ECOLOGICALLY OR BIOLOGICALLY SIGNIFICANT MARINE AREAS

in the Benguela Current Large Marine Ecosystem

Agulhas Bank Nursery Area

REVISED DESCRIPTION

Benguela CURRENT CONVENTION

MARISMA
Enabling Sustainable Ocean Use in the Benguela Current Region

giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

On behalf of:
Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety
of the Federal Republic of Germany

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

AGULHAS BANK NURSERY AREA

Revised Description

Front cover image credits: ACEP, Linda Harris, Steve Benjamin, Geoff Spiby, Melanie Wells

NELSON MANDELA UNIVERSITY

Agulhas Bank Nursery Area

Revised EBSA Description

General Information

Summary

The Agulhas Bank is a spawning ground and nursery area, and is the centre of abundance of numerous warm-temperate species, including several endemic sparids. The bank is an area of wider shelf along the otherwise relatively narrow shelf of South Africa. It is the only warm temperate nursery area for species that spawn on the narrow shelf in the north, and is important for retention, recruitment, and food provision. Dense benthic copepod communities provide a rich food source. The area includes Critically Endangered mud habitats and unique high-profile volcanic offshore reefs that support cold-water coral communities. There is a spawning aggregation area for the threatened endemic reef fish, *Petrus rupestris*, within this area. Agulhas Bank Nursery Area has been identified as important in two systematic planning initiatives, and contains two existing MPAs at De Hoop and Still Bay. The EBSA boundary has been refined since original delineation to better align with South Africa's expanding MPA network, and with the underlying biodiversity features, including fragile and sensitive habitat-forming species.

Introduction of the area

This area within the Agulhas Bank, on the south coast of South Africa, includes benthic and pelagic features that extend from the dune base to shallower than -150 m. Key benthic features include Critically Endangered mud habitats, high-profile volcanic deep reefs, low-profile deep reefs and rare gravels. The Agulhas Bank is important for numerous ecological processes, including spawning, larval retention, recruitment, connectivity and provision of nursery and foraging areas (Hutchings et al., 2002). This area is the centre of abundance of numerous warm temperate species, including several endemic sparids. Some of these species are threatened or overexploited (sparids and sciaenids), and the deep-reef habitats are considered important for the recovery of overexploited deep-reef fish species. However, two coastal MPAs at De Hoop and Still Bay provide some protection for some of the over-exploited species. A spawning area for the threatened endemic reef fish, *Petrus rupestris*, is located within this area, and aggregations of this species have recently been observed within this EBSA (Sink et al., 2010). The Agulhas Bank area has been identified as a priority using data provided through a national systematic planning initiative (Sink et al., 2011). Hutchings et al. (2002) emphasise the importance of this area as one of three key nursery areas in South Africa and the only one in the warm temperate ecoregion.

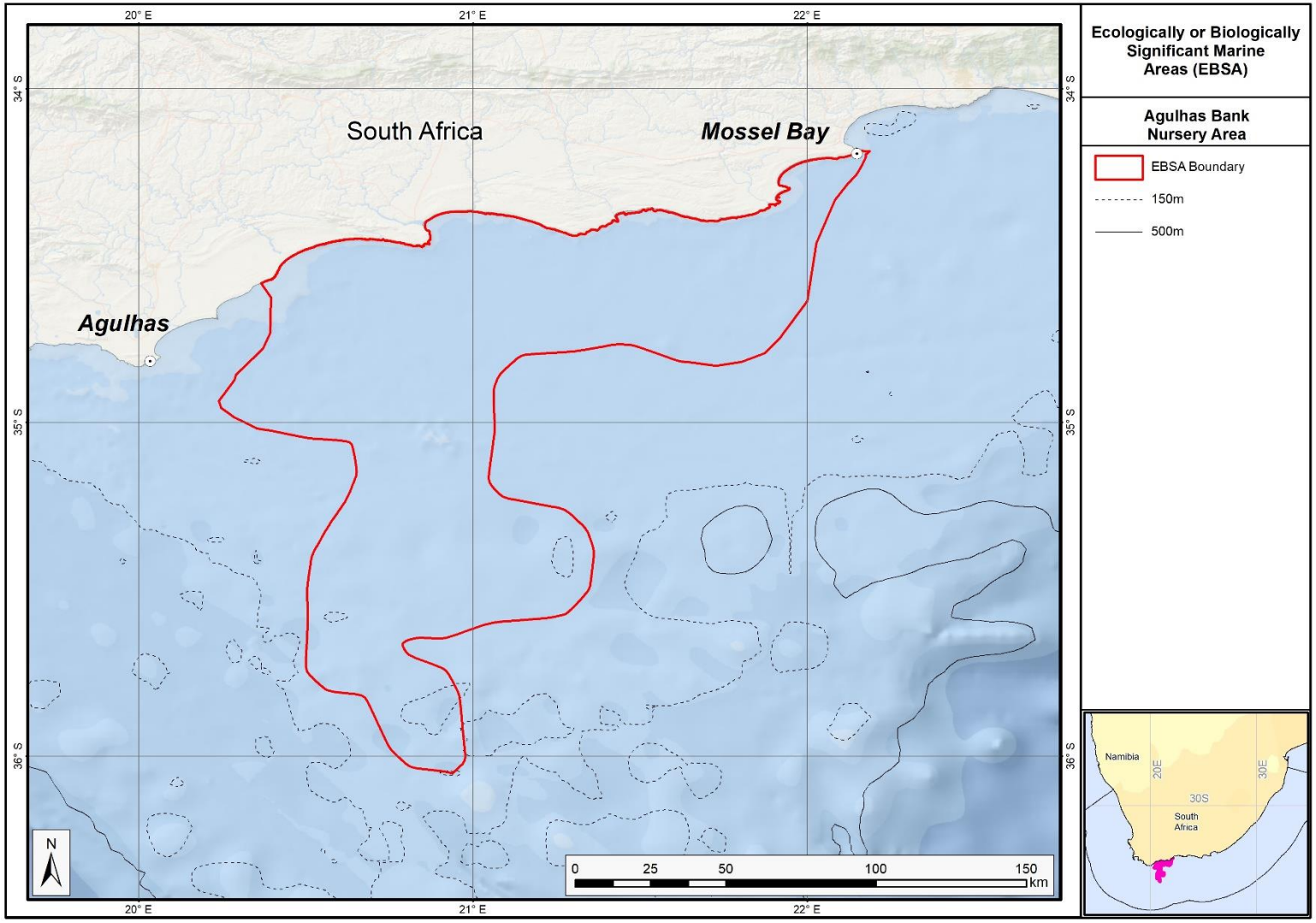
Description of the location

EBSA Region

Southern Indian Ocean

Description of location

This EBSA extends from the dune base across to the outer shelf, 175 km south of Cape Infanta in the Western Cape of South Africa, to almost as deep as -150 m. Along the shore it spans the De Hoop MPA in the west, to the headland that marks the start of Mossel Bay in the east. The area includes part of the Alphard and Agulhas Banks, and is entirely within South Africa's Exclusive Economic Zone (EEZ).



Proposed revised boundaries of the Agulhas Bank Nursery Area EBSA.

Area Details

Feature description of the area

Key benthic features include sandy and mud habitats, high-profile volcanic deep reefs, low-profile deep reefs and rare gravels. The Agulhas Bank is an important nursery area for species that spawn on the narrow shelf further north, including shad (*Pomatomus saltatrix*) and the sciaenid (*Attractoscion aequidens*). Squid also spawn in this area, and their paralarvae that hatch from the benthic eggs are dispersed across the bank, where they feed on a dense layer of copepods that occurs close to the seabed in this area (Hutchings et al., 2002). The Agulhas Bank area is moderately productive but has areas of relatively higher productivity within the broader area. There is a cold ridge of water on the central Agulhas Bank, which is a prominent subsurface feature during most summers (Swart and Largier 1987) and is associated with elevated phytoplankton concentrations (Probyn et al., 1994) and dense concentrations of copepods (Verheye et al.1994) and clupeoid fish eggs (Roel et al., 1994). The area is also frequented by migrating regionally Near Threatened loggerhead and regionally Critically Endangered leatherback turtles (Harris et al., 2018). Threatened ecosystem types in the area include: Critically Endangered Agulhas Muddy Mid Shelf; Endangered Agulhas Bays – West; and Vulnerable Agulhas Exposed Rocky Shore, Agulhas Inner Shelf Reef Sand Mosaic, Agulhas Kelp Forest, Agulhas Sandy Inner Shelf, Agulhas Sheltered Rocky Shore, and Agulhas Very Exposed Rocky Shore (Sink et al., 2019). The Agulhas Blues, Agulhas Mid Shelf Reef Sand Mosaic, Agulhas Mixed Shore, Agulhas Muddy Outer Shelf, Agulhas Sandy Mid Shelf and Warm Temperate Predominantly Open Estuary are Near Threatened (Sink et al., 2019). Overexploited and threatened linefish include the endemic red steenbras (*Petrus rupestris*, Endangered), Dageraad (*Chrysoblephus cristiceps*, Endangered) and black musselcracker (*Cymatoceps nasutus*, Vulnerable) (Sink et al., 2012; Sink et al., 2010). The area is also important for juvenile silver kob *(Argyrosomus inodorus*; Lombard et al., 2010, Attwood et al., 2011). The reef habitats range from low to very high profile, most have low rugosity, and support a variety of wall sponges, corals, red algae, kelp, gorgonians, fish and sharks (Gotz et al., 2014; Makwela et al., 2016). Some of these threatened and over-exploited species are protected in the De Hoop and Still Bay MPAs along the coast.

Since the original description, the boundary of this EBSA has been refined to improve precision so that it better represents the features comprising the EBSA, such as benthic ecosystem types and their condition, and fragile and sensitive habitat-forming species, using the best available data (e.g., Holness et al., 2014; Majiedt et al., 2013; Sink et al., 2012, 2019). The new delineation reduces the size of the EBSA to about a third of its original extent, and also aligns better with the recently expanded MPA network in South Africa. 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

South Africa’s National Biodiversity Assessment 2011, 2018 (Sink et al., 2012, 2019) indicated a range in ecological condition in this area based on an assessment of cumulatives pressures. The latest assessment (Sink et al., 2019) and EBSA boundary revision now indicates that 41% of the EBSA is in good ecological condition; the rest is in fair (19%) and poor (40%) ecological condition. There are deep reefs in the Agulhas Bank Nursery Area that are estimated to be in good ecological condition, even though pressures elsewhere have led to these habitats being considered threatened. Key activities in

the area include commercial demersal trawl and longline fisheries, a midwater trawl fishery, trap fisheries for rock lobster, linefishing and expanding petroleum activities.

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Other relevant website address or attached documents

Summary of ecosystem types and threat status for the Agulhas Bank Nursery Area EBSA. Data from Sink et al. (2019).

Threat Status	Ecosystem Type	Area (km^2)	Area (%)
Critically Endangered	Agulhas Muddy Mid Shelf	1731.8	12.7
Endangered	Agulhas Bays - West	323.4	2.4
	Agulhas Sheltered Rocky Shore	0.2	0.0
Vulnerable	Agulhas Exposed Rocky Shore	19.5	0.1
	Agulhas Inner Shelf Reef Sand Mosaic	389.5	2.9
	Agulhas Kelp Forest	0.5	0.0
	Agulhas Sandy Inner Shelf	12.4	0.1
	Agulhas Very Exposed Rocky Shore	1.4	0.0
	Warm Temperate Predominantly Open Estuary	2.6	0.0
Near Threatened	Agulhas Blues	850.3	6.2
	Agulhas Mid Shelf Reef Sand Mosaic	723.0	5.3
	Agulhas Mixed Shore	41.6	0.3
	Agulhas Muddy Outer Shelf	358.0	2.6
	Agulhas Sandy Mid Shelf	7156.4	52.3
Least Concern	Agulhas Dissipative-Intermediate Sandy Shore	12.6	0.0
	Agulhas Intermediate Sandy Shore	2.7	0.0
	Agulhas Outer Shelf Gravel Sand Mosaic	773.1	5.7
	Agulhas Rocky Outer Shelf	1250.0	9.1
	Alphard Bank	31.9	0.2
	Warm Temperate Small Temporarily Closed Estuary	0.2	0.0
Grand Total		**13681.0**	**100.0**

Assessment of the area against CBD EBSA criteria

C1: Uniqueness or rarity **High**

Justification

The volcanic offshore Alphard Bank is a unique feature that supports kelp, soft corals, stylasterine corals, and sponges (Sink et al., 2010; Makwela et al., 2016). Rare habitats within this area include some of the muddy and gravel ecosystem types (Sink et al., 2012a, 2019).

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

Justification

The Agulhas Banks Nursery Area is of particular importance for the life-history stages of multiple fish species, including *inter alia* endemic, threatened, and commercially important species. Fish that use the area for spawning, are: Red steenbras (*Petrus rupestris*, Endangered) and other linefish species (Hutchings et al., 2002) including anchovy (Mhlongo et al., 2015). There have also been recent observations of spawning aggregations of the endemic reef fish *Petrus rupestris* within this area (Sink et al., 2010). It also serves as a nursery area for silver kob (*Argyrosomus inodorus*; Attwood et al., 2011), geelbek, shad, white stumpnose (Hutchings et al., 2002). This area also supports a relatively high proportion of juvenile hake (*Merluccius capensis*; Sink et al., 2011). Squid paralarvae (Downey-Breedt et al., 2016) and mussel larvae are also present, with mussel veligers found in high abundances up to 87 km from the shore (Weidberg et al., 2015).

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

Justification

Threatened ecosystem types in the area include: Critically Endangered Agulhas Muddy Mid Shelf; Endangered Agulhas Bays – West; and Vulnerable Agulhas Exposed Rocky Shore, Agulhas Inner Shelf Reef Sand Mosaic, Agulhas Kelp Forest, Agulhas Sandy Inner Shelf, Agulhas Very Exposed Rocky Shore (Sink et al., 2019). The Agulhas Blues, Agulhas Mid Shelf Reef Sand Mosaic, Agulhas Mixed Shore, Agulhas Muddy Outer Shelf, and Agulhas Sandy Mid Shelf are Near Threatened (Sink et al., 2019). This area has also been identified through systematic planning as containing habitat important for overexploited and threatened linefish. This includes the endemic overexploited sparids such as red steenbras (*Petrus rupestris*), Dageraad (*Chrysoblephus cristiceps*, Endangered) and black musselcracker (*Cymatoceps nasutus*, Vulnerable) (Sink et al., 2012). The area is also recognized as important for the recovery of the overexploited silver kob (*Argyrosomus inodorus*; Attwood et al., 2011), and the reefs serve as aggregating structures for some overexploited fish species, such as the carpenter (*Argyrozona argyrozona*; Gotz et al., 2014). The overexploitation of linefish species is reported by Griffiths (2000). Further, regionally Near Threatened loggerheads and regionally Critically Endangered leatherbacks frequent this area on their migrations, also using the Agulhas Banks as a foraging ground (Harris et al., 2018).

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

Justification

High-profile deep reefs and hard grounds with stylasterine corals, black corals, gorgonians and wall sponges have been observed in this area through in-situ ROV surveys (Sink et al., 2010; Makwela et al., 2016). All of these are fragile species that are sensitive to disturbance, taking very long to recover from any impacts to the seabed.

C5: Biological productivity **Medium**

Justification

The Agulhas Bank area is moderately productive (Hutchings et al., 2002 and references therein) but has areas of relatively higher productivity within the broader area. There is a ridge of cold water, which is a prominent subsurface feature during most summers on the central Agulhas Bank (Swart and Largier 1987) and is associated with elevated phytoplankton concentrations (Probyn et al., 1994) and dense concentrations of copepods (Verheye et al.1994) and clupeoid fish eggs (Roel et al., 1994).

C6: Biological diversity **Medium**

Justification

There is high sparid and invertebrate biodiversity (core of the distribution of several endemic species) in the Agulhas Bank Nursey Area. The reef habitats range from low to very high profile, most have low rugosity, and support a variety of wall sponges, corals, red algae, kelp, gorgonians, fish and sharks (Gotz et al., 2014; Makwela et al., 2016). The site includes fish such as shad (*Pomatomus saltatrix*), geelbek (*Attractoscion aequidens*), red steenbras (*Petrus rupestris*), Dageraad (*Chrysoblephus cristiceps*), black musselcracker (*Cymatoceps nasutus*), and silver kob *(Argyrosomus inodorus*; Lombard et al., 2010; Sink et al., 2010; Attwood et al., 2011; Sink et al., 2012). Other well-known species include squid (Hutchings et al., 2002) and loggerhead and leatherback turtles (Harris et al., 2018). Further, this area was selected as a priority in systematic planning because of the relatively higher habitat diversity and thus opportunities to meet multiple biodiversity targets efficiently.

C7: Naturalness **Medium**

Justification

There is only one pelagic ecosystem type (Ab2) within this area, which is in good ecological condition (Sink et al., 2012). Benthic condition ranges from poor to good (Sink et al., 2012, 2019), but some deep reefs are apparently untrawled and in good ecological condition. The volcanic feature known as the Alphard Banks is in good ecological condition (Sink et al., 2010). The two MPAs in the EBSA also provide protection from many pressures and are in better ecological condition compared to that of the surrounding area. Overall, 41% of the EBSA is in good ecological condition; the rest is in fair (19%) and poor (40%) ecological condition (Sink et al., 2019).

Status of submission

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

COP Decision

dec-COP-12-DEC-22

End of proposed EBSA revised description

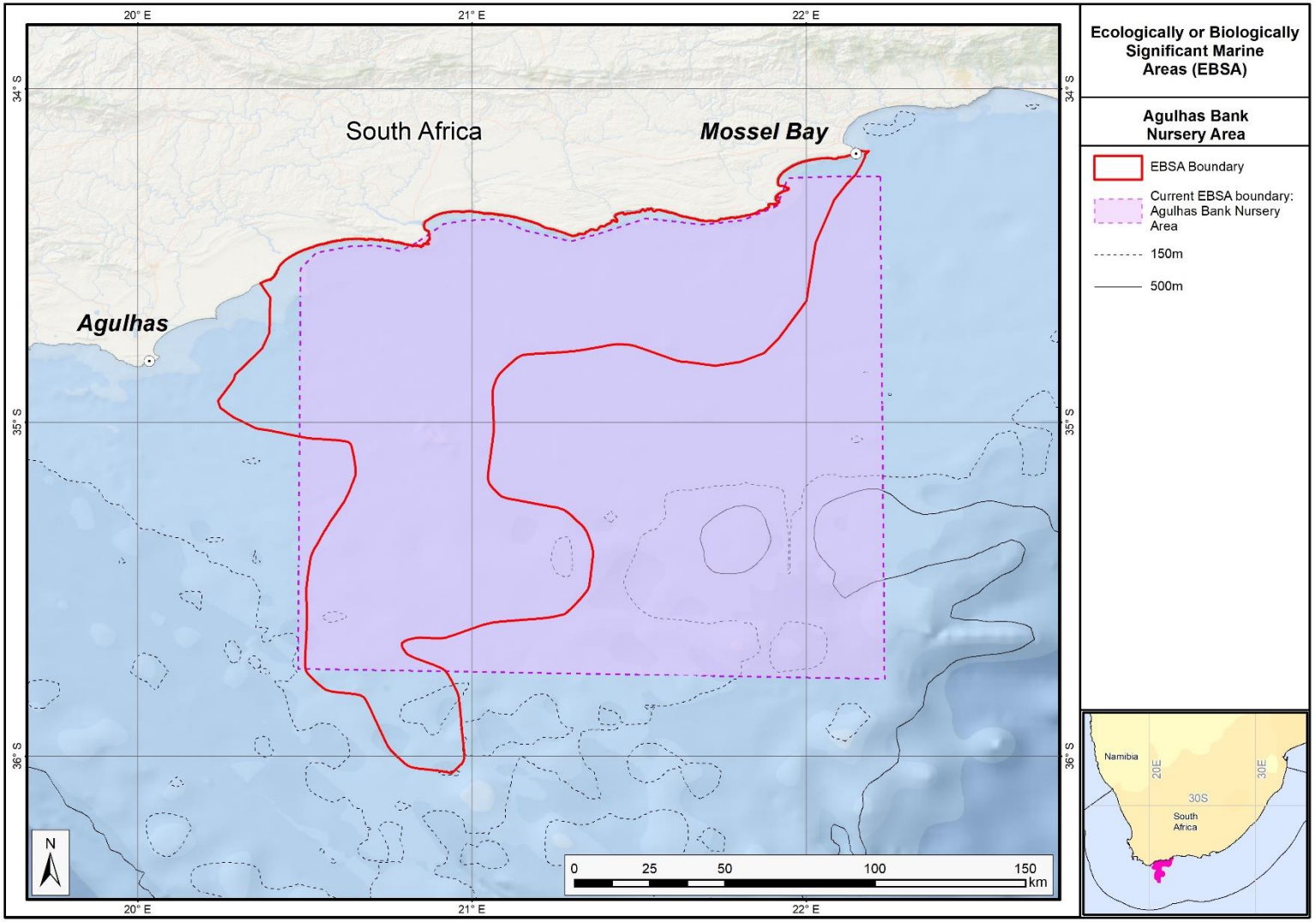
Motivation for Revisions

Significant changes have been made to the Agulhas Bank Nursery Area EBSA description. Additional data have resulted in further substantiated evaluations of two of the EBSA criteria, namely Criterion 2: importance for life-history stages, and Criterion 3: importance for threatened species. Additional references have been added and updates to the description were made. A supplementary table of the habitats represented in the EBSA and their associated threat status was also included.

There has also been a significant delineation change of this EBSA to focus the EBSA more closely on the key biodiversity features that underlie its EBSA status. The delineation process included an initial stakeholder review that identified the need to update boundaries, a technical mapping process and then an expert review workshop where boundary delineation options were discussed. The boundaries were revised a final time to accommodate the latest NBA 2018 assessment results and the review workshop discussion. 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 Systematic Conservation Plans 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 (Sink et al., 2019) 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 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 were validated in a national workshop.



The proposed revised boundaries for the Agulhas Bank Nursery Area EBSA in relation to its original boundaries.