# ECOLOGICALLY OR BIOLOGICALLY SIGNIFICANT MARINE AREAS

in the Benguela Current Large Marine Ecosystem



Browns Bank REVISED DESCRIPTION

On behalf of:







Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety 緣

of the Federal Republic of Germany

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SMA

**BROWNS BANK Revised Description** 



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# Browns Bank

# **Revised EBSA Description**

# **General Information**

### Summary

Browns Bank includes benthic and pelagic habitats of the outer shelf and shelf edge along the western continental margin of South Africa. The area includes reef-building cold-water corals and untrawled hard grounds. It is an important fish spawning area for demersal and pelagic species. The spawning area is linked to nursery grounds on the inshore area of the west coast and the Agulhas Bank, and has better retention than that of areas further north. The Agulhas and Southern Benguela ecoregions meet at the south-eastern boundary of the area and sporadic shelf edge upwelling enhances the productivity along the outer margin. The area is important for threatened habitats and species, including a Critically Endangered benthic ecosystem type and overlapping substantially with two proposed marine Important Bird Areas, namely for Cory's Shearwater and Atlantic Yellow-nosed Albatross. The area was also identified as a priority area through two systematic biodiversity plans, meeting targets for habitat representation, hake spawning, and fragile and sensitive habitat-forming species. The boundary of this EBSA has been refined since its first description to improve precision based on focus-area delineation for national MPA expansion, threat status of benthic ecosystem types, and presence of vulnerable, sensitive, fragile and slow-growing species.

## Introduction of the area

The area is along the outer shelf and shelf edge of the western continental margin of South Africa, south and slightly east of Cape Agulhas. It includes benthic habitats, including rocky, sandy and reef substrates (Sink et al., 2019), and a pelagic ecosystem type that is characterised by elevated productivity and frequent fronts due to shelf-edge upwelling (Lutjeharms et al., 2000, Lagabrielle 2009, Roberson et al., 2017). The area ranges from approximately 150 m – 800 m depth and the Agulhas and Southern Benguela ecoregions meet at the its south-eastern edge (Sink et al., 2012), with sporadic shelf-edge upwelling that enhances the productivity along its outer margin (Lagabrielle, 2009, Roberson et al., 2017). The area includes the western Agulhas Bank spawning ground, and is part of a critical area for retention of spawning products (Hutchings et al., 2002). It was identified as a priority area through a national plan to identify areas for offshore protection (Sink et al., 2011) and by a systematic biodiversity plan for the South African west coast (Majiedt et al., 2013).

Description of the location EBSA Region South-Eastern Atlantic

# **Description of location**

Browns Bank includes benthic and pelagic habitats of the outer shelf and shelf edge along the western continental margin of South Africa. This area is off the southwest coast of South Africa, almost directly south of Cape Agulhas, and is completely within national jurisdiction.



Proposed revised boundaries of the Browns Bank EBSA.

# **Area Details**

# Feature description of the area

The Browns Bank area includes unconsolidated sandy habitats, hard ground and reef habitats (Sink et al., 2019). The pelagic habitat is characterised by elevated productivity and frequent fronts due to shelf edge upwelling (Lutjeharms et al., 2000, Lagabrielle 2009, Roberson et al., 2017). The biodiversity at Browns Bank includes benthic macrofaunal communities characterized by high abundances of brittle stars and many species of polychaetes (Karenyi, 2014); cold-water corals, brisingid starfish, and 77 morphospecies of macroinvertebrates have also been collected within the area (Sink 2016). Further, it is a proposed marine Important Bird Area (IBA) for two species of seabirds, Cory's Shearwater and Atlantic Yellow-nosed Albatross (BirdLife International 2013), indicating that it holds a significant proportion of the global population of these species during some periods of each year for which data are available. Wandering, Shy, Black-browed, and Atlantic yellownose albatrosses sighted in the area, and Pintado petrels are noted as commonly occurring (Sink 2016). Browns Bank is also part of the western Agulhas Bank spawning ground as described by Hutchings et al. (2002). This area has been included in annual demersal fish trawl surveys conducted by the Department of Agriculture, Forestry and Fisheries, and was surveyed during the *Deep Secrets* cruise in 2016 (Sink 2016).

The boundary of this EBSA has been refined since it was first described, using the best available data (e.g., Holness et al., 2014; Majiedt et al., 2013; Sink et al., 2012a, 2019). The new boundary falls almost entirely within the old boundary, comprising an area about two thirds of the original delineation. It was refined to improve precision based on selection frequency in the two systematic biodiversity plans covering this area (Sink et al., 2011; Majiedt et al., 2013), MPA expansion in South Africa, presence of fragile and sensitive habitat-forming species, and benthic ecosystem types that are threatened. 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).

# Feature conditions and future outlook of the proposed area

According to Wilkinson (2009) there are three areas of untrawled hard grounds on the shelf edge within this area, suggesting they are still intact. However, a recent assessment of cumulative pressures to South Africa's marine environment showed that there is a small portion of the EBSA that is in good ecological condition, some parts in fair condition, but that most of the EBSA has been heavily modified and is in poor ecological condition (Sink et al., 2019).

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#### Other relevant website address or attached documents

Summary of ecosystem types and threat status for the Browns bank EBSA. Data from Sink et al. (2019).

Threat Status	Ecosystem Type	Area (km²)	Area (%)
Critically Endorgorod	Southern Benguela Rocky Shelf Edge Mosaic	1197.1	21.2
Endangered			
Least Concern	Agulhas Outer Shelf Reef Coarse Sediment Mosaic	385.5	6.8
	Agulhas Rocky Shelf Edge	414.8	7.3
	Southeast Atlantic Upper Slope	1938.1	34.3
	Southern Benguela Sandy Outer Shelf	1541.7	27.2
	Southwest Indian Upper Slope	180.5	3.2
Grand Total		5657.7	100.0

# Assessment of the area against CBD EBSA criteria

C1: Uniqueness or rarity High

# Justification

When first described, Browns Bank was identified by two systematic plans as a priority area because it is the only place where targets for the Southern Benguela Gravel Outer Shelf habitat (which is Critically Endangered) can be met (Majiedt et al., 2013, Sink et al., 2011). It should be noted that this ecosystem type has a limited extent with an estimated total area of less than 450 km<sup>2</sup>. Since the revision of the National Marine Ecosystem Type Map (Sink et al., 2019) and the EBSA boundary, this is still true; however, the ecosystem type is now called Southern Benguela Rocky Shelf Edge Mosaic. It is still Critically Endangered, but does extend a little beyond the extent of the EBSA along the shelf edge; the most intact parts of this ecosystem type are included in the EBSA.

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

# Justification

This area is part of the western Agulhas Bank spawning ground as described by Hutchings et al. (2002). The gadoid Cape hakes Merluccius capensis and M. paradoxus, the gempylid Thyrsites atun (snoek) and the clupeid Etremeus whiteheadii (round herring) move to the western Agulhas Bank and southern west coast to spawn, generally in late winter and early spring when offshore Ekman losses are at a minimum. The eggs and larvae drift northwards and inshore to the west coast nursery grounds. Browns Bank, an apex area of the Agulhas Bank, is recognized as a critical area for retention of spawning products because eddies in this area help to re-circulate water inshore and link important nursery areas with this spawning habitat on the shelf edge. Strong jet currents on the west coast oblige adult hake to shift southwards to spawn, to ensure that juveniles enter the west coast nursery grounds downstream (Hutchings et al., 2002). The area is also important for juvenile spiny lobsters (Santos et al., 2014). This shelf-edge area also constitutes foraging area for offshore seabirds (BirdLife International 2013). Limited tracking datasets have shown that the shelf edge is heavily used by a diversity of pelagic seabirds. In particular, the Browns Bank site is a proposed marine IBA for two species of seabird: Cory's Shearwater and Atlantic Yellow-nosed Albatross (BirdLife International 2013). Additional seabird tracking datasets may result in this site being an IBA for additional species in future.

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

# Justification

The Atlantic Yellow-nosed Albatross is globally Endangered, and Browns Bank is a proposed marine IBA site for this species, indicating that it holds a significant proportion of the global population of this species during some periods of each year for which data are available (BirdLife International 2013). This area also contains the last moderately intact patches of Southern Benguela Rocky Shelf Edge Mosaic, a rare habitat type that is considered Critically Endangered (Sink et al., 2012a,b, 2019). Wandering albatross, Shy, Black browed, Atlantic yellownose and Pintado petrels are common in area (Sink 2016).

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

# Justification

This area has hard ground habitats on the outer shelf and shelf edge that are considered sensitive to demersal trawling and mining (Sink et al., 2011, 2012a, 2012b). Recently, fisheries observers collected

two species of cold-water corals within this area (Capricorn Fisheries Monitoring, unpublished information). The specimens are in the invertebrate collection at iZiko, the South African Museum in Cape Town. Further, recent samples of coral, *Thouarella*, hermit crabs, and brisingid sea stars have been collection or seen, and 77 invertebrate morpho-species were identified from the area in a recent survey (Sink 2016).

# C5: Biological productivity Medium

# Justification

The Agulhas and Southern Benguela ecoregions meet at the southeastern boundary of the area and sporadic shelf edge upwelling enhances the productivity along its outer margin. Based on tracking data, the area holds a significant proportion of the global population of at least two species of seabirds, namely Cory's Shearwater and the globally Endangered Atlantic Yellow-nosed Albatross (BirdLife International 2013).

# C6: Biological diversity Low

Justification

The national marine ecosystem map indicates a moderate number of ecosystem types within the area (Sink et al., 2019).

# C7: Naturalness Medium

# Justification

There are three areas of untrawled hard grounds on the shelf edge within this area (Wilkinson 2009). The Southern Benguela Rocky Shelf Edge Mosaic ecosystem type is in poor condition and there is no remaining area of this ecosystem type left in good condition, and only fragments in moderate condition (Sink et al., 2012a,b, 2019). Across the EBSA, 2% of the habitat is in good ecological condition, 26% is in fair ecological condition and 72% is in poor ecological condition (Sink et al., 2019).

# Status of submission

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

COP Decision dec-COP-12-DEC-22

# End of proposed EBSA revised description

# **Motivation for Revisions**

Some technical revisions and updates to the description were made, even though little additional information was available. However, given the most recent assessment of ecological condition (Sink et al., 2019), the Naturalness criterion was downgraded from medium to low. A supplementary table of the habitats represented in the EBSA and their associated threat status was also included.

The main change is that the boundary of this EBSA has been slightly adjusted to focus the EBSA more closely on the key biodiversity features that underlie its EBSA status. The delineation process included

an initial stakeholder review which identified the need to update boundaries, 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 and Multi-Criteria Analysis methods. The features used in the analysis were:

- Irreplaceable and near irreplaceable (i.e. very high selection frequency) sites, as well as focus areas identified in the SCP undertaken for the West Coast by Majiedt et al. (2013), offshore areas (Sink et al., 2011) and by Holness et al. (2014) were incorporated.
- Delineations and threat status of consitituent ecosystem types in the area were included in the analysis and used to refine the boundary of the EBSA.
- Areas of high relative naturalness of benthic and coastal systems and pelagic systems identified in the National Biodiversity Assessment 2011, 2018 (Sink et al., 2012a, 2019) were included in the analysis.
- Distributions of known fragile, vulnerable and sensitive habitat-forming species were included (Unpublished SANBI and SAEON data).

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 were validated in a national workshop.



The proposed revised boundaries for the Browns Bank EBSA in relation to its original boundaries.