High**

Justification

Based on spatial modelling of 20-30 years of distribution and abundance data from demersal trawl surveys in Namibian and South African waters, Kirkman et al. (2013) identified the area as a persistent hotspot of species richness for demersal fish species. This may be linked to the habitat heterogeneity of the area, including the shelf edge, the presence of a shelf-indenting submarine canyon and the close proximity of a seamount. Further, 487 species have been recorded in the area (OBIS 2017). Diversity of ecosystem types is also high, with 11 ecosystem types occurring in the area (Sink et al., 2012; Holness et al., 2014).

C7: Naturalness **High**

Justification

The area on the South African side is one of the few areas where the threatened ecosystem types are in good condition (relatively natural/pristine), largely because it has been subjected to relatively low levels of anthropogenic pressures (Sink et al., 2011, 2019). The importance of the area for the conservation of the threatened ecosystem types represented there has therefore been emphasized by Majiedt et al., (2013). Although there are impacted areas, much of the Namibian portion of the area is also in good condition (Holness et al., 2014). Overall, 73% is in good ecological condition, 18% is fair and 9% is poor.

Status of submission

The Orange Shelf Edge EBSA (now Orange Seamount and Canyon Complex) was recognized as meeting EBSA criteria by the Conference of the Parties. The revised boundaries and description have been submitted to the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) for consideration by the Conference of the Parties to the Convention on Biological Diversity

COP Decision

dec-COP-12-DEC-22

End of proposed EBSA revised description.

Motivation for Revisions

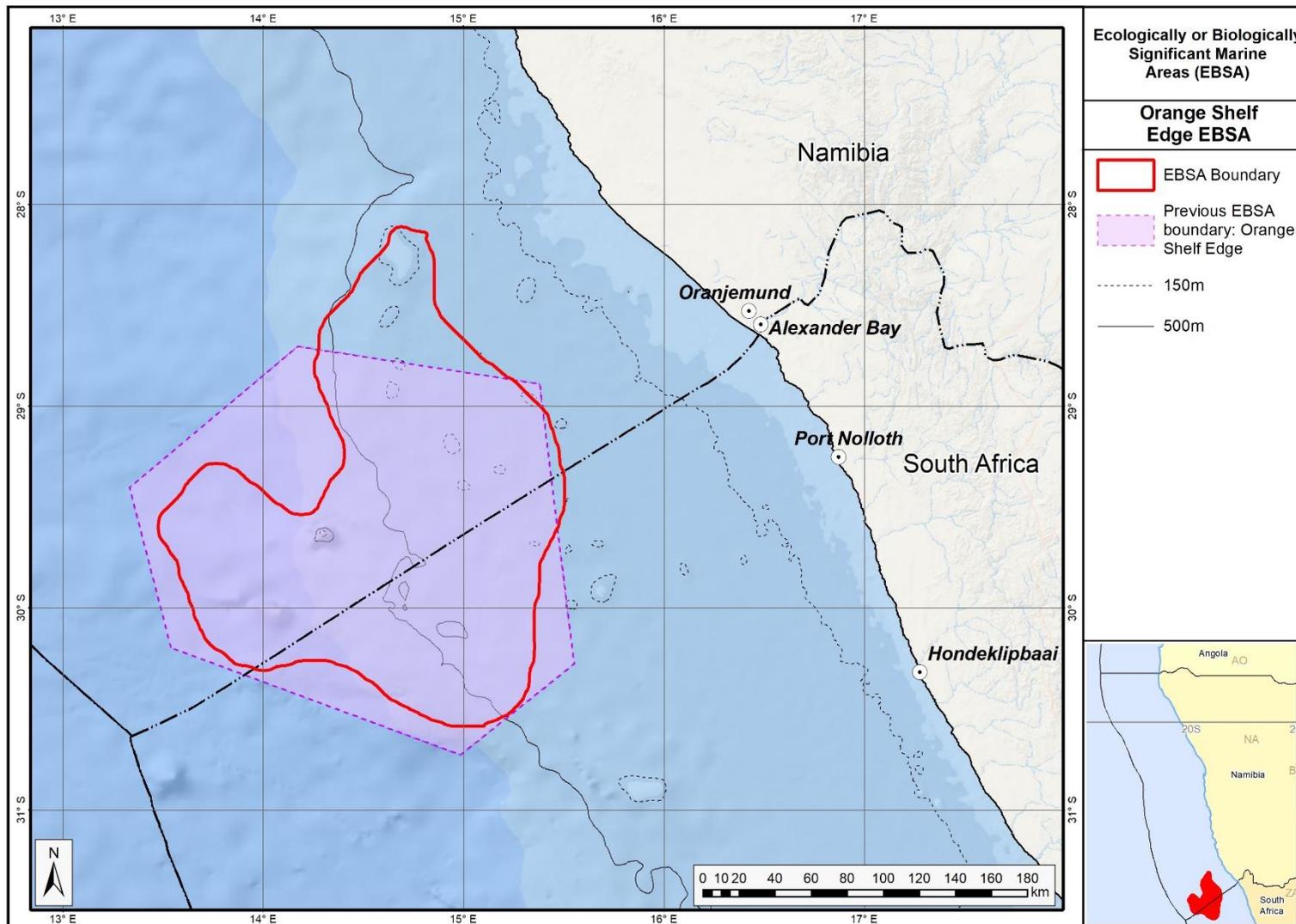
Only slight revision of the EBSA description was done since no new research has been carried on this area since its original adoption in 2014. Small additions, such as biodiversity information from OBIS and updated South African assessments were made, but none of these edits were significant enough to drive a change in the EBSA criteria rankings. A supplementary table of the ecosystem types represented in the EBSA and their associated threat status was also included.

The biggest change to the EBSA was a significant refinement of the EBSA delineation. This was done to focus more closely the EBSA on the key biodiversity features that underpin its EBSA status. The delineation process included an initial stakeholder workshop, a technical mapping process and then

an 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 features used in the analysis were:

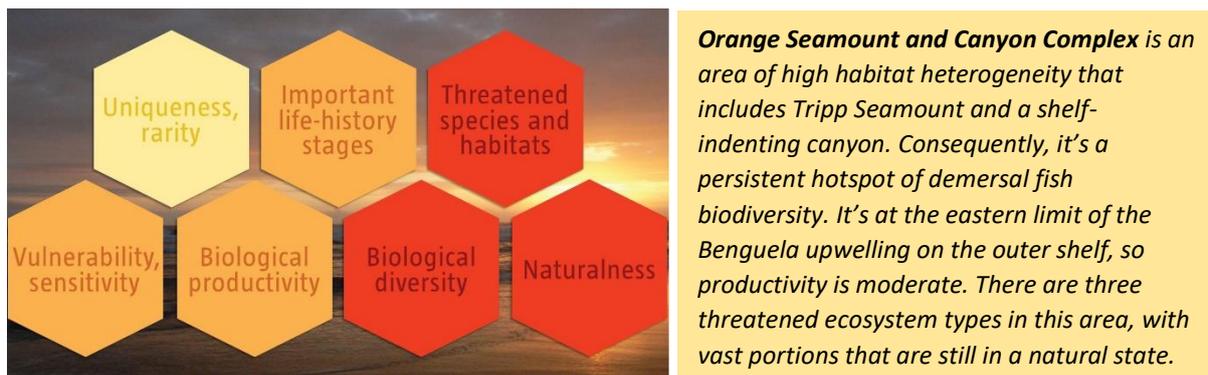
- Threatened Benthic and Coastal Ecosystems (Holness et al., 2014; Sink et al., 2012, 2019). The analysis focussed on the inclusion of the most threatened ecosystem types found in the area. These types are highlighted in the table in the Other relevant website address or attached documents section. Additional weight was given to the priority shelf edge habitats which are core to the EBSA description.
- Areas of highest fish diversity from Kirkman et al. (2013) were included.
- Areas of high relative naturalness identified in the SCP undertaken for the BCLME by Holness et al. (2014).
- Key physical features such as seamounts and canyons from the BCC spatial mapping project (Holness et al., 2014), GEBCO data (GEBCO Compilation Group 2019), and global benthic geomorphology mapping (www.bluehabitats.org, Harris et al., 2014).
- 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).

The multi-criteria analysis resulted in a value surface. The cut-off value (used to determine the 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 below were validated in a series of national (in both South African and Namibia) and regional (BCC) meetings.



The revised Orange Shelf Edge EBSA in relation to its original boundary.

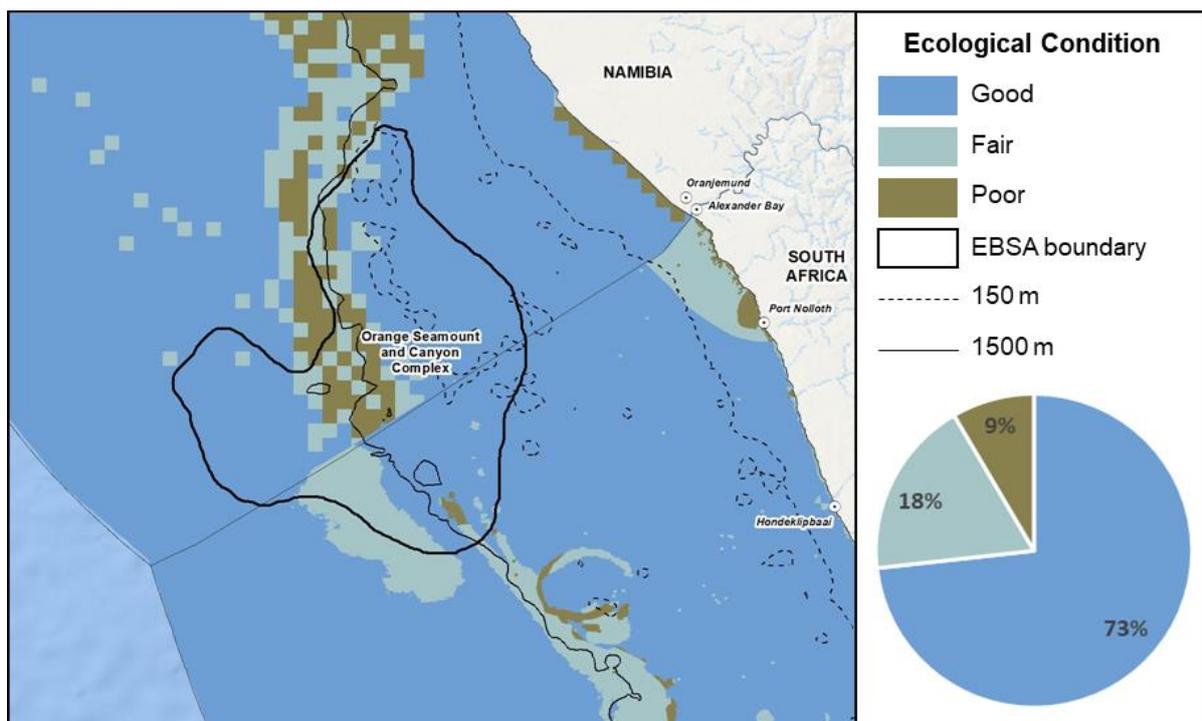
Status Assessment and Management Options



EBSA criteria coloured by rank for Orange Seamount and Canyon Complex: red=high, orange=medium, yellow=low.

Ecological Condition, Threat Status, Current Protection and Key Features in the EBSA

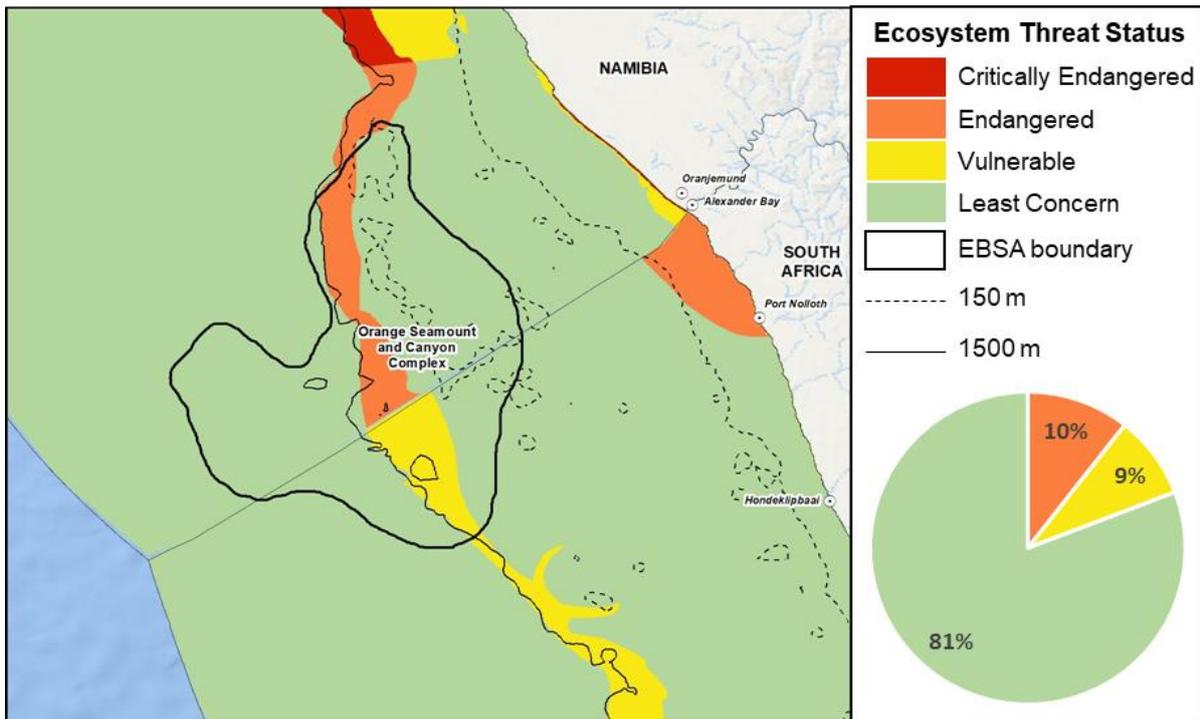
Orange Seamount and Canyon Complex has a myriad of features and ecosystem types that need to be protected for the area to maintain the characteristics that give it its EBSA status. The criteria for which this EBSA ranks highly are: importance for threatened species and habitats, biological diversity, and naturalness. There are 11 ecosystem types represented, of which the seamount, canyon and rocky shelf ecosystem types contain fragile species that are sensitive to damage. Given the high habitat heterogeneity, from the seamount to canyon, and spanning the shelf edge and slope, the site supports diverse communities and is a persistent hotspot for demersal fish. In South Africa, it's one of the only places where two threatened ecosystem types are in a natural or near-natural state.



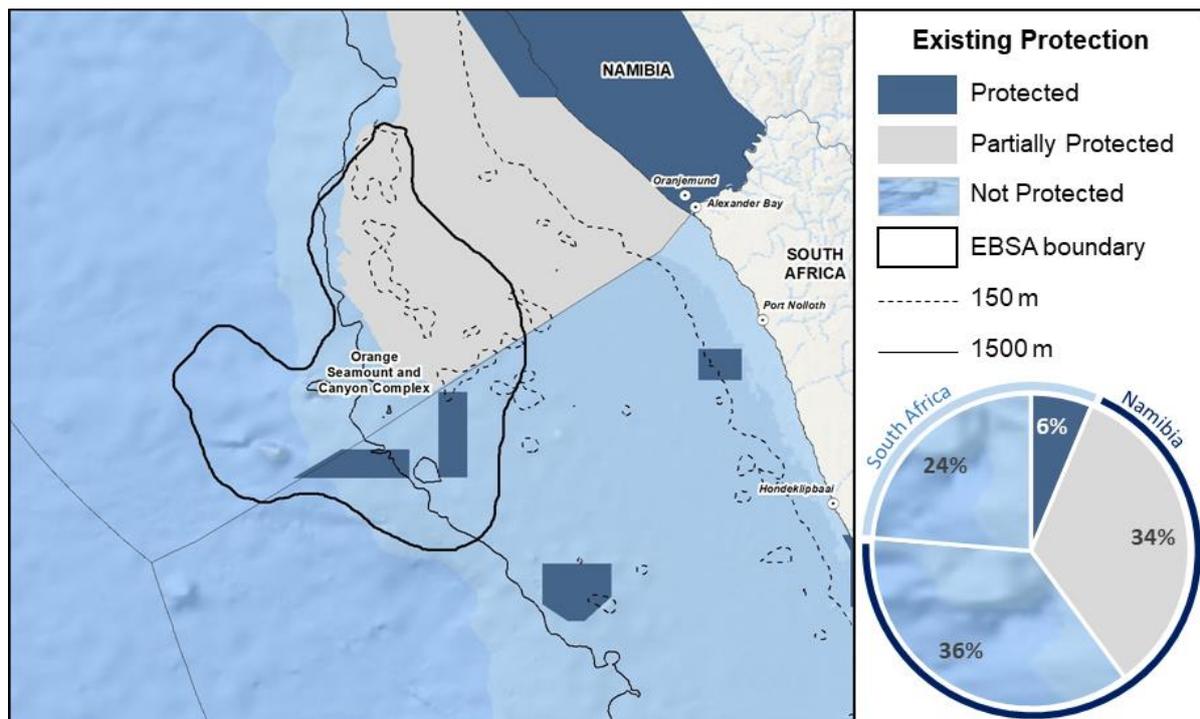
Orange Seamount and Canyon Complex proportion of area in each ecological condition category.

Orange Seamount and Canyon Complex is largely in good ecological condition (73%), with some portions that are in fair (18%) and poor (11%) ecological condition. Consequently, most of the area is

Least Concern (81%), with some areas along the shelf edge being Endangered (10%) and Vulnerable (9%).



Orange Seamount and Canyon Complex proportion of area in each ecosystem threat status category.



Orange Seamount and Canyon Complex proportion of area in a Marine Protected Area (MPA).

Protection of features in MPAs on the South African side has been considerably expanded and strengthened following the proclamation of the Operation Phakisa MPA network, with the EBSA area within reserves increasing by an order of magnitude from no protection to 6% of the overall EBSA extent (which is 20% of the South African portion of the EBSA extent). In Namibia, the EBSA extent is

split between no protection (36%) and partial protection (34%). Thus overall, 40% of the EBSA has some form of protection, and 60% is not protected. Strengthening protection in the EBSA is critical because most ecosystem types are either poorly or not protected.

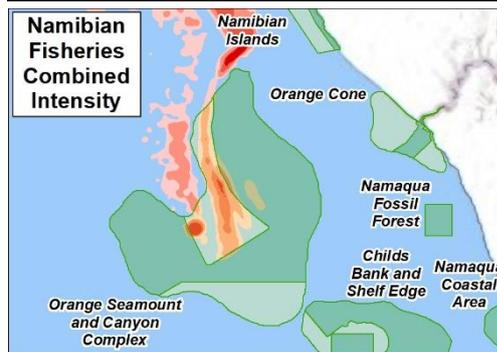
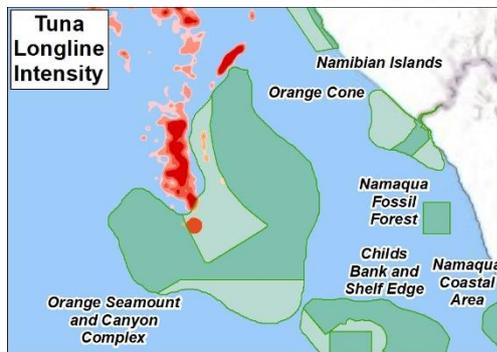
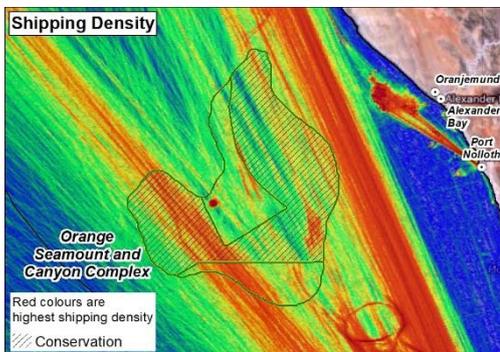
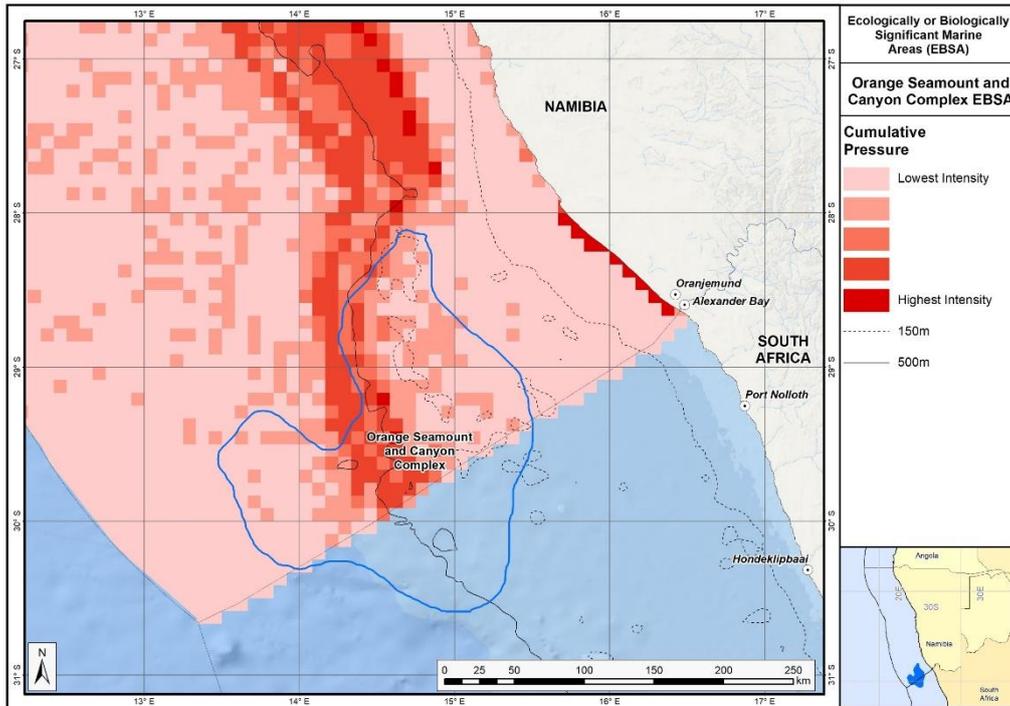
Threat status, protection level and ecological condition of ecosystem types in the EBSA. Other key features are also listed.

Feature	Threat Status	Protection Level	Condition (%)		
			Good	Fair	Poor
Ecosystem Types					
Namaqua Outer Shelf	LC	MP	93.8	6.1	0.1
Namaqua Shelf Edge	EN	MP	26.9	36.4	36.7
Namib Lower Slope	LC	NP	98.3	1.7	0.0
Namib Seamount	LC	NP	62.2	27.2	10.6
Namib Upper Slope	LC	NP	39.3	32.0	28.8
Southeast Atlantic Lower Slope	LC	NP	97.1	2.9	0.0
Southeast Atlantic Mid Slope	LC	PP	8.4	91.6	0.0
Southeast Atlantic Upper Slope	LC	PP	46.4	53.6	0.0
Southern Benguela Rocky Shelf Edge	VU	MP	81.1	0.0	18.9
Southern Benguela Sandy Outer Shelf	LC	PP	96.5	3.5	0.0
Southern Benguela Sandy Shelf Edge	VU	PP	95.1	4.9	0.0
Other Features					
<ul style="list-style-type: none"> • Persistent hotspot of demersal fish biodiversity • Canyon • Fragile species associated with rocky shelf edge, canyon and seamount 					

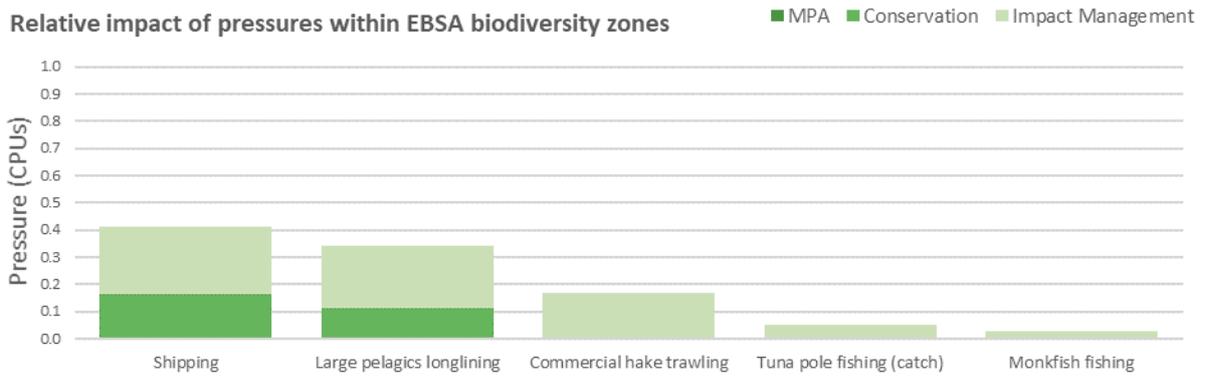
Given that this is a transboundary EBSA shared between Namibia and South Africa, the analysis of pressures and EBSA management is done separately per country to account for the differences in types of pressures and national management options. The following sections are thus repeated, first for Namibia and then South Africa.

Relevant Pressures and Activities (impact, extent): Namibia

- Both countries have five key activities operating in this EBSA that target similar resources and/or have the same impact on the EBSA features. Shipping is the only activity that covers the entire EBSA extent and has the highest cumulative pressure profile in both countries.
- In Namibia, key pressures that most directly impact the features for which the EBSA is described include: commercial hake trawling (general, wet and freezer), pelagic longlining, tuna pole fishing, monkfish fishing, and shipping. These various fisheries will need to be managed particularly well in order to protect the fragile benthic biodiversity and fish assemblages for which this EBSA is recognised. In almost all cases, the greater portion of each fishery is located in the Impact Management Zone.
- Pressures that don't occur in the EBSA but are present in Namibia include: ammunition and other dumping, benthic longlining, boat-based linefishing, boat-based recreational fishing, channel dredging, crab harvesting, dredge-spoil dumping, mariculture and guano harvesting, midwater trawling (horse mackerel), ports, port anchorage areas, rock lobster harvesting, salt pans, shipping refuge (disabled ships), shore-based fishing, and wastewater discharge.



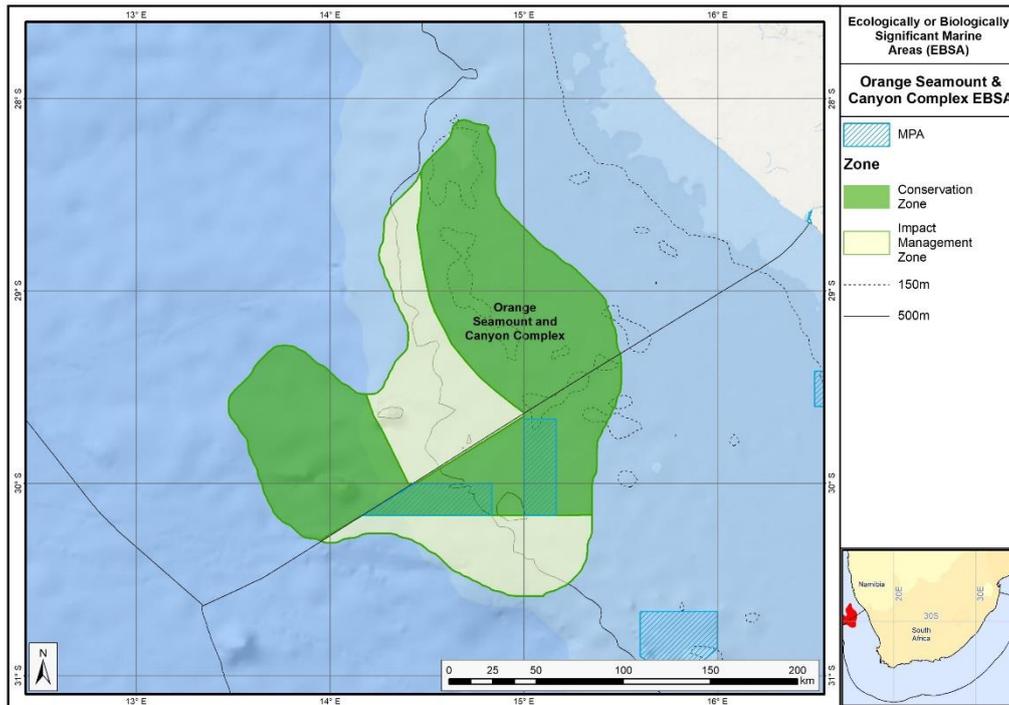
Map of cumulative pressure (top) and maps of the most important pressures (activities) in the EBSA and surrounds. Darker reds indicate higher pressure intensity.



Pressure (in arbitrary cumulative pressure units, CPUs) summed for each pressure in the EBSA, per proposed EBSA biodiversity zone, ranked left (highest) to right (lowest) by the overall relative importance of pressures in this EBSA.

Management Interventions Needed for the EBSA

Improved place-based protection of EBSA features should be pursued. In support of this, the EBSA is divided into a Conservation Zone and an Impact Management Zone, both comprising several areas within the EBSA. The aim of the Conservation Zone is to secure core areas of key biodiversity features in natural / near-natural ecological condition. Strict place-based biodiversity conservation is thus directed at securing key biodiversity features in a natural or semi-natural state, or as near to this state as possible. Activities or uses that have significant biodiversity impacts should be prohibited. Where possible and appropriate these areas should be considered for formal protection e.g., Marine Protected Areas or other effective area-based conservation measures (OECM). The aim of the Impact Management Zone is to manage negative impacts on key biodiversity features where strict place-based measures are not practical or not essential. In this zone, the focus is management of impacts on key biodiversity features in a mixed-use area, with the objective to keep biodiversity features in at least a functional state. Activities or uses which have significant biodiversity impacts should be strictly controlled and/or regulated. Within this zone, there should be no increase in the intensity of use or the extent of the footprint of activities that have significant biodiversity impacts. Where possible, biodiversity impacts should be reduced. As far as possible, the Conservation Zone was designed deliberately to avoid conflicts with existing activities. There are no MPAs in the Namibian portion of the EBSA.



Proposed zonation of the EBSA into Conservation (dark green) and Impact Management (light green) Zones. MPAs are overlaid in blue hatching.

Protection of features in the rest of the Conservation Zone may require additional Marine Protected Area declaration/expansion. Other effective conservation measures should also be applied via Marine Spatial Planning to ensure that the existing activities/uses are appropriately controlled to ensure compatibility of activities with the environmental requirements for achieving the management objectives of the EBSA Conservation and Impact Management Zones. Further, no new pressures should be extended into the Conservation Zone, even if they currently occur in the Impact Management Zone of the EBSA.

Recommended compatibility (consent¹ or prohibited²) of activities currently present in the EBSA³ in the Conservation and Impact Management Zones

Uses (including activities and pressures)	Conservation Zone: EBSA areas requiring strictest protection	Impact Management Zone: Other EBSA Areas requiring some protection or place-specific management
Bottom trawling (freezer trawlers)	Prohibited	Consent
Bottom trawling (general)	Prohibited	Consent
Ecotourism (regulated nature based and strictly controlled)	Primary	Primary
Military exercises and testing	Prohibited	Consent
Mining	Consent	Consent

Non-consumptive tourism and recreation	Consent	General
Pelagic longlining	Consent	Consent
Petroleum extraction	Consent	Consent
Renewable energy installations	Prohibited	Consent
Seismic surveys and mining exploration	Consent	Consent
Shipping lane	Consent	General
Small pelagics fishing	Prohibited	Consent
Undersea cables and pipelines	Consent	Consent

¹Consent: An activity which can continue in this zone subject to specific regulation and control.

²Prohibited: An activity which is not allowed or should not be allowed because it is incompatible with maintaining the biodiversity objectives of the zone.

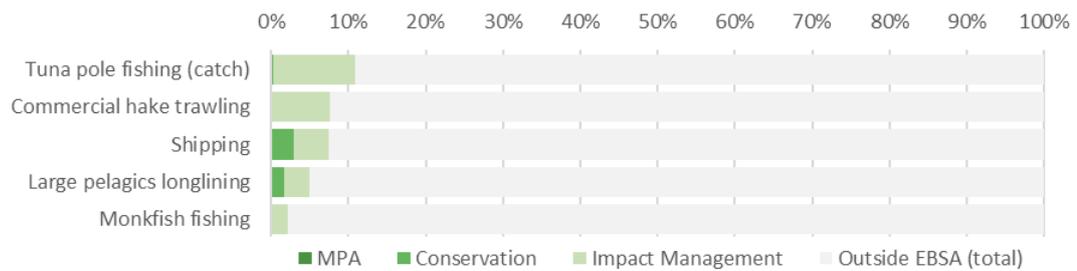
³Note that activities present in South Africa that are not relevant to the EBSA have been excluded from the table (e.g., the harvested species does not occur in the area; or the industry operates at a depth outside the depth range of the EBSA).

Furthermore, no new activities that can negatively impact the environment should be allowed in the EBSA, and some activities present in the EBSA do not need to be managed by EBSA zoning and can continue as per the current regulations. There are also some pressures on biodiversity features within the EBSA that originate from activities outside of these EBSA or beyond the jurisdiction of MSP. In support of maintaining the ecological integrity of and benefits delivered by the key biodiversity features, these other activities need to be appropriately managed by complementary initiatives.

Recommendations for other activities outside the EBSA or the MSP management jurisdiction.

Activities that are present but not managed by EBSA zones that can continue as per current regulations		
Shipping		
Activities that are currently not present in the EBSA and should be Prohibited in the future		
Ammunition and other dumping	Dredge-spoil dumping	Rock lobster harvesting
Benthic longlining	Mariculture	Salt pans
Boat-based linefishing	Midwater trawling (horse mackerel)	Shipping refuge (disabled ships)
Boat-based recreational fishing	Ports	Shore-based fishing
Channel dredging	Port anchorage areas	Wastewater discharge
Crab harvesting		
Other activities beyond the jurisdiction of MSP that directly influence the ecological condition of the EBSA that should be managed appropriately under the other appropriate legislation.		
Mean annual runoff reduction (e.g., determining and implementing freshwater flow requirements and estuarine management plans)		

Activity Evaluation Per Zone: Zoning Feasibility

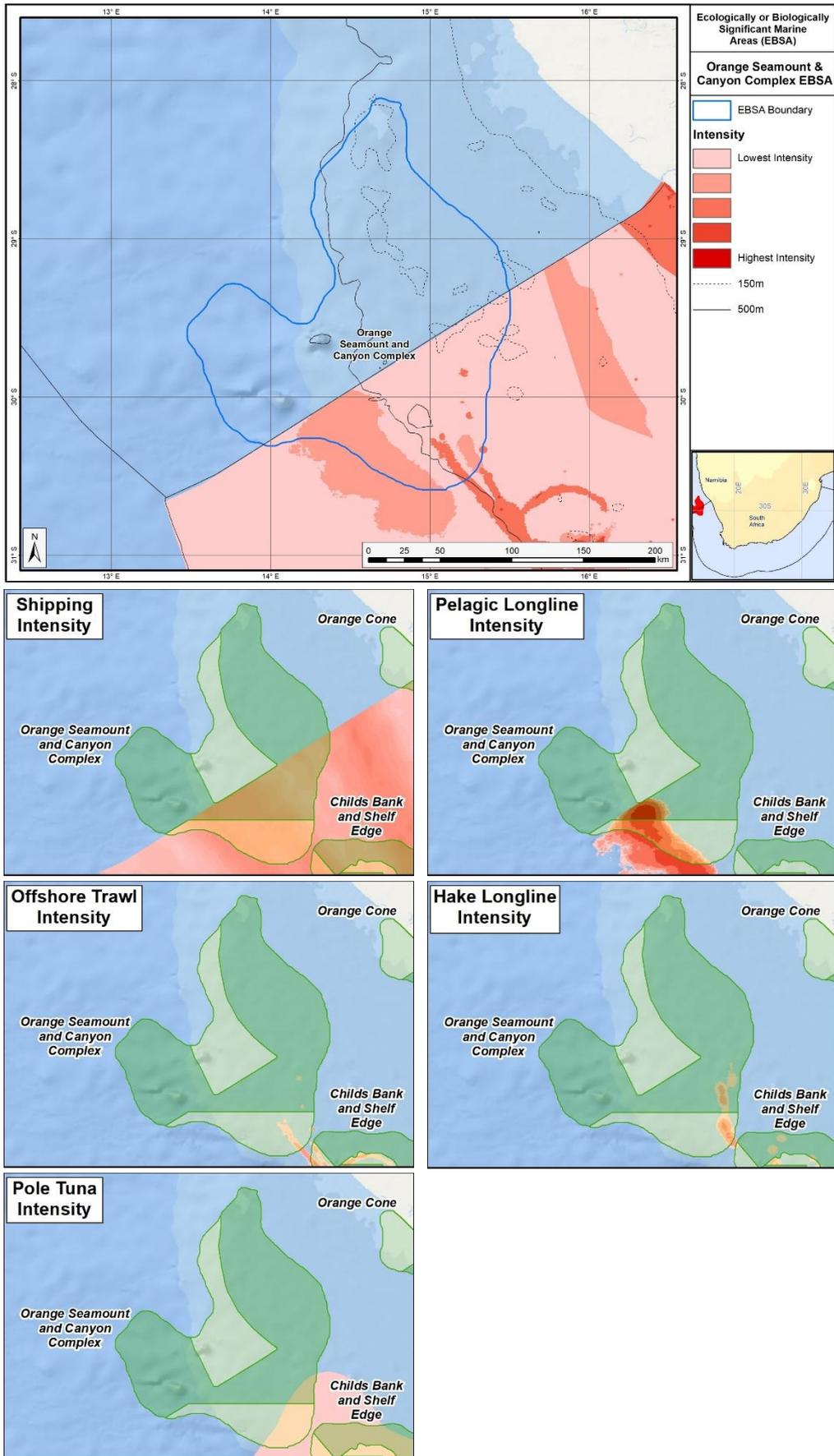


Proposed zonation of the EBSA, with the cumulative intensity footprint of activities within the EBSA (sorted highest to lowest) given relative to the national footprint of those activities to illustrate feasibility of management interventions.

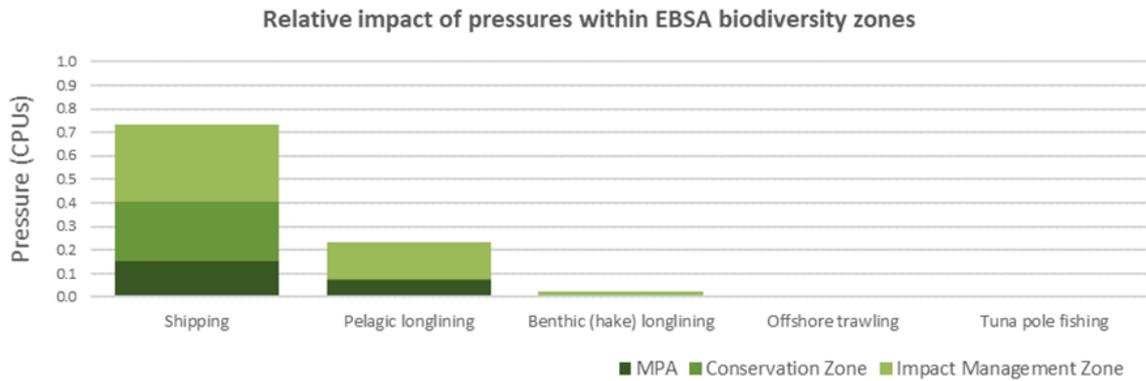
Tuna pole fishing in this EBSA comprises more than 10% of the national footprint of this activity, and is almost exclusively in the Impact Management Zone. This is a non-destructive and selective fishery and is recommended to continue in both zones as a Consent activity. Commercial bottom trawling for hake (wet, freezer, general) and monkfish is conversely a destructive activity and is incompatible with the management objectives with the Conservation Zone. It is therefore recommended to be Prohibited in that zone, but could be accommodated as a Consent activity in the Impact Management Zone. Pelagic longlining for species such as tuna is not a destructive fishery and is therefore recommended to continue as a Consent activity in both EBSA zones. Note, though, that this fishery often has high bycatch rates, and mitigation measure to limit impacts are recommended to be included as part of the regulations and controls for this activity, especially in the Conservation Zone. Shipping can continue in both the Conservation and Impact Management Zones under current general rules and legislation, however, there might need to be some control and regulation for shipping lanes in the Conservation Zone, where it is recommended to be a Consent activity. Other activities noted in the table of management recommendations above are either not currently present in the EBSA or are emerging activities; as far as possible, these are accommodated in the EBSA, depending on their compatibility with the management objectives of the two zones. Thus, the EBSA zonation has no or minimal impact on the national footprint for the listed marine activities.

Relevant Pressures and Activities (impact, extent): South Africa

- Five pressures are present in the South African portion of the EBSA, including: shipping, pelagic longlining, offshore trawling, benthic (hake) longlining, and tuna pole fishing. These four fisheries will need to be managed particularly well in order to protect the fragile benthic biodiversity and fish assemblages for which this EBSA is recognised. In all cases, the greater portion of each fishery is in the Impact Management Zone.
- Pressures that don't occur in the EBSA but are present in South Africa include: abalone harvesting, alien invasive species, beach seining, coastal development, coastal disturbance, dredge spoil dumping, gillnetting, inshore trawling, kelp harvesting, linefishing (commercial and recreational), mariculture, mean annual runoff reduction, midwater trawling, mining (prospecting and mining), naval dumping (ammunition), oil and gas (exploration and production), oyster harvesting, ports and harbours, prawn trawling, recreational shore angling, shark netting, small-pelagic fishing, south coast rock lobster harvesting, squid fishing, subsistence harvesting, wastewater discharge, west coast rock lobster harvesting; noting that some of these are coastal pressures that do not apply to offshore EBSAs.



Map of cumulative pressure (top) and maps of the five most important pressures (activities) in the EBSA and surrounds. Darker reds indicate higher pressure intensity.



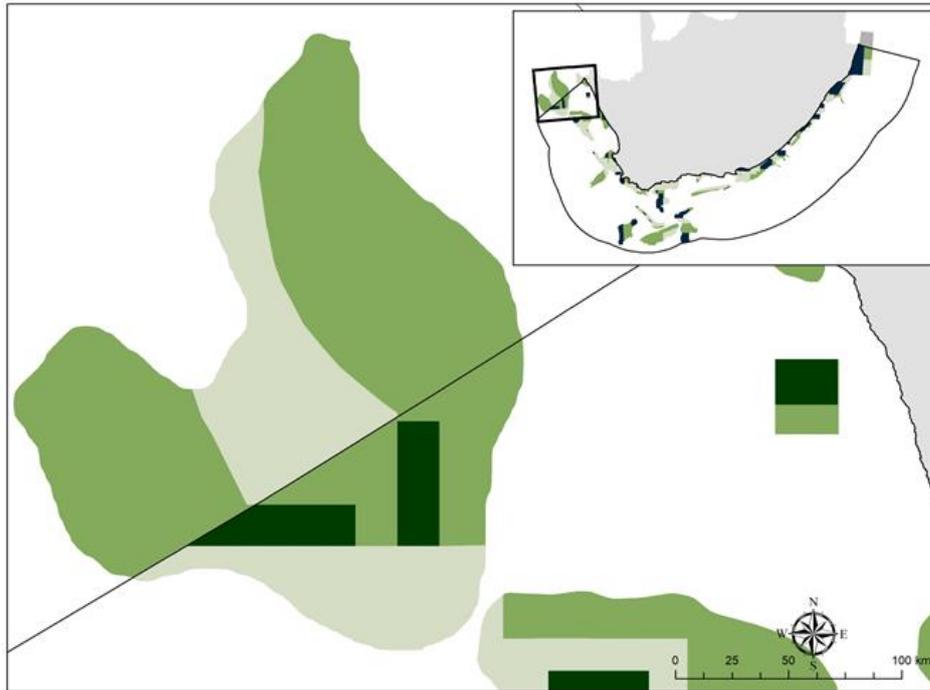
Pressure (in arbitrary cumulative pressure units, CPUs) summed for each pressure in the EBSA, per proposed EBSA biodiversity zone, ranked left (highest) to right (lowest) by the overall relative importance of pressures in this EBSA. Note that tuna pole fishing comprises <1% of the EBSA pressure profile.

Management Interventions Needed for the EBSA

Improved place-based protection of EBSA features should be pursued. In support of this, the EBSA is divided into a Biodiversity Conservation Zone and an Environmental Impact Management Zone, both comprising several areas within the EBSA. The aim of the Biodiversity Conservation Zone is to secure core areas of key biodiversity features in natural / near-natural ecological condition. Strict place-based biodiversity conservation is thus directed at securing key biodiversity features in a natural or semi-natural state, or as near to this state as possible. Activities or uses that have significant biodiversity impacts are incompatible with the management objective of this zone. If the activity is permitted, it would require alternative Biodiversity Conservation Zones or offsets to be identified. If this is not possible, it is recommended that the activity is Prohibited. Where possible and appropriate, the Biodiversity Conservation Zones should be considered for formal protection e.g., Marine Protected Areas or Other Effective Area-Based Conservation Measures (OECM). The aim of the Environmental Impact Management Zone is to manage negative impacts on key biodiversity features where strict place-based measures are not practical or not essential. In this zone, the focus is management of impacts on key biodiversity features in a mixed-use area, with the objective to keep biodiversity features in at least a functional state. Activities or uses that have significant biodiversity impacts should be strictly controlled and/or regulated. Within this zone, ideally there should be no increase in the intensity of use or the extent of the footprint of activities that have significant biodiversity impacts. Where possible, biodiversity impacts should be reduced.

As far as possible, the Biodiversity Conservation Zone was designed deliberately to avoid conflicts with existing activities. It also includes one MPA that is wholly within the EBSA: Orange Shelf Edge MPA. The activities permitted within this MPA are not considered as part of the EBSA management recommendations because these are as per the gazetted regulations.

Orange Shelf Edge MPA (proclaimed 2019) https://www.environment.gov.za/sites/default/files/legislations/nemp_aa_orangeshelfedgemarine_regulations_g42479gn791.pdf



Proposed zonation of the EBSA into Conservation (bright green) and Impact Management (light green) Zones. MPAs are overlaid in dark green.

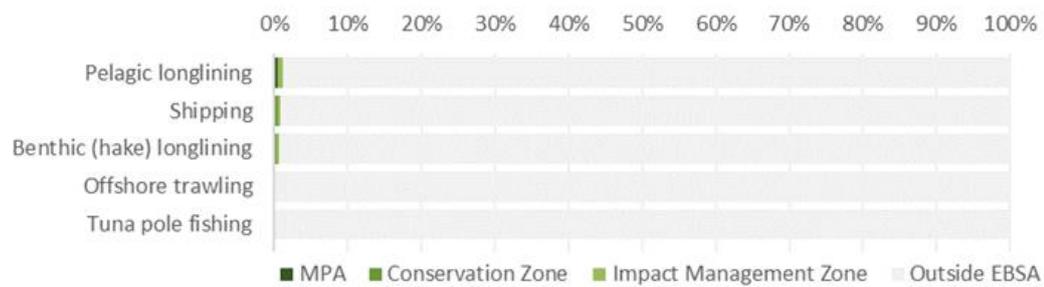
Protection of features in the rest of the Conservation Zone may require additional Marine Protected Area declaration/expansion. Other effective conservation measures should also be applied via Marine Spatial Planning (MSP) to ensure that the existing activities/uses are appropriately controlled to ensure compatibility of activities with the environmental requirements for achieving the management objectives of the EBSA Biodiversity Conservation and Environmental Impact Management Zones.

Based on the compatibility of sea-use activities with the management objective of each EBSA zone (see table below, from the sea-use guidelines of the National Coastal and Marine Spatial Biodiversity Plan), it is recommended for MSP that compatible activities are managed as General activities, which are those that are permitted and regulated by current general rules and legislation. Activities that are conditional are recommended to be managed as Consent activities, which are those that can continue in the zone subject to specific regulations and controls, e.g., to avoid unacceptable impacts on biodiversity features, or to avoid intensification or expansion of impact footprints of uses that are already occurring and where there are no realistic prospects of excluding these activities. Activities that are not compatible are recommended to be Prohibited, where such activities are not allowed or should not be allowed (which may be through industry-specific regulations) because they are incompatible with maintaining the biodiversity objectives of the zone. These recommendations are subject to stakeholder negotiation through the MSP process, recognizing that there will likely need to be significant compromises among sectors. It is emphasized, as noted above, that if activities that are not compatible with the respective EBSA zones are permitted, it would require alternative Biodiversity Conservation Zones or offsets to be identified. If this is not possible, it is recommended that the activity is Prohibited.

List of all sea-use activities, grouped by their Marine Spatial Planning (MSP) zones, and scored according to their compatibility with the management objective of the EBSA's Biodiversity Conservation Zone (i.e., Critical Biodiversity Area, CBA) and Environmental Impact Management Zone (i.e., Ecological Support Area, ESA). Activity compatibility is given as Y = yes, compatible, C = conditional or N = not compatible, with major activities that are present in the EBSA shaded in grey.

Broad sea use	Associated MSP Zones	Associated sea-use activities	Biodiversity Conservation Zone (i.e. CBA)	Environmental Impact Management Zone (i.e. ESA)
Conservation	Marine Protected Area: Sanctuary zone	Sea-use activities as per gazetted MPA regulations	N/A	N/A
	Marine Protected Area: Restricted zone			
	Marine Protected Area: Controlled zone	Sea-use activities as per existing CBA/ESA categories until MPA declaration	Y	Y
	Marine Protected Area: Proposed		Y	N/A
	Biodiversity Conservation Zone		N/A	Y
	Environmental Impact Management Zone			
Heritage	Heritage Protection Zone	Shipwrecks	Y	Y
		Sites of historic importance	Y	Y
		Sites of land- or seascape value	Y	Y
Recreation and tourism	Marine Tourism Zone	Beach visiting, recreation, non-motorised water sports	Y	Y
		SCUBA diving	Y	Y
		Shark cage diving	Y	Y
		Whale watching	Y	Y
		Motorised water sports (e.g., jet skis)	C	Y
		Recreational boat-based linefishing	C	Y
		Recreational shore-based linefishing	C	Y
		Spearfishing	C	Y
		Shark control	C	Y
Fisheries	Commercial Fishing Zone	Crustacean trawling	N	C
		Demersal inshore trawling	N	C
		Demersal offshore trawling	N	C
		Abalone harvesting	C	Y
		Beach seining	C	Y
		Commercial linefishing	C	Y
		Demersal hake longlining	C	Y
		Gillnetting	C	Y
		Kelp harvesting	C	Y
		Midwater trawling	C	Y
		Oyster harvesting	C	Y
		Pelagic longlining	C	Y
		Small pelagics fishing	C	Y
		South coast rock lobster harvesting	C	Y
		Squid fishing	C	Y
	Tuna pole fishing	C	Y	
		West coast rock lobster harvesting	C	Y
	Small Scale/Subsistence Fishing Zone	Subsistence fishing	C	Y
	Fisheries Resource Protection Zone	Resource protection	Y	Y
Aquaculture	Aquaculture Development Zone	Sea-based aquaculture	C	Y
Mining	Mining Zone	Mining: prospecting (non-destructive)	C	Y
		Mining: prospecting (destructive, localised impact, e.g., bulk sampling)	C	C
		Mining: mining construction and operations	N	C
Petroleum	Petroleum Zone	Petroleum: exploration (non-destructive)	C	Y
		Petroleum: exploration (destructive, localised impact, e.g., exploration wells)	C	C
		Petroleum: production	N	C
Renewable Energy	Renewable Energy Zone	Renewable energy installations	C	Y
Military	Military Zone	Missile testing grounds	C	Y
		Training areas	Y	Y
Transport	Maritime Transport Zone	Shipping lanes	Y	Y
		Ports and harbours	N	C
		Anchorage areas	C	Y
		Bunkering	C	Y
Infrastructure	Underwater Infrastructure Zone	Undersea cables	C	Y
		Seawater inlets	C	Y
		Pipelines	C	Y
	Land-based Infrastructure Zone	Coastal development	N	C
Disposal	Disposal Zone	Ammunition dumping site (*disused)	N*	N*
		Wastewater discharge	C	Y
		Dumping of dredged material	N	C

Activity Evaluation Per Zone: Zoning Feasibility

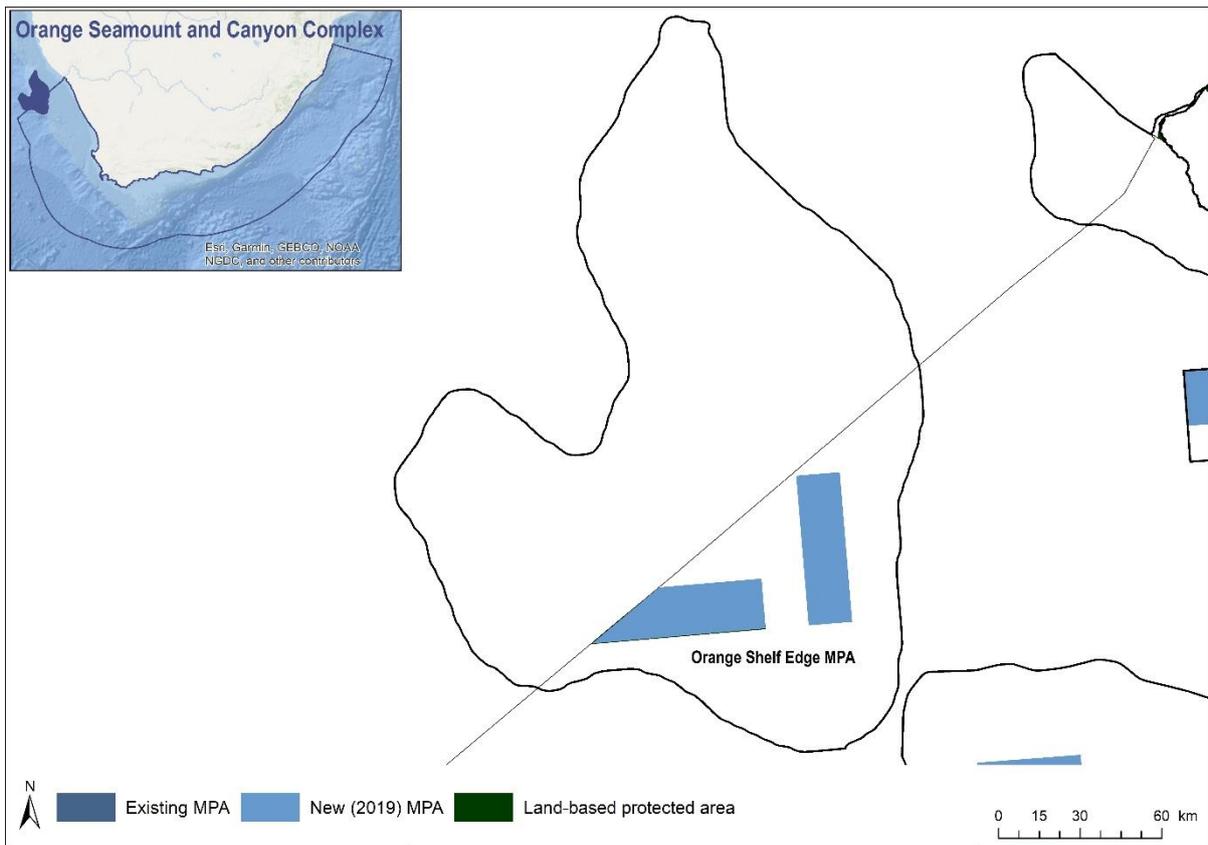


Proposed zonation of the EBSA, with the cumulative intensity footprint of activities within the EBSA (sorted highest to lowest) given relative to the national footprint of those activities to illustrate feasibility of management interventions.

The EBSA includes a very small fraction of the respective national footprints of the linefisheries that are present, namely pelagic longlining, benthic (hake) longlining and tuna pole fishing, and the greater proportion of these activities is within the Impact Management Zone. These fisheries are conditionally compatible with the Biodiversity Conservation Zone and compatible with the Environmental Impact Management Zone and therefore it is recommended that these fisheries continue in both zones provided stricter controls are put in place in the Conservation Zone. Offshore trawling is also present in a very small portion of the EBSA. This activity is not compatible with the Biodiversity Conservation Zone but is conditionally compatible in the Environmental Impact Management Zone. It is therefore recommended to continue in the Environmental Impact Management Zone provided stricter controls are put in place, and to be not permitted in the Biodiversity Conservation Zone (current zonation needs to be revised to exclude a very small area of trawling if it is truly present and the overlap is not an artefact of data resolution). Shipping is not managed by EBSA zones and thus is recommended to continue under current general rules and legislation. Thus, in all cases, the EBSA zonation has no or minimal impact on the activities that are present in this EBSA.

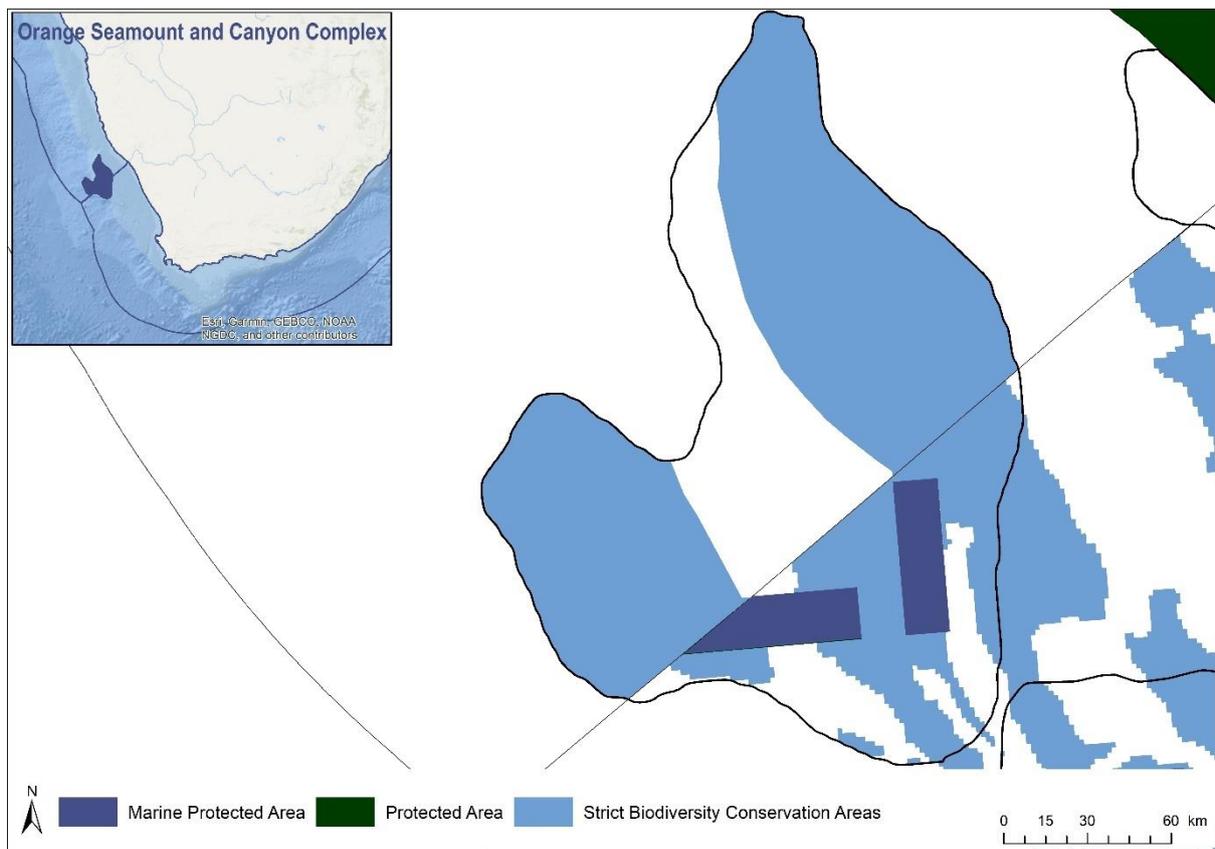
Management Recommendations for Marine Protected Areas

Since the inception of the MARIMSA Project, protection has increased in the EBSA with the declaration of the Orange Shelf MPA in 2019 in South Africa. It is recommended that full operationalisation of the new MPA is implemented, including a management plan, resourcing, and adequate staffing and law enforcement.



Marine protected areas (MPAs) in the Orange Seamount and Canyon Complex EBSA. Orange Shelf Edge MPA comprises two parts, both of which are within the EBSA.

Consolidation and further potential MPA expansion within the EBSA should be explored, particularly in the Strict Biodiversity Conservation Areas, to ensure that the features for which the EBSA was described receive adequate protection. Ideally, transboundary MPAs that span the international border should be implemented to secure the features that are not restricted to the individual countries. See Future Process below for more details.



Marine and land-based protected areas in the area surrounding Orange Seamount and Canyon Complex (from DFFE 2021, UNEP-WCMC & IUCN, 2022), and the EBSA Strict Biodiversity Conservation Areas where potential MPA expansion within the EBSA should be focused.

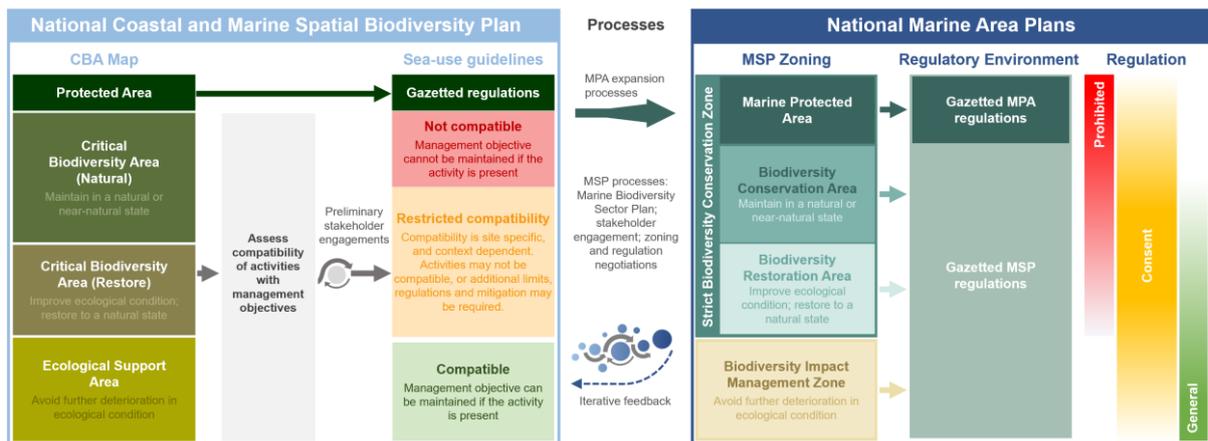
Management Recommendations for Marine Spatial Planning

Developing the biodiversity sector's input to the national Marine Spatial Planning process

Although Marine Area Plans are being developed in each country separately, regional alignment through the BCC is underway to ensure that the management recommendations within the transboundary EBSAs are congruent across the border. In Namibia, the management recommendations proposed for Orange Seamount and Canyon Complex, outlined above, are the basis for the biodiversity sector's input into the southern Marine Area Plan. The current MSP focus in Namibia regards the central Marine Area Plan, and although some progress has been made for MSP within Orange Seamount and Canyon Complex in terms of regional alignment (particularly for the sea-use guidelines), the southern plan will be developed in due course.

Following the initial management recommendations proposed for Orange Seamount and Canyon Complex, outlined above, South Africa iteratively developed a National Coastal and Marine Spatial Biodiversity Plan (NCMSBP; Harris et al. 2022a,b) that underpinned the Marine Biodiversity Sector Plan (DFFE 2022). The latter constitutes the biodiversity sector's input into the national Marine Spatial Planning (MSP) process. The NCMSBP comprises a Map of Critical Biodiversity Areas and Ecological Support Areas (abbreviated to CBA Map), and a set of sea-use guidelines that indicate activity compatibility with the management objectives of each of the CBA Map categories. These two components form the basis for the proposed biodiversity zones and management recommendations for the Marine Area Plans. EBSAs are an integral part of the NCMSBP, and thus the Biodiversity Sector

Plan. Therefore, these products informed the proposed zoning and sea-use guidelines for EBSAs in the MSP process.



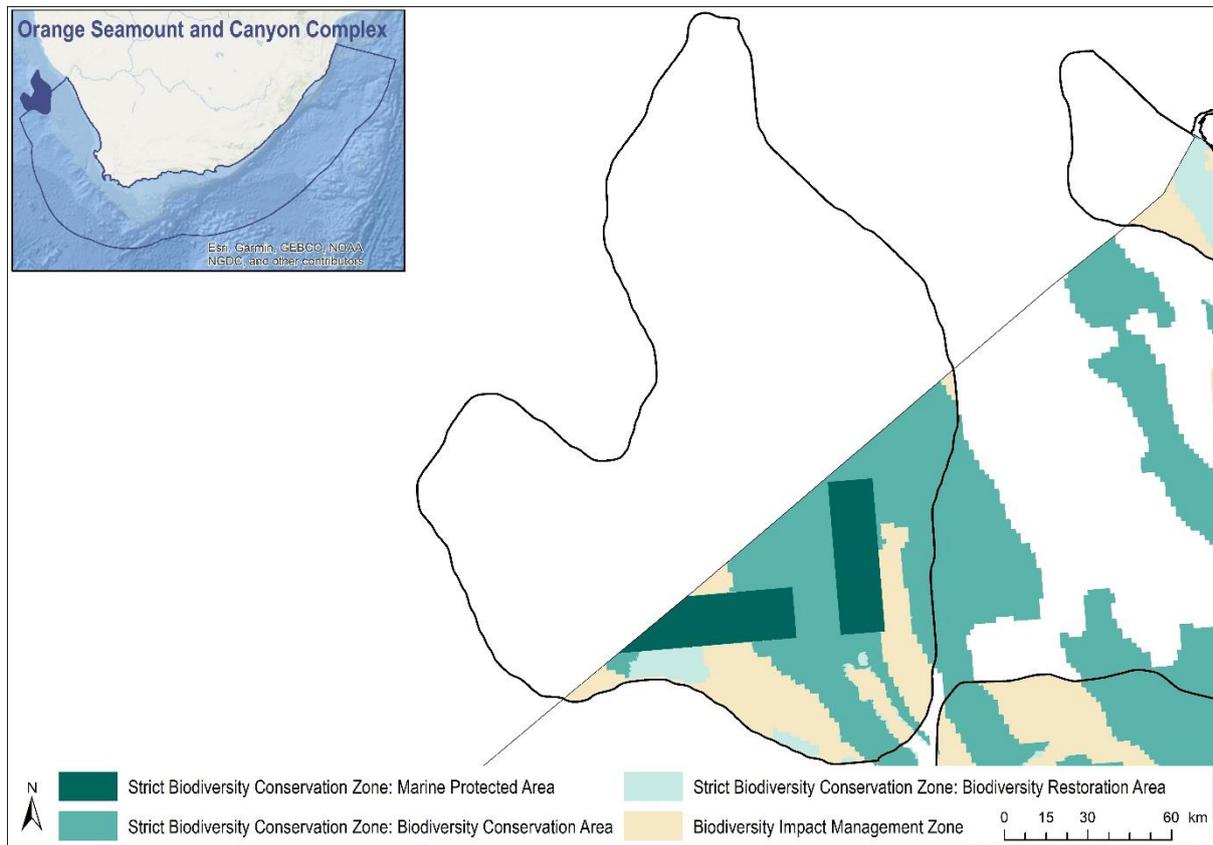
Schematic diagram illustrating that the National Coastal and Marine Spatial Biodiversity Plan will inform the Marine Area Plans through the Marine Biodiversity Sector Plan (DFFE 2022), and will be iteratively updated and refined based on feedback. The process for deriving the sea-use guidelines is also shown, indicating that it is based on an assessment of activity compatibility with the management objective of Critical Biodiversity Area (CBA) Natural, CBA Restore and Ecological Support Areas (ESAs). Marine Protected Area (MPA) expansion, focussing on CBAs, will also take place in a separate but related process. The outcomes of the Marine Spatial Planning and MPA expansion processes will be incorporated into the Marine Area Plans and will be fed back into future updates of the National Coastal and Marine Spatial Biodiversity Plan.

Proposed Zones

The proposed biodiversity zones for the EBSA in MSP comprises two types: a Strict Biodiversity Conservation Zone; and a Biodiversity Management Zone. It is recommended that there is full implementation and operationalisation of these zones as part of MSP. Sub-categories are yet to be developed in Namibia as part of the southern Marine Area Plan, but are likely to follow a similar approach to that for Namib Flyway and Namibian Islands in the central Marine Area Plan. Until then, the proposed zones are as indicated above in the Management Interventions Needed for the EBSA.

In South Africa, the Strict Biodiversity Conservation Zone has three sub-categories: Marine Protected Area; Biodiversity Conservation Area; and Biodiversity Restoration Area. All of these zones and sub-categories are found in Orange Seamount and Canyon Complex, and present more refined management recommendations than those that were initially proposed. Orange Shelf Edge MPA, comprising two parts, is the only MPA in this EBSA. It is managed according to the gazetted management regulations for this MPA. The rest of the Strict Biodiversity Conservation Zone is primarily a Biodiversity Conservation Area, where the management objective of this zone is to maintain the sites in natural or near-natural ecological condition. A much smaller portion comprises a Biodiversity Restoration Area, where the management objective of the zone is to improve the ecological condition of the sites and, in the long term, restore them to a natural / near-natural state, or as near to that state as possible. As a minimum, avoid further deterioration in ecological condition and maintain options for future restoration. The rest of the EBSA is a Biodiversity Impact Management Zone. This is a multi-use area that may already be heavily impacted, but needs to be kept ecologically functional because it is still important for marine biodiversity patterns, ecological processes, and ecosystem

services. Therefore, the management objective is to avoid further deterioration in ecological condition.



Updated proposed biodiversity zones for the Orange Seamount and Canyon Complex EBSA for South Africa's Marine Area Plans.

Proposed Sea-Use Guidelines

As explained in the Management Interventions Needed for the EBSA above, all sea-use activities were listed and recommendations for management were provided according to the compatibility of the activities with the management objective of each of the proposed biodiversity zones. As part of the regional alignment and development of the NCMSP, the sea-use guidelines for both countries have advanced the initial recommendations proposed above.

For example, where various aspects of an activity have a different impact on the environment, these were reflected separately, e.g., impacts from petroleum exploration are different to those from production. Activity compatibility in South Africa was based largely on the ecosystem-pressure matrix from the NBA 2018 (Sink et al. 2019), which is a matrix of expert-based scores of the functional impact and recovery time for each activity on marine ecosystems (adapted from Halpern et al. 2007). This also helped to inform the assessment of activity compatibility in Namibia. Activities were then classified into those that are Compatible, Not Compatible or have Restricted Compatibility with the management objectives of each proposed biodiversity zone. This classification broadly followed a set of predefined principles that account for the severity and extent of impact, similar to the IUCN Red List of Ecosystems criterion C3 (Keith et al. 2013). Some exceptions and adjustments were made based on initial discussions as part of the MSP process and regional alignment processes. It is recommended

that the sea-use guidelines, as proposed below, are implemented as part of the respective Marine Area Plans in Namibia and South Africa.

Sea-use guidelines for Orange Seamount and Canyon Complex in Namibia. List of all sea-use activities, grouped by their broad Marine Spatial Planning (MSP) Zones, and categorised according to their compatibility with the management objective of the Strict Biodiversity Conservation Area and Biodiversity Impact Management Area. Activity compatibility is given as Y = yes, compatible, R = restricted compatibility, or N = not compatible. Strict Biodiversity Conservation Zone: Marine Protected Areas (SBCZ: MPA) are managed according to their gazetted regulations.

Broad MSP Zone	Activities	MPA	Strict Biodiversity Conservation Area	Biodiversity Management Area
Biodiversity	Conservation activities (including MPA expansion)	Sea-use activities as per gazetted MPA regulations	Y	Y
Marine Tourism	Non-consumptive tourism and recreation		R	Y
	Ecotourism (regulated nature based and strictly controlled)		R	Y
	Recreational fishing (includes shore and recreational skiboat based)		R	Y
Heritage Conservation	Heritage sites		Y	Y
Commercial Fishing	Commercial Linfishing (e.g., snoek 20-m vessels)		R	Y
	Benthic longlining (e.g., hake, kingklip) (Not current activity)		R	Y
	Midwater trawling (Horse Mackerel)		R	Y
	Pelagic longlining		R	Y
	Commercial Pelagic Purse-seine (small pelagics) fishing		R	Y
	Crustacean trap-based harvesting (crabs)		R	Y
	Crustacean trap-based harvesting (rock lobster)		R	Y
	Bottom trawling (non-freezer)		N	R
	Bottom trawling (freezer trawlers)		N	R
Small-scale Fishing	Shore-based fishing (subsistence, artisanal)		R	Y
Mariculture	Mariculture		N	R
Mining	Mineral resource extraction (mining)		N	R
	Salt extraction (existing - man made)		R	R
	Salt extraction (new - man made)		N	R
Petroleum	Seismic surveys and mining exploration		R	R
	Petroleum extraction		N	R
Renewable Energy	Renewables (e.g. offshore wind, wave, solar)		N	R
Military	Military exercises and testing		N	R
Ammunition Dumping	Ammunition and other dumping		N	N
Maritime Transport	Shipping lane (designated lanes in and around ports)		N	Y
	Shipping (General ship movements)		Y	Y
	Shipping refuge (temporarily disabled ships)		N	R
	Bunkering at Sea		N	R
	Ports (existing, anchorage and new infrastructure in port zone)		N	Y
	Ports (new)		N	R
	Channel dredging	N	R	
	Dredge-spoil dumping (port channel dredging)	N	R	
Underwater Infrastructure	Cables and pipelines (undersea)	R	Y	
Land-based Infrastructure	Coastal Development - NEW (jetty, sea walls, breakwater etc.)	N	R	
Disposal	Wastewater and treated effluent discharge - existing (including desalination)	R	R	
	Wastewater and treated effluent discharge - new (including desalination)	N	R	

Sea-use guidelines for Orange Seamount and Canyon Complex in South Africa. List of all sea-use activities, grouped by their broad sea use and Marine Spatial Planning (MSP) Zones, and categorised according to their compatibility with the management objective of Strict Biodiversity Conservation Zone: Biodiversity Conservation Area (SBCZ: BCA); Strict Biodiversity Conservation Zone: Biodiversity Restoration Area (SBCZ: BRA); and the Biodiversity Impact Management Zone (BIMZ). Activity compatibility is given as Y = yes, compatible, R = restricted compatibility, or N = not compatible. Strict Biodiversity Conservation Zone: Marine Protected Areas (SBCZ: MPA) are managed according to their gazetted regulations.

Broad sea use	Associated MSP Zones	Associated sea-use activities	SBCZ: MPA	SBCZ: BCA	SBCZ: BRA	BIMZ
Conservation	Biodiversity Zones	Expansion of place-based conservation measures (e.g., MPA expansion)		Y	Y	Y
Recreation and tourism	Marine Tourism Zone	Beach recreation, non-motorised water sports		Y	Y	Y
		Ecotourism (e.g., shark cage diving, whale watching)		Y	Y	Y
		SCUBA diving		Y	Y	Y
		Motorised water sports (e.g., jet skis)		R	R	Y
		Recreational fishing (e.g., shore-based, boat-based and spearfishing)		N	R	Y
		Shark control: exclusion nets		Y	Y	Y
		Shark control: drumlines and gillnets		N	R	Y
Heritage	Heritage Conservation Zone	Protection of sites of heritage importance, including historical shipwrecks		Y	Y	Y
		Protection of sites of seascape value		Y	Y	Y
Fisheries	Commercial and Small-Scale Fishing Zones	Abalone harvesting		R	R	Y
		Linefishing		N	R	R
		Demersal shark longlining		N	R	Y
		Demersal hake longlining		N	R	R
		Midwater trawling		N	R	Y
		Pelagic longlining		R	R	Y
		Small pelagics fishing		N	R	Y
		South coast rock lobster harvesting		R	R	Y
		Squid harvesting		R	R	Y
		Tuna pole fishing		R	R	Y
		West coast rock lobster harvesting		R	R	Y
		Crustacean trawling		N	N	R
		Demersal hake trawling (inshore and offshore)		N	R	R
		Hake handlining		R	R	Y
		Seaweed harvesting		R	R	Y
		Commercial white mussel harvesting		R	R	Y
		Beach seining		R	R	Y
		Gillnetting		R	R	Y
		Kelp harvesting		R	R	Y
	Oyster harvesting		R	R	Y	
Small-scale fishing		R	R	Y		
	Fisheries Resource Protection Zone	Resource protection		Y	Y	Y
Aquaculture	Aquaculture Zone	Sea-based aquaculture		N	R	R
Mining	Mining Zone	Mining: prospecting (non-destructive)		R	R	R
		Mining: prospecting (destructive, e.g., bulk sampling)		N	N	R
		Mining: mining construction and operations ¹		N	N	R
Petroleum	Petroleum Zone	Petroleum: exploration (non-invasive)		R	R	R
		Petroleum: exploration (invasive, e.g., exploration wells)		R	R	R
		Petroleum: production ^{1,2}		N	N	R
		Petroleum: oil and gas pipelines		N	N	R
Renewable Energy	Renewable Energy Zone	Renewable energy installations		N	R	R
Defence	Military Zone	Military training and practice areas		R	R	Y
		Missile testing grounds		R	R	Y
Transport	Maritime Transport Zone	Designated shipping lanes (including port approach zones)		R	R	Y
		Anchorage areas		R	R	Y
		Bunkering		N	N	R
		Ports and harbours (new)		N	N	R

Broad sea use	Associated MSP Zones	Associated sea-use activities	SBCZ: MPA	SBCZ: BCA	SCBZ: BRA	BIMZ
		Dumping of dredged material		N	N	R
Infrastructure	Underwater Infrastructure Zone	Pipelines (excluding oil and gas)		N	R	Y
		Undersea cables (new installations)		N	R	Y
	Land-based Infrastructure Zone	Coastal development (new installations, including piers, breakwaters, and seawalls) ³		N	N	R
Abstraction and Disposal	Disposal Zone	Waste-water (new installations)		N	R	Y
	Sea-water abstraction and disposal	Sea-water abstraction and disposal (e.g., desalination)		R	R	Y
		Sea-water abstraction and disposal (e.g., aquaculture disposal)		N	R	Y
<p>¹ The activity should not be permitted to occur in CBAs because it is not compatible with the respective management objectives. However, if significant mineral or petroleum resources are identified during prospecting/exploration, then the selection of the site as a CBA could be re-evaluated as part of compromises negotiations in current or future MSP processes. This would require alternative CBAs and/or biodiversity offsets to be identified. However, if it is not possible to identify alternative CBAs to meet targets for the same biodiversity features that are found at the site, it is recommended that the activity remains prohibited.</p> <p>² The recommended prohibition of the activity in CBAs (because it is not compatible with the management objective) refers to the location of the biodiversity disturbance rather than the location of the petroleum resource. If petroleum production is possible using lateral drilling or other techniques that do not result in any impacts on biodiversity within the CBAs, then production may be treated as an activity with restricted compatibility (i.e., recommended to be a consent activity).</p> <p>³ New coastal development should not be permitted in CBA Restore sites unless it is part of rehabilitation and restoration activities to improve ecological condition.</p>						

Proposed management recommendations for activities with each of the different compatibility ratings:

- **Compatible:** Activities should be allowed and regulated by current general rules. Notwithstanding, there should still be duty of care, possibly requiring monitoring and evaluation programmes, to avoid unintended cumulative impacts to the biodiversity features for which this area is recognised.
- **Restricted compatibility:** A robust site-specific, context-specific assessment is required to determine the activity compatibility depending on the biodiversity features for which the site was selected. Particularly careful attention would need to be paid in areas containing irreplaceable to near-irreplaceable features where the activity may be more appropriately evaluated as not permitted. The ecosystem types in which the activities take place may also be a consideration as to whether or not the activity should be permitted, for example. Where it is permitted to take place, strict regulations and controls over and above the current general rules and legislation would be required to be put in place to avoid unacceptable impacts on biodiversity features. Examples of such regulations and controls include: exclusions of activities in portions of the zone; avoiding intensification or expansion of current impact footprints; additional gear restrictions; and temporal closures of activities during sensitive periods for biodiversity features.
- **Not compatible:** The activity should not be permitted to occur in this area because it is not compatible with the management objective. If it is considered to be permitted as part of compromises in MSP negotiations, it would require alternative Strict Biodiversity Conservation Zones and/or offsets to be identified. However, if this is not possible, it is recommended that the activity remains prohibited within the Strict Biodiversity Conservation Zone.

Research Needs

There are no specific research needs for this EBSA in addition to those for all EBSAs (see EBSA Research Needs below). However, it is noted that much more baseline research and ongoing monitoring is needed to ensure that the key features of the EBSA are well managed. This is particularly important

because the EBSA is adjacent to Namibia's Kudu gas field, and the area is subject to ongoing oil and gas exploration.

Future Process

There needs to be full operationalisation and practical implementation of the Orange Shelf MPA, including a management plan, staffing, and resources. There also needs to be full operationalisation and practical implementation of the proposed zoning in South Africa and Namibia's marine spatial plans, with gazetted management regulations following the proposed management recommendations outlined above. MPA expansion within the EBSA should be explored, with relevant areas included into focus areas that can be considered further in a dedicated MPA expansion process with adequate and meaningful stakeholder engagement. Regional alignment through the BCC should continue, which could also facilitate exploration of transboundary MPAs.

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Orange Cone

Revised EBSA Description

General Information

Summary

The Orange Cone is a transboundary area between Namibia and South Africa that spans the mouth of the Orange River (South Africa and Namibia's major river in terms of run-off to the marine environment). The estuary is biodiversity-rich but modified, and the coastal area includes 10 threatened ecosystem types: two Critically Endangered, four Endangered and four Vulnerable types. The marine environment experiences slow, but variable currents and weaker winds, making it potentially favourable for reproduction of pelagic species. Furthermore, given the proven importance of river outflow for fish recruitment at the Thukela Banks (a comparable shallow, fine-sediment environment on the South African east coast), a similar ecological dependence for the inshore Orange Cone is likely. Evidence supporting this hypothesis is growing but has not yet been consolidated. Comparable estuarine/inshore habitats are not encountered for 300 km south (Olifants River) and over 1300 km north (Kunene) of this system. The Orange River Mouth is a transboundary Ramsar site between Namibia and South Africa. The river mouth also falls within the Tsau//Khaeb (Sperrgebiet) National Park in Namibia, is under consideration as a protected area by South Africa, and is also an Important Bird and Biodiversity Area. Although there are substantially impacted areas especially on the coast and in the estuary, much of the area remains in a natural state. In summary, this area is highly relevant in terms of: 'Uniqueness or rarity', 'Importance for threatened, endangered or declining species and/or habitats' and 'Special importance for life history stages of species'.

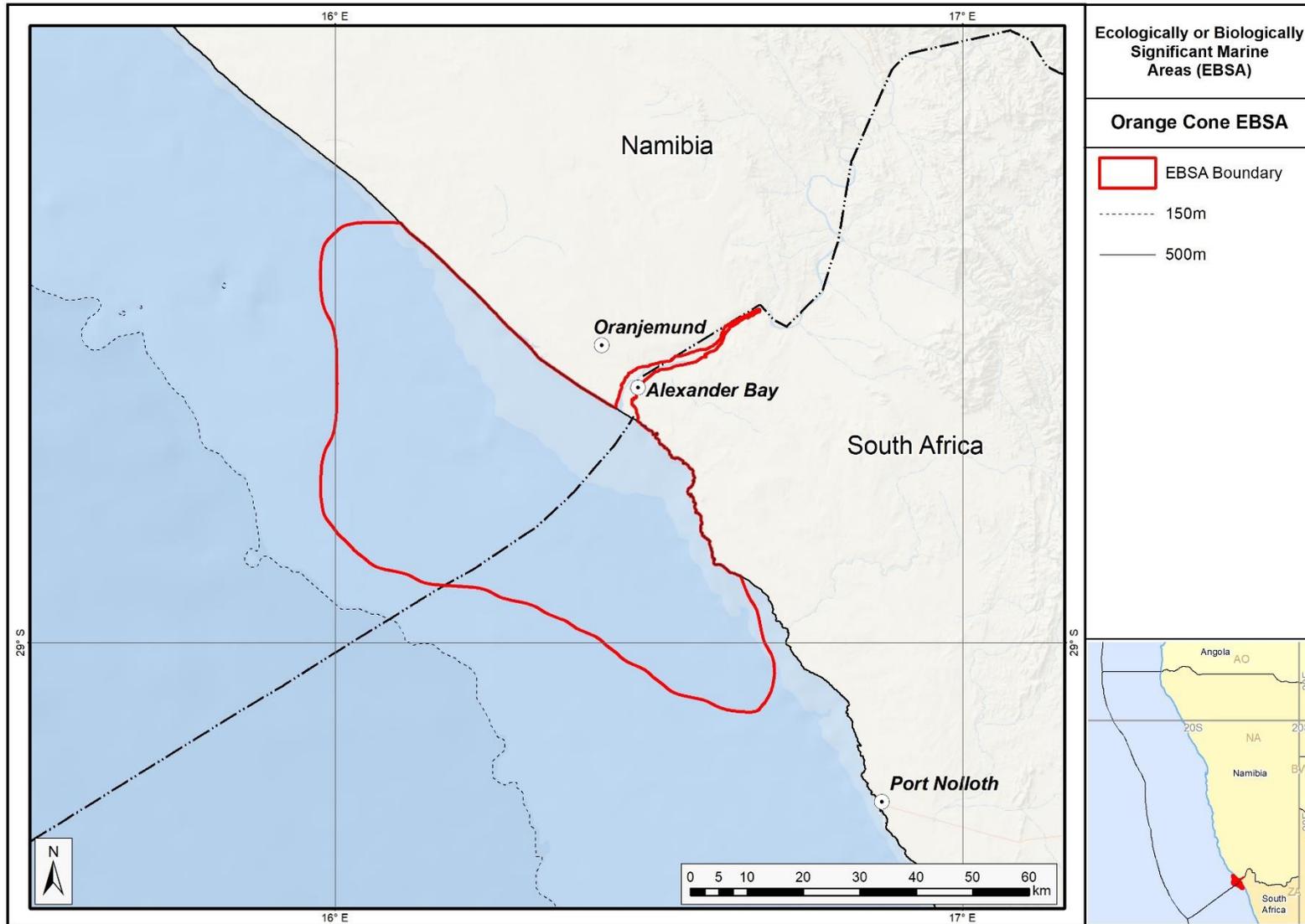
Introduction of the area

The Orange Cone spans the coastal boundary between South Africa and Namibia. The Orange River estuary extends approximately 10 km inland of the sea in a hydrological sense, although estuarine-dependent species migrate much further upstream. The estuary is substantially modified but under rehabilitation. Boundaries of the marine area that is ecologically coupled to the estuary are not accurately known, but could be extensive: seasonally and inter-annually, the marine habitat affected by freshwater outflow varies from a few kilometres to hundreds of kilometres in the longshore direction during floods, particularly southwards (Shillington et al., 1990). This area is located 50 km north and south of the Orange River, extending 30 - 45 km offshore, and includes the full extent of the estuary. There are 16 marine and coastal ecosystem types represented in the area (Sink et al., 2012, 2019; Holness et al., 2014). The associated pelagic environment is characterized by upwelling, giving rise to cold waters with high productivity/chlorophyll levels (Lagabrielle 2009). However, the winds in the area are weaker compared to that to the north or south of the river mouth, leading to less local upwelling (Boyd, 1988). The site is presented as a Type 1 EBSA because it contains "Spatially stable features whose positions are known and individually resolved on the maps" (sensu Johnson et al., 2018).

Description of the location

EBSA Region

South-Eastern Atlantic



Revised delineation of the Orange Cone EBSA.

Description of location

The Orange River estuary is located at 29°S and forms the boundary between South Africa and Namibia. The northern and southern boundaries of the Orange Cone EBSA are located 50 km north and south of the Orange River, respectively, with the eastern boundary extending 30 – 45 km offshore, and includes the full extent of the estuary. However, the broader area has characteristics of the Orange Cone marine environment as far as 100 km offshore. This EBSA straddles coastal and marine areas within the national jurisdictions of South Africa and Namibia.

Area Details

Feature description of the area

There are 16 ecosystem types represented in this EBSA (Sink et al., 2012, 2019; Holness et al., 2014). The associated pelagic environment is characterized by upwelling, giving rise to cold waters with high productivity (Lagabrielle 2009). However, the winds in the Orange Cone are weaker than those north or south of the area, leading to some stratification (Boyd 1988). Moreover, currents in the inshore region, and indeed over much of the Orange Cone area, have slower speeds than those occurring further north or south, and movements in both upper and lower layers are dominated by diurnal and/or inertial motions (Iita et al., 2001, Largier and Boyd, 2001).

The river and estuary have received substantial research attention over the last decade; the adjacent marine environment much less so, apart from some research during the Large Marine Ecosystem (LME) project from 1995-2000. However, given the proven role of the Thukela River outflow for the recruitment of fish stocks in the adjacent marine area on the South African east coast (Turpie and Lamberth 2010), it is hypothesized that the Orange River plays a similar role on the South African west coast. Although not formally described, evidence is mounting to support this hypothesis, because there are seemingly many relationships between Orange River flow volumes and demersal, pelagic and nearshore fish biomass (S.J. Lamberth, pers.com, unpublished). For example, the sole fishery collapse was associated with a change in local sediment particle size, because it altered burying difficulty and exposure to predators. Also, anchovy (mostly juveniles) appear to be positively correlated with the size of the plume, because the plume probably serves as a turbidity refuge. Furthermore, the conditions in the area are consistent with the criteria proposed for supporting pelagic species' reproduction (Parrish et al., 1983).

Because of a previous lack of research, the boundaries of the marine zone that is ecologically coupled to the estuary were not accurately known, but were thought to be extensive. For example, geological research suggests that the sediment from the Orange River travels as far north as southern Angola (1750 km north of the mouth), and makes up >80% of the dune sand along the Skeleton Coast in Namibia (Garzanti et al., 2014); according to these authors, "this is the longest cell of littoral sand transport documented so far". A particular challenge to determining the river's extent of influence is that the marine habitat affected by freshwater outflow varies greatly both seasonally and inter-annually, from a few to hundreds of kilometres in the longshore direction (mainly southwards) during floods (Shillington et al., 1990). Submarine delta deposits off the mouth of the Orange River extend 26 km offshore, and 112 km alongshore (Rodgers & Rau 2006). The terrigenous material exiting the Orange River has a heterogeneously integrated catchment signal (Hermann et al., 2016) that is generally confined to about 50 km from the shore (Rodgers & Rau 2006). Since the original description

of this EBSA, recent work on marine sediments and delineation of muddy sediment associated habitats have allowed a far more accurate delineation of the Orange Cone (Karenzi, 2014; Karenzi et al., 2016). It is largely these new data that were used to refine the Orange Cone EBSA boundary, which was noted in the original description as being an approximation that needed further research so it could be properly delineated. New, fine-scale coastal mapping (Harris et al., 2019) also allowed a more accurate coastal boundary to be delineated, with other recent data also included (e.g., Holness et al., 2014; Sink et al., 2012, 2019).

In terms of uniqueness of habitat (i.e., refuge for estuarine-dependent or partially dependent fish, and birds), approximately similar estuarine and adjacent inshore habitats are not encountered for over 300 km further south to the Olifants River and over 1300 km further north, until the Kunene River (Lamberth et al., 2008, van Niekerk et al., 2008). The fact that the estuary is a declared Ramsar site (Ramsar 2013; note that the adjacent Namibian and South African Ramsar sites were joined into a transboundary site) and an Important Bird and Biodiversity Area (IBA; BirdLife International 2013) is an important recognition of its importance to birds as well as other species. Altogether, 206 species have been recorded in the EBSA, including 4 threatened fish and condricthian species (OBIS 2017).

Feature conditions and future outlook of the proposed area

The impact of reduced and altered flow at the estuary mouth and into the marine environment has had a negative impact on the estuarine habitat, including the salt marsh, which was exacerbated by inappropriate developments associated with mining at the site (van Niekerk and Turpie 2012). The impact of these changes on the marine offshore environment is not yet known. Both the flow regime (as it will reach the mouth and the marine area) and rehabilitation of the estuary and salt marsh area need to be addressed. However, an estuary management plan is in an advanced stage, and protected area status for the estuary is well advanced as well (van Niekerk and Turpie 2012). Regarding the marine and coastal habitats and biodiversity of the area, the coastline and inshore area to 30 m depth is under considerable threat from mining impacts and is currently unprotected (Sink et al., 2012).

Ecosystem threat status has been estimated in South Africa (Sink et al., 2012, 2019) and Namibia (Holness et al., 2014; Table in the Other relevant website address or attached documents section) by assessing the weighted cumulative impacts of various pressures (e.g., extractive resource use, pollution, development and others) on each ecosystem type. These include two Critically Endangered, four Endangered and four Vulnerable ecosystem types, and another one ecosystem type that is Vulnerable. The Critically Endangered status implies that very little ($\leq 20\%$) of the total area of the habitats assessed are in natural/pristine condition, and it is expected that important components of biodiversity pattern have been lost and that ecological processes heavily modified. However, within the area, much of the EBSA was assessed to be in good ecological condition (56%), some fair (33%), and a lesser extent (11%) in poor ecological condition.

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Other relevant website address or attached documents

Summary of ecosystem types and threat status for the Orange Cone [data sources: Sink et al. (2019) and Holness et al. (2014)].

Threat Status	Ecosystem Type	Area (km ²)	Area (%)
Critically Endangered	Namaqua Intermediate Sandy Beach	29.7	0.9
Endangered	Namaqua Reflective Sandy Beach	3.1	0.1
Endangered	Cool Temperate Large Fluvially Dominated Estuary	30.2	1.0
	Orange Cone Inner Shelf Mud Reef Mosaic	338.8	10.7
	Orange Cone Muddy Mid Shelf	858.0	27.2
	Southern Benguela Reflective Sandy Shore	0.2	0.0
Vulnerable	Namaqua Exposed Rocky Shore	4.9	0.2
	Namaqua Kelp Forest	0.3	0.0
	Namaqua Mixed Shore	2.7	0.1
	Namaqua Inshore	322.9	10.2
Near Threatened	Southern Benguela Intermediate Sandy Shore	0.6	0.0
Least Concern	Namaqua Sandy Mid Shelf	0.5	0.0
	Southern Benguela Dissipative Sandy Shore	1.8	0.1
	Southern Benguela Dissipative-Intermediate Sandy Shore	0.1	0.0
	Namaqua Estuarine Shore	4.3	0.1
	Namaqua Inner Shelf	1560.1	49.4
Grand Total		3158.3	100.0

Assessment of the area against CBD EBSA criteria

C1: Uniqueness or rarity **High**

Justification

In terms of habitat uniqueness (i.e., refugia for estuarine-dependent or partially estuarine-dependent fish and birds, and freshwater outflow to the marine environment), approximately similar estuarine and adjacent inshore habitat are not encountered for over 300 km further south to the Olifants River, and over 1300 km further north, until the Kunene River (van Niekerk et al., 2008, Lamberth et al., 2008). The marine area is fed by the estuarine outflow, and also has its own oceanographic characteristics in terms of inertial currents and stratification, thus being largely “sheltered” from Benguela System forcing (Boyd 1988, Largier and Boyd 2001) that influences the whole Benguela region. This system is also the longest cell of littoral sand transport that has been recorded to date, with sediment moving as much as 1750 km north to southern Angola, and providing 80% of the sand that comprises the dunes along the Namibian Skeleton Coast (Garzanti et al., 2014).

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

Justification

A total of 33 fish species from 17 families have been captured from the Orange River estuary (van Niekerk et al., 2008). Out of these species, 34% showed some degree of estuarine (i.e., euryhaline) dependence, 24% were marine and the remaining 42% were freshwater species. The high diversity and abundance of estuarine-dependant and marine species suggests that this is an extremely important estuarine nursery area, especially for Kob species (van Niekerk and Turpie 2012), and not just a freshwater conduit as previously thought (van Niekerk et al., 2008). Certainly, oceanographic

conditions in the area are consistent with the criteria proposed by Parrish et al. (1983) for the reproduction of pelagic species, and the system is also hypothesised to play a similar role to that of the comparable Thukela River/Thukela Banks (on the South African east coast) where the freshwater outflow is proven to support recruitment of fish stocks (Turpie and Lamberth 2010). Evidence is continually mounting to confirm the role of the Orange Cone in supporting key life-history stages. For example, the area is the northern margin of the important west coast nursery ground for pelagic fish species with periodic spawning (Hutchings et al., 2002). The Orange Cone is also an important recruitment/nursery area and one of three primary population components for shallow water hake (Jansen et al., 2016). Furthermore, northern sections of the Orange Cone, particularly a coastal reef called “Mittag”, are important for the Namibian commercial rock lobster fishery (Currie et al., 2008).

The estuary and wetland area are also an important stopover site for migrating shorebirds and other waterbirds, and provides breeding habitat for birds such as White-breasted Cormorants (Crawford et al., 2013) and Cape Cormorants. However, due to the destruction of breeding islands by the 1988 flood, the latter have not bred there since (H. Kolberg pers. obs). The value of the site is recognised internationally with both Ramsar and IBA status. In fact, the Orange River Mouth Wetlands are said to be the sixth most important coastal wetlands for birds, supporting as many as 26000 individuals of 56 species (BirdLife International, 2018).

South of the Kunene River (over 1300 km to the north of the Orange River), the only permanently open estuaries on the west coast of the sub-region include the Orange, Olifants and Berg Rivers (Lamberth et al., 2008). Migration up and down the west coast of southern Africa by marine and estuarine species, e.g., Angolan dusky kob, and west coast steenbras, may be dependent on the availability of warm water refugia offered by these estuary mouths and their plumes, especially during upwelling months (Lamberth et al., 2008).

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

Justification

The area is also an important nursery for coastal fish species, such as kob (van Niekerk and Turpie 2012), which are overexploited (Mann 2000). The estuary includes important breeding habitat for Endangered Cape Cormorants (Crawford et al., 2016), and also contains Endangered Ludwig’s bustard and Vulnerable Damara Terns (Birdlife International, 2018). Four fish and condricthian species recorded in the EBSA are threatened, including the Endangered *Rostroraja albai* and *Mustelus mustelus*, and Vulnerable *Galeorhinus galeus* and *Squalus acanthias* (OBIS 2017).

Ten of the 16 ecosystem types represented in this EBSA are threatened, including two Critically Endangered, four Endangered and four Vulnerable ecosystem types (Holness et al., 2014; Sink et al., 2019). Because ecosystem types are generally a very good surrogate for species-level biodiversity patterns, the implication, therefore, is that the species and biological communities that are associated with and unique to these habitats are similarly declining and threatened.

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

Justification

The estuarine salt marsh area is vulnerable and has been slow to show recovery despite rehabilitation efforts (van Niekerk and Turpie 2012). There has also been a marked decline in certain fish stocks that

were previously exploited in the region (Lamberth et al., 2008). Mining and habitat modification are thought to have had an impact with respect to these changes.

C5: Biological productivity Medium

Justification

Winds in the Orange Cone are weaker than those that occur to the north or south of the area, leading to some stratification (Boyd 1988). This, and the effect of the freshwater inflow, may serve to concentrate productivity within the area.

C6: Biological diversity Medium

Justification

Altogether, 206 species have been recorded in the Orange Cone EBSA (OBIS 2017). A high diversity of fish species (33 species from 17 families) has been captured from the Orange River estuary (van Niekerk et al., 2008), including freshwater, marine and estuarine-dependent species. The marine area served as the conduit supporting the estuary's biodiversity for migratory marine and estuarine-dependent species, as well as marine pelagic and demersal species, including their juvenile stages. Furthermore, the fact that the estuary is a declared Ramsar site (Ramsar 2013) and an IBA (BirdLife International 2013) are important recognitions of its importance to birds and other species. There are 16 ecosystem types represented in this EBSA (Holness et al., 2014; Sink et al., 2019).

C7: Naturalness Medium

Justification

The estuary and nearshore are impacted, including notable infestation by alien plants around the estuary that persist in spite of rehabilitation efforts. Nevertheless, the estuary still provides many ecological services such as recruitment. There are significant impacts from coastal diamond mining in Namibia and, to a lesser extent, in South Africa (Sink et al., 2012; Holness et al., 2014). Although data are sparse, the area has been shown to be largely in fair condition (Sink et al., 2012; Holness et al., 2014), but there have been long-term declines in fish catch.

Status of submission

The Orange Cone EBSA was recognized as meeting EBSA criteria by the Conference of the Parties. The revised boundaries and description have been submitted to the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) for consideration by the Conference of the Parties to the Convention on Biological Diversity

COP Decision

dec-COP-12-DEC-22

End of proposed EBSA revised description.

Motivation for Revisions

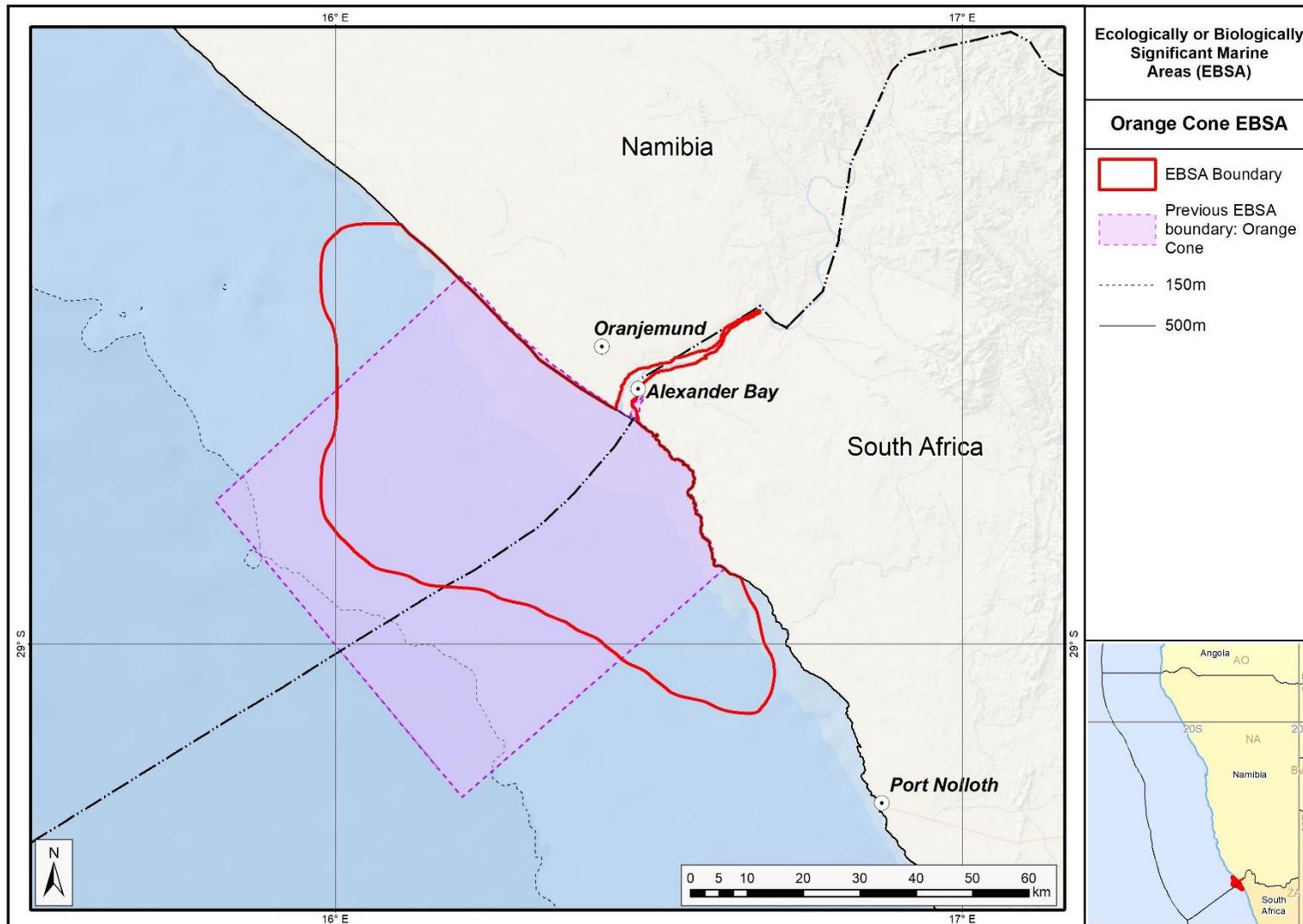
Some updates were made to the description and references. One criterion rank, Importance for threatened species and habitats, was upgraded from Medium to High based on additional data and

extension of the EBSA to include the Orange River Estuary, which is an important Ramsar site. Small additions, such as biodiversity information from OBIS were also made. A supplementary table of the habitats represented in the EBSA and their associated threat status were also included (in Other relevant website address or attached documents section).

The biggest 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 underpin its EBSA status. The delineation process included an initial stakeholder workshop, a technical mapping process and then an 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 features used in the analysis were:

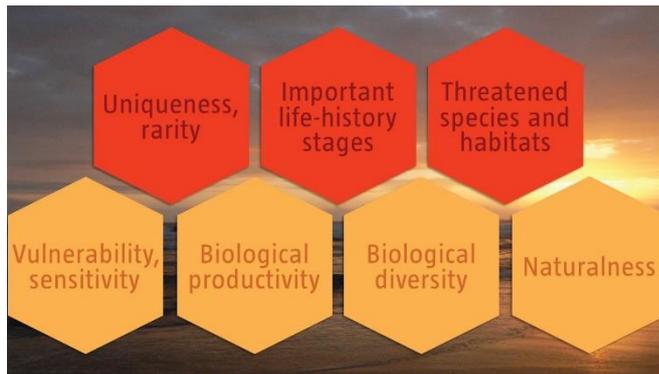
- Threatened Benthic and Coastal Ecosystems (Holness et al., 2014; Sink et al., 2012, 2019). The analysis focussed on the inclusion of the most threatened ecosystem types found in the area. These types are highlighted in the table in the Other relevant website address or attached documents section.
- The key muddy ecosystem types associated with the Orange Cone were identified based on data from new studies by Karenyi (2014) and Karenyi et al. (2016).
- 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).
- Areas of high relative naturalness identified in the SCP undertaken for the BCLME by Holness et al. (2014).
- The Orange River Mouth Ramsar site was included (<https://rsis.ramsar.org/ris/526>).
- The coastal boundary was refined to be more accurate based on new data (Harris et al., 2019).

The multi-criteria analysis resulted in a value surface. The cut-off value (used to determine the 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 below were validated in a series of national (in both South African and Namibia) and regional (BCC) meetings.



The revised Orange Cone EBSA boundary in relation to its original delineation.

Status Assessment and Management Options

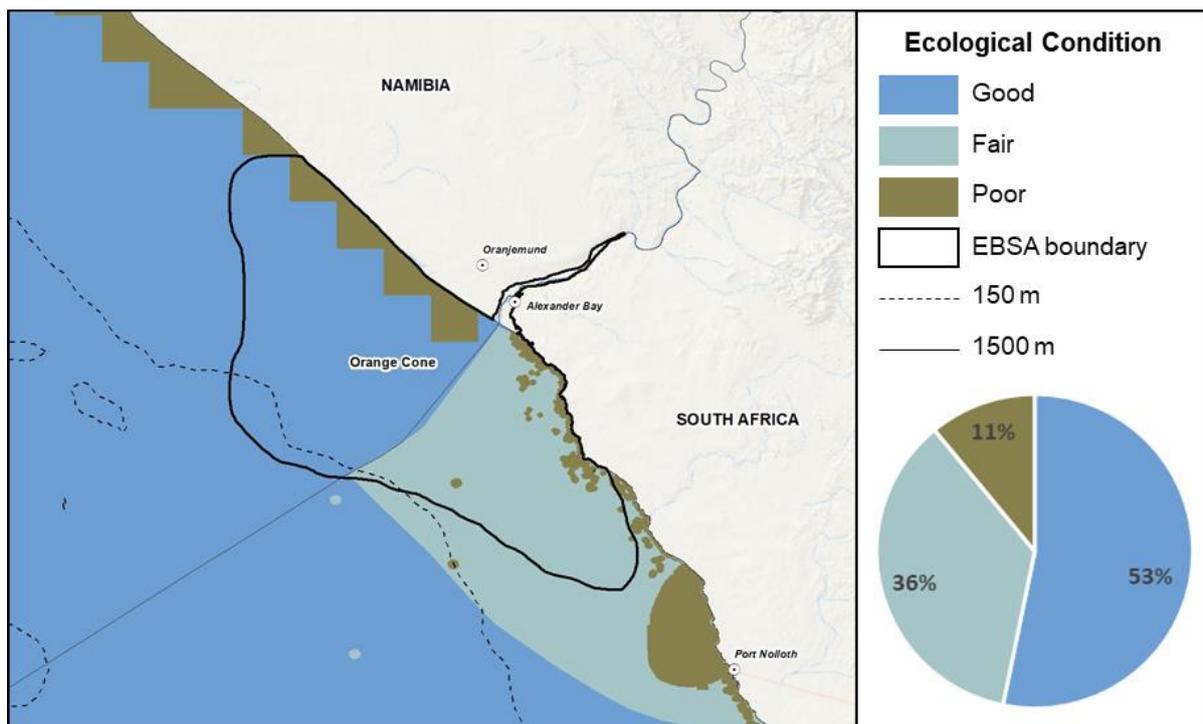


Orange Cone is underpinned by land-sea connectivity through the Orange River. Huge volumes of sediment and freshwater are exported offshore, driving muddy ecosystem and associated communities, with conditions supporting important life-history stages of fish, as well as threatened top predators and ecosystems. The estuary supports a rich diversity and is a Ramsar site and Important Bird and Biodiversity Area for birds.

EBSA criteria coloured by rank for Orange Cone: red=high, orange=medium.

Ecological Condition, Threat Status, Current Protection and Key Features in the EBSA

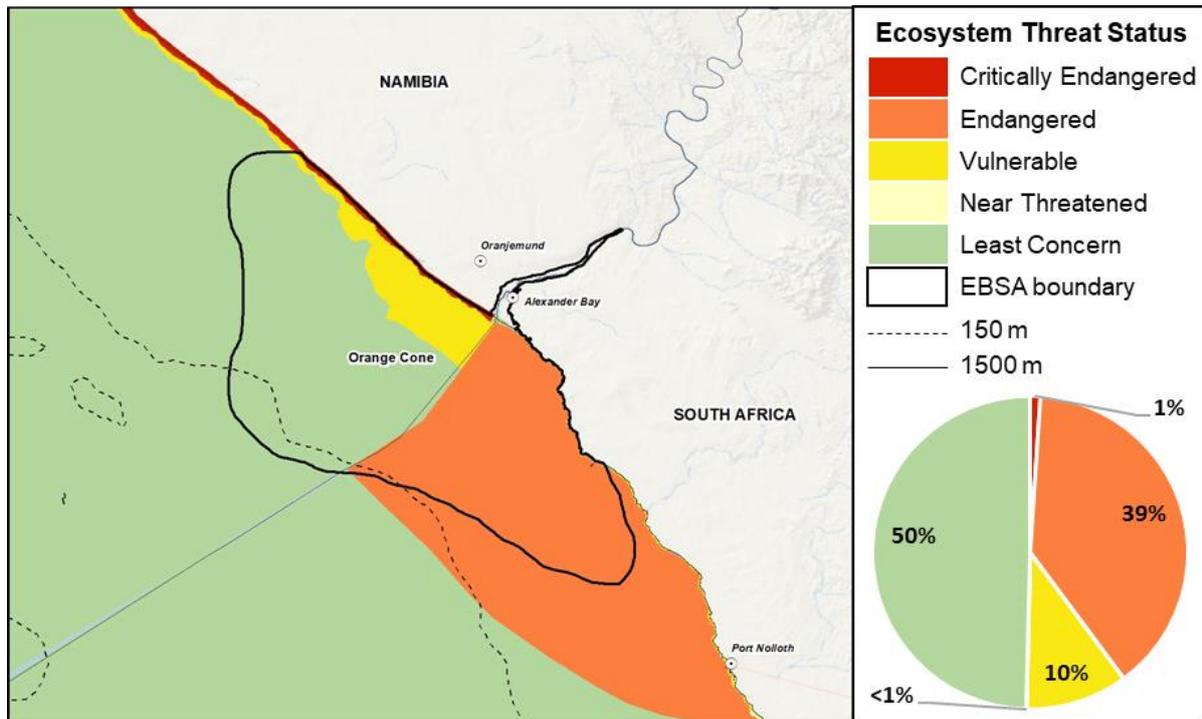
Orange Cone is underpinned by a critical connection between land and sea via the Orange River that needs to be protected for the area to maintain the features and processes that give it its EBSA status. The criteria for which this EBSA ranks highly are: uniqueness and rarity, importance for life history stages, and importance for threatened species and habitats. There are 16 ecosystem types represented, most of which are muddy or sandy, and 10 of which are threatened. This area, including the estuary, is important for supporting key life-history stages of fish, and is also an important site for threatened fish, sharks and birds. In fact, the estuary area is an Important Bird and Biodiversity Area and a Ramsar Site. Kelp forests also contribute to the nursery function of the EBSA and are sensitive to disturbance.



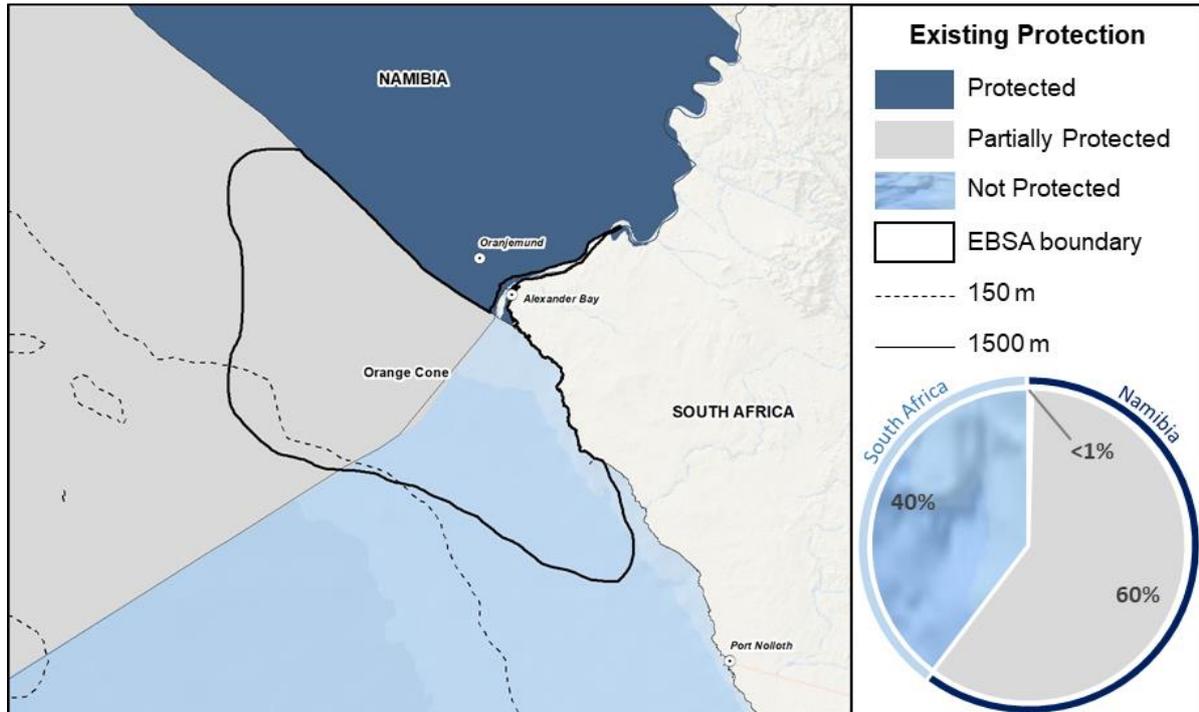
Orange Cone proportion of area in each ecological condition category.

Orange Cone is mostly in good ecological condition (53%), with notable portion that is fair (36%), and a smaller area that is in poor ecological condition (11%) generally along the shore. Consequently, half of the EBSA (50%) is Least Concern. However, the inshore areas and full offshore extent of the South

African portion of the EBSA are threatened, mostly comprising Endangered (39%) and Vulnerable (10%) ecosystem types, with Critically Endangered (1%) and Near Threatened (<1%) types as well.



Orange Cone proportion of area in each ecosystem threat status category.



Orange Cone proportion of area in a Marine Protected Area (MPA).

The patterns in ecological condition and ecosystem threat status between the two countries are explained clearly by the stark contrast in protection and management between the two countries. On the Namibian side, there is land-sea protection, with the adjacent land being a protected area, and

the coastal area falling within a reserve offering partial protection. In South Africa, there is no protection within the EBSA; this is one of only two EBSAs in South Africa where this is the case. Importantly, the South African portion of Orange Cone includes three high-risk ecosystem types, assessed as Endangered and not protected that are priorities for protection. Note that adjacent to the EBSA, there are also two terrestrial ecosystem types that are high risk, calling for land-sea coastal protection in this area if these ecosystem types and associated biodiversity are to be protected into the future. This cluster of five high-risk types comprises more than a third of the 13 high-risk coastal (terrestrial, estuarine and marine) ecosystem types in South Africa, as assessed in the National Biodiversity Assessment 2018.

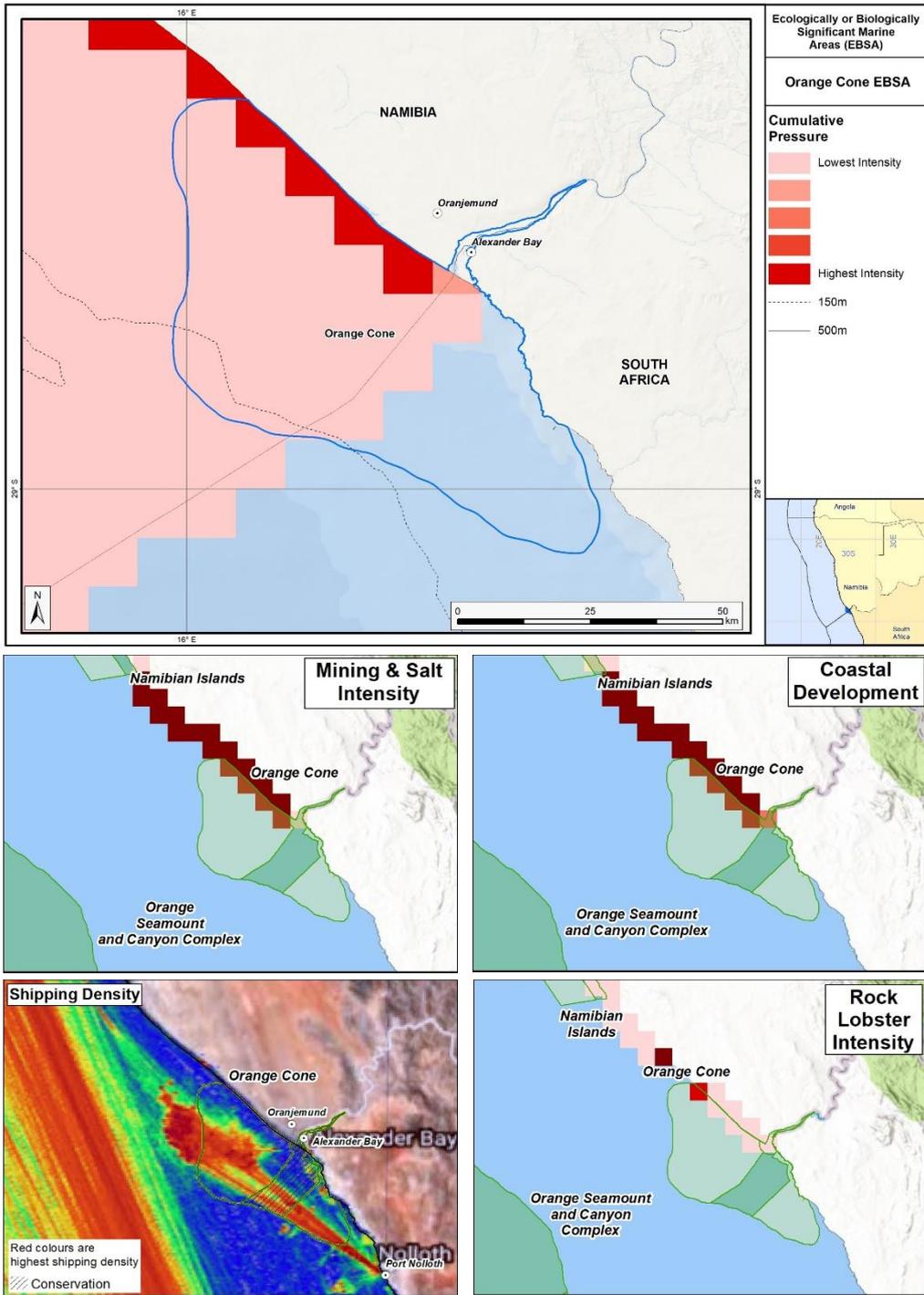
Threat status, protection level and ecological condition of ecosystem types in the EBSA. Other key features are also listed.

Feature	Threat Status	Protection Level	Condition (%)		
			Good	Fair	Poor
Ecosystem Types					
Namaqua Estuarine Shore	LC	MP	100.0	0.0	0.0
Namaqua Inner Shelf	LC	MP	97.0	0.0	3.0
Namaqua Inshore	VU	WP	45.6	0.0	54.4
Namaqua Intermediate Sandy Beach	CR	WP	9.5	0.0	90.5
Namaqua Reflective Sandy Beach	CR	WP	0.0	0.0	100.0
Cool Temperate Large Fluvially Dominated Estuary	EN	NP	95.4	1.8	2.8
Namaqua Exposed Rocky Shore	VU	MP	0.4	15.6	84.0
Namaqua Kelp Forest	VU	MP	0.1	33.8	66.1
Namaqua Mixed Shore	VU	MP	3.9	10.0	86.2
Namaqua Sandy Mid Shelf	LC	PP	99.8	0.2	0.0
Orange Cone Inner Shelf Mud Reef Mosaic	EN	NP	0.0	77.9	22.1
Orange Cone Muddy Mid Shelf	EN	NP	0.5	98.7	0.8
Southern Benguela Dissipative Intermediate Sandy Shore	LC	WP	3.1	86.0	10.8
Southern Benguela Dissipative Sandy Shore	LC	WP	1.6	97.1	1.3
Southern Benguela Intermediate Sandy Shore	NT	PP	2.5	91.4	6.1
Southern Benguela Reflective Sandy Shore	EN	MP	0.0	95.4	4.6
Other Features					
<ul style="list-style-type: none"> • Important Bird and Biodiversity Area • Ramsar site • Threatened fish (such as kob), sharks (such as <i>Rostroraja albai</i> and <i>Mustelus mustelus</i>) and birds (e.g., Damara Terns, Ludwig's bustard, and breeding Cape Cormorants) 					

Given that this is a transboundary EBSA shared between Namibia and South Africa, the analysis of pressures and EBSA management is done separately per country to account for the differences in types of pressures and national management options. The following sections are thus repeated, first for Namibia and then South Africa.

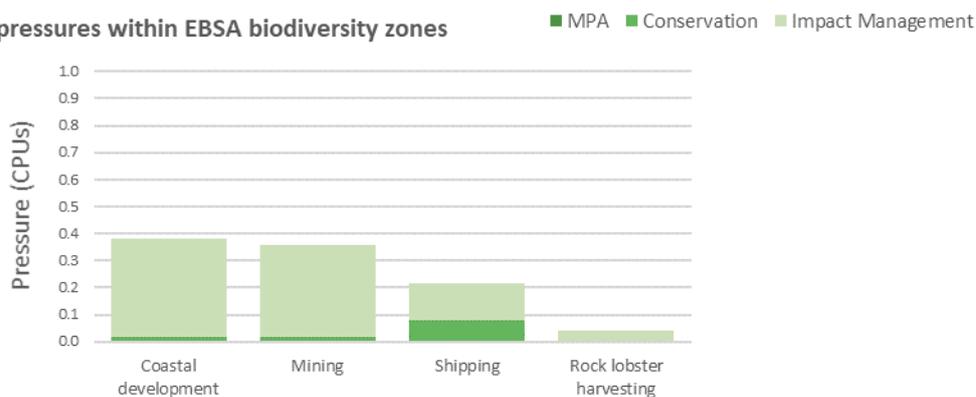
Relevant Pressures and Activities (impact, extent): Namibia

- Between the two countries, there are eight pressures present in this EBSA, of which shipping and mining (largely for diamonds) are the only ones that occur on both sides of the border.
- Pressures on the Namibian side include: coastal development, mining, shipping and lobster harvesting. Note that mean annual runoff reduction is included in the South African assessment and would also be an issue in the Namibian portion of the EBSA, but it was not included in that analysis given limited data availability at the time of assessment.
- Key pressures in this EBSA that most directly impact the features for which the EBSA is described include: mean annual runoff reduction, mining, and coastal development. These activities, and activities upstream of the estuary (to limit impacts of flow reduction caused by, e.g., damming and abstraction), will need to be managed particularly well in order to protect the estuarine habitat for associated birds, and offshore ecosystem types, nursery habitats, and fish assemblages for which this EBSA is recognised.
- Activities that are present in Namibia but do not take place in the EBSA include: ammunition and other dumping, benthic longlining, boat-based linefishing, boat-based recreational fishing, bottom trawling (general, freezer, wet), channel dredging, crab harvesting, dredge-spoil dumping, midwater trawling (horse mackerel), pelagic longlining, ports, port anchorage areas, salt pans, shipping refuge (disabled ships), shore-based fishing, and small pelagics fishing.



Map of cumulative pressure (top) and maps of the four most important pressures (activities) in the EBSA and surrounds. Darker reds indicate higher pressure intensity.

Relative impact of pressures within EBSA biodiversity zones

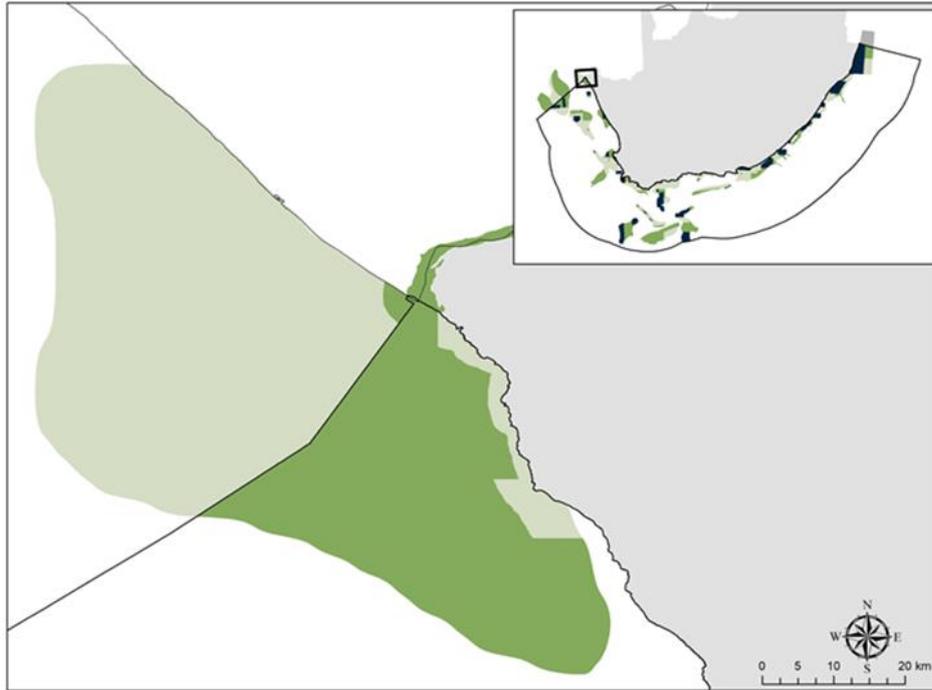


Pressure (in arbitrary cumulative pressure units, CPUs) summed for each pressure in the EBSA, per proposed EBSA biodiversity zone, ranked left (highest) to right (lowest) by the overall relative importance of pressures in this EBSA.

Management Interventions Needed for the EBSA in Namibia

Improved place-based protection of EBSA features should be pursued. In support of this, the EBSA is divided into a Conservation Zone and an Impact Management Zone, both comprising several areas within the EBSA. The aim of the Conservation Zone is to secure core areas of key biodiversity features in natural / near-natural ecological condition. Strict place-based biodiversity conservation is thus directed at securing key biodiversity features in a natural or semi-natural state, or as near to this state as possible. Activities or uses that have significant biodiversity impacts should be prohibited. Where possible and appropriate these areas should be considered for formal protection e.g., Marine Protected Areas or other effective area-based conservation measures (OECM). The aim of the Impact Management Zone is to manage negative impacts on key biodiversity features where strict place-based measures are not practical or not essential. In this zone, the focus is management of impacts on key biodiversity features in a mixed-use area, with the objective to keep biodiversity features in at least a functional state. Activities or uses which have significant biodiversity impacts should be strictly controlled and/or regulated. Within this zone, there should be no increase in the intensity of use or the extent of the footprint of activities that have significant biodiversity impacts. Where possible, biodiversity impacts should be reduced.

As far as possible, the Conservation Zone was designed deliberately to avoid conflicts with existing activities. On the Namibian side of Orange Cone, the adjacent land (outside the EBSA extent) is protected in the Sperrgebiet National Park (https://laws.parliament.na/cms_documents/sperrgebiet-delimitation-c2f73655a5.pdf). Shallow water areas adjacent to this reserve are partially protected by 'shallow water trawling exclusion area' regulations (Paterson and Kainge, 2014). However, no MPAs exist within this EBSA.



Proposed zonation of the EBSA into Conservation (dark green) and Impact Management (light green) Zones.

Protection of features in the rest of the Conservation Zone may require additional Marine Protected Area declaration/expansion. Other effective conservation measures should also be applied via Marine Spatial Planning to ensure that the existing activities/uses are appropriately controlled to ensure compatibility of activities with the environmental requirements for achieving the management objectives of the EBSA Conservation and Impact Management Zones. Further, no new pressures should be extended into the Conservation Zone, even if they currently occur in the Impact Management Zone of the EBSA.

Recommended compatibility (consent¹ or prohibited²) of activities currently present in the EBSA³ in the Conservation and Impact Management Zones

Uses (including activities and pressures)	Conservation Zone: EBSA areas requiring strictest protection	Impact Management Zone: Other EBSA Areas requiring some protection or place-specific management
Ecotourism (regulated nature based and strictly controlled)	Primary	Primary
Mariculture	Prohibited	Consent
Military exercises and testing	Prohibited	Consent
Mining	Prohibited	Consent
Non-consumptive tourism and recreation	Consent	General
Petroleum extraction	Prohibited	Consent
Renewable energy installations	Prohibited	Consent

Rock lobster harvesting	Prohibited	Consent
Seismic surveys and mining exploration	Prohibited	Consent
Shipping lane	Prohibited	General
Undersea cables and pipelines	Consent	Consent
Wastewater discharge	Prohibited	Consent

¹Consent: An activity which can continue in this zone subject to specific regulation and control.

²Prohibited: An activity which is not allowed or should not be allowed because it is incompatible with maintaining the biodiversity objectives of the zone.

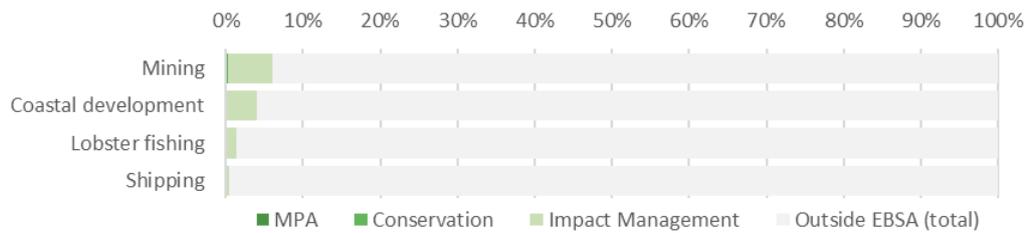
³Note that activities present in South Africa that are not relevant to the EBSA have been excluded from the table (e.g., the harvested species does not occur in the area; or the industry operates at a depth outside the depth range of the EBSA).

Furthermore, no new activities that can negatively impact the environment should be allowed in the EBSA, and some activities present in the EBSA do not need to be managed by EBSA zoning and can continue as per the current regulations. There are also some pressures on biodiversity features within the EBSA that originate from activities outside of these EBSA or beyond the jurisdiction of MSP. In support of maintaining the ecological integrity of and benefits delivered by the key biodiversity features, these other activities need to be appropriately managed by complementary initiatives.

Recommendations for other activities outside the EBSA or the MSP management jurisdiction.

Activities that are present but not managed by EBSA zones that can continue as per current regulations		
Shipping		
Activities that are currently not present in the EBSA and should be Prohibited in the future		
Ammunition and other dumping	Crab harvesting	Port anchorage areas
Benthic longlining	Dredge-spoil dumping	Salt pans
Boat-based linefishing	Midwater trawling	Shipping refuge (disabled ships)
Boat-based recreational fishing	(horse mackerel)	Shore-based fishing
Bottom trawling (general, freezer, wet)	Pelagic longlining	Small pelagics fishing
Channel dredging	Ports	
Other activities beyond the jurisdiction of MSP that directly influence the ecological condition of the EBSA that should be managed appropriately under other appropriate legislation.		
Coastal development (e.g., implementation of appropriate setback lines)		
Coastal disturbance (e.g., formalising access points; rehabilitating degraded dunes; appropriate zoning of bathing and watercraft activities, etc)		
Mean annual runoff reduction (e.g., determining and implementing freshwater flow requirements and estuarine management plans)		

Activity Evaluation Per Zone: Zoning Feasibility for Namibia



Proposed zonation of the EBSA, with the cumulative intensity footprint of activities within the EBSA (sorted highest to lowest) given relative to the national footprint of those activities to illustrate feasibility of management interventions.

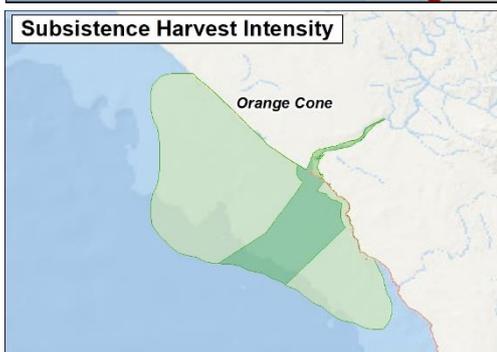
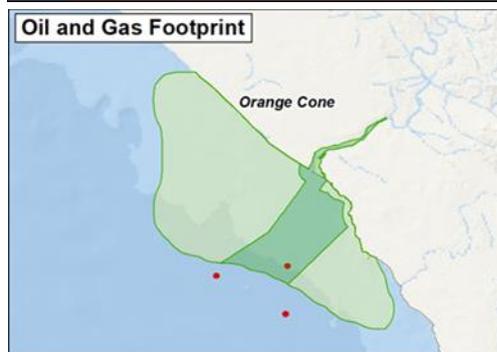
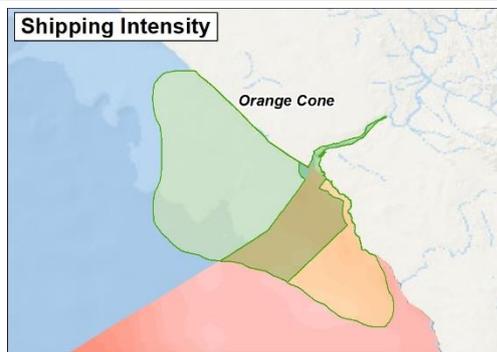
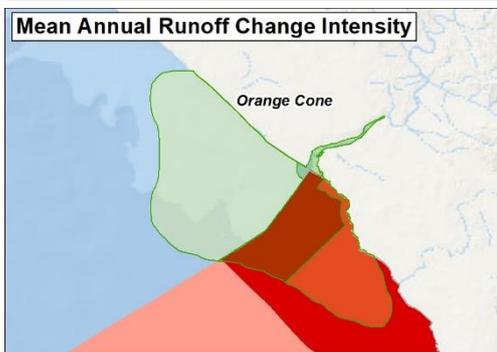
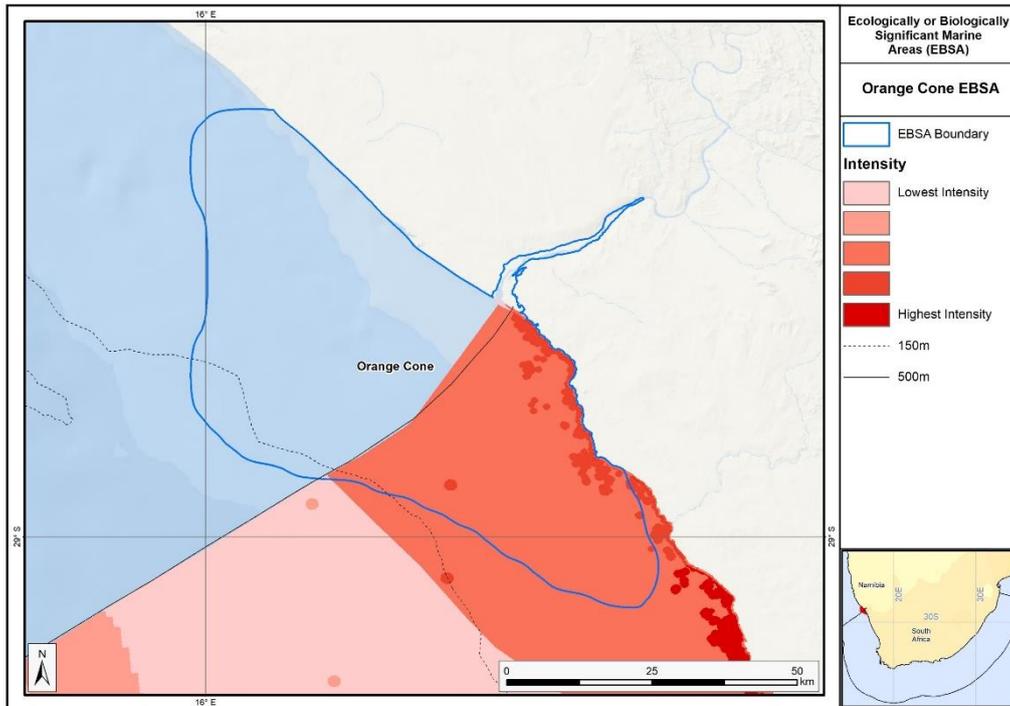
The three most important pressures in this EBSA are mining (prospecting and mining), and lobster harvesting; all of which comprise only a small percentage of the national footprint of these activities. All three are present almost exclusively in the Impact Management Zone, and are listed as Consent activities, where they are recommended to continue as Consent activities. Other activities noted in the table of management recommendations above are either not currently present in the EBSA or are emerging activities; as far as possible, these are accommodated in the EBSA, depending on their compatibility with the management objectives of the two zones.

There are also several activities that are largely outside the EBSA but have downstream impacts to the biodiversity within the EBSA, e.g., from mean annual runoff reduction, coastal development, coastal disturbance, and wastewater discharge. The impacts should be managed, but principally fall outside the direct management and zoning of the EBSA. These existing activities are proposed as Consent activities for both EBSA zones, recognising that they should ideally be dealt with in complementary integrated coastal zone management in support of the EBSA. For example, investment in eradicating the alien invasive species could aid in improving the ecological condition of rocky and mixed shores, improving benefits for subsistence and recreational harvesting; and rehabilitation of degraded dunes and formalising access points could support improved habitat for nesting shorebirds, and enhanced benefits for coastal protection during storm surges. Similarly, improved estuary management through development of appropriate freshwater flow requirements, estuarine management plans and wastewater management regulations can improve the ecological condition of the surrounding marine environment, in turn, improving water quality and safe conditions for human recreation.

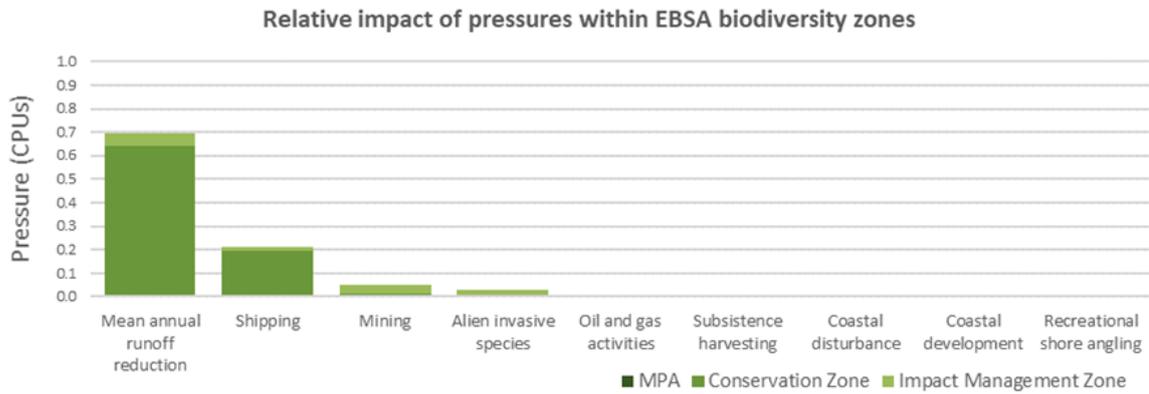
Relevant Pressures and Activities (impact, extent): South Africa

- In the South African portion of the EBSA, the key pressures include: mean annual runoff reduction, shipping, mining (prospecting and mining), alien invasive species, oil and gas (exploration and production), and subsistence harvesting.
- Mining (prospecting and mining), and activities upstream of the estuary (to limit impacts of flow reduction caused by, e.g., damming and abstraction), will need to be managed particularly well in order to protect the estuarine habitat for associated birds, and offshore ecosystem types, nursery habitats, and fish assemblages for which this EBSA is recognised.
- Note that oil and gas (exploration and production) and subsistence harvesting each comprise only 1% of the EBSA pressure profile.

SOUTH AFRICA



Map of cumulative pressure (top) and maps of the five most important pressures (activities) in the EBSA and surrounds. Darker reds indicate higher pressure intensity.



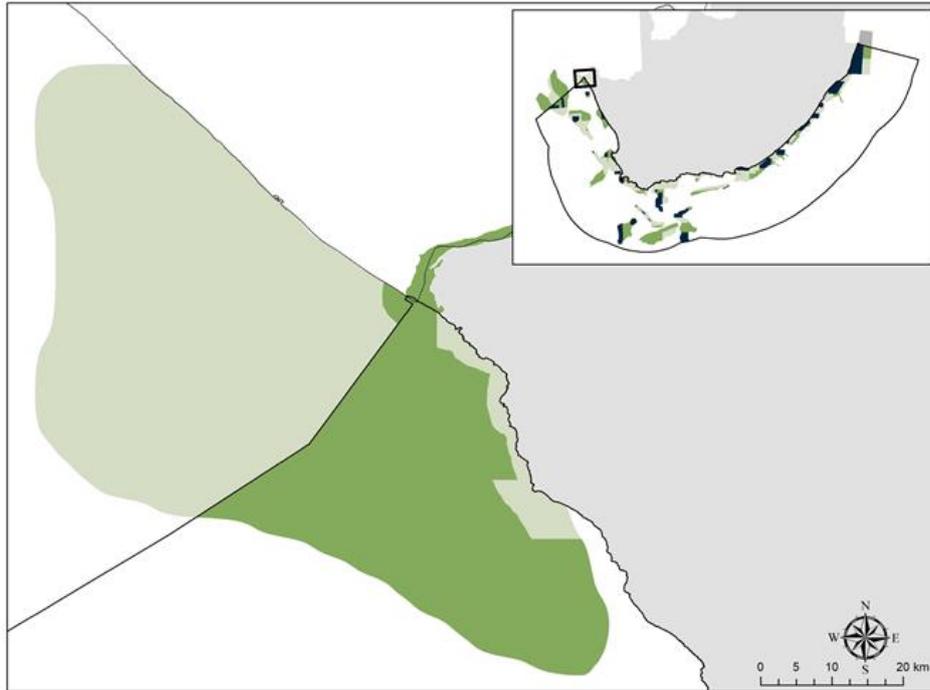
Pressure (in arbitrary cumulative pressure units, CPUs) summed for each pressure in the EBSA, per proposed EBSA biodiversity zone, ranked left (highest) to right (lowest) by the overall relative importance of pressures in this EBSA. Note that oil and gas (exploration and production) and subsistence harvesting each comprise <1% of the EBSA pressure profile.

Management Interventions Needed for the EBSA for South Africa

Improved place-based protection of EBSA features should be pursued. In support of this, the EBSA is divided into a Biodiversity Conservation Zone and an Environmental Impact Management Zone, both comprising several areas within the EBSA. The aim of the Biodiversity Conservation Zone is to secure core areas of key biodiversity features in natural / near-natural ecological condition. Strict place-based biodiversity conservation is thus directed at securing key biodiversity features in a natural or semi-natural state, or as near to this state as possible. Activities or uses that have significant biodiversity impacts are incompatible with the management objective of this zone. If the activity is permitted, it would require alternative Biodiversity Conservation Zones or offsets to be identified. If this is not possible, it is recommended that the activity is Prohibited. Where possible and appropriate, the Biodiversity Conservation Zones should be considered for formal protection e.g., Marine Protected Areas or Other Effective Area-Based Conservation Measures (OECM). The aim of the Environmental Impact Management Zone is to manage negative impacts on key biodiversity features where strict place-based measures are not practical or not essential. In this zone, the focus is management of impacts on key biodiversity features in a mixed-use area, with the objective to keep biodiversity features in at least a functional state. Activities or uses that have significant biodiversity impacts should be strictly controlled and/or regulated. Within this zone, ideally there should be no increase in the intensity of use or the extent of the footprint of activities that have significant biodiversity impacts. Where possible, biodiversity impacts should be reduced.

As far as possible, the Biodiversity Conservation Zone was designed deliberately to avoid conflicts with existing activities. There are no MPAs in Orange Cone. However, there is a recently proclaimed Nature Reserve on the South African side of the Orange River mouth that is mostly within the EBSA, with intentions to proclaim an adjacent MPA in and around the mouth of the estuary that approximately follows the Ramsar boundary (but this is still to be determined). The activities permitted within the Nature Reserve are as per the gazetted regulations.

Orange River Mouth No link available
 Nature Reserve
 (proclaimed 2018)



Proposed zonation of the EBSA into Conservation (dark green) and Impact Management (light green) Zones.

Protection of features in the rest of the Conservation Zone may require additional Marine Protected Area declaration/expansion. Other effective conservation measures should also be applied via Marine Spatial Planning (MSP) to ensure that the existing activities/uses are appropriately controlled to ensure compatibility of activities with the environmental requirements for achieving the management objectives of the EBSA Biodiversity Conservation and Environmental Impact Management Zones.

Based on the compatibility of sea-use activities with the management objective of each EBSA zone (see table below, from the sea-use guidelines of the National Coastal and Marine Spatial Biodiversity Plan), it is recommended for MSP that compatible activities are managed as General activities, which are those that are permitted and regulated by current general rules and legislation. Activities that are conditional are recommended to be managed as Consent activities, which are those that can continue in the zone subject to specific regulations and controls, e.g., to avoid unacceptable impacts on biodiversity features, or to avoid intensification or expansion of impact footprints of uses that are already occurring and where there are no realistic prospects of excluding these activities. Activities that are not compatible are recommended to be Prohibited, where such activities are not allowed or should not be allowed (which may be through industry-specific regulations) because they are incompatible with maintaining the biodiversity objectives of the zone. These recommendations are subject to stakeholder negotiation through the MSP process, recognizing that there will likely need to be significant compromises among sectors. It is emphasized, as noted above, that if activities that are not compatible with the respective EBSA zones are permitted, it would require alternative Biodiversity Conservation Zones or offsets to be identified. If this is not possible, it is recommended that the activity is Prohibited.

List of all sea-use activities, grouped by their Marine Spatial Planning (MSP) zones, and scored according to their compatibility with the management objective of the EBSA's Biodiversity Conservation Zone (i.e., Critical Biodiversity Area, CBA) and Environmental Impact Management Zone (i.e., Ecological Support Area, ESA). Activity compatibility is given as Y = yes, compatible, C = conditional or N = not compatible, with major activities that are present in the EBSA shaded in grey.

Broad sea use	Associated MSP Zones	Associated sea-use activities	Biodiversity Conservation Zone (i.e. CBA)	Environmental Impact Management Zone (i.e. ESA)
Conservation	Marine Protected Area: Sanctuary zone	Sea-use activities as per gazetted MPA regulations	N/A	N/A
	Marine Protected Area: Restricted zone			
	Marine Protected Area: Controlled zone	Sea-use activities as per existing CBA/ESA categories until MPA declaration	Y	Y
	Marine Protected Area: Proposed		Y	N/A
	Biodiversity Conservation Zone		N/A	Y
	Environmental Impact Management Zone			
Heritage	Heritage Protection Zone	Shipwrecks	Y	Y
		Sites of historic importance	Y	Y
		Sites of land- or seascape value	Y	Y
Recreation and tourism	Marine Tourism Zone	Beach visiting, recreation, non-motorised water sports	Y	Y
		SCUBA diving	Y	Y
		Shark cage diving	Y	Y
		Whale watching	Y	Y
		Motorised water sports (e.g., jet skis)	C	Y
		Recreational boat-based linefishing	C	Y
		Recreational shore-based linefishing	C	Y
		Spearfishing	C	Y
		Shark control	C	Y
Fisheries	Commercial Fishing Zone	Crustacean trawling	N	C
		Demersal inshore trawling	N	C
		Demersal offshore trawling	N	C
		Abalone harvesting	C	Y
		Beach seining	C	Y
		Commercial linefishing	C	Y
		Demersal hake longlining	C	Y
		Gillnetting	C	Y
		Kelp harvesting	C	Y
		Midwater trawling	C	Y
		Oyster harvesting	C	Y
		Pelagic longlining	C	Y
		Small pelagics fishing	C	Y
		South coast rock lobster harvesting	C	Y
		Squid fishing	C	Y
	Tuna pole fishing	C	Y	
	West coast rock lobster harvesting	C	Y	
	Small Scale/Subsistence Fishing Zone	Subsistence fishing	C	Y
	Fisheries Resource Protection Zone	Resource protection	Y	Y
Aquaculture	Aquaculture Development Zone	Sea-based aquaculture	C	Y
Mining	Mining Zone	Mining: prospecting (non-destructive)	C	Y
		Mining: prospecting (destructive, localised impact, e.g., bulk sampling)	C	C
		Mining: mining construction and operations	N	C
Petroleum	Petroleum Zone	Petroleum: exploration (non-destructive)	C	Y
		Petroleum: exploration (destructive, localised impact, e.g., exploration wells)	C	C
		Petroleum: production	N	C
Renewable Energy	Renewable Energy Zone	Renewable energy installations	C	Y
Military	Military Zone	Missile testing grounds	C	Y
		Training areas	Y	Y
Transport	Maritime Transport Zone	Shipping lanes	Y	Y
		Ports and harbours	N	C
		Anchorage areas	C	Y
		Bunkering	C	Y
Infrastructure	Underwater Infrastructure Zone	Undersea cables	C	Y
		Seawater inlets	C	Y
		Pipelines	C	Y
		Land-based Infrastructure Zone	Coastal development	N
Disposal	Disposal Zone	Ammunition dumping site (*disused)	N*	N*
		Wastewater discharge	C	Y
		Dumping of dredged material	N	C

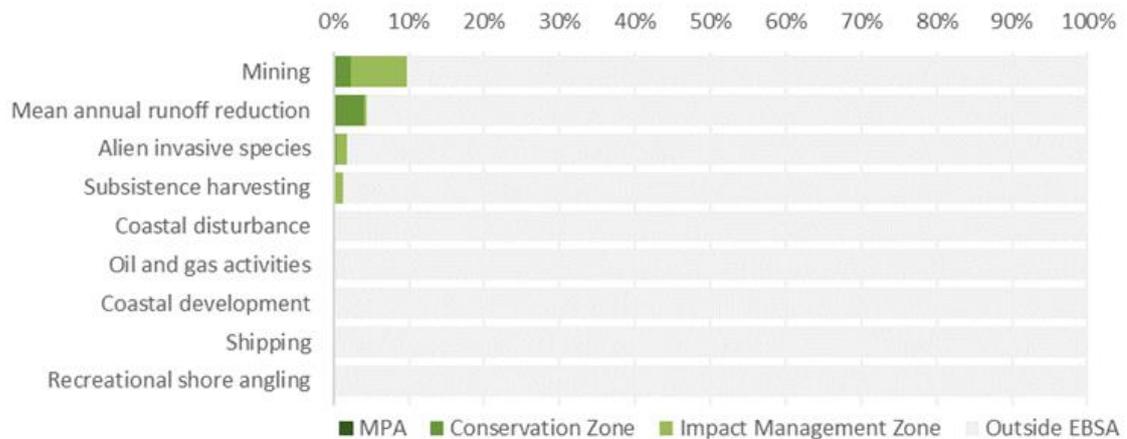
There are also some pressures on biodiversity features within the EBSA that originate from activities outside of these EBSA or beyond the jurisdiction of MSP. In support of maintaining the ecological integrity of and benefits delivered by the key biodiversity features, these other activities need to be appropriately managed by complementary initiatives.

Recommendations for other activities beyond the jurisdiction of MSP management to support securing key biodiversity features within the EBSA.

Other activities beyond the jurisdiction of MSP (above the high-water mark) that directly influence the ecological condition of the EBSA that should be managed appropriately under the ICM Act and other appropriate legislation.

- Coastal development (e.g., implementation of appropriate setback lines)
- Coastal disturbance (e.g., formalising access points; rehabilitating degraded dunes; etc)
- Prevent new marine species invasions through response planning, ring-fenced resources and rapid action
- Mean annual runoff reduction (e.g., determining and implementing freshwater flow requirements and estuarine management plans)

Activity Evaluation Per Zone: Zoning Feasibility



Proposed zonation of the EBSA, with the cumulative intensity footprint of activities within the EBSA (sorted highest to lowest) given relative to the national footprint of those activities to illustrate feasibility of management interventions.

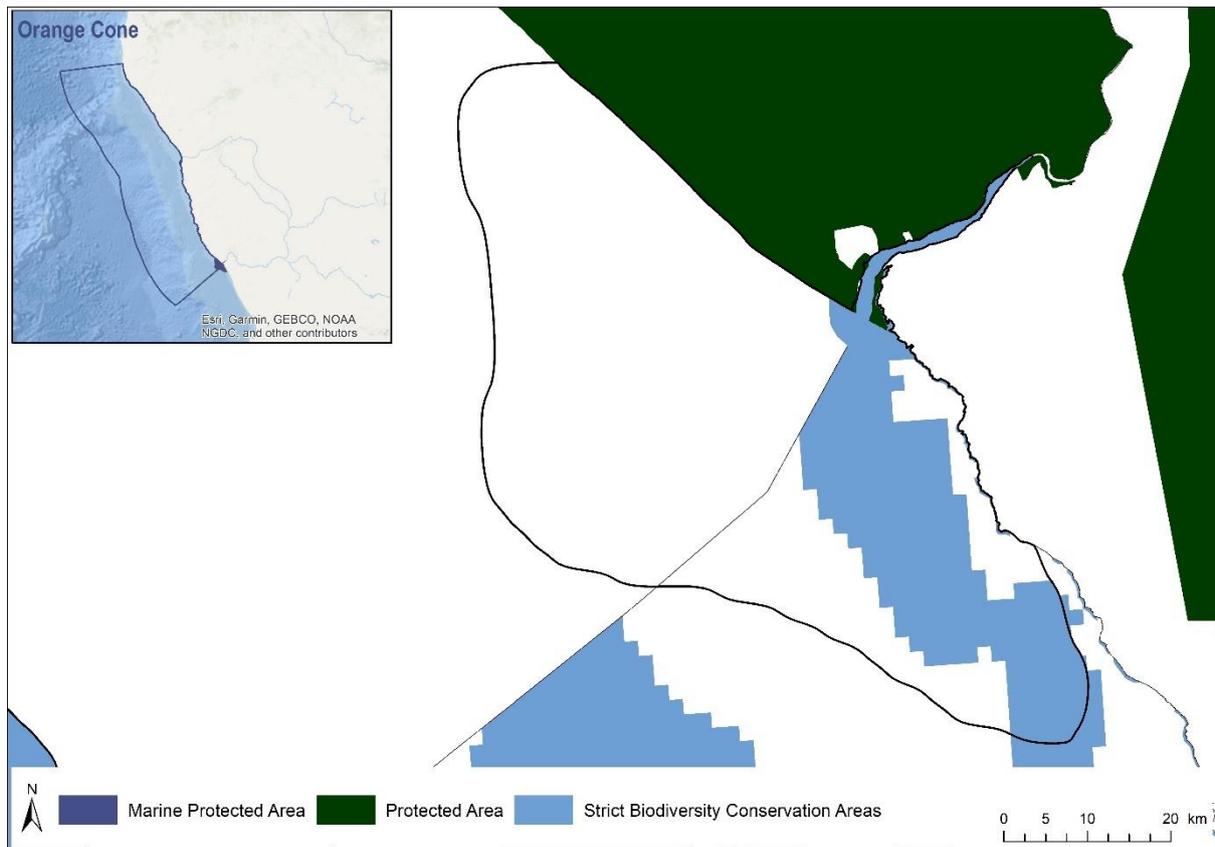
Nearly a fifth of the country’s marine mining footprint is in the EBSA, most of which is in the Impact Management Zone. Prospecting is considered to be compatible or conditionally compatible with the EBSA zones and is recommended to continue with relevant regulations and management. Mining construction and operations are considered conditionally compatible in the Impact Management Zone, where they could continue subject to appropriate management, but are not compatible with the EBSA Conservation Zone, where it is recommended that these activities are not permitted. Subsistence harvesting occurs along the shores of the EBSA at a relatively low intensity, exclusively in the Impact Management Zone where it is considered to be compatible with that zone and is therefore recommended to continue. Oil and gas exploration and production activities occur in the EBSA. Exploration is considered compatible or conditionally compatible with the EBSA zones and is recommended to continue. Production is conditionally compatible with the Impact Management

Zone, but is not compatible with the Conservation Zone and is thus recommended to be not permitted. Shipping is compatible with both EBSA zones and is recommended to continue under current general rules and legislation. Thus, in all cases, the EBSA zonation has no or minimal impact on the national footprint for the listed marine activities.

There are also several activities that are largely outside the EBSA but have downstream impacts to the biodiversity within the EBSA, e.g., from mean annual runoff reduction. The impacts should be managed, but principally fall outside the direct management and zoning of the EBSA and should ideally be dealt with in complementary integrated coastal zone management in support of the EBSA. For example, investment in eradicating the alien invasive species could aid in improving the ecological condition of rocky and mixed shores, improving benefits for subsistence and recreational harvesting; and rehabilitation of degraded dunes and formalising access points could support improved habitat for nesting shorebirds, and enhanced benefits for coastal protection during storm surges. Similarly, improved estuary management through development of appropriate freshwater flow requirements and estuarine management plans can improve the ecological condition of the surrounding marine environment, in turn, improving the ecological condition of the adjacent marine environment. Rehabilitation of related estuarine habitats is also recommended as a priority. These can partly be addressed in the management plan of the newly proclaimed Nature Reserve at the Orange River mouth.

Management Recommendations for Marine Protected Areas

There are no MPAs within the EBSA, however, there is some land-based protection covering parts of the estuarine habitat. It is recommended that existing land-based management is strengthened, and that formal protection within the EBSA should be explored to ensure that the features for which the EBSA was described receive adequate protection. See Future Process below for more details.



There are no MPAs in the Orange Cone EBSA. Land-based protected areas are shown (from DFFE, 2021, UNEP-WCMC & IUCN, 2022), which cover parts of the estuarine habitat.

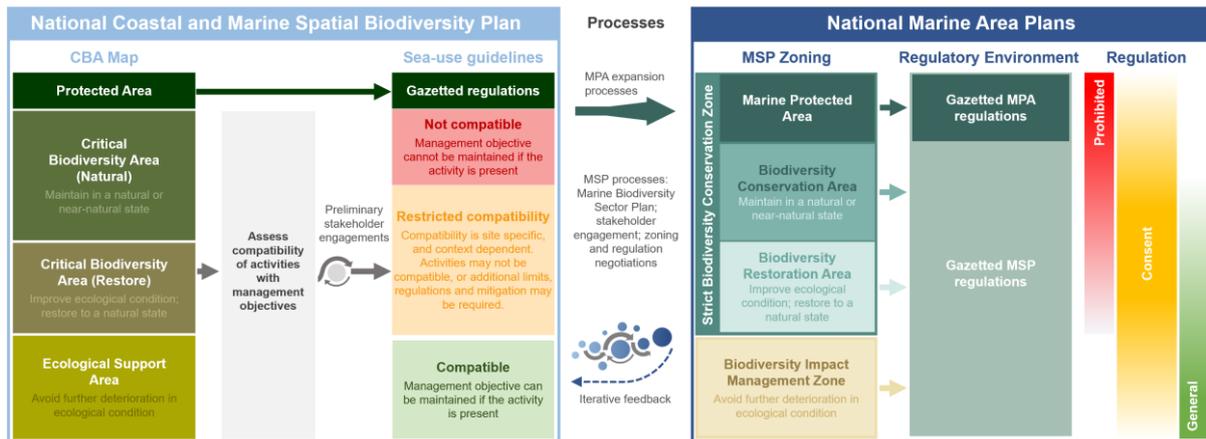
Management Recommendations for Marine Spatial Planning

Developing the biodiversity sector's input to the national Marine Spatial Planning process

Although Marine Area Plans are being developed in each country separately, regional alignment through the BCC is underway to ensure that the management recommendations within the transboundary EBSAs are congruent across the border. In Namibia, the management recommendations proposed for Orange Cone, outlined above, are the basis for the biodiversity sector's input into the southern Marine Area Plan. The current MSP focus in Namibia regards the central Marine Area Plan, and although some progress has been made for MSP within Orange Cone in terms of regional alignment (particularly for the sea-use guidelines), the southern plan will be developed in due course.

Following the initial management recommendations proposed for Orange Cone, outlined above, South Africa iteratively developed a National Coastal and Marine Spatial Biodiversity Plan (NCMSBP; Harris et al. 2022a,b) that underpinned the Marine Biodiversity Sector Plan (DFFE 2022). The latter constitutes the biodiversity sector's input into the national Marine Spatial Planning (MSP) process. The NCMSBP comprises a Map of Critical Biodiversity Areas and Ecological Support Areas (abbreviated to CBA Map), and a set of sea-use guidelines that indicate activity compatibility with the management objectives of each of the CBA Map categories. These two components form the basis for the proposed biodiversity zones and management recommendations for the Marine Area Plans. EBSAs are an

integral part of the NCMSBP, and thus the Biodiversity Sector Plan. Therefore, these products informed the proposed zoning and sea-use guidelines for EBSAs in the MSP process.

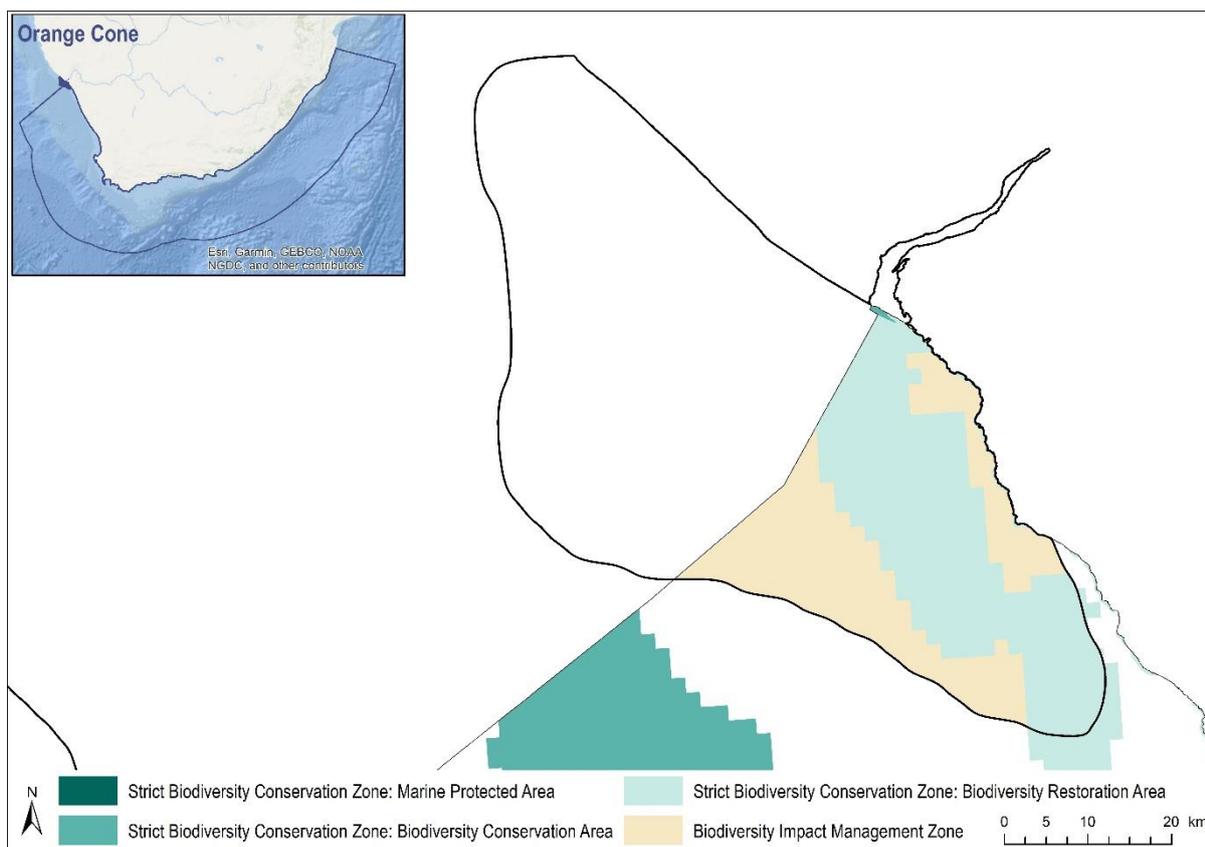


Schematic diagram illustrating that the National Coastal and Marine Spatial Biodiversity Plan will inform the Marine Area Plans through the Marine Biodiversity Sector Plan (DFFE 2022), and will be iteratively updated and refined based on feedback. The process for deriving the sea-use guidelines is also shown, indicating that it is based on an assessment of activity compatibility with the management objective of Critical Biodiversity Area (CBA) Natural, CBA Restore and Ecological Support Areas (ESAs). Marine Protected Area (MPA) expansion, focussing on CBAs, will also take place in a separate but related process. The outcomes of the Marine Spatial Planning and MPA expansion processes will be incorporated into the Marine Area Plans and will be fed back into future updates of the National Coastal and Marine Spatial Biodiversity Plan.

Proposed Zones

The proposed biodiversity zones for the EBSA in MSP comprises two types: a Strict Biodiversity Conservation Zone; and a Biodiversity Management Zone. It is recommended that there is full implementation and operationalisation of these zones as part of MSP. Sub-categories are yet to be developed in Namibia as part of the southern Marine Area Plan, but are likely to follow a similar approach to that for Namib Flyway and Namibian Islands in the central Marine Area Plan. Until then, the proposed zones are as indicated above in the Management Interventions Needed for the EBSA.

In South Africa, the Strict Biodiversity Conservation Zone has three sub-categories: Marine Protected Area; Biodiversity Conservation Area; and Biodiversity Restoration Area. Only two of these zones and sub-categories are found in Orange Cone, and no MPAs are present. Approximately half the EBSA comprises a Strict Biodiversity Conservation Zone: Biodiversity Restoration Area, where the management objective of the zone is to improve the ecological condition of the sites and, in the long term, restore them to a natural / near-natural state, or as near to that state as possible. As a minimum, avoid further deterioration in ecological condition and maintain options for future restoration. The rest of the EBSA is a Biodiversity Impact Management Zone. This is a multi-use area that may already be heavily impacted, but needs to be kept ecologically functional because it is still important for marine biodiversity patterns, ecological processes, and ecosystem services. Therefore, the management objective is to avoid further deterioration in ecological condition.



Proposed biodiversity zones for the Orange Cone EBSA for South Africa's Marine Area Plans. Land-based protected areas are not shown but do extend into some of the estuarine habitat (see previous section).

Proposed Sea-Use Guidelines

As explained in the Management Interventions Needed for the EBSA above, all sea-use activities were listed and recommendations for management were provided according to the compatibility of the activities with the management objective of each of the proposed biodiversity zones. As part of the regional alignment and development of the NCMSBP, the sea-use guidelines for both countries have advanced the initial recommendations proposed above. For example, where various aspects of an activity have a different impact on the environment, these were reflected separately, e.g., impacts from petroleum exploration are different to those from production. Activity compatibility in South Africa was based largely on the ecosystem-pressure matrix from the NBA 2018 (Sink et al. 2019), which is a matrix of expert-based scores of the functional impact and recovery time for each activity on marine ecosystems (adapted from Halpern et al. 2007). This also helped to inform the assessment of activity compatibility in Namibia. Activities were then classified into those that are Compatible, Not Compatible or have Restricted Compatibility with the management objectives of each proposed biodiversity zone. This classification broadly followed a set of predefined principles that account for the severity and extent of impact, similar to the IUCN Red List of Ecosystems criterion C3 (Keith et al. 2013). Some exceptions and adjustments were made based on initial discussions as part of the MSP process and regional alignment processes. It is recommended that the sea-use guidelines, as proposed below, are implemented as part of the respective Marine Area Plans in Namibia and South Africa.

Sea-use guidelines for Orange Cone in Namibia. List of all sea-use activities, grouped by their broad Marine Spatial Planning (MSP) Zones, and categorised according to their compatibility with the management objective of the Strict Biodiversity Conservation Area and Biodiversity Impact Management Area. Activity compatibility is given as Y = yes, compatible, R = restricted compatibility, or N = not compatible. Strict Biodiversity Conservation Zone: Marine Protected Areas (SBCZ: MPA) are managed according to their gazetted regulations.

Broad MSP Zone	Activities	MPA	Strict Biodiversity Conservation Area	Biodiversity Management Area
Biodiversity	Conservation activities (including MPA expansion)	Sea-use activities as per gazetted MPA regulations	Y	Y
Marine Tourism	Non-consumptive tourism and recreation		R	Y
	Ecotourism (regulated nature based and strictly controlled)		R	Y
	Recreational fishing (includes shore and recreational skiboat based)		R	Y
Heritage Conservation	Heritage sites		Y	Y
Commercial Fishing	Commercial Linefishing (e.g., snoek 20-m vessels)		R	Y
	Benthic longlining (e.g., hake, kingklip) (Not current activity)		R	Y
	Midwater trawling (Horse Mackerel)		R	Y
	Pelagic longlining		R	Y
	Commercial Pelagic Purse-seine (small pelagics) fishing		R	Y
	Crustacean trap-based harvesting (crabs)		R	Y
	Crustacean trap-based harvesting (rock lobster)		R	Y
	Bottom trawling (non-freezer)		N	R
	Bottom trawling (freezer trawlers)		N	R
Small-scale Fishing	Shore-based fishing (subsistence, artisanal)		R	Y
Mariculture	Mariculture		N	R
Mining	Mineral resource extraction (mining)		N	R
	Salt extraction (existing - man made)		R	R
	Salt extraction (new - man made)		N	R
Petroleum	Seismic surveys and mining exploration		R	R
	Petroleum extraction		N	R
Renewable Energy	Renewables (e.g. offshore wind, wave, solar)		N	R
Military	Military exercises and testing		N	R
Ammunition Dumping	Ammunition and other dumping		N	N
Maritime Transport	Shipping lane (designated lanes in and around ports)		N	Y
	Shipping (General ship movements)		Y	Y
	Shipping refuge (temporarily disabled ships)		N	R
	Bunkering at Sea		N	R
	Ports (existing, anchorage and new infrastructure in port zone)		N	Y
	Ports (new)		N	R
	Channel dredging	N	R	
	Dredge-spoil dumping (port channel dredging)	N	R	
Underwater Infrastructure	Cables and pipelines (undersea)	R	Y	
Land-based Infrastructure	Coastal Development - NEW (jetty, sea walls, breakwater etc.)	N	R	
Disposal	Wastewater and treated effluent discharge - existing (including desalination)	R	R	
	Wastewater and treated effluent discharge - new (including desalination)	N	R	

Sea-use guidelines for Orange Cone in South Africa. List of all sea-use activities, grouped by their broad sea use and Marine Spatial Planning (MSP) Zones, and categorised according to their compatibility with the management objective of Strict Biodiversity Conservation Zone: Biodiversity Conservation Area (SBCZ: BCA); Strict Biodiversity Conservation Zone: Biodiversity Restoration Area (SBCZ: BRA); and the Biodiversity Impact Management Zone (BIMZ). Activity compatibility is given as Y = yes, compatible, R = restricted compatibility, or N = not compatible. Strict Biodiversity Conservation Zone: Marine Protected Areas (SBCZ: MPA) are managed according to their gazetted regulations.

Broad sea use	Associated MSP Zones	Associated sea-use activities	SBCZ: MPA	SBCZ: BCA	SBCZ: BRA	BIMZ
Conservation	Biodiversity Zones	Expansion of place-based conservation measures (e.g., MPA expansion)		Y	Y	Y
Recreation and tourism	Marine Tourism Zone	Beach recreation, non-motorised water sports		Y	Y	Y
		Ecotourism (e.g., shark cage diving, whale watching)		Y	Y	Y
		SCUBA diving		Y	Y	Y
		Motorised water sports (e.g., jet skis)		R	R	Y
		Recreational fishing (e.g., shore-based, boat-based and spearfishing)		N	R	Y
		Shark control: exclusion nets		Y	Y	Y
		Shark control: drumlines and gillnets		N	R	Y
		Heritage	Heritage Conservation Zone	Protection of sites of heritage importance, including historical shipwrecks		Y
Protection of sites of seascape value				Y	Y	Y
Fisheries	Commercial and Small-Scale Fishing Zones	Abalone harvesting		R	R	Y
		Linefishing		N	R	R
		Demersal shark longlining		N	R	Y
		Demersal hake longlining		N	R	R
		Midwater trawling		N	R	Y
		Pelagic longlining		R	R	Y
		Small pelagics fishing		N	R	Y
		South coast rock lobster harvesting		R	R	Y
		Squid harvesting		R	R	Y
		Tuna pole fishing		R	R	Y
		West coast rock lobster harvesting		R	R	Y
		Crustacean trawling		N	N	R
		Demersal hake trawling (inshore and offshore)		N	R	R
		Hake handlining		R	R	Y
		Seaweed harvesting		R	R	Y
		Commercial white mussel harvesting		R	R	Y
		Beach seining		R	R	Y
		Gillnetting		R	R	Y
		Kelp harvesting		R	R	Y
	Oyster harvesting		R	R	Y	
Small-scale fishing		R	R	Y		
	Fisheries Resource Protection Zone	Resource protection		Y	Y	Y
Aquaculture	Aquaculture Zone	Sea-based aquaculture		N	R	R
Mining	Mining Zone	Mining: prospecting (non-destructive)		R	R	R
		Mining: prospecting (destructive, e.g., bulk sampling)		N	N	R
		Mining: mining construction and operations ¹		N	N	R
Petroleum	Petroleum Zone	Petroleum: exploration (non-invasive)		R	R	R
		Petroleum: exploration (invasive, e.g., exploration wells)		R	R	R
		Petroleum: production ^{1,2}		N	N	R
		Petroleum: oil and gas pipelines		N	N	R
Renewable Energy	Renewable Energy Zone	Renewable energy installations		N	R	R
Defence	Military Zone	Military training and practice areas		R	R	Y
		Missile testing grounds		R	R	Y
Transport	Maritime Transport Zone	Designated shipping lanes (including port approach zones)		R	R	Y
		Anchorage areas		R	R	Y
		Bunkering		N	N	R
		Ports and harbours (new)		N	N	R

Broad sea use	Associated MSP Zones	Associated sea-use activities	SBCZ: MPA	SBCZ: BCA	SCBZ: BRA	BIMZ
		Dumping of dredged material		N	N	R
Infrastructure	Underwater Infrastructure Zone	Pipelines (excluding oil and gas)		N	R	Y
		Undersea cables (new installations)		N	R	Y
	Land-based Infrastructure Zone	Coastal development (new installations, including piers, breakwaters, and seawalls) ³		N	N	R
Abstraction and Disposal	Disposal Zone	Waste-water (new installations)		N	R	Y
	Sea-water abstraction and disposal	Sea-water abstraction and disposal (e.g., desalination)		R	R	Y
		Sea-water abstraction and disposal (e.g., aquaculture disposal)		N	R	Y
<p>¹ The activity should not be permitted to occur in CBAs because it is not compatible with the respective management objectives. However, if significant mineral or petroleum resources are identified during prospecting/exploration, then the selection of the site as a CBA could be re-evaluated as part of compromises negotiations in current or future MSP processes. This would require alternative CBAs and/or biodiversity offsets to be identified. However, if it is not possible to identify alternative CBAs to meet targets for the same biodiversity features that are found at the site, it is recommended that the activity remains prohibited.</p> <p>² The recommended prohibition of the activity in CBAs (because it is not compatible with the management objective) refers to the location of the biodiversity disturbance rather than the location of the petroleum resource. If petroleum production is possible using lateral drilling or other techniques that do not result in any impacts on biodiversity within the CBAs, then production may be treated as an activity with restricted compatibility (i.e., recommended to be a consent activity).</p> <p>³ New coastal development should not be permitted in CBA Restore sites unless it is part of rehabilitation and restoration activities to improve ecological condition.</p>						

Proposed management recommendations for activities with each of the different compatibility ratings:

- **Compatible:** Activities should be allowed and regulated by current general rules. Notwithstanding, there should still be duty of care, possibly requiring monitoring and evaluation programmes, to avoid unintended cumulative impacts to the biodiversity features for which this area is recognised.
- **Restricted compatibility:** A robust site-specific, context-specific assessment is required to determine the activity compatibility depending on the biodiversity features for which the site was selected. Particularly careful attention would need to be paid in areas containing irreplaceable to near-irreplaceable features where the activity may be more appropriately evaluated as not permitted. The ecosystem types in which the activities take place may also be a consideration as to whether or not the activity should be permitted, for example. Where it is permitted to take place, strict regulations and controls over and above the current general rules and legislation would be required to be put in place to avoid unacceptable impacts on biodiversity features. Examples of such regulations and controls include: exclusions of activities in portions of the zone; avoiding intensification or expansion of current impact footprints; additional gear restrictions; and temporal closures of activities during sensitive periods for biodiversity features.
- **Not compatible:** The activity should not be permitted to occur in this area because it is not compatible with the management objective. If it is considered to be permitted as part of compromises in MSP negotiations, it would require alternative Strict Biodiversity Conservation Zones and/or offsets to be identified. However, if this is not possible, it is recommended that the activity remains prohibited within the Strict Biodiversity Conservation Zone.

Research Needs

There are no specific research needs for this EBSA in addition to those for all EBSAs (see EBSA Research Needs below). However, it is noted that much more baseline research and ongoing monitoring is needed to ensure that the key features of the EBSA are well managed. Many issues link to the management of the Orange River Mouth, as well as diamond mining along the coast and in marine areas of both countries. Other research into the fluvial fan and plume is also recommended to better understand land-sea connectivity processes, and the effect that freshwater flow reduction could have on marine systems.

Future Process

There needs to be full operationalisation and practical implementation of the proposed zoning in South Africa and Namibia's national marine spatial plans, with gazetted management regulations following the proposed management recommendations outlined above. MPA declaration within the EBSA should be explored, with relevant areas included into focus areas that can be considered further in a dedicated MPA expansion process with adequate and meaningful stakeholder engagement. If MPA declaration is not possible, then other formal protection measures should be considered, e.g., OECMs, to ensure that the features for which the EBSA was described are adequately protected. Further alignment between land-based and marine biodiversity priorities should also be strengthened, e.g., through the cross-realm planning in the CoastWise project. Regional alignment through the BCC should continue, which could also facilitate exploration of transboundary MPAs.

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EBSA Research Needs

Research needs are generally the same across all EBSAs, and are presented here as a list that is applicable to all EBSAs. If there are specific needs that are unique to a particular EBSA, these are given after the Motivation for Revisions section per EBSA, above.

Data, foundational knowledge and understanding

- **Improved mapping of ecosystem types within and around EBSAs** as part of national and regional mapping processes is required. Although significant improvements have been made, there still needs to be effort to refine classification, improve mapping, groundtruth the boundaries and monitor changes in ecosystem types. This is particularly important for offshore types which are poorly known and poorly delineated. In addition, special benthic features like canyons and seamounts remain poorly mapped. Improved bathymetry data and targeted surveys are needed.
- **Improved species information is required** for EBSAs, particularly where threatened or fragile, sensitive or vulnerable species underpin (or could strengthen) the EBSA status. This is also important for informing whether conservation actions (MPAs, zoning, other place-based controls and general controls) are effective in achieving biodiversity targets (especially for resource species) and managing impacts.
- **Species assessments within EBSAs to comprehensively list threatened species** and ensure they are being adequately catered for in the EBSA networks. This is important to ensure that management of EBSAs fully meets requirements for threatened and sensitive/vulnerable species. Clearly, if relevant species are present in an EBSA but are not known, there is no guarantee that management activities (e.g. zoning) would meet their requirements. This includes both resident and migratory species.
- **More ecological studies are required to better understand many of the offshore ecosystem types** that are currently mapped, but poorly known. This includes their constituent biodiversity and ecology, ecological processes and ecosystem services. Field based survey data are often lacking or outdated. EBSAs provide a logical focus area for survey cruises, repeat sampling and long-term monitoring.
- **Systematic research on actual ecological condition of EBSA is required.** Currently ecological condition is inferred from mapping cumulative pressures, but direct evidence is required. EBSA zones can also provide useful controls for studies on impacts of individual pressures (which may be excluded from some zones and allowed in adjacent areas).
- **Research on human-impact mitigation** is also recognised as a research priority. In this regard, establishing and strengthening protection in EBSAs provides a notable research opportunity. As management regimes change within EBSAs, it is important to track recovery of sites following exclusion of key pressures in well-designed experiments (e.g., before-after, control-impact designs) to quantitatively determine the efficacy of improved management for coastal and marine biodiversity.
- **Improved sharing of data** (especially spatial data) will improve overall understanding of EBSAs. Currently, even if data exist, these are hard to identify and access. Organized sharing of (spatial) data is critical for rational evidence-based management of EBSAs.

Monitoring, management, and conservation

- **Long-term monitoring programmes** need to be established to facilitate **early detection of degradation of EBSA biodiversity features and ecosystems**. This includes early warning of invasive species and to track changes from global change (both climate change and other pressures as economic activities in the ocean intensify and diversify). EBSAs could serve as reference sites given that they are largely in good ecological condition (or at least better condition compared to surrounding areas) and where negotiations are underway to control activities in EBSAs.
- **Improved monitoring of actual levels of human activity within and around EBSA** is required. Short term improvements are possible through minor adjustments to existing fisheries monitoring protocols. For example, moving towards a point specific summary of activity rather than broad grid-based integration of data would provide a much-improved view of actual activities.
- Potential for the **expansion of Marine Protected Areas** should be explored in EBSA conservation zones. In particular, EBSA biodiversity features (e.g. ecosystems, species and ecological process areas) that are under-represented in national and regional protected area networks, should be investigated in terms of their potential for inclusion in MPA networks.