Title/Name of the area:

Saya de Malha Bank, Mascarene Plateau

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Abstract (*in less than 150 words)*

The Saya de Malha Bank is located in the western Indian Ocean along the underwater Mascarene Ridge that spans the distance between the Seychelles and Mauritius, and support what is believed to be the largest shallow water biotope and the largest seagrass meadow in the world. The Mascarene Plateau, being remote, with emergent land and small islands only at its southern extreme, is not yet well-known globally, or well-studied, but there are strong indications of unique oceanographic features and habitats, including the largest seagrass beds in the world, species endemism and significant aggregations of marine mammals and seabirds. Mauritius and the Seychelles have individual or joint jurisdiction over the waters and entire seabed of the plateau, though the waters over the Saya de Malha Bank are beyond national jurisdiction and in the High Seas.

Introduction

The Saya de Malha bank sits in the path of the South Equatorial Current (SEC), that dominates the oceanography of the Western Indian Ocean (WIO), and together with its sister plateau to the south, the younger Nazareth bank, concentrates flow of the SEC into a narrow passage between them at 12.5-13^{o}S. The bank thus has a major influence on the oceanography of the WIO and regions to the west. Only a small proportion of the SEC passes north of the bank as a slow, broad current, and island wakes and eddies in the lee of the bank may result in higher oceanic productivity due to mixing and upwelling. The influence of these features on the connectivity of the marine fauna of the bank and plateau system, with other coralline islands in the Seychelles, and for the WIO in general, is presently unknown.

Enhanced oceanic productivity caused by interaction of the banks with the South Equatorial Current is likely important for ocean food webs, and as indicated by seabirds using the Seychelles Basin (shown for wedge-tailed shearwaters and white-tailed tropicbirds), and for the pygmy blue whale (Balaenoptera musculus brevicauda) as a feeding and breeding ground.

Location

The Mascarene Plateau includes the products of the Mascarene-Reunion hotspot in the WIO, thus extends from the island of Reunion in the south to Saya de Malha in the north. Loosely, it can also be extended northwards to include the Ritchie Plateau and North Seychelles Banks, which are continental fragments left behind as Indian migrated northwards. The Saya de Malha bank, located between 8°30 - 12° S and 59°30 - 62.30° E, is the largest of the banks on the plateau, with an area of approximately 41,000 km^2.

Historically considered to be beyond national jurisdiction, the Mascarene Plateau was the subject of a successful joint application by the governments of the Seychelles and Mauritius, under the United Nations Convention on the Law of the Sea (UNCLOS) Commission on the Limits of the Continental Shelf, to extend their Outer Continental Shelf, which was approved in 2010. Hence, the seabed is jointly managed by Mauritius and the Seychelles, while the water column remains in the high seas.

Feature description of the proposed area

The S. de Malha bank is the largest single bank in the Indian Ocean, larger than the Great Chagos Bank.

The bank is described as being flat, but considerable depth variation occurs across its top, with the shallowest being a crest less than 75 m deep to the north and east, with patches west of this and at the northwest side, and depressions down to 300-400 m depth in the center of the bank. The entire bank is clearly differentiated at the 500 m contour from the deep ocean surrounding it. With no exposed island mass, the waters over the bank are a globally unique mid-ocean shallow sea.

The smaller northern bank, the Ritchie plateau, is separated from the main bank by a transform fault, and is part of the granitic continental rocks of the Seychelles bank and the ridge extending between them in a NW-SE direction. South of the Saya de Malha bank, the Nazareth and Cargados Carajos banks are of similar construction, but younger, and only St. Brandon's island, at the southern end of the Cargados Carajos bank, has any aerially exposed landmass.

Current knowledge holds that the bank supports the largest contiguous seagrass beds in the world, with 80-90% of shallow surfaces being covered by seagrasses dominated almost exclusively by Thalassondendron ciliatum, from depths up to 30-40 m, with additional records of Halophila decipiens and Enhalus acoroides. Coral reefs appear limited to rocky patches and outcrops, and likely to the edges of the bank.). A partial survey conducted in 2002 documented that seagrass covers roughly 80-90% of the bottom, with corals covering between 10-20%, and sandy areas covering the remaining 5% (Hilbertz et al 2002).

Shallower portions of the banks support a diverse reef fish community including parrotfish, surgeonfish and rabbitfish. Pelagic fishes such as flying fish, bonito and tuna as well as whales (beaked, pilot) and dolphins (spotted, spinner) have been observed in the deeper, nutrient rich waters over the edges of the banks. The deeper water that surrounds the banks also are known to be a breeding ground for pygmy blue and sperm whales (Vierros 2009, Hilbertz et al 2002).

Feature condition and future outlook of the proposed area

There is no human habitation on or near the bank as there is no emergent land. Thus the ecological integrity of the bank is very high, and an EBSA that includes the whole bank will meet the highest level of integrity possible. Nomination of a portion of the bank would result in slightly lower integrity of the nomination site, but the lack of current threats, and successful management planning in the future, would ensure high enough integrity for sustainability of a site.

Threats: the remoteness of the bank has protected it from threats, much as it has prevented much research and data collection. Nevertheless, vessels from distant-water fishing nations (DWFN) operate in the Indian Ocean and Mauritian vessels target the bank and adjacent ones. Prospecting for seabed metals

and oil and gas mining have returned weak results, so the threat from them is currently considered low. Climate change is a significant threat for the carbonate-dominated food webs of the shallow banks.

Management: future management of the S. de Malha bank will depend on joint arrangements by the Seychelles and Mauritius, and national priorities such as in fisheries. Management, surveillance and enforcement of a distant marine zone with no emergent land to host a management base will be challenging, but increasingly possible with the advent of remote sensing surveillance technologies, and existing operationalization of them in, for example, fisheries management and vessel surveillance. National legislation to enable management of this type of distant marine site would be necessary.

Assessment of the area against CBD EBSA Criteria

(Discuss the area in relation to each of the CBD criteria and relate the best available science. Note that a candidate EBSA may qualify on the basis of one or more of the criteria, and that the boundaries of the EBSA need not be defined with exact precision. And modeling may be used to estimate the presence of EBSA attributes. Please note where there are significant information gaps)

CBD EBSA Criteria (Annex I to decision IX/20)	**Description** (Annex I to decision IX/20)	**Ranking of criterion relevance** (please mark one column with an X)			
		Don't Know	**Low**	**Some**	**High**
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.				**X**
The Saya de Malha Bank is the largest bank of its type in the Indian Ocean, including the largest seagrass beds in the world, and it and the other banks form a large contiguous and unexploited shallow marine habitat that supports production in the surrounding ocean.					
Special importance for life-history stages of species	Areas that are required for a population to survive and thrive.				**X**
Breeding grounds for the pygmy blue whale Balaenoptera musculus brevicauda.					
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.	**X**			
Uncertain as data are not very comprehensive. Although limited information exists on species associated					

with the Saya de Malha Banks, it is known that the seagrass meadows serve as nursery habitat for juvenile fishes, as feeding grounds for green seaturtles (listed as endangered by CITES), as grazing areas for larger predators and marine mammals, and as foraging areas for terns (Hilbertz et al 2002). In addition, a Russian expedition in 2008 reported an estimated five percent rate of endemism and identified more than 150 species of invertebrates (Vortsepneva and Spiridonov 2008).

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.	**X**			

Unknown, though climate change is expected to be a significant threat for the carbonate-dominated food webs of the shallow banks.

Biological productivity	Area containing species, populations or communities with comparatively higher natural biological productivity.				**X**

Ocean-platform interactions result in raised productivity on and downstream of the bank through mixing and seabed-water column interactions. Both satellite data and field measurements support the hypothesis that the Saya de Malha Banks form an area of high productivity (Vierros 2009, Gallienne and Smythe-Wright 2005). New and others (2005) documented higher nitrate levels on the eastern side of the banks (Figure 2). Elevated levels of chlorophyll, which correlates to relatively higher levels of net primary productivity, can be observed in satellite imagery of the region (New et al 2005).

Biological diversity	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.	**X**			

No well enough surveyed to say.

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.				**X**

The remoteness of the Saya de Malha Banks provides them with a higher degree of naturalness than most other seagrass communities in the world, the vast majority of which are in nearshore environments. Hence, by their remoteness, they are removed from most land-based sources of anthropogenic stress.

Due to the shallowness of the banks, the area generally is avoided on shipping routes as a navigational hazard (Christenson 2010).

The banks are not entirely free from human-induced disturbance, however. Mauritius maintains a fishery for emperor fish (Lethrinus mahsena), a commercially valuable species. Handline fishing boats have been exploiting fisheries of the Saya de Malha Banks since the early 1960s (Bertrand 1988). The collateral impacts of this relatively small fishery are not known, but is probably not great. There are no known high seas fisheries for deep-water snapper and deep-water shrimp (Maguire et al 2006). In addition, earlier exploration for petroleum reserves and mineral deposits in the area resulted with no positive identification (Backman and Duncan 1988, ISA 2010, Meyeroff and Kamen-Kaye 1981, Nath and Prasad 1991). Straddling stocks do exist on the Mascarene Ridge including the Saya de Malha Banks where Mauritius maintains pelagic fisheries of dame berri (Lethrinus mahsena) and capitaine (L. nebulosa) (Maguire et al 2006).

Sharing experiences and information applying other criteria (Optional)

Other Criteria	**Description**	**Ranking of criterion relevance** (please mark one column with an X)			
		Don't Know	**Low**	**Some**	**High**
Add relevant criteria					
Explanation for ranking					

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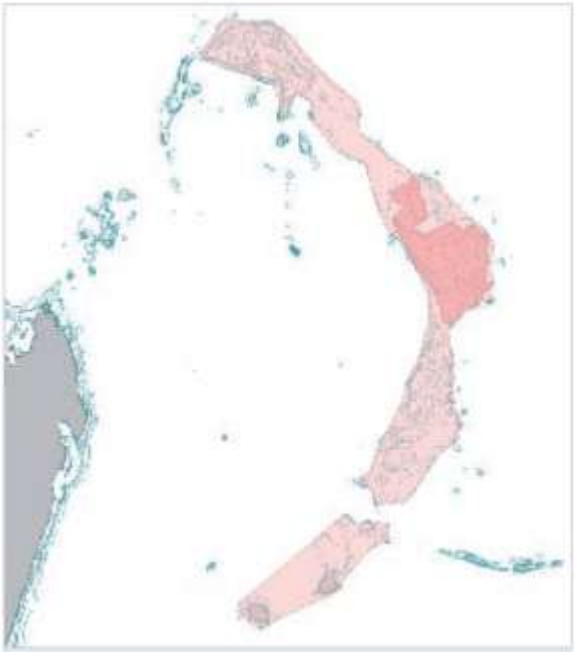
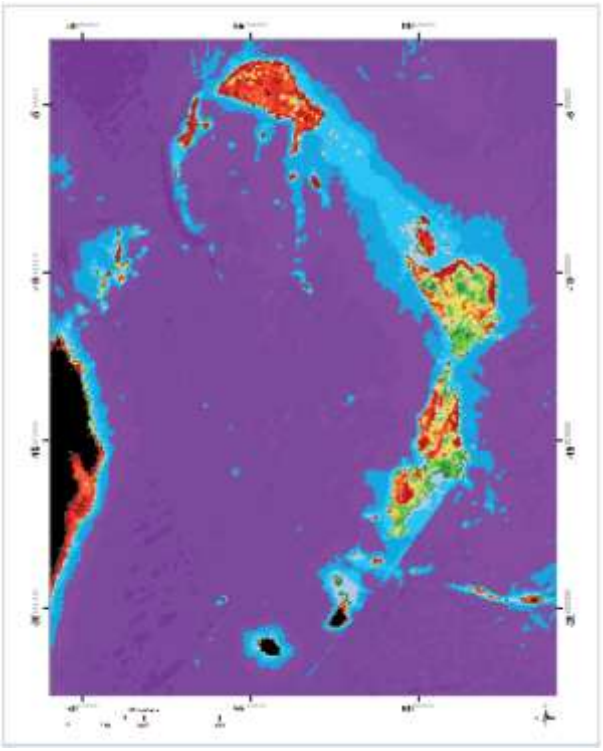
Maps and Figures

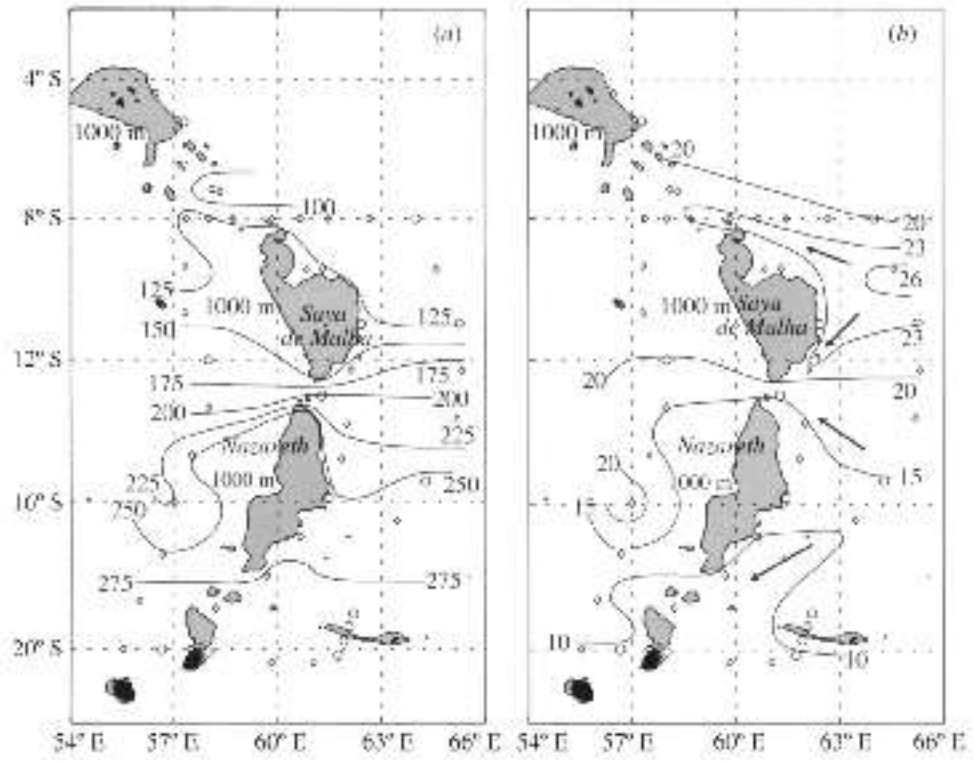
Figures below can be provided in higher resolution.



The Mascarane Plateau, stretching from the N. Seychelles Bank in the north to St. Brandons Island in the south (with the isolated Mascarene Islands shown to the south). The S. de Malha bank is the eastern point of the arc, and the largest bank. © David Obura



The Mascarene plateau, colour-coded by depth: red and yellow show areas shallower than 125 m, green to 500 m, and blue to 4000 m. © etopo



Depth (m) of density surface 26.0 kg m-3 and (b) nitrate (micro-mol 1^{-1}) on the 26.0 kg m^{-3} density surface. Arrows indicate inferred flow directions. From: New et al 2005.