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SOUTHERN INDIAN OCEAN REGIONAL WORKSHOP
TO FACILITATE THE DESCRIPTION OF
ECOLOGICALLY OR BIOLOGICALLY
SIGNIFICANT MARINE AREAS
Flic en Flac, Mauritius, 31 July to 3 August 2012

REPORT OF THE SOUTHERN INDIAN OCEAN REGIONAL WORKSHOP TO FACILITATE THE DESCRIPTION OF ECOLOGICALLY OR BIOLOGICALLY SIGNIFICANT MARINE AREAS[1]

INTRODUCTION

1. In paragraph 36 of decision X/29, the Conference of the Parties to the Convention on Biological Diversity (COP 10) requested the Executive Secretary to work with Parties and other Governments as well as competent organizations and regional initiatives, such as the Food and Agriculture Organization of the United Nations (FAO), regional seas conventions and action plans, and, where appropriate, regional fisheries management organizations (RFMOs), with regard to fisheries management, to organize, including the setting of terms of reference, a series of regional workshops, with a primary objective to facilitate the description of ecologically or biologically significant marine areas (EBSAs) through the application of scientific criteria in annex I of decision IX/20, and other relevant compatible and complementary nationally and intergovernmentally agreed scientific criteria, as well as the scientific guidance on the identification of marine areas beyond national jurisdiction, which meet the scientific criteria in annex I to decision IX/20.

2. In the same decision (paragraph 41), the Conference of the Parties requested that the Executive Secretary make available the scientific and technical data and information and results collated through the workshops referred to above to participating Parties, other Governments, intergovernmental agencies and the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) for their use according to their competencies.

3. The Conference of the Parties, at its tenth meeting, also requested the Executive Secretary, in collaboration with Parties and other Governments, the Food and Agriculture Organization of the United Nations (FAO), United Nations Division for Ocean Affairs and the Law of the Sea, the United Nations Educational, Scientific and Cultural Organization—Intergovernmental Oceanographic Commission (UNESCO–IOC), in particular the Ocean Biogeographic Information System, and other competent organizations, the World Conservation Monitoring Centre of the United Nations Environment

[1] The designations employed and the presentation of material in this note do not imply the expression of any opinion whatsoever on the part of the Secretariat concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

Programme (UNEP-WCMC) and the Global Ocean Biodiversity Initiative (GOBI), to establish a repository for scientific and technical information and experience related to the application of the scientific criteria on the identification of EBSAs in annex I of decision IX/20, as well as other relevant compatible and complementary nationally and intergovernmentally agreed scientific criteria that shares information and harmonizes with similar initiatives, and to develop an information-sharing mechanism with similar initiatives, such as FAO's work on vulnerable marine ecosystems (VMEs) (paragraph 39 of decision X/29).

4. The Conference of the Parties, at its tenth meeting, requested the Subsidiary Body to prepare reports based on scientific and technical evaluation of information from the workshops, setting out details of areas that meet the criteria in annex I to decision IX/20 for consideration and endorsement in a transparent manner by the Conference of the Parties to the Convention, with a view to including the endorsed reports in the repository referred to in paragraph 39 of decision X/29 and to submit them to the United Nations General Assembly and particularly its Ad Hoc Open-ended Informal Working Group, as well as relevant international organizations, Parties and other Governments (paragraph 42, decision X/29).

5. Pursuant to the above request and with financial support from the Government of Japan, through the Japan Biodiversity Fund, the Executive Secretary convened, in collaboration with the Secretariat of the Nairobi Convention and the United Nations Food and Agriculture Organization (FAO) and hosted by the Government of Mauritius, the Southern Indian Ocean Regional Workshop to Facilitate the Description of Ecologically or Biologically Significant Marine Areas, in Flic en Flac, Mauritius, from 31 July to 3 August 2012. It was held immediately following a training workshop on EBSAs, convened by the Secretariat of the Convention on Biological Diversity in collaboration with the Global Ocean Biodiversity Initiative (30 July in Flic en Flac, Mauritius).

6. This workshop was also held immediately following FAO's Regional Workshop on Vulnerable Marine Ecosystems (VMEs) in the Indian Ocean (25 to 27 July 2012 in Flic en Flac, Mauritius), in order to facilitate collaboration between the Convention on Biological Diversity's work on EBSAs and FAO's work on VMEs, as requested by the tenth meeting of the Conference of the Parties to the Convention.

7. The Government of Australia provided support, through the Commonwealth Scientific and Industrial Research Organisation (CSIRO), to the Secretariat of the Convention on Biological Diversity in their scientific and technical preparation for the workshop. The results of this technical preparation were made available in the note by the Executive Secretary on data to inform the CBD Southern Indian Ocean Regional Workshop to Facilitate the Description of Ecologically or Biologically Significant Marine Areas (UNEP/CBD/RW/EBSA/SIO/1/2).

8. The meeting was attended by experts from Australia, Comoros, France, India, Indonesia, Kenya, Madagascar, Maldives, Mauritius, Mozambique, Seychelles, Somalia, South Africa, Sri Lanka, United Kingdom and United Republic of Tanzania as well as the Food and Agriculture Organization of the United Nations, International Seabed Authority, Nairobi Convention Secretariat, UNDP-GEF, the Agulhas and Somali Current Large Marine Ecosystems (ASCLME) Project, UNESCO-IOC Sub Commission for Africa and the Adjacent Island States; IOSEA Marine Turtle MoU Secretariat/Convention on the Conservation of Migratory Species of Wild Animals; IUCN Global Marine Programme, IUCN/Global Ocean Biodiversity Initiative, Indian Ocean Commission, South East Atlantic Fisheries Organization, Indian Ocean Rim Association for Regional Cooperation (IOC-ARC), BirdLife International, Coastal Oceans Research and Development in the Indian Ocean (CORDIO), Commonwealth Scientific and Industrial Research Organization (CSIRO), Global Ocean Observing System for Indian Ocean (IGOOS), International Collective in Support of Fish Workers, Southern Indian Ocean Deepsea Fishers Association, Western Indian Ocean Marine Science Association, Mauritius Oceanography Institute, United Republic of Tanzania Deep Sea Fishing Authority, WWF Madagascar & West Indian Ocean Programme Office. The full list of participants is attached as annex I.

ITEM 1. OPENING OF THE MEETING

9. On behalf of the Mr. Braulio Dias, Executive Secretary of the Convention on Biological Diversity, Ms. Jihyun Lee (Environmental Affairs Officer for marine and coastal biodiversity at the CBD Secretariat) delivered the opening statement. In his statement, Mr. Dias welcomed participants and thanked them for participating in this important workshop, the third regional EBSA workshop convened by the Secretariat. He thanked the Government of Mauritius for hosting this workshop. He acknowledged with appreciation the Japan Biodiversity Fund for providing financial support for the participation of experts from developing countries. He also thanked the Nairobi Convention Secretariat and FAO for closely collaborating with the Secretariat in convening the workshop. Mr. Dias highlighted the importance of creating synergies between the work of the Convention on EBSAs and the work of FAO on VMEs, as demonstrated by the convening of this workshop immediately following FAO's Regional Workshop on the VME database. He reminded workshop participants of the key outcome of the Rio+20 Conference, which emphasized the Aichi Biodiversity Target to conserve 10 per cent of coastal and marine areas in protected areas. He also mentioned the guidance from the tenth meeting of the Conference of the Parties that the application of the EBSA criteria was a scientific and technical exercise, and that areas identified as such may require enhanced conservation and management measures selected by States and competent intergovernmental organizations. He informed participants that the results of this workshop would be submitted to forthcoming meetings of the Convention’s Subsidiary Body on Science, Technology and Technological Advice (SBSTTA) and of the Conference of the Parties (COP). He added that the EBSA reports considered by the Conference of the Parties would be transmitted to the relevant United Nations General Assembly process on marine biodiversity conservation in areas beyond national jurisdiction. He concluded by emphasizing that marine and coastal biodiversity was the theme of the 2012 International Day for Biodiversity, which provided opportunities to highlight the complex challenges it faced. He expressed his wish for active participation by all in this workshop to ensure the regional collaboration necessary for marine conservation.

10. On behalf of the Head of the Nairobi Convention Secretariat, Doris Mutta, Associate Project Officer, delivered an opening statement. She introduced the Nairobi Convention as one of 17 Regional Seas Conventions and Action Plans administered by the United Nations Environment Programme to address transboundary problems, such as marine pollution, and the need for marine and coastal management. She noted that the Convention provided the legal framework for regional cooperation among the Governments of Comoros, France, Kenya, Madagascar, Mauritius, Mozambique, Seychelles, Somalia, United Republic of Tanzania and the Republic of South Africa. She indicated that the marine and coastal environment was managed through the Nairobi Convention framework, which included three protocols and an Action Plan, noting that the objectives of its Protocol concerning Protected Areas and Wild Fauna and Flora were the conservation and sustainable use of biodiversity, in line with the objectives of the Convention on Biological Diversity. She noted that the Secretariat and its member states regularly prepared reports on the state of the marine environment to support effective decision-making on sustainable management, and she noted that there were at least 50 marine protected areas in the region. She introduced the Transboundary Diagnostic Analysis (TDA), a decision-support tool that identified elements that may induce impacts beyond national boundaries and had identified 25 habitat hotspots that had deteriorated. She also noted the Secretariat’s recent partnership with BirdLife International to assess the health and vulnerability of endangered and threatened birds. Finally, she referred to the EBSA process as an opportunity for the Nairobi Convention to partner with the CBD Secretariat in mutually beneficial areas and indicated that this workshop marked the beginning of discussions on how CBD and the Nairobi Convention could join efforts towards sustainable management of transboundary marine and coastal ecosystems. She said that the Convention Secretariat and its Parties looked forward to the outcome of this process, particularly as an input to the development of the Protocol on Integrated Coastal Zone Management. She ended by wishing the participants success in their deliberations.

11. On behalf of Mr. Árni Mathiesen, Assistant Director General of the Fisheries and Aquaculture Department of the Food and Agriculture Organization of the United Nations, Mr. Anthony Thompson delivered opening remarks. He indicated that FAO was pleased to participate in this workshop on EBSAs

in the Indian Ocean. He expressed his hope that this workshop, and the FAO/Smartfish workshop held the previous week on VMEs in the Indian Ocean in which the CBD Secretariat participated, would stimulate collaboration between FAO and the CBD Secretariat. He explained that FAO, to ensure food security, worked to assist countries and regional fisheries management bodies to implement the Ecosystem Approach to Fisheries. In 2008, FAO adopted the *FAO International Guidelines for the Management of Deep-sea Fisheries in the High Seas,* which had assisted management bodies to ensure that deep-sea fisheries were not having significant adverse impacts on vulnerable marine ecosystems in the high seas in areas beyond national jurisdiction. Achieving sustainable fisheries and safeguarding marine biodiversity was a challenge that required effective global collaboration between fisheries and biodiversity communities. He further expressed his hope that the FAO VME database would produce a knowledge-sharing system that would support this process. FAO hoped that collaboration on the technical and scientific aspects of VMEs and EBSAs would continue to complement one another to produce sustainable and healthy oceans. He conveyed the wishes of FAO for a successful, productive workshop.

12. Mr. D. Mauree, Director of Fisheries, Mauritius welcomed the participants on behalf of the Minister of Fisheries, Mr. Louis Joseph Nicholas Von-Mally, and thanked the CBD Secretariat for choosing Mauritius as the venue for this important regional workshop. In his opening note, he expressed his concern at the alarming rate of biodiversity loss. With new and advanced technologies, fishing and mining were possible in the most remote seas so that biodiversity in ecologically sensitive areas was suffering from mounting pressures. These pressures would have serious consequences on marine habitats of ecological or biological significance. Furthermore, countries were also facing the challenges of climate change and pollution. The increasing needs for the goods and services provided by the oceans were having a negative impact on the marine environment. Countries had to act right away and find a way of working together to tackle the root cause. While recognizing the mounting threats one became aware of the fundamental role of biological diversity for the global economy and livelihoods, thus the rationale of this workshop. Mr. Mauree expressed his appreciation to the CBD Secretariat for the timely initiative to hold the workshop.

ITEM 2. ELECTION OF THE CO-CHAIRS, ADOPTION OF THE AGENDA AND ORGANIZATION OF WORK

13. After brief self-introductions by all participants, Ms. Kerry Sink (South Africa) and Mr. Ian Cresswell (Australia) were elected as workshop co-chairs based on proposals from participants from Indonesia and the UNEP/Nairobi Convention Secretariat, seconded by participants from Mauritius, CORDIO and GOBI, in consultation with the Secretariat of the Convention on Biological Diversity.

14. Participants were then invited to consider the provisional agenda (UNEP/CBD/RW/EBSA/SIO/1/1) and the proposed organization of work as contained in annex II to the annotations to the provisional agenda (UNEP/CBD/RW/EBSA/SIO/1/1/Add.1) and adopted them without any amendments.

15. The workshop was organized in plenary session and break-out group sessions. The Co-Chairs nominated the following rapporteurs for the plenary sessions, taking into consideration the expertise and experience of the workshop participants and in consultation with the Secretariat of the Convention on Biological Diversity and the UNEP/Nairobi Convention Secretariat:

- Agenda item 3 (Workshop background, scope and output) : Mr. Daniel Nkondola (United Republic of Tanzania) & Mr. Nic Bax (CSIRO/Technical Support Team)
- Agenda item 4 (Review of relevant scientific information) : Mr. Salomao Bandeira (Mozambique) & Mr. Piers Dunstan (CSIRO/Technical Support Team)
- Agenda item 5 (Description of EBSAs): Mr. Samuel Kasiki (Kenya) & Mr. Nic Bax (IOGOOS)
- Agenda item 6 (Identification of Gaps): Ms. Margareth Kyewalyanga (Nairobi Convention Secretariat) & Mr. Jeff Ardron (GOBI)

ITEM 3. WORKSHOP BACKGROUND, SCOPE AND OUTPUT

16. Ms. Doris Mutta (UNEP/Nairobi Convention Secretariat) and Mr. Tim Andrew (Western Indian Ocean Marine Science Association) (on behalf of himself and Lucy Scott, ASCLME Project) provided overviews of relevant scientific and management programmes at the regional scale that can contribute to as well as benefit from this regional workshop on EBSAs.

17. In addition to the information provided by the above presentations, participants also noted other regional programmes, past or ongoing, which could provide useful data and information for the EBSA process. These programmes involved a number of countries, the island State members of the Indian Ocean Commission (Comoros, Mauritius, Madagascar, Réunion Island (France), and Seychelles) and also the countries signatory to the Nairobi Convention (Comoros, France, Kenya, Madagascar, Mauritius, Mozambique, Seychelles, Somalia, South Africa and United Republic of Tanzania), among others:

(a) Regional programme for the sustainable management of coastal zones of Indian Ocean countries (ReCoMaP, 2006- 2011)

A programme of the Indian Ocean Commission funded by the European Union involving seven countries: Comoros, Madagascar, Mauritius, Seychelles, Kenya, United Republic of Tanzania and Somalia. Support was given to both State and non-State actors for the project for capacity-building in MPA management and/or creation; coastal fishing initiatives; mariculture and the establishment of a regional Protocol to the Nairobi Convention on integrated coastal zone management.

(b) African Monitoring of the Environment for sustainable development (AMESD)

A Pan African project funded by the European Union for countries of sub-Saharan Africa (2008-2013). The project is being implemented by the African Union Commission in partnership with regional economic communities (IGAD, ECOWAS, CEMAC and the Indian Ocean Commission–IOC). The Mauritius Oceanography Institute is implementing the project on behalf of the Indian Ocean Commission. It is the regional implementation centre of the programme for the Western Indian Ocean. The theme for the region is management of coastal and marine resources covering: Comoros, Mauritius, Madagascar, Seychelles Kenya, United Republic of Tanzania and Mozambique. Oceanographic data are available.

(c) Marine highway development and the prevention of marine and coastal contamination project (2008- 2012)

Project funded by the GEF through the World Bank and implemented by the South African Maritime Safety Authority (SAMSA) and the Indian Ocean Commission involving 9 countries. (Comoros, Mauritius, Madagascar, Réunion Island (France), Seychelles, Kenya, Mozambique, United Republic of Tanzania and South Africa). Data available are: hydrographical and oceanographic data, marine sensitive area maps and economic valuation reports.

(d) Marine protected area network project (2006- 2010)

Project funded by the French GEF (FFEM) and implemented by WWF Madagascar under the management of the Indian Ocean Commission. Participating countries include Comoros, Madagascar, Mauritius, Réunion Island (France) and Seychelles. A regional ecological analysis was conducted, and sites of ecological importance were identified. A number of potential priority sites were identified for conservation efforts at a national, regional and international level.

18. Mr. Nic Bax presented a regional overview of biogeographic information on open-ocean water and deep-sea habitats and introduced a discussion regarding the geographic scope of the workshop.

19. Summaries of the presentations are provided in annex II.

20. The workshop participants noted the followings regarding COP 10 guidance on the regional workshop as well as the potential contribution of scientific information produced by the workshop:

- The workshop is tasked to describe areas meeting the scientific criteria for ecologically or biologically significant areas (EBSAs) or other relevant criteria based on best available scientific information. As such, the experts attending the workshop are not expected to discuss any management issues, including threats to the areas; the EBSA descriptions proposed at the workshop do not imply any management obligations or commitments.
- The identification of EBSAs and the selection of conservation and management measures is a matter for States and competent intergovernmental organizations, in accordance with international law, including the United Nations Convention on the Law of the Sea (paragraph 26, decision X/29);
- Description of areas meeting the scientific criteria for EBSAs can provide useful scientific information/data that can contribute to the work of FAO, regional fisheries management organizations and flag States on vulnerable marine ecosystems, as well as the work at the International Seabed Authority;
- The EBSA description process facilitates scientific collaboration and information-sharing at national, sub-regional and regional levels, and UNEP/Nairobi Convention Secretariat could facilitate such collaboration building upon the results of the workshop.

21. The workshop participants agreed on the following scope for the workshop, as contained in the map in annex VI, in consideration of the following:

- GOODS biogeographic classification system;
- Marine areas within national jurisdiction of the participating countries (Comoros, France, Kenya, Madagascar, Mauritius, Mozambique, Seychelles, Somalia, South Africa and the United Republic of Tanzania) of the Nairobi Convention, as well as Indonesia, Maldives and Sri Lanka (except for Australia, India, and the United Kingdom where separate national processes are underway) as well as marine areas beyond national jurisdiction in this region;
- The northern coverage of the UNEP/Nairobi Convention (10 degrees north);
- For the southern limit, the northern boundary (between 45°S and 55°S) of the Convention for the Conservation of Antarctic Marine Living Resources (CCAMLR) in this region;
- For the western limit, the south of southern Africa, all of the Agulhas current ecoregion was included;

For the eastern limit, south of Australia, the western boundary of the Western South Pacific EBSA regional workshop (Fiji, November 2011) was used, which coincides with the area in the south-east of Tasmania.

ITEM 4. REVIEW OF RELEVANT SCIENTIFIC DATA/INFORMATION/MAPS COMPILED AND SUBMITTED FOR THE WORKSHOP

22. For the consideration of this item, the workshop had before it two notes by the Executive Secretary (UNEP/CBD/RW/EBSA/SIO/1/2 and UNEP/CBD/RW/EBSA/SIO/1/3/Rev.2) containing a compilation of the submissions of scientific information to describe ecologically or biologically significant marine areas in the Southern Indian Ocean region provided by Parties, other Governments and relevant organizations in response to the Secretariat's notification ntf-2012-073 (Ref. No. SCBD/STTM/JM/JL/JG/79841, issued on 16 May 2012). The documents/references submitted prior to the workshop were made available for the information of workshop participants on the meeting website (http://www.cbd.int/doc/?meeting=EBSA-SIO-01).

23. During a training session held on 30 July, Mr. Piers Dunstan provided a presentation on "Review of relevant scientific data/information/maps compiled to facilitate the description of EBSAs in the Southern Indian Ocean region", which contributed to the meeting in its consideration of this agenda item.

24. Mr. Anthony Thompson (FAO) provided a summary on the results of the FAO Regional Workshop on Vulnerable Marine Ecosystems (VMEs) in the Indian Ocean, held in Flic en Flac, from 25 to 27 July, 2012.

25. Ms. Gwenaëlle Le Gurun (International Seabed Authority) provided a presentation on the International Seabed Authority and EBSAs, focusing on the possible scientific contribution of the regional EBSA workshops to the work of the Authority and suggesting how the work of the Authority could contribute to the EBSA process.

26. Mr. Douglas Hykle (IOSEA Marine Turtle MoU Secretariat) briefed the meeting on the work of the Convention on Migratory Species/IOSEA Marine Turtle MoU, which can contribute to the objectives of the workshop, and discussed potential areas of future scientific collaboration with CBD's work on EBSAs.

27. Mr. Ben Lascelles (BirdLife International) provided a presentation on scientific information provided by the BirdLife International that could be considered by the workshop participants in their deliberation.

28. Mr. Remi Ratsimbazafy (WWF Madagascar & West Indian Ocean Programme Office) presented on the relevant scientific information, available from the ecoregional analysis and prioritization process in the Western Indian Ocean islands marine ecoregion, for use by the workshop participants in their deliberation.

29. Summaries of the above presentations are provided in annex II.

30. Workshop participants who had submitted scientific information prior to the workshop, as well as those who prepared information during the workshop, using the template provided by the CBD Secretariat in the above notification ntf-2012-073 (Ref. No. SCBD/STTM/JM/JL/JG/79841, issued on 16 May 2012) to describe areas meeting EBSA criteria were invited to present the information in plenary. Presentations were made by experts from Comoros, France, Kenya, Indonesia, Madagascar, Mauritius, Mozambique , Seychelles, Somalia, South Africa, Sri Lanka, United Kingdom (together with IUCN Global Marine Programme), United Republic of Tanzania, and CORDIO East Africa.

31. Each presentation describing areas meeting EBSAs criteria provided an overview of the areas considered, the assessment of the area against EBSA criteria, scientific data/information available as well as any other relevant information.

ITEM 5. DESCRIPTION OF AREAS MEETING EBSA CRITERIA THROUGH APPLICATION OF THEIR SCIENTIFIC CRITERIA AND OTHER RELEVANT COMPATIBLE AND COMPLEMENTARY NATIONALLY AND INTERGOVERNMENTALLY AGREED SCIENTIFIC CRITERIA

32. For the consideration of this item, based on the compilation of scientific information presented under agenda item 4 and building on the presentations describing specific areas meeting EBSA criteria as well as deliberations of the workshop in plenary session, the workshop participants were then split into three subregional breakout groups to consider the description of EBSAs through the application of the scientific criteria.

Group 1. Northern and Western Indian Ocean / Nairobi Convention region: English-speaking group (Kenya, Mozambique, Somalia, United Republic of Tanzania, South Africa))

- Facilitator : Kenneth Mavuti (Nairobi Convention Secretariat)
- Rapporteurs: Tim Andrew (WIOMSA) and Nina Nawanjaya Wambiji (UNESCO-IOC)
- Technical support: Mike Fuller (CSIRO)

Group 2. Northern and Western Indian Ocean / Nairobi Convention region: French-speaking group (Comoros, France, Madagascar, Seychelles and Mauritius)

- Facilitator: Remi Ratsimbazafy (WWF-Madagascar)
- Rapporteur: Ravi D.C. Mohit (Mauritius)
- Technical support: Jeff Ardron (GOBI)

Group 3. North-Eastern and Southern Indian Ocean region (Australia, India, Indonesia, Maldives and Sri Lanka)

- Facilitator: Piers Dunstan (CSIRO)
- Rapporteur: Aurelie Spadone (IUCN)
- Technical support: Piers Dunstan (CSIRO)

33. Participants were assisted by the technical support team, including GIS operators, who made hard/electronic copies of the maps available for the deliberation of the breakout group discussion.

34. During its breakout group discussion, participants drew approximate boundaries of areas meeting EBSA criteria on a central map as they were completed to keep track of opportunities to extend or merge areas for EBSA description and to identify areas that had yet to be considered. This process was found to be time-consuming but productive, with country experts increasing their understanding of the data available.

35. Workshop participants decided the following in describing EBSAs:

- Use peer-reviewed scientific literatures or information from quality-controlled sources such as scientific research/expedition reports produced by credible scientific research institutions or reports/documents produced by competent national/regional/international bodies in assessing the area against EBSA criteria;
- Reference regarding the application of FAO's VME criteria should be based on the information produced by competent bodies;
- Workshop consideration on the application of EBSA criteria focused on open-ocean waters and deep-sea habitats as well as some proposals covering coastal habitats and features;
- Geomorphological features can be used as useful proxy information for ecological or biological characteristics;
- Provision of traditional knowledge for the consideration of the workshop participants was not practically possible at the scale of regional workshop, and would require separate steps at different scales;
- Areas where description against EBSA criteria was not provided due to lack of sufficient scientific data or analysis but considered by the workshop as important for future consideration, are included in annex VI;
- Nesting smaller areas meeting EBSA criteria is acceptable within larger regional areas meeting EBSA criteria;

36. The results of the breakout groups were reported in plenary for consideration. Workshop participants in plenary reviewed the description of areas meeting EBSA criteria proposed by the breakout group sessions and considered them for inclusion in the final list describing areas meeting EBSA criteria.

37. The workshop participants agreed on the descriptions of 39 areas meeting EBSA criteria. The detailed descriptions, as agreed by the plenary, are listed in annex IV and described in its appendix. The map of described areas is contained in annex V.

38. The workshop acknowledged the description of areas meeting EBSA criteria was based on expert knowledge available at the meeting as well as data compiled prior to the workshop. It was recognized that

this description of areas meeting EBSA criteria was a first attempt at the process, and it was recommended that the Secretariat assist Parties in finding ways to organize future workshops and further training to further consider potential areas meeting EBSA criteria as scientific information and expert knowledge were updated and expanded. Further details concerning the need for capacity-building, information gaps and procedural issues are described in annex VII.

ITEM 6. IDENTIFICATION OF GAPS AND NEEDS FOR FURTHER ELABORATION IN DESCRIBING AREAS MEETING EBSA CRITERIA, INCLUDING THE NEED FOR THE DEVELOPMENT OF SCIENTIFIC CAPACITY AND A PROPOSAL FOR FUTURE SCIENTIFIC COLLABORATION

36. Building on the workshop deliberation on describing areas meeting EBSA criteria, the workshop participants were invited to identify, through subregional breakout group sessions and open plenary discussion, gaps and needs for further elaboration in describing areas meeting EBSA criteria, including the need for the development of scientific capacity and a proposal for future scientific collaboration.

37 As a result of the experts' divergent views on certain areas proposed as meeting EBSA criteria, they agreed not to include some that were originally submitted prior to the workshop. These EBSA templates are available in the workshop's website: http://www.cbd.int/doc/?meeting=EBSA-SIO-01

38. The results of the group discussions, which were presented at the plenary, are contained in annex VI.

ITEM 7. OTHER MATTERS

39. Workshop participants noted the need to translate the report of this workshop into French to facilitate understanding by regional experts who did not participate in the workshop. Participants further noted that there was a need to provide translation throughout the workshop deliberations, including during breakout group sessions, in addition to the plenary discussions, as provided by the present workshop on the first and the last days.

ITEM 8. ADOPTION OF THE REPORT

40. Participants considered and adopted the workshop report on the basis of a draft report prepared and presented by the Co-Chairs with some changes.

41. Participants agreed that any additional scientific information and scientific references would be provided to the CBD Secretariat by workshop participants within two weeks of the closing of the workshop in order to further refine the description of areas meeting EBSA criteria contained in annex IV and its appendix and annex V.

ITEM 9. CLOSURE OF THE MEETING

42. In closing the workshop, the Co-Chairs thanked the workshop participants for their valuable contributions to the workshop deliberations. The workshop participants thanked the Government of Mauritius for hosting the workshop, the Government of Japan for its financial support, and the Government of Australia for providing technical support, through CSIRO. The participants also expressed their appreciation to the CBD Secretariat for organizing and servicing the workshop, to the Nairobi Convention Secretariat for their collaboration and the workshop Co-Chairs for their excellent leadership.

43. The workshop was closed at 5 p.m. on Friday, 3 August 2012.

Annex I

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Annex II

SUMMARY OF THEME PRESENTATIONS

Annex Item 3

Ms. Doris Mutta (UNEP Nairobi Convention Secretariat)

Ms. Doris Mutta introduced the scope, membership and geographic coverage of the Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Western Indian Ocean (The Nairobi Convention), and outlined the array of ecosystems and habitats in the Convention area, including species diversity and ecological and socio-economic significance. It was reported that 22 percent of the species in the WIO are endemic to the region. The presentation then elaborated on the implementation of the Convention's framework, including its three technical protocols. In particular, the protocol concerning protected areas, wild fauna and flora is of direct relevance to the CBD EBSA process particularly in view of its objectives on conservation and sustainable use . The Convention's structure was also described in terms of its decision-making process and the role of science.

The biennial Conference of Parties is the decision-making body for the Convention. The Conference of the Parties is guided by the expert and scientific input of the Forum for Academic and Research Institutes, the Consortium for the Conservation of the Marine Environment in the Western Indian Ocean region (WIO-C), as well as other regional initiatives. Expert groups are constituted from the pool of scientists in the region and facilitated to address specific marine and coastal environment issues as requested by the Conference of Parties. Various ecosystem assessments that have been or are being undertaken by the Convention through various expert groups were mentioned. The outcomes are directed to inform management and decision-making. It was pointed out that the outcome of the EBSA workshop will be communicated to the upcoming Nairobi Convention meetings, including the seventh meeting of the Ad hoc Legal and Technical Working Group on Integrated Coastal Zone Management to the Nairobi Convention.

Mr. Tim Andrew (Western Indian Ocean marine Science Association) and Ms. Lucy Scott (Agulhas and Somali Current Large Marine Ecosystems Project)

Mr. Tim Andrew and Ms. Lucy Scott provided a brief overview of regional frameworks, supporting mechanisms (international and regional organizations and agencies) and regional/national coastal and marine projects and programmes in the Western Indian Ocean region. Political frameworks include NEPAD, the Indian Ocean Commission, Nairobi Convention, Intergovernmental Oceanographic Commission (IOC) of UNESCO, and regional fisheries management agencies, such as the Indian Ocean Tuna Commission (IOTC), Southwest Indian Ocean Fisheries Commission (SWIOFC) and South Indian Ocean Fisheries Agreement (SIOFA). Alliances such as the new Western Indian Ocean Sustainable Ecosystem Alliance will also play a coordinating role supporting these frameworks.

Several organizations, agencies and projects provide supporting information to the above regional bodies. Examples are regional projects like the Agulhas and Somali Current Large Marine Ecosystems (ASCLME) Project, the WIO-LaB Project addressing land-based causes of marine and coastal degradation, SmartFish Programme, the Islands Project, and the EAF Nansen Project (with various funders, including World Bank, EU and GEF). Non-governmental organizations (NGOs) such as WIOMSA, CORDIO, WWF, WCS, BirdLife International, East African Wildlife Society (EAWS) and The Nature Conservancy, and networks like the Consortium for the Conservation of Coastal and Marine Ecosystems in the Western Indian Ocean (WIO-C), which include the above NGOs as well as organizations such as IUCN, also provide information and support for various international processes. Of note is the supporting role provided to the Nairobi Convention by the WIO-C. National-level marine/coastal initiatives and integrated coastal zone management also support the overall sustainable use and conservation of the marine and coastal environment of the Western Indian Ocean (WIO).

A summary report of agencies, projects and programmes active in the WIO in 2009 found over 140 multinational agencies/projects. A breakdown and some examples were discussed, and the report is available online. An overview was provided on the WIO-C, as this network could potentially provide a support mechanism for the CBD EBSA process, at least in the Western Indian Ocean. This is particularly relevant as the current host organization for WIO-C, WIOMSA has recently become part of the Consortium of Scientific Partners of CBD.

Mr. Nic Bax (CSIRO and IOGOOS)

Mr. Nic Bax presented a regional overview of biogeographic information on open-ocean water and deep-sea habitats and introduced a discussion regarding the geographic scope of the workshop.

The Indian Ocean came to be over 100 million years with the break-up of Gondwanaland. It is the world's third-largest ocean, with relatively little continental shelf (except for Australia's Northwest Shelf), an average depth of 3800m and a maximum depth of 7,250m in the Java trench. The origins of the Indian Ocean are apparent in the broad inter-ocean spreading ridges (SW, Central and SE Indian Ocean). Other deep-sea ridges include the Madagascar Ridge, Broken Plateau, the narrower Ninety East Ridge, the Mascarene Plateau, the Chagos-Laccadive Ridge, and the Carlsberg Ridge. Seamounts occur on these ridges coming closer to the surface and often related to higher biological value. The Indian Ocean can be considered to be divided into three meridional basins divided by the ridges, with the western basin being further subdivided by additional ridges and Madagascar.

The monsoonal climate of the northern Indian Ocean leads to seasonally variable currents north of the equator, while south of 10°S there is a stable gyre. This gyre links to the Aguhlas current in the southwest, which is very active with eddies that may be frequently associated with increased productivity. The lack of winds from a consistent direction across the equator means that there is no equatorial upwelling as in the Atlantic and Pacific oceans.

Surface oceanography has been used to divide the pelagic environment of the Indian Ocean into different realms by Longhurst (1998) followed by UNESCO (2007) in the Global Open Oceans and Deep Sea (GOODS) bioregionalization. Physical and limited biological data were also used to develop realms in the abyssal (>3000m) and bathyl (800-3000m) depths. There was no variation longitudinally but there was a latitudinal split at about 45˚S. Additional bioregionalisation has been suggested by Zezina (1997) based on deep-sea survey data from brachiopods showing more detailed bioregional patterns. There was further spatial patterning in shallower waters based on the MEOW classification (Spalding 2009), and recent genetic comparison between common fish species has found cryptic species between South Africa and Australia for some nearshore species, but for no offshore species.

The major bioregional patterns were presented and discussed as inputs to defining the boundaries of the area to be considered by the workshop and the development of regional working groups.

Annex Item 4

Piers Dunstan (CSIRO)

Mr. Piers Dunstan delivered a presentation entitled "Data to inform the CBD Southern Indian Ocean Workshop to Facilitate the Description of Ecologically or Biologically Significant Marine Areas". He indicated that CSIRO has led the effort (in support of CBD Secretariat) for data synthesis and sourcing, and has recognized the importance of using the best available data to support the assessment of areas against EBSA criteria. Data includes direct biological data and also physical data as proxies. Some layers are raw data, and some are combined or synthetic. Biological data include: catches of commercial pelagic species; habitat preferences of juvenile SBT across their range, patterns of Green Turtle movement, IOSEA turtle feeing and nesting sites, prediction of deep sea corals, data sourced from the Ocean Biogeographic Information System (OBIS), historic whale catches, and important bird areas. Mr. Dunstan noted that physical data, which can be used as surrogates, including: seamounts, Southern Indian Ocean Benthic Protected Area, global seascape, canyons, vents and seeps, and physical ocean climatology data. The latter includes: temperature climatology, salinity climatology, oxygen climatology, nitrate climatology, silicate climatology, phosphate climatology, sea surface altimetry, SeaWiFS chlorophyll A, VGPM global ocean productivity, mixed layer depth climatology, frontal index and eddy kinetic energy.

Mr Anthony Thompson (Food and Agriculture Organization of the United Nations)

Mr. Anthony Thompson presented a summary of the FAO/SmartFish project Regional Workshop on Vulnerable Marine Ecosystems (VMEs) in the Indian Ocean, which was held in Flic en Flac, Mauritius from 25 to 27 July 2012. The workshop explained the VME concept and process as explained in the International Guidelines for the Management of Deep-sea Fisheries in the High Seas (2008) with case-study examples presented from four regional bodies responsible for the management of fisheries in areas beyond national jurisdiction. Deep-sea fisheries typically exploit low productivity species and therefore need careful precautionary management. In addition, they may occur on or near to benthic vulnerable marine ecosystems (VMEs), often rich in coral and sponge habitats, which can suffer significant adverse impact (SAI) from some of the bottom contact fishing gears. The VME process is designed to identify measures that will safeguard these VMEs whilst allowing for the sustainable harvesting of the targeted deep-sea fishery resource.

The workshop was technical in nature and intended to stimulate informal discussion. The global knowledge provided was linked to regional needs, and the importance of networking and data-sharing was emphasised. Data sources relevant for VMEs and deep-sea fisheries in the Indian Ocean were identified. It is hoped that these will be useful for any future regional VME process and that they will feed into the VME database, which is currently under development. Mock-up examples of the search engine and output from other regions were presented and discussed.

The role of the States and the importance of projects within the region was highlighted and the collaboration with industry stressed, particularly through the Southern Indian Ocean Deepsea Fishers Association (SIODFA). It was recognized that many of the scientific and management discussions regarding VMEs in the Indian Ocean will occur within the newly constituted Southern Indian Ocean Fisheries Agreement (SIOFA). The support provided to States as a result of this workshop, and the ABNJ Deep-sea Project currently under development by FAO and its partners, will hopefully contribute to the scientific and management process that will be established within SIOFA.

Ms. Gwenaëlle Le Gurun (International Seabed Authority)

Ms. Gwenaëlle Le Gurun delivered a presentation describing the mandate and function of the International Seabed Authority (ISA). She explained that the ISA was established by its constituent instruments (the 1982 United Nations Convention on the Law of the Sea and the 1994 Agreement relating to the implementation of Part XI of the United Nations Convention on the Law of the Sea of 10 December 1982) as the competent organization through which its current 162 Members organize and control exploration for and exploitation of mineral resources in the Area. The Authority has competence over the "Area", which is defined by the Convention as "the seabed and ocean floor and subsoil thereof, beyond the limits of national jurisdiction". She explained that the foundation of the legal regime governing activities in the Area rests on the principle that the Area and its mineral resources (e.g. polymetallic nodules, polymetallic sulphides and cobalt-crusts) are designated as the "common heritage of mankind." The Area is open to use exclusively for peaceful purposes, and no state may claim or exercise sovereignty or sovereign rights over any part of the Area or its resources. Activities in the Area are to be carried out for the benefit of mankind as a whole and may only be conducted on the basis of a contract, sponsored by a Member State of the Authority, which confers exclusive rights and sets out obligations. The Authority has also received the mandate to ensure the effective protection of the marine environment from harmful effects that may arise from activities in the Area. In particular, the Authority has the competence to adopt and review environmental rules, regulations and necessary measures to assess and manage environmental impacts that may arise from activities in the Area. Another essential function of the Authority relates to the encouragement and promotion of marine scientific research in the Area, in particular related to impacts on the marine environment, and to the collection and dissemination of the available results.

She informed the participants of another process relevant to EBSAs, the adoption by the Council of the Authority of an environmental management plan (EMP) for the Clarion-Clipperton Zone (ISBA/18/C/22). The CCZ is an area where 12 out of 17 contractors carry out exploration for polymetallic nodules. The EMP, which gives effect to the precautionary approach, includes the designation, on a provisional basis, of a network of nine areas of particular environmental interest. She presented the decision of the Council (ISBA/18/C/22) and briefly described the design of the nine APEIs and the goals and objectives of the environmental management plan for the Clarion Clipperton Zone (ISBA/17/LTC/7). She explained that the process was based on a representative approach, which enables the selection of the full range of ecosystems and habitats in undisturbed area in order to preserve and conserve marine biodiversity and ecosystem structure and function in the context of seabed mining activities, based on the best available scientific information. The presentation noted the complementarities and differences between the EBSA process and the establishment of an EMP for the CCZ, drawing attention to environmental data and information of the Authority to inform the EBSA process, and fostering cooperation between experts participating in the CBD EBSA process and the ISA.

She explained that with its ridges, abyssal plains and seamounts, the Indian Ocean is of particular relevance for the Authority as an area of interest for the mining of polymetallic nodules, polymetallic sulphides and cobalt crusts. This is illustrated by the award of three 15-year contracts with an exploration area in the Indian Ocean. The Authority entered into a contract for exploration for polymetallic nodules with the Government of India in 2002. On 18 November 2011, the Authority signed with the China Ocean Mineral Resources Research and Development Association a contract for exploration for polymetallic sulphides in the Southwest Indian Ridge. A second contract for exploration for polymetallic sulphides in the Central Indian Ocean is to be concluded with the Government of the Republic of Korea following the approval of a plan of work for exploration on 26 July 2012. On 6 September 2011, Bundesanstalt für Geowissenschaften und Rohstoffe, a German public institution, submitted to the Secretary-General of the Authority notification of its intention to engage in prospecting for polymetallic sulphides in the Southern Central Indian Ridge and the Northern Southeast Indian Ridge. The prospecting programme is scheduled for the period 2011 to 2015.

She recalled that the Authority cooperates closely with the SCBD with respect to the description of EBSAs in areas beyond national jurisdiction. While the description of these areas is not associated with any legally binding protection regime, the information available may be of use to the Authority when considering, for example, the issuance of new contracts for exploration for polymetallic nodules, for polymetallic sulphides or for cobalt-rich crusts. For this reason, the Authority follows the progress of the description of EBSAs in order to better understand how this science-driven process can assist the Authority in the fulfilment of its responsibilities and how the work of the Authority can assist the EBSA process.

Mr. Douglas Hykle (Indian Ocean Southeast Asian Marine Turtle MoU Secretariat)

Mr.Douglas Hykle briefly introduced the IOSEA Marine Turtle Memorandum of Understanding, an agreement concluded under the Convention on Migratory Species (CMS), with 33 Signatory States across the Indian Ocean – South-East Asia region (www.ioseaturtles.org). The presentation familiarized participants with another process relevant to EBSA, highlighting complementarities and differences between them, drawing attention to data sources to inform the EBSA process, and encouraging cooperation between experts participating in the CBD EBSA process and IOSEA Focal Points.

The IOSEA Online Reporting Facility includes a database that documents more than 1000 sites used by marine turtles for nesting and foraging. IOSEA Signatory States have agreed to the establishment of a Network of Sites of Importance for Marine Turtles to recognize the ecological and socio-economic values of certain sites. Other ecological and practical benefits are expected to accrue from the inclusion of sites in the network, which is expected to focus initially on terrestrial nesting beaches and coastal waters. The nomination and vetting processes are underpinned by a high degree of scientific rigour. Several of the EBSAs proposed for the Southern Indian Ocean are potential candidates for the site network. Both the IOSEA and EBSA area-based processes may be informed by species assessments commissioned by IOSEA, an Ecological Risk Assessment to be prepared (jointly with the Indian Ocean Tuna Commission) by December 2012, and analyses of satellite tracking data supported by a comprehensive metadatabase maintained by IOSEA.

Ben Lascelles (BirdLife International)

Mr. Ben Lascelles provided a presentation outlining how Important Bird Areas (IBAs) help to describe EBSAs. He explained that the IBA programme has been used to set conservation priorities for over 30 years in terrestrial environments and noted that IBAs can act as a shadow list for protected areas (e.g. EU Birds Directive, Ramsar Sites) and that they have been used to inform the description of EBSAs.

To date over 10,000 IBAs have been identified globally, and this will be supplemented in October 2012 by the launch of a first inventory of 3000 marine sites. Sites qualify when IBA criteria and thresholds are met. Regarding seabirds IBAs are identified for congregations (areas holding >1% global population), threatened species (IUCN Red Listed), biome and range restricted species. IBA criteria therefore show significant overlap and congruence with EBSA criteria, particularly in relation to sites of importance for life history stages and threatened species, and can therefore be used to inform the description of EBSAs. Background documents have been submitted to this workshop with further information.

A range of seabird data has been compiled through generous contributions from seabird scientists and submitted for consideration at this EBSA workshop. This data has been analyzed to show locations of breeding colonies and at-sea areas where one or more EBSA criteria can be shown to have been met.

Mr. Remi Ratsimbazafy (WWF Madagascar & West Indian Ocean Programme Office)

Mr. Remi Ratsimbazafy provided a presentation on the Marine Protected Area Network Project of the Indian Ocean Commission countries (RAMP-COI, 2006- 2010). The project is funded by the French GEF (FFEM) and WWF, implemented by WWF Madagascar and the West Indian Ocean Programme Office (WWF MWIOPO) under the auspices and direction of the Indian Ocean Commission. Participating countries include Comoros, Madagascar, Mauritius, Reunion Island (France) and Seychelles. In the framework of this project, a marine prioritization process has been initiated to identify a network of seascapes and sites of critical importance for marine conservation and fisheries in the member countries of the Indian Ocean Commission. This process used conservation planning tool such as Marxan combined with expert knowledge. The Marxan tool indicates areas of irreplaceable biodiversity features, uses targets of 30% for both bioregions and habitats (reefs and mangroves) and drivers of change analysis as a cost layer. This process led to the identification of 45 globally, regionally and nationally outstanding priority areas, five offshore areas important for migratory species (cetaceans, marine turtles, seabirds, sharks, tuna and eels) and one transnational marine conservation area encompassing the western part of Madagascar, Comoros archipelago, south of Seychelles, French overseas territories of Mayotte and Glorieuse, southern Tanzania, and northern Mozambique.

Annex III

SUMMARY OF THE WORKSHOP DISCUSSION ON REVIEW OF RELEVANT SCIENTIFIC DATA/INFORMATION/MAPS COMPILED FOR THE WORKSHOP

Group 1. Northern and Western Indian Ocean / Nairobi Convention region: English-speaking group (Kenya, Mozambique, Somalia, United Republic of Tanzania, South Africa) and some marine areas beyond national jurisdiction)

The group considered all proposals describing areas meeting EBSA criteria, based on scientific information submitted prior to the workshop, as well as a number of areas not originally included in the submissions but proposed by participants from a country or a group of countries during the workshop. All the proposed descriptions of areas meeting EBSA criteria were reviewed, mapped, presented and discussed before being accepted. The following are some salient points of the discussion.

Marine Areas within National Jurisdiction

Somalia

- **Shabelle coastline**
  Withdrawn due to lack of information, but put forward for future consideration.

- **Kismayo coastline - Bajuni Island**
  Withdrawn due to lack of information, but put forward for future consideration.

Kenya

- **Lamu-Kiyunga**
  This is a Somali current upwelling area, very different from other areas in the region. Rare bird breeding areas (IBAs) occur here. Special coral reef occur, and it is a highly productive area. Dugongs resident. On turtle migration route. Vulnerable to port development. Lobster (6 species) and fish thrive in productive waters. Naturalness is assessed as “high”.

- **Watamu-Malindi**
  This submission was initially submitted considering the high importance of the area to three species of dolphin. It has been updated to include a wider range of species and ecosystems. Two major rivers in the area create a unique system that impacts on species diversity (eg., corals).

  There was a need to adjust rankings to lower levels based on comparison on a regional rather than only a national scale. The comment was made that it is difficult to assess the submission without more detailed information. It was noted that "Naturalness" may be the key criterion in this case because it is already a no-take marine park. It was suggested that the border of areas for EBSA description needs to be more precisely defined on the map. Area is a UN Biosphere Reserve. Bird species occurring here are not threatened.

- **Shimoni-Kisite-Funzi**
  Kisite Island and the associated mainland coast are recognized as important in all categories. It was pointed out that it was important to use references to justify statements in ranking tables. Comment was made that the scientific assessment of area against EBSA criteria could be used to assist in the process of establishing MPAs when countries see this as useful. During the plenary discussion on this area and the Pemba area, it was proposed the expert from Tanzania provide adequate information on the Pemba area so that the two proposed areas meeting EBSA criteria are combined to become a transboundary area covering Kenya and the United Republic of

Tanzania. The expert from Tanzania has provided information which has been consolidated with the further information from Kenya to describe the Pemba-Shimoni-Kisite EBSA.

Kenya/United Republic of Tanzania

- **Pemba-Shimoni-Kisite**
  Discussion was extensive around the inclusion of this transboundary area for EBSA description, which focuses on the Pemba Channel, including Pemba Island, areas adjacent to the mainland such as Tanga Coelacanth Marine Park, and the southern shore and islands of the Kenyan coast. It is suggested that this area is of significant importance and meets EBSA criteria. During the final plenary, the expert from United Republic of Tanzania was requested to provide more scientific information on Pemba (see above) for consolidation with information from Kenya on Kisite Mpunguti MPA. The information prepared now also includes the Kisite Mpunguti MPA, located in Kenya, as part of the transboundary EBSA.

United Republic of Tanzania

- **Tanga Coelacanth Marine Park**
  Important and unique coelacanth habitat. Highly ranked for threatened species (coelacanth). Naturalness is ranked low because of high fishing pressure. Newly established marine park. Suggested that coelacanth is rare and because of this should be ranked as “high”. The reefs and islands are also unique and rare and thus the area should be ranked “high” here.

- **Zanzibar (Unguja Island), Zanzibar Channel, and Saadani National Park (mainland coast)**
  Originally the area for EBSA description included only Chwaka Bay in Zanzibar. However, the group felt that the entire island of Zanzibar and the Zanzibar Channel, including areas of the mainland coast, such as Saadani National Park, should be included in a larger area meeting EBSA criteria. A wide variety of habitats and species are covered in this area. Several MPAs and reserves are present in the area, and thus "Naturalness" is ranked as “medium”. In terms of corals, Zanzibar is very diverse in diversity. However, scientific information is lacking in terms of how comparatively diverse these ecosystems and communities are on a broader regional scale. More information is needed to support the assessment.

- **Rufiji – Mafia – Kilwa**
  This area is recognized by other processes, such as that of WWF, as important for many biological and ecological reasons. The area arguably contains the finest representative complex of characteristic tropical marine habitats and species found in the Eastern African Marine Ecoregion (EAME). It includes the largest contiguous block of mangrove forest in Eastern Africa (540 km^2) in the Rufiji Delta; extensive and diverse coral reefs in Mafia and the Songosongo Archipelago; and extensive seagrasses, algal beds and intertidal flats. This habitat diversity gives rise to some of the highest marine species diversity in the region. Coelacanth have been caught within this area as well.

United Republic of Tanzania/Mozambique

- **Pemba Bay – Mtwara**
  This area covers the coast from Mtwara, United Republic of Tanzania, in the north, to Pemba, Mozambique in the south. It is an area incorporating the highest diversity of hard corals on the East African Coast. It is ranked “high” in all criteria except for "threatened, endangered and declining" species and habitats. Naturalness is low because of significant impact from human populations in most locations.

Mozambique

- **Baixo Pinda – Pebane (Primeiras and Segundos)**
  This area stretches from Baixo Pinda to Pebane on the coast of northern Mozambique. Coral communities here are important for connectivity between northern and southern reefs. Several

canyons have been identified offshore so this habitat could be important, but information is poor on these canyons. Southern limit of coral reefs and also northern limit of large fishing grounds (Sofala Bank). Baixa Pinda has 8km tidal flats, which are regionally unique, while offshore islands have corals and important reefs. More emphasis needs to be placed on declining habitats. Connectivity is important in terms of corals at this area.

- **Zambezi River Delta(Quelimane to Zuni River)**
  This area extends from Quelimanein the north to Zuni River mouth further south. Fisheries data are lacking for this area although it is in the middle of Sofala Bank, Mozambique's most productive fishery. The area is extremely important for mangroves. The area is unique in terms of habitat supporting large fishery and huge mangrove forest (largest trees in Eastern Africa). Productivity is very high in all respects. Naturalness is rated "medium" due to impacts from fishing industry, but inaccessible coast protects many areas. High biomass and productivity are recognized. It is important to highlight how mangroves support productivity.

- **Save River – San Sebastian**
  This area extends from the Save River in the north to San Sebastian further south and includes Bazaruto archipelago. Up to 250 dugongs are located in area, which is the largest population in the Western Indian Ocean. There are very important seagrass beds and mangroves around the Save River. Inshore fish production is very high. Loggerhead turtle nesting areas are present. Large pelagic fish breed around islands. Most rankings are "high" due to importance of dugong population here to the region as a whole. Bazaruto Island is a national park and naturalness is "high". Invertebrate diversity is very high. It was noted that this is the last viable population of dugong on Eastern African coast. Productivity is as a result of upwellings and eddies associated with turbulence and tidal turn-over as well as those associated with the Agulhas current.

- **Morumbene to Závora Bay**
  This area extends from Morrumbene in the north to Zavora in the south. This has recently been identified as an area where manta rays, reef mantas, whale sharks and dugongs (10 to 20 in number) aggregate in large numbers and is unique in the region. Algal blooms are common and productivity is high. There are mating and feeding areas for humpback whales. In terms of megafauna this area is very unique.

- **Incomati River– Ponta do Ouro**
  This area extends from the Inkomati River in Maputo Bay to Ponta do Ouro on the border with South Africa. Area was increased from Maputo Bay to the south to include the important habitats associated with the southern Mozambique coastline. Best studied area of Mozambique—dugongs are present (e.g. 10 species), with the largest *Zostera capensis* beds in the world. Turtle nesting areas are present on sandy beaches to the south of Maputo Bay. New species of seagrass are identified in this area, which are so unique to the region. Maputo Bay is highly productive for prawn species.

South Africa

- **Natal Bight**
  The area was formed by the silt plume of the Thugela River. Area extends to 2000m. Important prawn habitat and many-slow growing sparid fish present. Submarine canyons are present offshore. Interaction between Agulhas Current and inshore features enhance productivity. Life-history support on habitats in the Bight is important for multiple species. Several IUCN listed species supported by this ecosystem. Presence of IUCN listed species does not necessarily mean they are limited to the area. Historically, this is a heavily fished area, which leads to a low rating in the "naturalness" criterion.

- **Delagoa Shelf Edge (canyons and slope)**
  It was commented that canyons and coelacanths should be included in other submissions in the region that cover deeper waters.

Mozambique Channel

- **Mozambique Channel**
  The issue of including the Mozambique Channel as a larger area for EBSA description to include Agulhas Current oceanographic processes was discussed and accepted with a modified southern boundary to include a broader area. The smaller scale area for individual EBSA descriptions within this area can focus more on specific areas and are discussed separately. The northern border on the continental coast adjusted to Mtwara in United Republic of Tanzania, and in the south to St Lucia Lighthouse in South Africa. The eddies associated with the Agulhas Current are covered in this area. Connectivity is a special issue of this area. Biodiversity is very important across all categories. The overall area is important for migration and there are important breeding islands for several species in the channel. Several high ranking scores were queried in the discussion based on the question of their significance at local or regional scale. It was also suggested that there was a need to be more specific about what life-history stage is considered in the ranking process. It was noted and agreed that productivity of the system is very high. The ranking of high in most categories is a result of the very large area covered. The Channel was also identified in the World Heritage Marine Programme, and World Wide Fund for Nature – Eastern African Marine Ecoregion (WWF EAME), World Wide Fund for Nature – Western Indian Ocean Marine Ecoregion (WWF WIOMER) processes as an area of outstanding importance.

Discussion of EBSA description in Areas Beyond National Jurisdiction

- **Walters Shoals**
  The Shoals form part of the West Wind Drift Islands biogeographic region, and several fish species endemic to this bioregion occur here. Several rare birds forage in the productive waters around the Shoals. High depth range supports a wide range of species. High in “Naturalness” as the area is remote and not heavily fished. This is an important foraging area for birds west into Mozambique Channel.

Group 2. Northern and Western Indian Ocean / Nairobi Convention region: French-speaking group (Comoros, France, Madagascar, Seychelles and Mauritius)

The group considered all proposals describing areas meeting EBSA criteria, based on scientific information submitted prior to the workshop as well as a number of areas not originally included in the submission but proposed by participants of this break-out group during the workshop. All the areas meeting EBSA criteria were reviewed, mapped, and presented during the plenary session.
Following are some salient points of the discussion:

All participants of this group agreed to describe or re-describe areas meeting EBSA criteria by expanding/merging areas. The group initially made a checklist of all the proposed areas for EBSA description already submitted to the workshop as well as all new proposals, based on the merging/expansion of proposed areas already submitted to the workshop.

This group recognized the need to consult the proposals made by the Group 1 in order to avoid duplicating proposals for describing areas meeting EBSA criteria, especially in the South-West Indian Ocean. Thus a joint working session was held on Thursday 2 August 2012 between Group 1 and Group 2 to exchange ideas and discuss any issues of concern and identify any overlaps. The group found this session very fruitful as they could elaborate the geographic scope of the overlapping proposals for areas meeting EBSA criteria in order to avoid duplication. The two groups then reconvened to their respective break-out group sessions and the discussions progressed.

Group 3. North-Eastern and Southern Indian Ocean region (Australia, India, Indonesia, Maldives and Sri Lanka)

The group considered all proposals describing areas meeting EBSA criteria, based on scientific information submitted prior to the workshop, as well as a number of areas not originally included in the submission but proposed by participants from a country or a group of countries during the workshop. All the proposed descriptions of areas meeting EBSA criteria were reviewed, mapped, presented and discussed at the plenary. Following are some salient points of the discussion; the full lists of areas considered appear in annex IV.

Prince Edward Islands, Del Cano Rise and Crozet Islands
Initially, three key features have been described for the Prince Edwards Islands and combined into one unique area meeting the EBSA criteria. The group agreed that merging the three zones was the right decision with regards to the connectivity among them. The proposed area extends outside of the South African EEZ. It is located at the southern end of the South West Indian Ridge. The group further proposed to merge the Prince Edward and Crozet islands areas into one proposed area for EBSA description. It is noted that there is evidence of connectivity between the two areas. The fauna is consistent and several species are spread over the entire area (e.g. species of seals, seabirds).

Dragon vent field, SW Indian Ridge
The group discussed the ranking of the uniqueness criterion and the fact that there are possibly other vent fields similar to this one. It was finally decided to rate the uniqueness or rarity criterion “high”. It is noted that these ecosystems are considered as functionally fragile.

Atlantis Seamount
This site lies in sub-tropical waters. Coral gardens, solitary corals and cliff communities (including anemone, large sponges and octocorals) have been observed on this seamount. The group noted that some information made available by a participant has not been included into the initial EBSA description and decided to add them and modified the proposal accordingly. The scientific information and references for this proposal were strengthened.

Agulhas slope and seamounts
The group reviewed the ranking of the criteria. It is noted that this group of seamounts are relatively isolated. This area is recognized as a spawning area for several species. There are four different pelagic and benthic habitat types in this area. The proposed area is at the intersection of the different features. Some parts of the area are considered as intact.

Offshore of Port Elizabeth, South Africa
This site is at the intersection of several pelagic and benthic habitat types. It is a spawning and nursery area. It hosts threatened species and includes key transport pathways for a number of pelagic species. The group discussed the ranking of the different criteria. It is noted that submarine canyon is a rare habitat type. The group recommended additional seabird information to be included in the proposal using information provided by a participant. The group referred to a global map of productivity for the whole region to better assess the criteria and strengthen the scientific rational for the productivity criterion.

Agulhas Bank Nursery Area, South Africa
It is noted that this site is a major nursery area. The group referred to a global map of productivity for the whole region to better assess the criteria and strengthen the scientific rational for the productivity

criterion. It is a major feeding area for species that spawns in the area. Very rare habitat types are present. Therefore the group agreed the ranking for the uniqueness criterion to be high. The group discussed the possibility of merging this area with the offshore of Port Elizabeth one but concluded that it is preferred to leave them separate as the features described differ and there was insufficient evidence of connectivity.

Sri Lankan side of Gulf of Mannar

Originally the proposed area covered the whole continental shelf of Sri Lanka. This proposal was modified during the workshop. The newly proposed site is a 40 km long strip on the north-western and northern coast of Sri Lanka. It is an important area for sea turtles, and the seagrass bed is in good condition. It is a biodiversity-rich area, and it includes many different habitat types. It is a recognised spawning area and hosts threatened and endangered species. The vulnerability to coral bleaching notably is high. The group referred to the global map of productivity and agreed on the ranking for this criterion to be high. The justification for the ranking of the biological diversity criterion was strengthened, and new references were added.

Coral Seamount and fracture zone region

This site lies in the sub-Antarctic region. Cold water coral reefs have been found on this seamount along with coral gardens and octocorals. The ranking of the fragility criterion was discussed. The group also discussed the size of the proposed area for Coral seamount. Additional geology data were made available by one of the participant, so the group decided to broaden the scope of the proposal and extend the limits to the immediate surrounding area around the Coral seamount in order to include a unique geological feature for this part of the Indian Ocean: a cliff that ranges between 4000m and 200m on one of the faults that occurs across the ridge. Additional published information was provided and included to strengthen this proposal. The scientific information and references were strengthened.

Middle of What Seamount

Middle of What is a seamount with a deep summit that lies in the boundary region between the sub-tropical and sub-Antarctic waters. It was noted through in situ survey that this site hosts cold water coral reefs which are rare and sensitive habitats. There was discussion regarding the uniqueness of this feature. And it was noted that this seamount is the only such feature where direct scientific observation has confirmed the presence of intact cold water coral reefs in this boundary region between sub-tropical and sub-Antarctic waters. It was recognized that the scientific information needed to be strengthened for this proposal and thus it was not included as an area meeting EBSA criteria.

Protea Banks and sardine route

It is noted that the sardine run, which occurs occasionally in special environmental conditions, is a very unique feature. The area comprises a seamount called Protea Banks. This site is a spawning aggregation for several species. It is noted that there are sensitive habitats with black coral communities on the top of Protea Banks. The group referred to a global map of productivity for the whole region to better assess the criteria and strenghten the scientific rational for the productivity criterion for this area.

Fools' Flat

Maps of this area show sand and gravel as well as rocky habitat with hard corals. It is located in the middle of Broken Ridge. It is noted that it is unusual to have this extent of coral reefs on a ridge feature. The vulnerability is considered high because of the type of habitat. The group reviewed the scientific basis provided for this proposal and discussed the ranking of the different criteria.

South of Java Island

This site is the only spawning ground for southern blue fin tuna. It is noted by the group that this species is listed as critically endangered by IUCN. The different criteria were discussed.

Central Indian Basin
This site is a major foraging area for seabirds with a phytoplankton bloom occurring during austral winter. The group assessed the different criteria ranking. The productivity criterion was rated “low” because no noticeable signature is noted on the global map of productivity, as it is a temporal feature. The group further discussed the ranking of the vulnerability criterion with regards to by-catch and finally agreed to rank it “low”.

Agulhas Front
This site is a high productivity frontal region. Seabird data were combined with the productivity data for description of this site. It is noted that this region hosts a high number of species. The uniqueness criterion was discussed, and the group agreed to rate it “high” for the uniqueness of the high productivity extended area. The naturalness criterion was also discussed, and it was decided to rate it “low”.

Due South of Great Australian Bight
This site is very important for two species of birds. Criteria for this site were reviewed by the group.

East Broken Ridge Guyot
This is a geological feature. Biogeographically it is a peculiar feature. This site is located at the far eastern end of Broken Ridge. It is the shallowest of a series of seamounts. Concerns were raised that this site was only described for its unique geological feature and no information was available at the time of the workshopto assess its biological and ecological value.

Rusky
This is an isolated geological feature that stands next to Fools’ Flat. It is a knoll on the edge of the Broken Ridge plateau. It has black corals on it. The scientific basis and criteria for this area were reviewed by the group.

Annex IV

DESCRIPTION OF AREAS MEETING EBSA CRITERIA IN SOUTHERN INDIAN OCEAN REGION AS AGREED BY THE WORKSHOP PLENARY

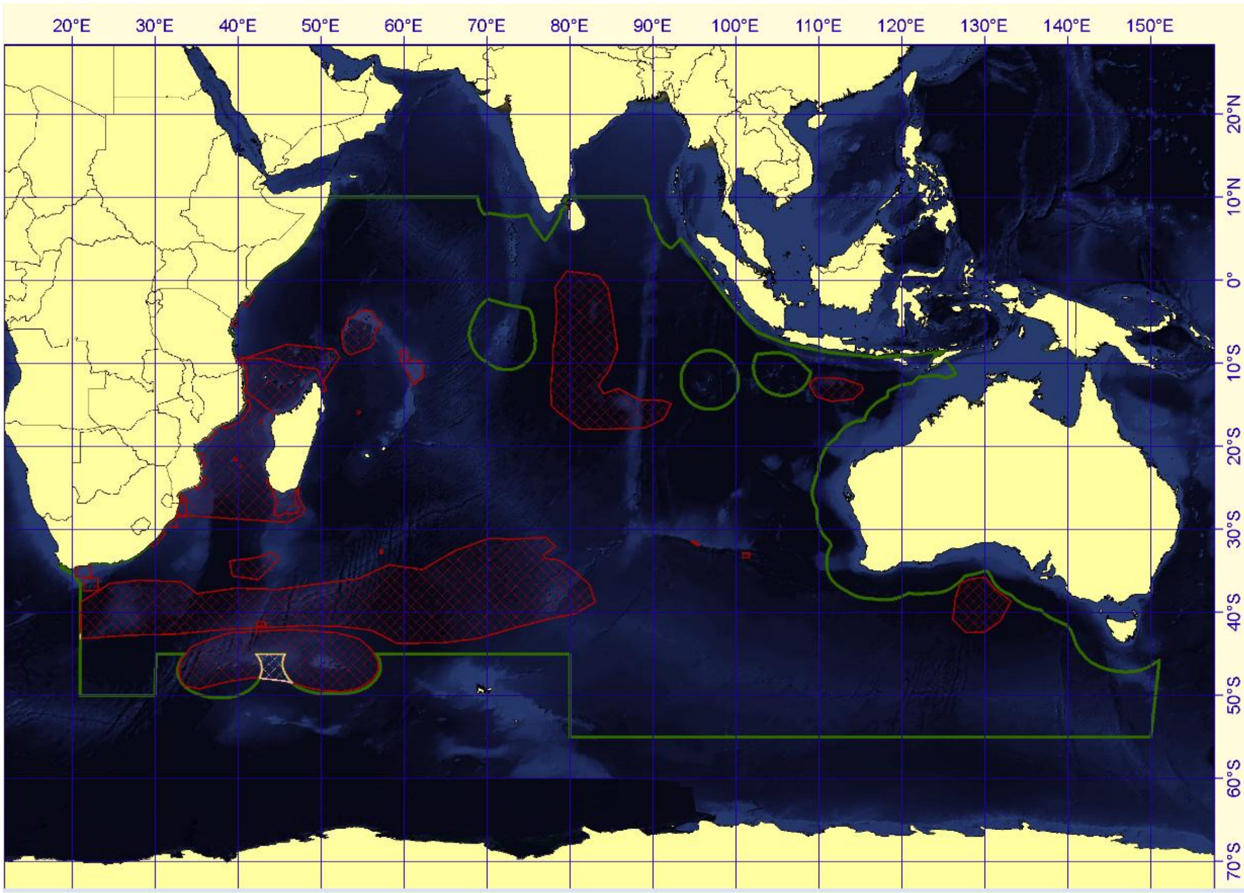
Number	Areas meeting EBSA criteria (See the detailed description of compiled EBSAs in the appendix to annex IV)[2]
1	Agulhas Bank Nursery Area
2	Agulhas slope and seamounts
3	Offshore of Port Elizabeth
4	Protea Banks and sardine route
5	Natal Bight
6	Incomati River to Ponta do Ouro (southern Mozambique)
7	Delagoa shelf edge, canyons and slope
8	Save River to San Sebastian
9	Morrumbene to Zavora bay (Southern Mozambique)
10	Quelimane to Zuni River (Zambezi River Delta)
11	Agulhas Front
12	Tanga Coelacanth Marine Park
13	Pemba-Shimoni-Kisite
14	Baixo Pinda – Pebane (Primeiras and Segundas Islands)
15	Zanzibar (Unguja) – Saadani
16	Rufiji – Mafia- Kilwa
17	Watamu Area
18	Pemba Bay - Mtwara (part of the Mozambique Channel)
19	Mozambique Channel
20	Iles Eparses (part of the Mozambique Channel)
21	Lamu-Kiunga area
22	Walters Shoal
23	Coral Seamount and fracture zone feature
24	Northern Mozambique Channel
25	Moheli Marine Park
26	Prince Edward Islands , Del Cano Rise and Crozet Islands
27	Southern Madagascar (Part of Mozambique Channel)
28	Tromelin Island
29	Mahe, Alphonse and Amirantes Plateau
30	Atlantis Seamount

[2] For clarity reasons, the appendix to annex IV was placed at the end of the document.

31	Blue Bay Marine Park, Mauritius
32	Saya de Malha Bank
33	Sri Lankan side of Gulf of Mannar
34	Central Indian Basin
35	Rusky
36	Fool’s Flat
37	East Broken Ridge Guyot
38	South of Java Island
39	Due South of Great Australian Bight

Annex V

MAP DESCRIBING WORKSHOP GEOGRAPHIC SCOPE AND 39 EBSAS IN SOUTHERN INDIAN OCEAN REGION AS AGREED BY THE WORKSHOP PLENARY



Annex VI

AREAS CONSIDERED DURING THE WORKSHOP BUT NOT DESCRIBED FOR EBSA CRITERIA DUE TO DATA PAUCITY AND LACK OF ANALYSIS

No.	Area for Future Consideration
1	Coco de Mer*
2	North Seychelles Oceanic Basin*
3	Saint André to Androka*
4	Saint Brandon*
5	South-West Coast – Mauritius*
6	Dragon Vent Field*
7	Kismayo coastline - Bajuni Island (Somalia)
8	Shabelle coastline (Somalia)

*Scientific description of area is included in the appendix to annex IV.

Annex VII

SUMMARY OF THE WORKSHOP DISCUSSION ON IDENTIFICATION OF GAPS AND NEEDS FOR FURTHER ELABORATION IN DESCRIBING ECOLOGICALLY OR BIOLOGICALLY SIGNIFICANT MARINE AREAS, INCLUDING THE NEED FOR THE DEVELOPMENT OF SCIENTIFIC CAPACITY AND A PROPOSAL FOR FUTURE SCIENTIFIC COLLABORATION

Geographical information gaps

The Indian Ocean has hosted relatively few scientific cruises. The situation is presently exacerbated by piracy. As a result, it can be difficult to interpret what data are available. For example, the southwest Indian Ocean Ridge, the site of recent cruises, has little historical scientific data by which to place it in context; i.e. if discovered species on one seamount are unique or indicative of wider distributions.

For the central Indian Ocean, a description of areas against EBSA criteria suggested for the seamounts on the ridge to the south-west of Chagos Islands was withdrawn due to lack of data. In the north-western Indian Ocean east of the horn, a proposed area for EBSA description based on the seamounts of the Carlsberg Ridge was also withdrawn due to lack of information.

Data gaps for seabirds in the western Indian Ocean were also identified, in particular due to lack of tracking information from the following species: Jouanins petrel (*Pseudobulweria fallax*), lesser noddies (*Anous tenuirostris*), and sooty terns. In addition, the workshop also noted that much valuable information on seabird distributions can be gathered relatively cheaply by including seabird observers on research cruises and other vessels of opportunity.

Recent information on the coastal areas off Somalia is also missing, and older information difficult to get hold of. Effort needs to be placed in sourcing older studies in the absence of current information in order to inform the description of areas meeting EBSA criteria. Two potential areas off the coast of Somalia have been flagged for future consideration due to lack of information.

There is a lack of information on deepwater areas in the EEZs of all countries, limiting the description of areas for EBSA criteria in these waters. In addition, limited information on areas beyond national jurisdiction in areas off Eastern Africa (between the mainland and Seychelles Islands) prevented any description of areas for EBSA criteria in this area.

Data gaps on marine mammals

Information is scanty on marine mammals in Kenyan and Somali waters. No population studies have been completed on the identified species Indo-Pacific bottlenose dolphin (*Tursips aduncus*), Indo-Pacific humpback dolphin (*Sousa chinesis*), spinner dolphin (*Stenella longirostris*), humpback whale (*Magaptera novaengliae*) and dugong (*Dugong dugon*). Marine mammal research teams are strong in South Africa, Mozambique and Zanzibar following collaboration with universities and funded graduate students.

Capacity gaps

In several countries a lack of capacity in terms of technical expertise as well as vessels and equipment was noted as a constraint to generating sufficient information to inform the EBSA process. This was particularly true for open-ocean and deep-sea habitats, although in certain countries even capacity for inshore research is severely constrained. Building endogenous scientific and technical capacities within the region is urgently required, especially in the field of assessing biological diversity and monitoring of the marine environment. Long-term joint training initiatives and degree / diploma courses at lower and middle levels are to be encouraged. It was also suggested that greater effort needs to be placed in linking regional researchers and scientists with international cruises and research initiatives. This would assist both with human capacity development as well as with meeting the costly infrastructure and equipment needs for offshore research.

The workshop identified several other general capacity needs for the region:

(a) Increased coordinated research and monitoring;

(b) Ecological inventories in some national waters (e.g., habitat mapping, migration routes, occurrence of species)

(c) Mapping of migration route of marine mammals within the South-Western Indian Ocean region (tracking of mammals, birds);

(d) Capacity-building of scientists from the region;

(e) Collaborative research between the regional countries and those countries outside the region with the expertise to conduct research in the region.

Training day

The Indian Ocean EBSA workshop was preceded by a day of training to explain the EBSA criteria and provide guidance on how they could be applied. (This was the first EBSA workshop to receive such pre-training.) In general, the training session was very well received. However, the need for additional training was also expressed, highlighting the following issues: i) insufficient time between the training and the EBSA meeting by which to digest and apply what had been learnt, as well as more time to discuss issues with the trainers; ii) more guidance on how to rank the EBSA criteria (e.g. questions were raised around assessment of productivity and also fragility); and iii) how local / sub-regional ranking should fit within a regional context, and how that nests within the global context (e.g. should a feature be assessed according to similar features found locally, regionally, or globally).

The EBSA workshop

Participants expressed widespread appreciation for the EBSA workshop and for the process of describing EBSAs in the region. However, it was noted that there were some gaps in expertise at the meeting, resulting in some gaps in the discussion, regarding, for example, genetic diversity, fish spawning /aggregation areas, and the distributions of several apex predators, including pelagic fishes.

In some cases, regional experts were unavailable and could not immediately be contacted by meeting participants to answer questions that arose in the preparation of the EBSA descriptions. It is expected that these minor gaps will be filled by workshop participants following the workshop.

At times, the workshop struggled with questions of how much supporting evidence is necessary to describe areas meeting EBSA criteria. Peer-reviewed literature, it was agreed, was not mandatory though certainly preferable. The value of incorporating the most up-to-date recent research was also recognized, even though it may not yet be published. One suggestion was to list personal communications (pers. comm.) along with papers in preparation in the references. Published grey literature, such as cruise reports, as well as any preliminary data should be made available to workshop participants to support the workshop deliberation on EBSA description. Local and traditional knowledge were not generally considered.

Concern was expressed regarding the tight timelines of the workshop. Balancing the lack of data with a comprehensive review process is a challenge in the description of areas meeting EBSA criteria. Having more time and intermediate steps to develop and review the EBSA descriptions would have been helpful. There was widespread agreement that the description of EBSAs should not be a one-off process, and hence that this workshop should be a first, rather than a last, step for the EBSA process in the region.

Contribution of EBSA regional workshop to regional scientific capacity

Key reflections on the benefits of the regional workshop for country participants included increased regional knowledge, new data to supplement spatial planning and assessment within territorial seas and EEZs, peer review and constructive criticism that led to strengthened scientific application of EBSA criteria. In addition the workshop provided important regional networking opportunities and laid foundations for future collaborations in regional planning and deep-sea research. The workshop background and discussions also enhanced participants' understanding of regional and international conventions, initiatives and research programmes to support marine biodiversity conservation.

Follow-up processes

The process of how CBD implement EBSA description through a series of regional workshop was explained by the CBD Secretariat and appeared to be well understood by the workshop participants. However, several expressed concerns and questions regarding how EBSAs would be used after the workshop reports are considered by SBSTTA and the SBSTTA report on EBSAs is considered by the CBD COP. While it was broadly understood that EBSAs are not MPAs, amongst a small number of participants there nonetheless was confusion regarding the different nature of EBSAs and MPAs. This may have impeded the description of some areas for EBSA criteria.

Several participants noted the need for competent authorities to coordinate and cooperate in the region, particularly in marine areas beyond national jurisdiction. There was widespread support that EBSAs and the scientific information supporting them should be shared widely. It was recognized that discussing follow-up processes was beyond the mandate of this meeting, but many felt that it was an important topic deserving discussion at the future meeting of the Conference of the Parties to the Convention.

Connectivity

The workshop considered the issues of ecological or biological connectivity in areas outside of the workshop boundary and noted the importance of these areas (e.g., Kerguelen Archipelago) for scientific collaboration and communication with future workshops. Connectivity is also important within the Indian Ocean in order to decide on the distribution of species and whether there are particular source areas that would make more valuable EBSAs, and this relates to both the shallow and deep-water environments.

Appendix to Annex IV

DESCRIPTION OF AREAS MEETING EBSA CRITERIA IN THE SOUTHERN INDIAN OCEAN REGION AS AGREED BY THE WORKSHOP PLENARY

Area No. 1: Agulhas Bank Nursery Area

Abstract

The Agulhas Bank, a spawning ground and nursery area, 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 narrow east coast 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. This area has been identified as important habitat by two systematic planning initiatives.

Introduction

This area, within the Agulhas Bank on the southeast coast of South Africa, includes benthic and pelagic features. The area ranges from the 30 m depth contour to approximately 250 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. 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 area (Sink *et al.* 2010). The Agulhas Bank area has been identified 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.

Location

The area is bounded by latitudes of approximately 34°S to 36°S and longitudes of approximately 20°E and 23°E. The area is entirely within both the territorial sea and Exclusive Economic Zone of South Africa.

Feature description of the proposed 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, feeding on a dense layer of copepods that occur 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, 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).Threatened habitat types in the area include critically endangered Agulhas muddy inner shelf, endangered Agulhas hard inner shelf and the vulnerable Agulhas hard outer shelf, Agulhas sandy inner shelf and Agulhas gravel outer shelf (Sink *et al.* 2012). Overexploited and threatened linefish include the endemic red steenbras (*Petrus rupestris,* Endangered) (Sink *et al.* 2012), Dageraad (*Chrysoblephus cristiceps,* Endangered) (Sink *et al.* 2012) and black musselcracker (*Cymatoceps nasutus*,Vulnerable) (Sink *et al.* 2012; Sink *et al.* 2010). The area is important for juvenile silver kob (*Argyrosomus inodorus*) (Lombard *et al.* 2010, Attwood *et al.* 2011).

Feature condition and future outlook of the proposed area

South Africa's National Biodiversity Assessment 2011 (Sink *et al.* 2012) indicated a range of conditions (fair to poor) in this area (based on pressure data and an ecosystem-pressure matrix), while the condition of the broader area ranges from poor to good. There are deep reefs that are estimated to be in good 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.

Assessment of the area against CBD EBSA Criteria

<table>
<tr><td rowspan="2">CBD EBSA Criteria
(Annex I to decision IX/20)</td><td rowspan="2">Description
(Annex I to decision IX/20)</td><td colspan="4">Ranking of criterion relevance
(please mark one column with an X)</td></tr>
<tr><td>Don't Know</td><td>Low</td><td>Some</td><td>High</td></tr>
<tr><td>Uniqueness or rarity</td><td>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.</td><td></td><td></td><td></td><td>x</td></tr>
<tr><td colspan="6">Rare habitats within this area include Agulhas muddy inner shelf and Agulhas gravel inner shelf (Sink et al. 2012a). The volcanic offshore Alphard Bank is a unique feature that supports kelp (Ecklonia maxima), soft corals and stylasterine corals (Sink et al. 2010).</td></tr>
<tr><td>Special importance for life-history stages of species</td><td>Areas that are required for a population to survive and thrive.</td><td></td><td></td><td></td><td>x</td></tr>
<tr><td colspan="6">Spawning: Red steenbras (Petrus rupestris, Endangered) and other linefish species (Hutchings et al. 2002). There have been recent observations of spawning aggregations of the endemic reef fish Petrus rupestris within this area (Sink et al. 2010). Nursery area for silver kob (Argyrosomus inodorus) (Attwood et al. 2011), geelbek, shad and white stumpnose (Hutchings et al. 2002). This area also supports a relatively high proportion of juvenile hake (Merluccius capensis) (Sink et al. 2011).</td></tr>
<tr><td>Importance for threatened, endangered or declining species and/or habitats</td><td>Area containing habitat for the survival and recovery of endangered, threatened, declining species or area with significant assemblages of such species.</td><td></td><td></td><td></td><td>x</td></tr>
<tr><td colspan="6">Threatened habitat types in this area include Agulhas muddy inner shelf (Critically Endangered), Agulhas hard inner shelf (Endangered) and Agulhas hard outer shelf, Agulhas sandy inner shelf and Agulhas gravel outer shelf (Vulnerable) (Sink et al. 2012). This area has been identified through systematic planning as containing habitat important for overexploited and threatened Linefish. This includes the</td></tr>
</table>

<table>
<tr><td rowspan="2">CBD EBSA Criteria
(Annex I to decision IX/20)</td><td rowspan="2">Description
(Annex I to decision IX/20)</td><td colspan="4">Ranking of criterion relevance
(please mark one column with an X)</td></tr>
<tr><td>Don’t Know</td><td>Low</td><td>Some</td><td>High</td></tr>
<tr><td colspan="6">endemic overexploited sparids such as red steenbras (Petrus rupestris) and 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). The overexploitation of linefish species is reported by Griffiths (2000).</td></tr>
<tr><td>Vulnerability, fragility, sensitivity, or slow recovery</td><td>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.</td><td></td><td></td><td>x</td><td></td></tr>
<tr><td colspan="6">High-profile deep reefs and hard grounds with stylasterine corals, black corals and gorgonians have been observed in this area through in-situ ROV surveys (Sink et al. 2010).</td></tr>
<tr><td>Biological productivity</td><td>Area containing species, populations or communities with comparatively higher natural biological productivity.</td><td></td><td></td><td>x</td><td></td></tr>
<tr><td colspan="6">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 cold ridge of 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).</td></tr>
<tr><td>Biological diversity</td><td>Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.</td><td></td><td></td><td>x</td><td></td></tr>
<tr><td colspan="6">High sparid and invertebrate biodiversity (core of the distribution of several endemic species). This area was selected through systematic planning because of the relatively higher habitat diversity and opportunities to meet multiple biodiversity targets in this area.</td></tr>
<tr><td>Naturalness</td><td>Area with a comparatively higher degree of naturalness as a result of the lack of or low level of human-induced disturbance or degradation.</td><td></td><td></td><td>x</td><td></td></tr>
<tr><td colspan="6">Only one pelagic habitat type (Ab2) within this area, which is in good condition, according to the National Biodiversity Assessment 2011 (Sink et al. 2012). Benthic condition ranges from poor to good (Sink et al. 2012), but some deep reefs are apparently untrawled and in good condition. The volcanic feature known as the Alphard Banks are in good condition (Sink et al. 2010).</td></tr>
</table>

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Maps and Figures

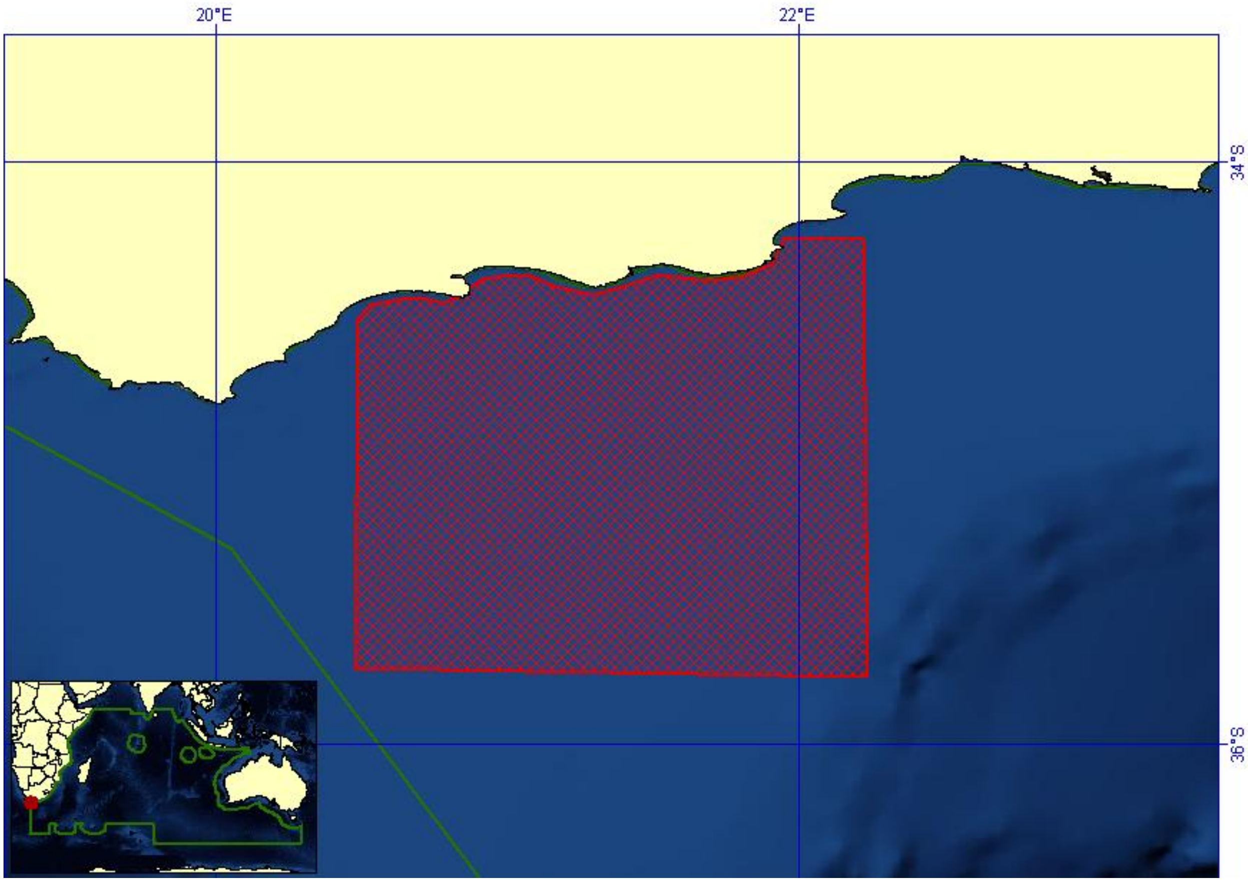

Figure 1. Map of area meeting EBSA criteria

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Area No. 2: Agulhas slope and seamounts

Abstract

The outer margin along the southern tip of the Agulhas Bank represents a dynamic offshore area with high productivity and high pelagic and benthic habitat heterogeneity. The Agulhas and Southern Benguela ecoregions meet at this point, and sporadic shelf-edge upwelling enhances the productivity along the outer margin. The area is recognized as a spawning area for sardine, anchovy, horse mackerel and hake, and this apex area of the Agulhas Bank is recognized as a critical area for retention of spawning products. Eddies in this area help recirculate water inshore and link important nursery areas with spawning habitat on the shelf edge. This area was identified as a priority area through a national spatial plan because of high habitat diversity. Further research and in situ surveys of the unexplored hard shelf edge and seamounts is recommended in this area

Introduction

This area includes the outer margin along the southern tip of the Agulhas Bank in South Africa and is a dynamic offshore area with high pelagic and benthic habitat heterogeneity. The area includes outer shelf, shelf edge, slope and seamount habitats and ranges between approximately 200 and 1800 m in depth. The Agulhas and Southern Benguela ecoregions (Sink *et al.* 2012) meet at this point, and sporadic shelf edge upwelling enhances the productivity along the outer margin (Lagabrielle *et al.* 2009). The area is recognized as a spawning area for sardine, anchovy, horse mackerel and hake, and this apex area of the Agulhas Bank is recognized as a critical area for retention of spawning products (Hutchings *et al.* 2002). Eddies in this area help recirculate water inshore and link important nursery areas with spawning habitat on the shelf edge. This area was identified as a priority area through a national plan to identify focus areas for offshore protection (Sink *et al.* 2011) because it has relatively high habitat diversity and can meet multiple benthic and pelagic habitat conservation targets in a small area.

Location

The apex area of the Agulhas Bank at the southern tip of the continental shelf edge off southern Africa bounded by approximately 35°S to 38°S and 21° to 23°E. The area is within the mainland EEZ of South Africa and is therefore within national jurisdiction. This area includes Shackleton and Mallory seamounts and includes the area referred to as “Southwest Indian Seamounts” in Sink *et al.* 2011.

Feature description of the proposed area

The area includes benthic and pelagic features, including shelf edge, slope and seamounts, and shelf-edge driven upwelling. Sink *et al.* 2011 provide details (note that parts of the proposed area are referred to as “Southwest Indian Seamounts” in that report).

Feature condition and future outlook of the proposed area

The shelf edge and seamounts have not been sampled, although in-situ research is recommended in this area.

CBD EBSA Criteria	**Description** (Annex I to decision IX/20)	**Ranking of criterion relevance** (please mark one column with an X)

(Annex I to decision IX/20)		**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**	
This area includes 2 of 4 known seamounts within the Davie Seamount cluster (Sink *et al.* 2011, 2012), and these seamounts are relatively isolated and are likely to host distinct communities.					
Special importance for life-history stages of species	Areas that are required for a population to survive and thrive.				**X**
This area is recognized as a spawning area for small pelagic fish (sardine, anchovy, horse mackerel) and hake (Hutchings *et al.* 2002, Sink *et al.* 2011). This apex area of the Agulhas Bank is recognized as a critical area for retention of spawning products. Eddies in this area help re-circulate water inshore and link important nursery areas with spawning habitat on the shelf edge. The shelf edge constitutes foraging area for offshore seabirds (Birdlife data, see references below).					
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**	
Threatened habitat types in this area include Agulhas hard outer shelf and shelf edge, Agulhas muddy outer shelf and Agulhas sandy shelf edge (Sink *et al.* 2012.). Critically endangered leatherback turtles have been reported in this area (Petersen *et al.* 2009a), and the shelf edge in this area is a feeding area for offshore seabirds (Petersen et al 2009b) One of the pelagic habitat types characterised by elevated productivity and frequent fronts (Lutjeharms *et al.* 2000, Lagabrielle 2009) due to shelf edge upwelling is also considered threatened (Sink *et al.* 2012).					
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**
This area includes hard shelf edge and seamounts (some of the hard grounds are untrawled). These are likely to support fragile long-lived biota. Video images of the shelf edge show cold-water corals, gorgonians and large sponges (Sink *et al.* 2011). Vulnerable biota that use this area include long-lived seabirds, turtles and sharks, and the area has been identified by analyses aimed at identifying priority areas for reducing by-catch in the large pelagic fishery (Sink *et al.* 2011.)					
Biological productivity	Area containing species, populations or communities with comparatively higher natural biological productivity.				**X**

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**
Higher productivity related to the eastern limit of the Benguela upwelling on the outer shelf (Pelagic habitat type Ab3) and very frequent SST and chlorophyll fronts (Lutjeharms *et al.* 2000, Lagabrielle 2009, Sink *et al.* 2011, 2012). Cool productive water is advected onto the shelf in this sheer zone through Agulhas Current–driven upwelling cells (Lutjeharms *et al.* 2000).					
Biological diversity	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.				**X**
This area has high pelagic and benthic habitat heterogeneity. Four pelagic habitat types (Ab3, Bc1,Cb3 and Cb4) and ten benthic habitats occur in this dynamic area, leading to its selection in a national systematic plan (Sink *et al.* 2011, 2012).					
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
Rough grounds and strong currents already offer some protection from pressures to this area (Sink *et al.* 2011, 2012). Relatively lower levels of disturbance occur in this area based on pressure data reported in the National Biodiversity Assessment 2011 (Sink *et al.* 2012). Most of the hard areas fall outside of the hake trawl footprint (Sink *et al.* 2011).					

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Maps and Figures

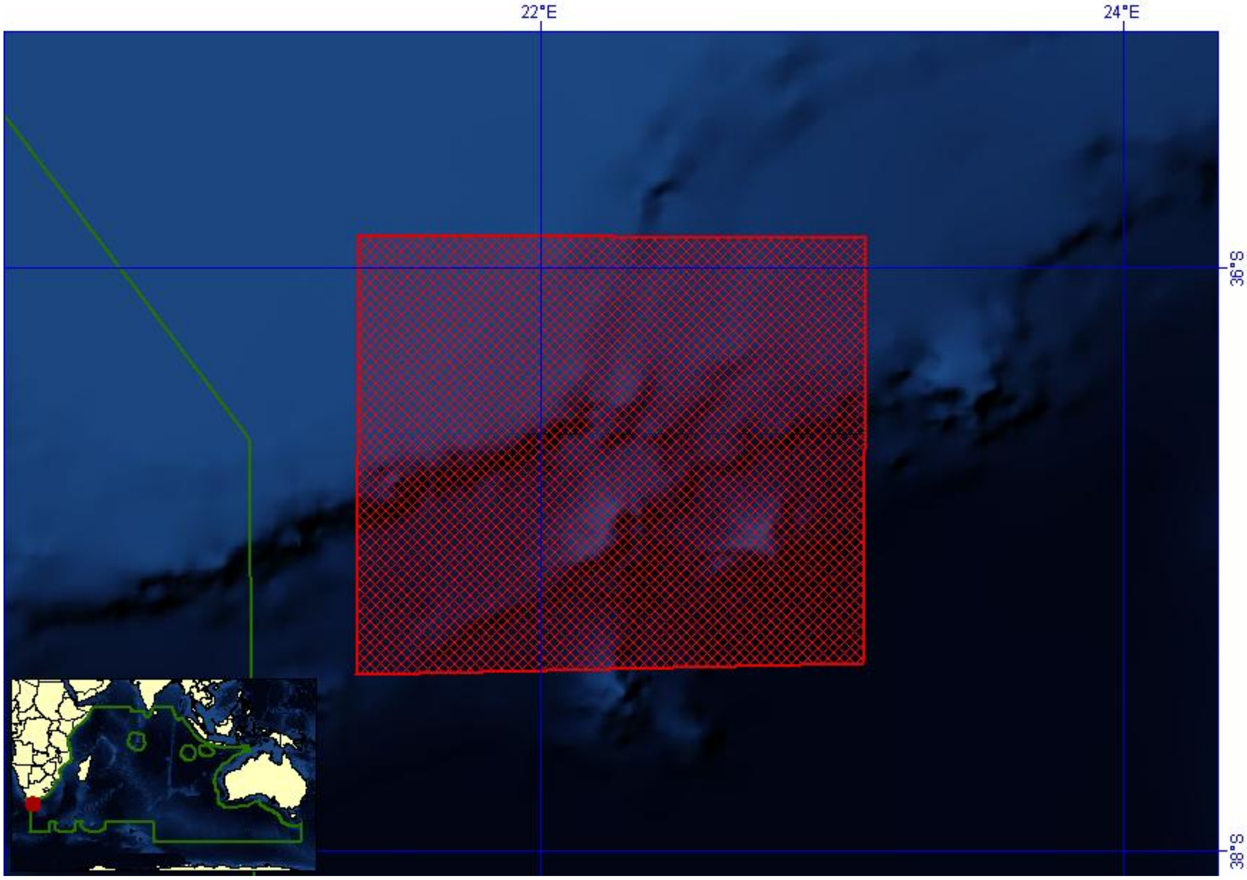

Figure 1. Map of the area meeting EBSA criteria

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Only processed and analysed information is included here, and the results from these analyses are publically available. Bird-tracking data used in this analysis is property of the dataowners. Any request to use the original tracking data will require permission; requests should be made to BirdLife International **(**science@birdlife.org**).**

Area No. 3: Offshore of Port Elizabeth

Abstract

This area includes some rare habitat types of limited spatial extent and is considered an important benthic and pelagic area that supports important ecological processes. Complex circulation occurs in this area where the Agulhas Current leaves the coast, following the shelf break. Cold-water eddies, intrusions of Agulhas water onto the shelf and large offshore meanders of the Agulhas Current occur at this location. Seabird (including the Endangered African penguin) breeding and foraging areas fall within the area, which also includes spawning areas, nursery areas and key transport pathways for demersal and pelagic fish. This area is also used by endangered leatherback turtles. Potential vulnerable habitats and species include submarine canyons, steep shelf edge, deep reefs, outer shelf and shelf edge gravels, and reef-building cold-water corals ranging in depth between 100 and 1000 m.

Introduction

This area, from the coastline to the upper slope off Port Elizabeth, including Algoa Bay, includes benthic and pelagic features and an offshore area of high habitat complexity. The depth range is from the shallow subtidal to 1000m. Benthic features include a large shelf intersecting canyon (Sink et al. 2011) and rare seabed habitat types in (Sink et al. 2012). Further details on habitats, processes and species are detailed in Sink et al. 2011. This area was identified as a priority area through a national plan to identify focus areas for offshore protection (Sink et al. 2011) because it has relatively high habitat diversity, can meet multiple benthic and pelagic habitat conservation targets in a small area and is an important area in the lifecycle of key fisheries and seabird species.

Location

This area extends from the coastline to the upper slope off Port Elizabeth within the EEZ of South Africa (Approximately 33°S to 35°S and 25°E - 27°E) and includes an area of complex circulation patterns where the Agulhas Current leaves the coast, following the shelf edge. The area is entirely within the national jurisdication of South Africa.

Feature description of the proposed area

The area includes benthic and pelagic features with details on habitats, processes and species provided by Sink *et al.* 2011.

Feature condition and future outlook of the proposed area

The South African National Biodiversity Assessment 2011 (Sink *et al.* 2012) indicated declining conditions overall in this area (based on pressure data and an ecosystem-pressure matrix) with conditions ranging from fair to poor across this broad area. Key pressures include commercial demersal trawl and longline fisheries, a midwater trawl fishery, linefishing, trap fisheries for rock lobster, shark fisheries and mining activities.

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** (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**	
Rare habitat types in this region include outer shelf mixed sediments and Agulhas canyon (Sink *et al.* 2012). This site includes a large canyon that intersects with the shelf (Sink *et al.* 2011).					
Special importance for life-history stages of species	Areas that are required for a population to survive and thrive.				**x**
This area includes foraging areas for African penguins and Cape gannets (Sink *et al.* 2011). BirdLife International data also indicates importance for damara terns, kelp gulls and roseate terns. Species that have shown spawning activity in this area include kingklip, squid, sparids and hake (Hutchings *et al.* 2002, Sink *et al.* 2011). This is considered an area of crucial importance for the entry of eggs and larvae spawned upstream to enter the Agulhas Bank nursery area (Hutchings *et al.* 2002).					
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**
This area includes areas important for the survival of several IUCN global Red-listed species, including the African penguin Spheniscus demersus (Endangered on the IUCN global redlist) and the Cape Gannet Morus capensis (Vulnerable on the IUCN global redlist). This area is also an area of use by leatherback turtles (listed as Critically Endangered on the IUCN global redlist) within the 50% of the utilisation density polygons prepared on the available tagging data (Petersen et al. 2009). Threatened habitat types include Agulhas inshore reef, Agulhas mixed sediment outer shelf, Agulhas muddy inner shelf, Agulhas canyon (all reported as critically endangered), Agulhas hard inner shelf (endangered) and Agulhas sandy inner shelf, Agulhas hard outer shelf, Agulhas hard shelf edge, Agulhas sandy shelf edge, Agulhas gravel outer shelf (vulnerable) (Sink et al. 2012).					
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**	
This area includes submarine canyons, steep shelf edge, deep reefs and outer shelf and shelf edge gravels. These habitats may support fragile habitat-forming species. Cold-water corals (*Goniocorella dumosa, Solenosmilia variabilis)* have been recorded in the area (Sink *et al.* 2011) and are in the Iziko South African museum invertebrate collection. In-situ surveys have not been undertaken in this area, and further research is needed to provide more information on habitat sensitivity.					

<table>
<tr><th rowspan="2">CBD EBSA Criteria
(Annex I to decision IX/20)</th><th rowspan="2">Description
(Annex I to decision IX/20)</th><th colspan="4">Ranking of criterion relevance
(please mark one column with an X)</th></tr>
<tr><th>Don’t Know</th><th>Low</th><th>Some</th><th>High</th></tr>
<tr><td>Biological productivity</td><td>Area containing species, populations or communities with comparatively higher natural biological productivity.</td><td></td><td></td><td></td><td>x</td></tr>
<tr><td colspan="6">This area has medium to high productivity and very high variability in productivity, and chlorophyll A concentration associated with frequent SST and chlorophyll fronts associated with the steep outer shelf (Lagabrielle 2009, Sink et al. 2011).</td></tr>
<tr><td>Biological diversity</td><td>Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.</td><td></td><td></td><td></td><td>x</td></tr>
<tr><td colspan="6">Four pelagic habitat types and 16 benthic habitat types lead to high habitat heterogeneity in this area. (Agulhas island, Agulhas mixed sediment inner and outer shelf, Agulhas sandy inner shelf, Agulhas hard inner and outer shelf, Agulhas sandy outer shelf, Agulhas canyon, Agulhas gravel outer shelf, Agulhas gravel shelf edge, Agulhas muddy inner and outer shelf, Southwest Indian upper bathyal and lower bathyal) (Sink et al. 2012).</td></tr>
<tr><td>Naturalness</td><td>Area with a comparatively higher degree of naturalness as a result of the lack of or low level of human-induced disturbance or degradation.</td><td></td><td>x</td><td></td><td></td></tr>
<tr><td colspan="6">Although some areas are assessed as in poor condition (based on pressure data, see South Africa’s National Biodiversity Assessment 2011, Sink et al. 2012), there are many examples of habitat types in good condition and include examples of features that may support fragile and vulnerable habitat forming species (Sink et al. 2012).</td></tr>
</table>

References

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Maps and Figures

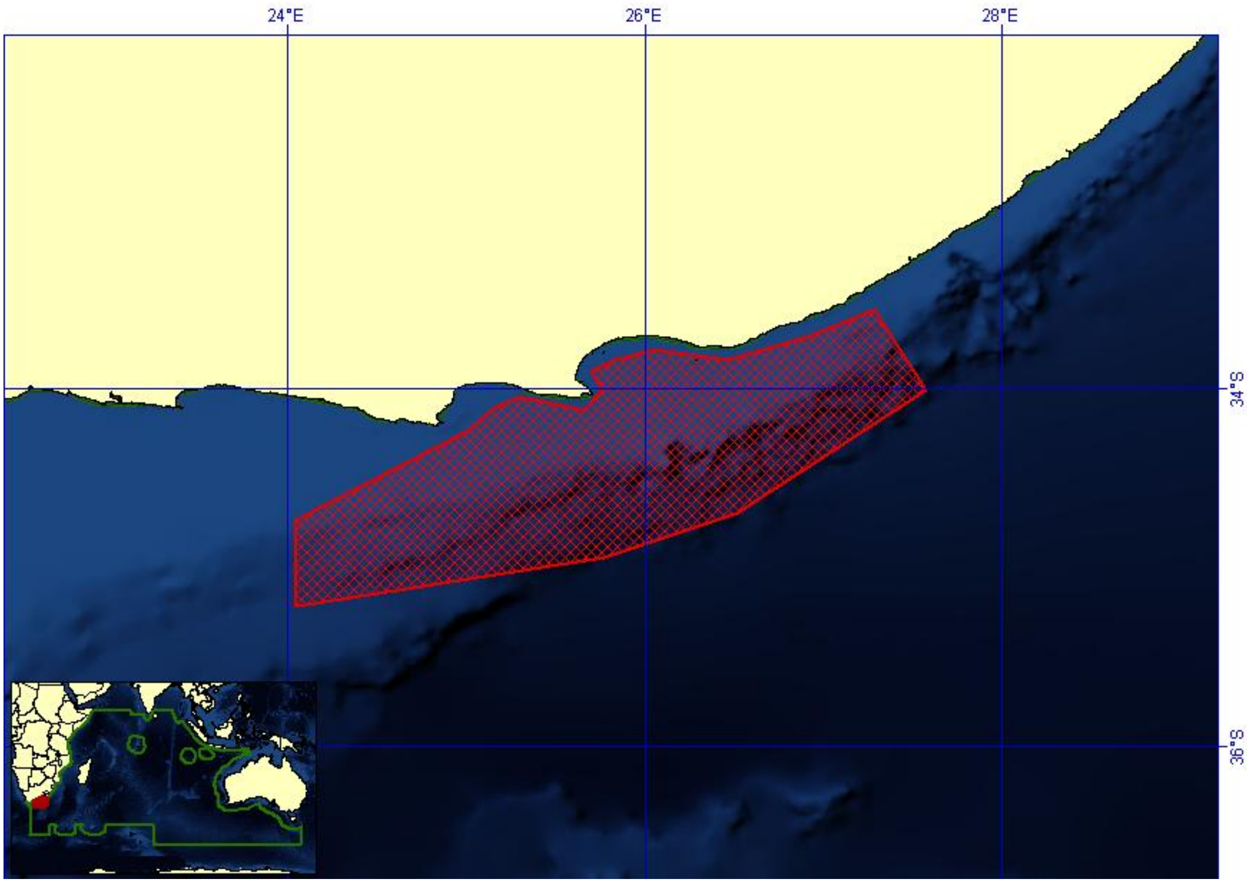

Figure 1. Map of area meeting EBSA criteria

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Area No. 4: Protea banks and sardine route

Abstract

This area includes a key component of the migration path for several fish (known as the sardine run) and an offshore area of high habitat complexity. Benthic features include a unique deep-reef system known as Protea Banks, steep shelf edge and slope, and four submarine canyons. The sardine run is a temporary feature associated with foraging top predators, including seabirds, mammals, sharks and gamefish. Protea Banks is an aggregating area with spawning of sciaenids and sparids reported. Some of these species are in decline and are considered threatened. This area has moderate productivity, and the sardine run represents an important ecological process that facilitates the transfer of nutrients from the more productive Agulhas Bank into the more oligotrophic environment further north.

Introduction

This area includes a key component of the migration path for several fish (known as the sardine run) and an offshore area of high habitat complexity. Benthic features include a unique deep reef system known as Protea Banks, steep shelf edge and slope. Protea Banks comprises a relatively shallow “seamount” that drops to extensive rocky flats that extend towards the shelf edge (full extent uncertain). It constitutes a site of fish spawning aggregations and is home to an abundance of soft corals, algae and molluscs, many of which are endemic. The area includes benthic and pelagic features with further details on habitats, processes and species detailed in Mann 2000, Freon *et al.* 2010, Sink *et al.* 2011, Harris *et al.* 2011 and Ezemvelo KZN Wildlife 2012 (note that this area falls within the area 20 site of the latter report). The sardine run is a temporary feature usually associated with foraging top predators, including seabirds, mammals (O’Donoghue *et al.* 2010a, 2010b), sharks and gamefish (Dudley and Cliff 2010, Fennessy *et al.* 2010).

Location

This area falls within the national jurisdiction of South Africa, between the coastal towns of Port Edward and Pennington on the south coast of the province of KwaZulu-Natal, and extends from the coastline to the upper bathyal. This includes latitudes of approximately 30°S to 32°S and longitudes of approximately 30°E to 31°E.

Feature description of the proposed area

This area includes benthic and pelagic features, with details on habitats, processes and species in Mann 2000, Freon *et al.* 2010, Sink *et al.* 2011, Harris *et al.* 2011 and Ezemvelo KZN Wildlife 2012 (note that this area falls within the area 20 site of the latter report). The area includes part of a key migration pathway that is an important ecological process believed to play a role in the transfer of productivity from the productive Agulhas bank into the less productive area in southern KwaZulu-Natal. Some research has been conducted on the sardine migration (see Freon *et al.* 2010, Van der Lingen *et al.* 2010) but the heterogeneous benthic habitats in deep water are poorly studied. Key habitats include a unique deep-reef feature, four submarine canyons (with seven reef-building cold-water coral records in the national invertebrate museum collection), hard shelf edge and unconsolidated shelf and shelf edge sediments. There are four submarine canyons that incise the shelf in this area and seven museum records representing three different species of framework-building corals. In situ research is needed in the deeper areas of this area meeting EBSA criteria.

Feature condition and future outlook of the proposed area

South Africa’s National Biodiversity Assessment 2011 (Sink *et al.* 2012) indicated declining conditions overall in this area (based on pressure data and an ecosystem-pressure matrix), with conditions ranging from fair to poor across this broad area. Fish species in the area include threatened or depleted species.

There is planned research in the Protea Banks area through the African Coelacanth Ecosystem Program Phase III.

Assessment of the area against CBD EBSA Criteria

<table>
<tr><td rowspan="2">CBD EBSA Criteria
(Annex I to decision IX/20)</td><td rowspan="2">Description
(Annex I to decision IX/20)</td><td colspan="4">Ranking of criterion relevance
(please mark one column with an X)</td></tr>
<tr><td>Don't Know</td><td>Low</td><td>Medium</td><td>High</td></tr>
<tr><td>Uniqueness or rarity</td><td>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.</td><td></td><td></td><td></td><td>X</td></tr>
<tr><td colspan="6">This area includes two very unique features: a large component of the migratory route of a migratory population of sardines and a unique deep reef feature that hosts species known only from this location. It is noted that this could be perceived as uniqueness, as deep reefs are poorly studied in this region, but no similar bathymetric features have been noted in this depth range in the province. (Sink et al. 2011). The migratory route component is a major component of the migration path for several species and is part of a globally unique phenomenon referred to as the "sardine run" (Freon et al. 2010). The term "sardine run" is part of the cultural heritage of the South African nation and refers to a natural phenomenon that involves the coastal, alongshore movement during early austral winter of a small and variable fraction of the South African population of sardine (Sardinops sagax) from the eastern Agulhas Bank to the KwaZulu-Natal (KZN) coast. The sardine run is associated with foraging top predators such as seabirds, mammals (O'Donoghue et al. 2010a, 2010b), sharks and gamefish (Dudley and Cliff 2010, Fennessy et al. 2010) that facilitate its visual detection.</td></tr>
<tr><td>Special importance for life-history stages of species</td><td>Areas that are required for a population to survive and thrive.</td><td></td><td></td><td></td><td>X</td></tr>
<tr><td colspan="6">This area includes the Protea Banks, a known spawning aggregation site for several species (Mann 2000) and an area that is part of an important migration path for several species, most notably the "Natal sardine run". A genetically distinct portion of the South African population of sardine Sardinops sagax migrates through this area as part of a well known phenomenon that is less well understood from a process perspective (Van der Lingen et al. 2010). The sardines are followed by large numbers of sharks, cetaceans and seabirds. Key species that are included in this migration event include Geelbek (Atractoscion aequidens) and Garrick (Lichia amia), and the area is also important for the endemic and threatened sparid Seventy-four (Polysteganus undulosus) (Mann et al. 2000, Fennessey et al. 2010). This area is considered a nursing ground for the sparid Chrysoblephus puniceus (Ezemvelo KZN Wildlife 2012). BirdLife data indicates that this area is important for foraging white chinned petrels, and the sardine run is a key ecological event providing forage fish for Cape gannets (Freon et al. 2010, O'Donoghue et al. 2010)</td></tr>
<tr><td>Importance for threatened, endangered or declining species and/or habitats</td><td>Area containing habitat for the survival and recovery of endangered, threatened, declining species or area with significant assemblages of such species.</td><td></td><td></td><td>X</td><td></td></tr>
<tr><td colspan="6">This area has some importance for overexploited sparids and sciaenids (Mann 2000) and vulnerable (IUCN global redlist) seabirds. Overexploited sparid and scienids include Chrysoblephus puniceus (Mann 2000). Cape gannets and white chinned petrels utilise this area (Freon et al. 2010, Birdlife tracking data).</td></tr>
</table>

Threatened habitat types within this area include endangered Natal inshore reef and some vulnerable habitats, including Natal sandy shelf, Natal canyon and Natal shelf reef (Sink *et al.* 2012).					
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	
Explanation for ranking This area includes submarine canyons, an area of steep shelf edge and a unique deep-reef system. These habitats may support fragile habitat-forming species. Seven records of two species of reef-building cold-water corals (*Goniocorella dumosa, Solenosmilia variabilis*) have been recorded in the area (Sink et al. 2011) and are in the Iziko South African museum invertebrate collection. In-situ surveys have not been undertaken in this area, and further research is needed to provide more information on habitat sensitivity.					
Biological productivity	Area containing species, populations or communities with comparatively higher natural biological productivity.			X	
This steep area has a relatively high frequency of chlorophyll and SST fronts (Lagabrielle 2009, Sink *et al.* 2012)					
Biological diversity	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.			X	
Sink *et al.* (2011) show the high benthic habitat diversity in this area, with many habitat types in a small area. The dynamic pelagic environment and the sardine run also contribute to the high diversity in the pelagic ecosystems (Freon *et al.* 2010, Van der Lingen *et al.* 2010).					
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 pelagic habitat is considered in good condition with benthic habitat types ranging from poor to good (Snk *et al.* 2012). There is no pelagic long-lining inshore of 20 nm in this area (Sink *et al.* 2011)					

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www.seabirdtracking.org – tracking contributors who provided data presented at this workshop are: Maria Ana Dias, Paulo Catry, Teresa Catry, Robert Crawford, Richard Cuthbert, Karine Delord, Jacob Gonzalez-Solis, Jano Hennicke, Matthieu Le Corre, Deon Nel, Malcolm Nicoll, Jose Pedro Granadeiro, Samantha Petersen, Richard Phillips, Patrick Pinet, Jaime Ramos, Jean-Baptiste Thiebot, Ross Wanless, Henri Weimerskirch, Vikash Tatayah

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Maps and Figures

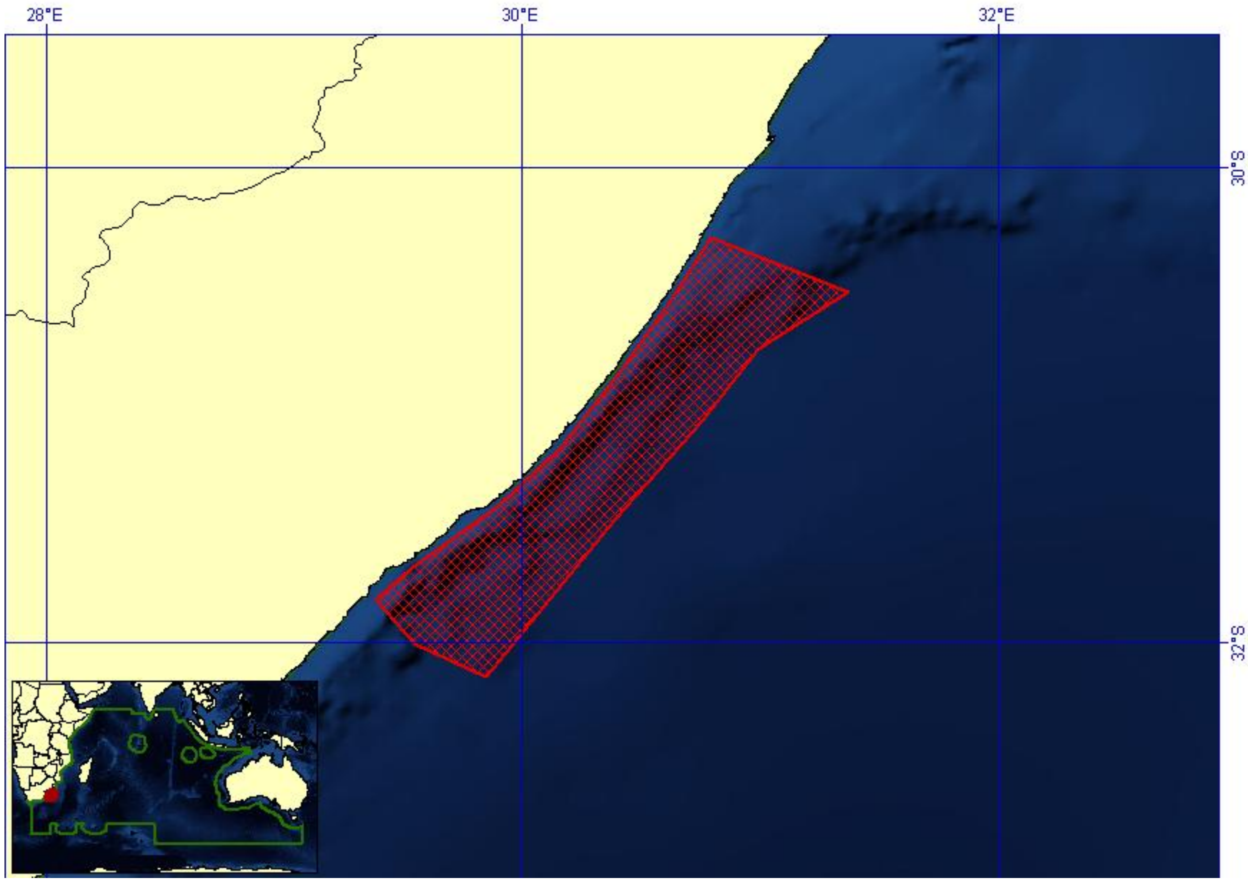

Figure 1. Map of area meeting EBSA criteria

Area No. 5: Natal Bight

Abstract

The Natal Bight is important for numerous ecological processes, including terrestrial-marine connectivity, larval retention, recruitment and provision of nursery and foraging areas. The area incorporates rare habitat types and supports some species known to exist in few localities. Cool productive water is advected onto the shelf through Agulhas-driven upwelling cells, and continental runoff from the large Thukela River is important for the maintenance of mud and other unconsolidated sediment habitats. The turbid, nutrient-rich conditions are important for life-history phases (breeding, nursery and feeding) for crustaceans, demersal fish, migratory fish, turtles and sharks, some of which are threatened. Potential vulnerable marine ecosystems and species include submarine canyons, cold-water corals and slow-growing sparids. Endangered habitat types occur in this area, with the remaining portions of such habitats in good condition.

Introduction

The Natal Bight is important for numerous ecological processes, including terrestrial-marine connectivity, larval retention, recruitment and provision of nursery and foraging areas. The area incorporates rare habitat types and supports some species known to exist in few localities. Cool productive water is advected onto the shelf through Agulhas-driven upwelling cells, and continental runoff from the large Thukela River is important for the maintenance of mud and other unconsolidated sediment habitats. The turbid, nutrient-rich conditions are important for life-history phases (breeding, nursery and feeding) for crustaceans, demersal fish, migratory fish, turtles and sharks. Some of these species are threatened (turtles, scalloped hammerhead) or overexploited (sparids and sciaenids), and the deep reef and palaeo-shoreline habitats are considered important for the recovery of overexploited deep-reef fish species. Other potential vulnerable marine ecosystems and species include submarine canyons and cold-water corals. Endangered habitat types occur in this area with the remaining portions of such habitats in good condition.The Tugela Banks have been identified as a priority area by two different systematic biodiversity plans, a national plan to identify focus areas for offshore protection (Sink *et al.* 2011) and a fine-scale provincial plan for the province of KwaZulu-Natal (Harris *et al.* 2011).

Location: The Natal Bight area is off the east coast of South Africa and includes the Tugela Banks and the Natal Bight nursery area, extending from Port Durnford to the Mgeni River offshore to 2000 m, and includes the shelf edge and upper bathyal zone.

Note: This includes both the Tugela Banks focus area (Sink *et al.* 2011) and includes areas 3 and 6 from Sheffield Beach to Richards Bay offshore to 2000m (Harris *et al.* 2011).

Feature description of the proposed area

The area is characterized by extensive alluvial deposits forming banks, primarily off the Thukela River but also off the Mgeni River to a lesser degree (see Sink *et al.* 2011). The seafloor is thus sedimentary in nature but varies in the degree to which it is consolidated. The banks are productive in terms of benthic and deposit feeeders, an attribute typical of such features.

Feature condition and future outlook of the proposed area

The National Biodiversity Assessment 2011 (Sink *et al.* 2012) indicated declining condition overall in this area (based on pressure data and an ecosystem-pressure matrix) with conditions ranging from fair to poor across the overall area. Key pressures include the crustacean trawl fishery, a line fishery targeting sparids and sciaenids and emerging mining and petroleum applications. A submarine cable has recently been laid in the area. Research on a number of the aforementioned aspects has been undertaken (but not published) by the Oceanographic Research Institute in Durban. There is planned research in the area through the African Coelacanth Ecosystem Program Phase III.

Assessment of the area against CBD EBSA Criteria

<table>
<tr><td rowspan="2">CBD EBSA Criteria
(Annex I to decision IX/20)</td><td rowspan="2">Description
(Annex I to decision IX/20)</td><td colspan="4">Ranking of criterion relevance
(please mark one column with an X)</td></tr>
<tr><td>Don't Know</td><td>Low</td><td>Medi um</td><td>Hig h</td></tr>
<tr><td>Uniqueness or rarity</td><td>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.</td><td></td><td></td><td>X</td><td></td></tr>
<tr><td colspan="6">Endemic and rare species: Spotted legskate -Anacanthobatis marmoratus, Porcupine stingray - Urogymnus asperrimus. Bearded Goby – Taenioides jacksoni also endemic. (Haupt 2010, Livingston et al. 2012. Rare gravel and mud habitat types, as well as a submarine canyon (Natal) of limited extent (Sink et al. 2012).</td></tr>
<tr><td>Special importance for life-history stages of species</td><td>Areas that are required for a population to survive and thrive.</td><td></td><td></td><td></td><td>X</td></tr>
<tr><td colspan="6">Migration corridor for Geelbek – Atractoscion aequidens, White stumpnose – Rhabdosargus holubi, Shad- Pomatomussaltatrix, Dusky kob - Argynosomus japonicas (VU), Garrick – Lichia amia.
Spawning and migration route for sardine – Sardinops sagax.
Nursery area: Scalloped hammerhead – Sphyrna lewini (EN), Slinger – Chrysoblephus puniceus, Black musselcracker – Cymatoceps nasutus.
Spawning area for Bull shark – Carcharhinus leucas and Sand tiger shark – Carcharias taurus, Black musselcracker- Cymatoceps nasutus, King mackerel –Scomber japonicus.
Feeding area: Leatherback turtle – Dermochelys coriacea
(Haupt 2010, Harris et al. 2011, Vogt 2011, Sink et al. 2011, Ezemvelo KZN Wildlife 2012)</td></tr>
<tr><td>Importance for threatened, endangered or declining species and/or habitats</td><td>Area containing habitat for the survival and recovery of endangered, threatened, declining species or area with significant assemblages of such species.</td><td></td><td></td><td></td><td>X</td></tr>
<tr><td colspan="6">IUCN listed species:
CR: Seventy-four Polysteganus undulosus, leatherback turtle – Dermochelys coriacea
EN: Scalloped hammerhead –Sphyrna lewini, great hammerhead - S. mokarran, dageraad- Chrysoblephus christiceps, red stumpnose – Chrysoblephus gibbiceps
VU: Flapnose houndshark – Scylliogaleus quecketti, porcupine stingray-Urogymnus asperrimus, dusky kob - Argynosomus japonicas, bearded goby – Taenioides jacksoni
Endemic sparids of conservation concern: Polysteganus coeruleopunctatus
Threatened habitat types:
EN: Natal muddy shelf, Natal inshore reef
VU: Natal Shelf Reef, Natal sandy shelf, Natal canyon, Pelagic habitat Cb3.
(Haupt 2010, Sink et al. 2011)</td></tr>
<tr><td>Vulnerability, fragility, sensitivity, or slow recovery</td><td>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.</td><td></td><td></td><td>X</td><td></td></tr>
<tr><td colspan="6">Submarine canyons, cold-water corals, shelf edge and deep reefs. (Sink et al. 2011, 2012)</td></tr>
<tr><td>Biological productivity</td><td>Area containing species, populations or</td><td></td><td></td><td></td><td>X</td></tr>
</table>

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**	**Medium**	**High**
	communities with comparatively higher natural biological productivity.				
Indian Ocean water with high but variable chlorophyll associated with very frequent SST and chlorophyll fronts (Lagabrielle 2009). This habitat (pelagic habitat Cb3) is characterised by cool productive water that has been advected onto the shelf in this sheer-zone through Agulhas Current-driven upwelling cells (Lutjeharms*et al.* 2000, Lutjeharms*et al.* 2000).					
Biological diversity	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.		**X**		
Fairly high habitat heterogeneity as indicated by selection in two systematic conservation plans (Ezemvelo KZN Wildlife 2012, Sink *et al.* 2011).					
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		
Portions of reef, mud and gravel habitats in good condition (Sink *et al.* 2012).					

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					
This area helps meet by-catch management targets for the crustacean trawl fishery. By-catch of scalloped hammerhead sharks *Sphyrna lewini* (EN) of concern in this area (Sink *et al.* 2011, 2012)					

References

Ezemvelo KZN Wildlife. 2012. *Focus areas for additional marine biodiversity protection in KwaZulu-Natal, South Africa.* Unpublished Report - Jan 2012. Scientific Services, Ezemvelo KZN Wildlife: Durban. Pp 62.

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Maps and Figures

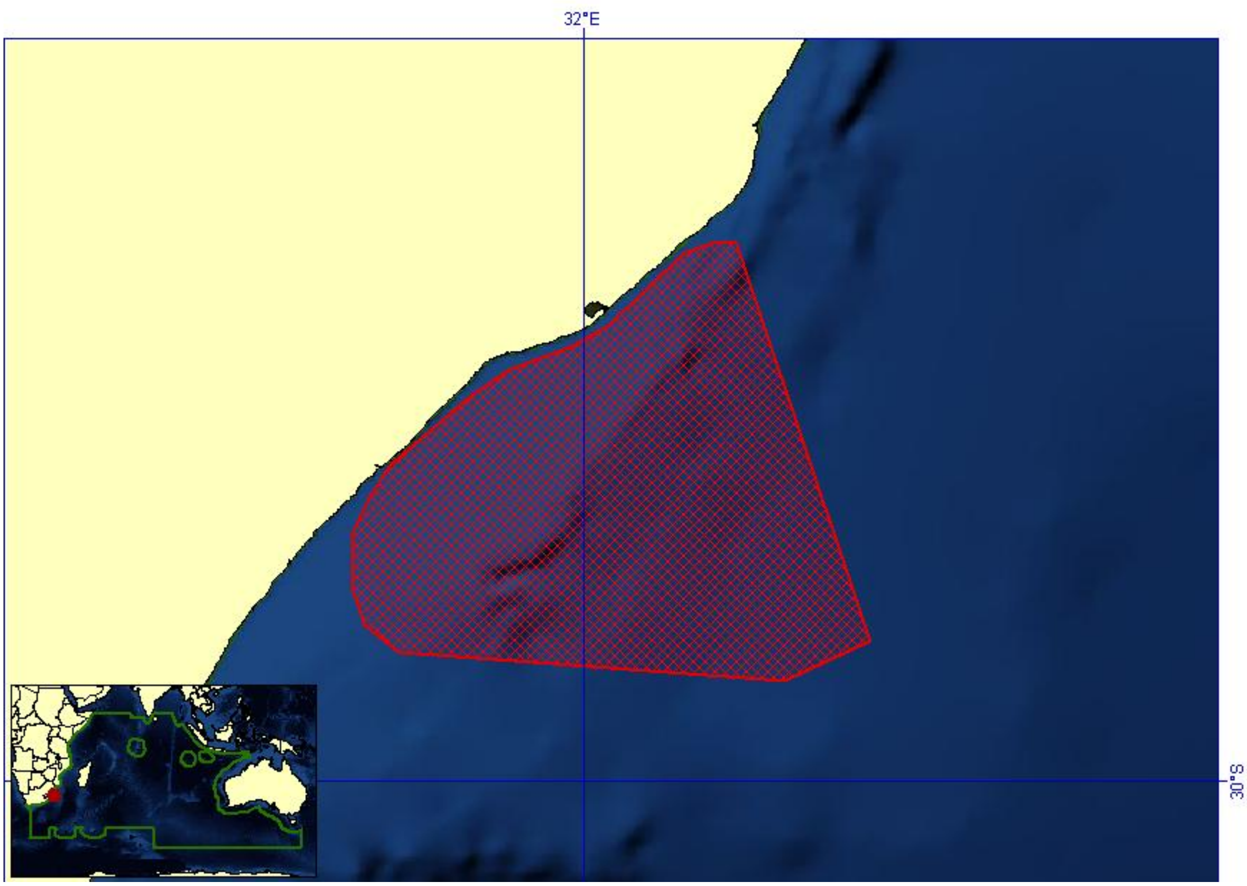

Figure 1. Map of area meeting EBSA criteria

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Area No. 6: Incomati River to Ponta do Ouro (Southern Mozambique)

Abstract

This area meeting EBSA criteria covers Maputo Bay from the Incomati River mouth, the Lagoa bight, the regions of Baixo Danae and the whole coastline and high seas of the southern tip from Inhaca island to Ponta Do Ouro (border between Mozambique and South Africa in KwaZulu/Natal). Maputo Bay is a rather large shallow bay with five river inlets. The bay is diverse, harbouring major critical habitats (extensive mangroves, extensive seagrass beds and the largest, southernmost coral reefs in sub-equatorial Africa, in addition to sandy and rocky beaches, rough and gentle coastlines, etc). For such a small area, it hosts extremely high biodiversity in various taxa. Maputo Bay is also an important fishing ground—the second most important in Mozambique, especially for shrimp. The bay is also home to several species of special concern, such as dugongs, dolphins, three species of turtles (the leatherback turtle, *Dermochelys coriacea*, the loggerhead turtle *Caretta caretta* and the green turtle *Chelonia mydas*), sharks, whales, seahorses, endangered bivalves, and the vulnerable seagrass *Zostera capensis.* Inhaca Island holds 33% of all bird species occurring in Southern Africa. The bay has the marine and terrestrial reserves of Inhaca Island and Machangulo peninsula but faces challenges associated with the Maputo port and industries in the western bay (Maputo City), mangrove deforestation, overfishing mainly in the near shore as well as impacts from extreme events such as floods and sedimentation.

Introduction

Maputo Bay has an area of 1280 km^2 (Guissamulo 1993) and a depth variation of 8-20 m (Ministério da Defesa Nacional 1986; Nhapulo 2000), most of it being less than 10 m deep (Nhapulo 2000). The bay has a muddy substrate, especially in its western and southern areas; other areas tend to be sandy. Rocky substrates in the intertidal area are prominent on the eastern side of Inhaca Island, especially in the northern end. Water temperature around Inhaca Island varies within the range of 20 to 39°C and the salinity within 30 and 39 ppt, with a mean of 35 ppt. Tides vary from 0.3 to 3.8 m and are semi-diurnal with two low and two high tides per day. Other meteorological data for Inhaca Island (western Maputo Bay) from 1989 to 1998 include: extreme total monthly precipitation 5.4-259.3 mm in rainy seasons (October-March) and 0.0-121.2 mm in dry seasons (April-September); mean extreme monthly air temperature 18.0-31.6ºC in rainy and 14.8-30.8ºC in dry seasons; nebulosity (cloud coverage) had an overall median of 5 in rainy and 3 in dry seasons (scale varying from 0=minimum to 10=maximum nebulosity). Predominant winds were from SW at Inhaca and from NE at parts of Maputo Bay and wind speed in the Maputo Bay/Maputo area was 1.0-3.7 m s^{-1} in rainy and 1.0-3.4 m s^{-1} in dry seasons (data provided by National Institute for Meteorology, Mozambique). Data on nutrients in the water column are scarce, but Paula *et al.* (1998) found neglible amounts of nitrate in shallow water off the west coast of Inhaca between May and December, but this increased to around 2.5 µmol N l^{-1} between January and April.

Maputo Bight extends from the bay northwards, therefore this area covers only the southern part of this bight that replenishes the bay. Baixo Danae is the pinnacle area just northeast of the bay, and the region of Inhaca island to Ponta the Ouro covers the southernmost coastline of Mozambique to the border with South Africa.

Location

Incomati Bay

Feature description of the proposed area

Mangroves border the banks of the three main estuaries/estuarine systems that open to Maputo Bay and form a continuous belt along its southeastern banks, from the mouth of the Maputo River to Inhaca Island (Figure 1). Mangroves cover an area of about 176 km^2 around Maputo Bay (Table 1). In most of the estuaries surrounding the bay, mangrove habitats extend some 15 to 20 km upstream. The only exception is the Tembe River, where mangroves extend some 50 km upstream.

Seagrass beds occur in over 38 km^2 of the bay, mainly in the shallow inlets bordering Inhaca Island (Banco do Sangala at Inhaca northern bay, between Inhaca and Portuguese Island and *Saco da Inhaca*) and the shallows located just southwest of Inhaca. A smaller area is located in the northwest margin of the bay between the mouths of the Incomati and the Espírito-Santo estuaries (northeast Maputo city). The western and southern Maputo Bay is less suitable for seagrasses given the existence of a fine sediment plume produced by the discharge of several rivers (mostly Maputo, Matola, Tembe, Umbeluzi) also associated with extensive mangrove swamps in the shallow southern shores.

Rocky habitats are scarce throughout the bay, covering an area of about 40 ha, and are mainly made up of sandstone outcrops that occur mostly around Inhaca Island (see Figure 2 for detail). The areas of consolidated and older sandstones are located at Ponta Mazónduè (Inhaca northeast end), cabo Santa Maria (northern tip of the Machangulo peninsula) and Ponta Torres, whereas rather softer sandstones are common in several spots around Inhaca island.

Coral reefs are even more limited in range, occurring in only three known locations:, one south of Portinho da Inhaca, at Barreira Vermelha;one in the vicinity of Ponta Torres (together totaling an area of 12 ha(; and a third at the bay entrance at Baixo Danae. The once exuberant coral reefs of Portuguese Island vanished during the end of last decade of the 20^{th} century due to dramatic sand accretion. The three sites contain 71 species of corals, most of which, especially at Inhaca, are scleractinian (reef-building) (Schleyer and Pereira, in press). The fauna of Maputo Bay, especially that of Inhaca Island, is rich and diverse, highlighting its importance both for biodiversity conservation and provision of natural resouces for local communities. Around 26 classes of marine invertebrates have been identified at Inhaca, including 232 families and 965 species. Around 490 fish species are present (Macnae and Kalk, 1969). Eighteen species of echinoderms associated with Indo-pacific coral reefs have been recorded. Twenty-five reef-fish families were recorded for Inhaca Island. Most of the fish species around Inhaca have part of their life cycle associated with coral communities, and the islanders depend heavily on this resource. Therefore the coral communities are important for the local community.

At least five marine mammal species occur at Inhaca, including the endagered dugong, two species of dolphins and two species of whales. Five marine turtle species (Turnland 1999) occur at Inhaca, two of which (the loggerheard *Caretta caretta* and leatherback *Dermochelys coriacea*) breed on the eastern shore. The protected turtle-breeding grounds on Inhaca are particularly important.

In the intertidal zone, six species of seagrass and eight species of seaweed have been recorded. They shelter numerous animals, such as worms, sea cucumbers, molluscs, crustaceans, shrimps and fish.

Inhaca provides permanent or transitory habitat for 299 bird species, representing 33% of all birds occuring in Southern Africa, and including shorebirds, birds of marshy areas and forest birds. Some birds are Palearctic migrants, a few are intra African migrants, and some are residents (De Boer and Bento, 1999). The Inhaca intertidal zone supports thousands of shorebirds. Direct counts from 1995, 1996 and 1997 recorded 6,566, 5,100 and 8,514 shorebirds respectively. This shows the importance of the island as the most southern flyway for migratory birds on the east coast of Africa. Eight bird species recorded on Inhaca are listed as threatened species (De Boer and Bento, 1999).

A small population of dugong is found in sheltered areas on the Inhaca coast in shallow waters close to the coastline, where they feed on several species of seagrass in the bays and lagoons (Stuart and Stuart, 1995, Fernando et al., in press).

The island has wide intertidal areas and nearby sandbanks with a large diversity of fish and marine invertebrate fauna. At least one reef is in good condition, despite sedimentation processes arising from erosion. For its size, the island holds several diverse marine habitats, which are mostly represented along large and separated stretches of coastline. Its location in a subtropical region makes it of significant scientific interest. Corals and mangroves occur in between transitional tropical and temperate zones. That fact is determinative for the differences among coral and mangrove communities occurring in the north and centre of the country. The coral reefs at Inhaca Island are not the most southerly on the east coast of southern Africa as mentioned by Macnae and Kalk, 1969), but they are the most accessible from the shore. Three small fringing reefs occur along the coasts of Inhaca Island in shallow water.

Sandy beaches border the coastlines northwards and southwards of the entrance of the bay, as well as the southwest margin of the bay between the mouths of the Espírito-Santo and Maputo estuaries. Sandy beaches are also common around the western and eastern side of Inhaca and Portuguese islands, as well as between this island and the northeast side point on Inhaca (Ponta Mazónduè), where increasing accretion led to the formation of a small island known as Sangala (considered part of Banco Sangala, Inhaca northern bay). The sand accretion on the eastern side of Inhaca Island, associated with the prevailing inland winds, gave rise to sand dunes reaching an altitude of around 80 metres, the tallest on Inhaca's Indian Ocean side. The sandy beaches on the eastern side of the island are nesting grounds for leatherback and loggerhead turtles. These habitats are considered to be of global conservation significance.

Maputo Bay produces some 400 tonnes of shrimp (4% of the total catch of Mozambique) and 2000 tonnes of fish (Prof. Macia, Pers. com.).

Feature condition and future outlook of the proposed area

Maputo Bay is rather well kept on its western side (Inhaca and Portuguese islands and around Machangulo Peninsula and in some estuarires, namely Maputo River and at Incomati and surrounding islands of the Incomati estuary (northwestern end). The western end of Maputo Bay has been more transformed due to the development of Maputo City and its main activities, such as its port and its industries. The main threats to Maputo Bay include:

- Sedimentation from floods,
- Inhaca and Portuguese islands are already considered "zones of special vigilance"
- Endangered species are present, especially dugongs and the seagrass *Zostera capensis*
- There is a good state of knowledge about Maputo Bay (this is the most documented studies area in Mozambique)
- The area has high species richness and diverse ecosystems

Assessment of the area against CBD EBSA Criteria

<table>
<tr><td rowspan="2">CBD EBSA Criteria
(Annex I to decision IX/20)</td><td rowspan="2">Description
(Annex I to decision IX/20)</td><td colspan="4">Ranking of criterion relevance
(please mark one column with an X)</td></tr>
<tr><td>Don’t Know</td><td>Low</td><td>Some</td><td>High</td></tr>
<tr><td>Uniqueness or rarity</td><td>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.</td><td></td><td></td><td>X</td><td></td></tr>
<tr><td colspan="6">Explanation for ranking:
• Largest Zostera capensis meadows in the world, recently rated as Vulnerable (IUCN Red List)
• Maputo Bay, while rather small, encompasses interconnected habitats that harbour vast diversity and resources.
• The bay is very shallow (10-20m in average) but also collects fresh water from 5 rivers, providing a diversity of both mangrove forests, seagrass habitats and coral reefs (71 species).
• Home to around only 10 dugongs (located at Inhaca Island). Connection with extensive meadows of dugong food seagrass (Holodule uninervis and Halophila ovalis – see Bandeira 2002, Fernando et al. in press).
• Other important species of special concern (see above), especially megafauna such as dolphins and whales
• Second-largest shrimp-fishing ground in Mozambique</td></tr>
<tr><td>Special importance for life-history stages of species</td><td>Areas that are required for a population to survive and thrive.</td><td></td><td></td><td>X</td><td></td></tr>
<tr><td colspan="6">Explanation for ranking:
• Home to dugongs, who feed on its seagrass meadows (Holodule uninervis and Halophila ovalis – Fernando et al. in press)
• Largest meadow of Zostera capensis in the world (Vulnerable, according to IUCN Red List)
• one of the largest coral reefs far south of equator in eastern Africa
• Turtle-nesting sites, 3 species nest in this proposed area (the leatherback turtle, Dermochelys coriacea, the loggerhead turtle Caretta caretta and green turtle Chelonia mydas
• Dolphins
• 33% of birdlife of southern Africa (299 species), some species of special concern</td></tr>
<tr><td>Importance for threatened, endangered or declining species and/or habitats</td><td>Area containing habitat for the survival and recovery of endangered, threatened, declining species or area with significant assemblages of such species.</td><td></td><td></td><td></td><td>X</td></tr>
<tr><td colspan="6">Explanation for ranking:
• Unique for dugongs
• Largest meadow of Zostera capensis, a Vulnerable seagrass, according to the IUCN (see Bandeira</td></tr>
</table>

in press) • Turtle-nesting areas • Dolphins • High diversity of various groups, some vulnerable (southern coral reefs, birds, seagrasses, fish and invertebrates). 299 bird species, representing 33% of all birds occurring in Southern Africa, some of them species of special concern (De Boer and Bento, 1999)					
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**	
Explanation for ranking: • Increased economic development in western Maputo Bay, focused on Maputo port and industries, associated with pollution • sedimentation from currents and floods • increased activity in coral reefs (fishing and tourism) • Possible over-fishing • Mangrove deforestation • Seagrass destruction (for collection of edible clams)					
Biological productivity	Area containing species, populations or communities with comparatively higher natural biological productivity.				**X**
Explanation for ranking: • Maputo Bay is the second-largest shrimp-fishing ground in Mozambique. • More than 20 artisanal fish landing areas that provides high catch rates • High clam production from river banks/estuaries (Incomati River, Espiruto Santo Estuary)					
Biological diversity	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.				**X**
Explanation for ranking: • Inhaca Island: 6 mangrove species, 8 seagrass species, 71coral reefs, 299 bird species, 244 seaweed species, 5 turtles, dugong; • Estuaries of Incomati River, Maputo River, Estuary of Espirito Santo have high biodiversity. • See Macnae 1969 for more information as well as Bandeira & Paula (in press) for additional details on biodiversity.					
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**	
Explanation for ranking: • Inhaca and Portuguese islands, with focus on marine reserves of Inhaca and adjacent Portuguese island • Maputo River estuary and Machangulo peninsula are also quite pristine • The coastal region from Inhaca to Ponta de Ouro is also pristine					

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	**Habitat connectivity**				**X**

Explanation for ranking:

- High connectivity of resources with habitats: e.g. shrimp with mangroves, mud and high bay waters
- Fisheries with both seagrasses or mangroves and deep waters of the bay.
- Life cycle of some crustacean (e.g. *Scylla serrata* crab) in estuaries and inner bay waters

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Maps and Figures

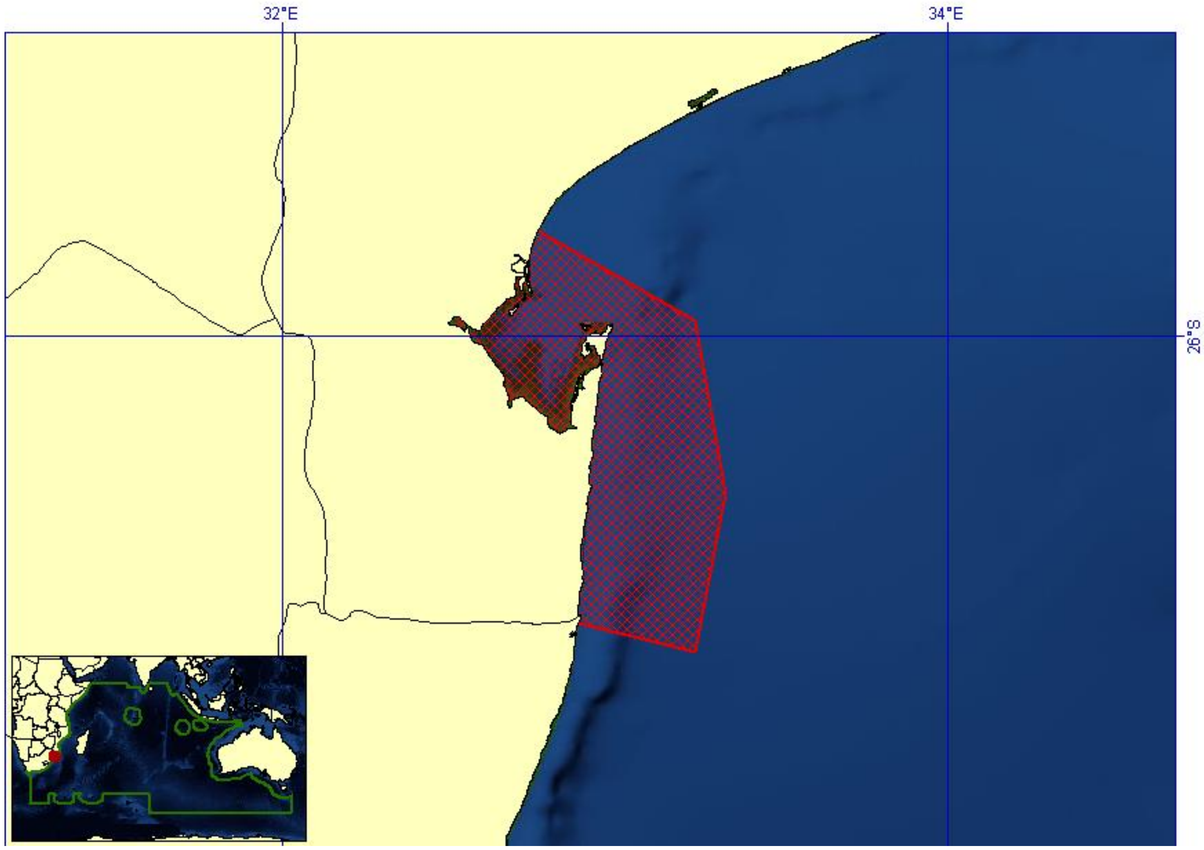

Figure 1. Map of area meeting EBSA criteria

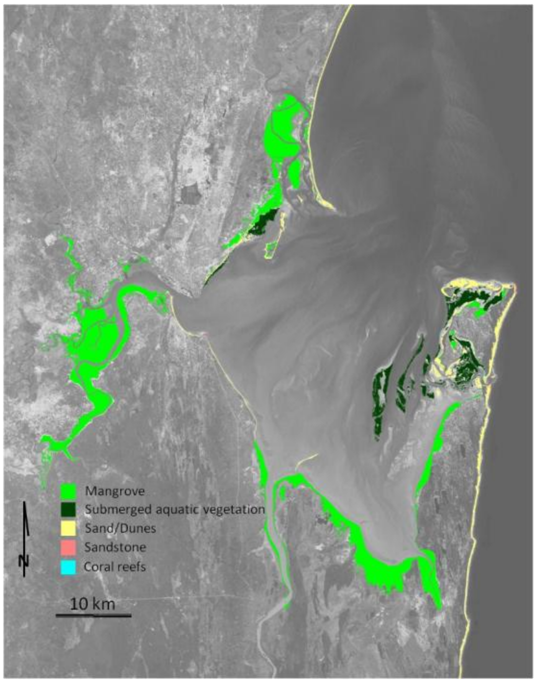

Figure 2. (a) Maputo bay; (b) Inhaca and Portuguese islands (From: The Maputo Ecosystem book)

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Area No. 7: Delagoa shelf edge, canyons and slope

Abstract

This area extends south, north and offshore of the existing Maputaland and St Lucia marine protected areas in the iSimangaliso Wetland Park, a World Heritage Site, and also encompasses the Ponta do Ouro Partial Marine Reserve, to capture the full extent of offshore benthic and pelagic habitat types, providing for coastal and offshore connectivity and covering the important offshore habitats of endangered Leatherback Turtles. The area includes a key migratory route for humpback whales, a nursery area for bull sharks, spawning areas for fish (endemic sparids) and sharks and includes habitat of other threatened species including coelacanths, marine mammals and sharks. Potential vulnerable marine ecosystems include numerous submarine canyons, paleo shorelines, deep reefs and hard shelf edge with reef-building cold-water corals also recovered at depths of more than 900 m. Whale sharks feed in this area in summer.

Introduction

This area extends south, north and offshore of the existing Maputaland and St Lucia marine protected areas in the iSimangaliso Wetland Park, a World Heritage Site, and also encompasses the Ponta do Ouro Partial Marine Reserve, to capture the full extent of offshore benthic and pelagic habitat types, providing for coastal and offshore connectivity and covering the important offshore habitats of endangered Leatherback Turtles. The area includes a key migratory route for Humpback Whales, a nursery area for Bull Sharks, spawning areas for fish (especially endemic sparids) and sharks and includes habitat of other threatened species, including coelacanths, marine mammals and sharks. Potential vulnerable marine ecosystems include numerous submarine canyons, palaeo-shorelines and deep reefs, and hard shelf edge with reef-building cold-water corals in depths of more than 900 m. Whale sharks feed in this area in summer. This area has been identified as a priority area by two different systematic biodiversity plans, a national plan to identify focus areas for offshore protection (Sink *et al.* 2011) and a fine-scale provincial plan for the province of KwaZulu-Natal (Harris *et al.* 2011).

Location:

This area is bounded by the coastline and extends across the exclusive economic zones (EEZs) of both Mozambique and South Africa between approximately 26°S to 29°S and 32°E and 34°E, running from a line perpendicular to the coastline out to the 2000 m isobaths at the northern tip of Inhaca Island and Cape St Lucia lighthouse. It lies within the territorial seas and EEZs of both South Africa and Mozambique.

Feature description of the proposed area

The area meeting EBSA criteria is bounded by the highwater mark of a coastline characterized by the highest vegetated dunes in the world, with minimal terrigenous riverine input (see Sink *et al.* 2011 and Harris *et al.* 2011), making the area relatively natural and pristine. The deeper reaches are characterized by bioclastic and siliceous sediments intersected by Pleistocene sandstone reefs formed during changes in sea level. The continental shelf is intersected by canyons and is steep, falling to fine, unconsolidated sediment and is bathed by the warm Agulhas Current, the largest of the western boundary currents.

Feature condition and future outlook of the proposed area

South Africa's National Biodiversity Assessment 2011 (Sink *et al.* 2012) indicated that most of this area was in good condition, but these analyses were confined to South Africa. The area is relatively pristine but emerging pressures include new mining and petroleum applications and a port development in Mozambique. The inshore reaches are subjected to limited fishing and regulated recreational activities.

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** (please mark one column with an X)			
		Don't Know	**Low**	**Medium**	**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 submarine canyons support a population of coelacanths (*Latimeria chalumnae)*. The spotted legskate (*Anacanthobatis marmoratus)* is a rare species found in this area (Haupt 2010).					
Special importance for life-history stages of species	Areas that are required for a population to survive and thrive.				X
Breeding and feeding areas for leatherback turtles (particularly in the south). Migratory corridor for humpback whales. Nursery area for bull shark (*Carcharhinus leucas)*. Spawning area for dusky shark (*Carcharhinus obscurus)* and King Mackerel (*Scomber japonicas)*. Spawning and nursery area for sand tiger shark (*Carcharias taurus)* (Sink *et al.* 2011, Vogt 2011, Ezemvelo KZNW Wildlife 2012)					
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	
IUCN listed species: **CR**: Ceolacanth – *Latimeria chalumnae* **EN**: Scalloped hammerhead – *Sphyrna lewini* (EN), great hammerhead **-** *S. mokarran* **VU**: Sperm whales – *Physeter macrocephalus* , smooth hammerhead – *Sphyrna zygaena* Overexploited linefish species (sarids, sciaenids)					
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	
Two species of reef-forming cold-water corals. Numerous submarine canyons. Important for vulnerable shark species with low fecundity.					
Biological productivity	Area containing species, populations or communities with comparatively higher natural biological productivity.			X	
Chlorophyll a and sea temperature fronts contribute to variable and elevated productivity in this area (Ezemvelo KZN Wildlife 2012)					
Biological diversity	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.				X
This area includes the overlap between the Delagoa and Natal ecoregions and is considered an important transition zone (Sink *et al.* 2011, 2012, Ezemvelo KZN Wildlife 2012. High habitat heterogeneity and high species diversity are reported.					

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
This area is relatively pristine with almost no industrial fishing (pelagic long lining not permitted within 20nm of the coast).					

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Maps and Figures

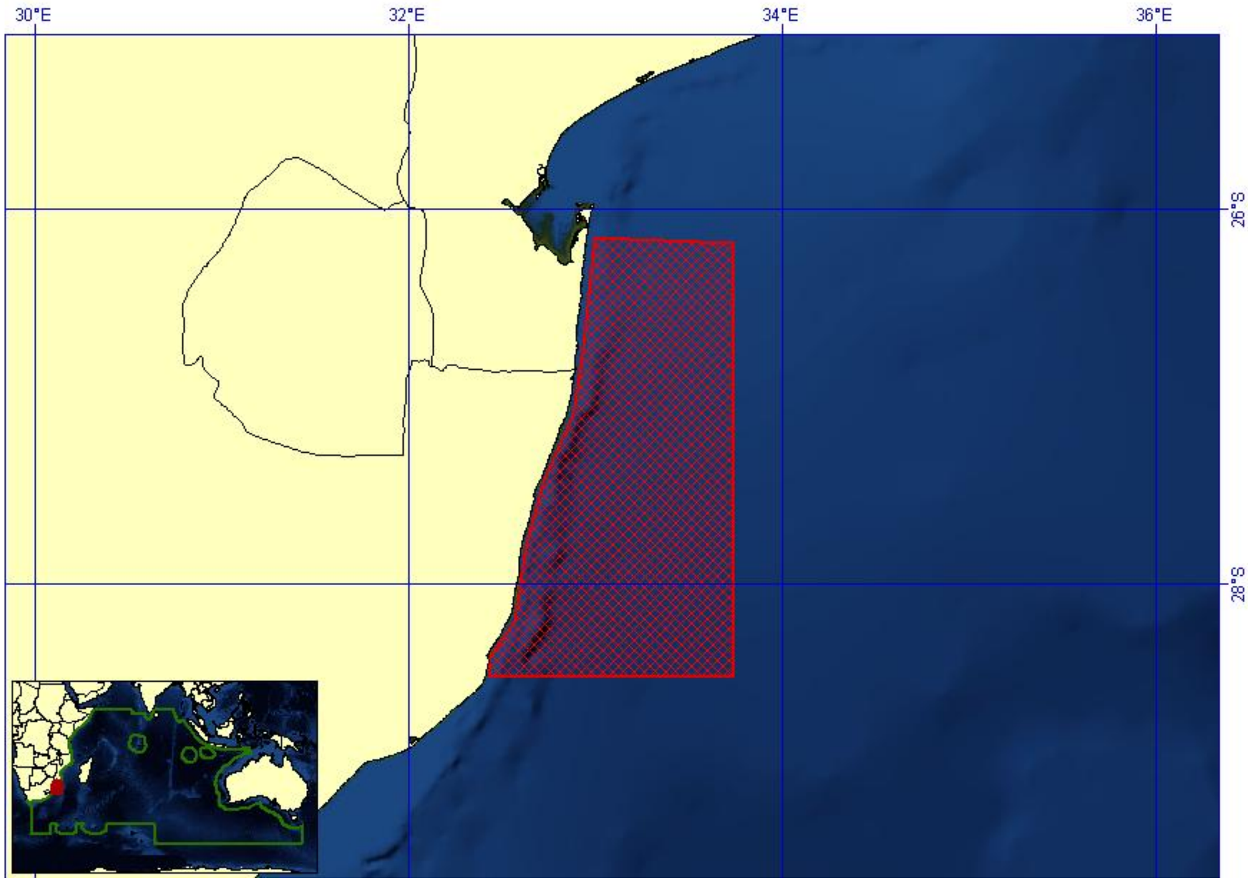

Figure 1. Map of the area meeting EBSA criteria

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Area No. 8: Save River to San Sebastian (Central Mozambique)

Abstract

This region covers mainly the Bazaruto Archipelago site, home of the most viable dugong population in East Africa, already a marine protected area. Megafauna, such as dugongs, turtles, dolphins and marlins, as well as seagrass meadows and mangrove forests abound in this site. Increased fisheries activity, extreme events such as cyclones and floods as well as prospecting for oil and gas are some of the challenges that make this area vulnerable. However, the Bazaruto Archipelago National Park has helped to protect this important area meeting EBSA criteria.

Introduction

The Save River to San Sebastian region is a stretch of coastline at least 120 km long which encompasses two bays (Bazaruto and Govuro) and an archipelago with five islands. It is located in the Inhambane Province, in the southern part of the Mozambique coastline. It possesses diverse flora and fauna, including sea mammals. The archipelago and neighbouring coastline have diverse terrestrial and marine habitats, such as sand dunes, rocky and sandy shores, coral reefs, seagrasses and mangrove forests. Oceanographically, the region is influenced by fast-flowing currents induced by wave action and tides, especially in the channels between the islands, generated by the tidal ranges at spring tides that transport large amounts of sand, forming extensive flood and ebb-tidal deltas. The average tidal amplitude is about 4 m during normal spring tides (Everett *et al.*, 2008), according to the National Institute of Hydrography and Navigation. There is some estuarine influence from the Save and Govuro rivers in the north and from the lakes of Sao Sebastião Peninsula, which drain into Bazaruto Bay

Two different basins are found, one to the north of Santa Carolina Island with 33 metres of maximum depth and in the middle section of the bay with a maximum depth of 24 metres. The northern basin is the main connection between the bay and the open sea and the deepest area of the bay (Cockcroft *et al.*, 2008).

A shallow tropical bay, the Bazaruto Archipelago is inhabited by seagrass beds associated with the sandy tidal flats in shallow and subsidiary waters less than 5 m deep (Bandeira *et al.*, 2008). These seagrass beds are important as nursery areas for fish and provide grazing area for dugongs. In extent and distribution, seagrass beds comprise the area between Inhassoro and Cabo Sao Sebastiao, covering an area of nearly 88 km^2 in shallow intertidal and subtidal waters. The dominant species of seagrass include *Thalassodendron ciliatum, Cymodocea rotundata, Halodule uninervis* and *Zostera capensis* (*Bandeira et al*. 2008; Cockcroft *et al.*, 2008).

Fisheries activities, both subsistence and commercial, are intensively and extensively practiced along the mainland by local people but to a lesser extent in the Archipelago, because of conservation measures in force at Bazaruto Archipelago National Park. Woman and children are involved in the collection mainly of invertebrates in seagrass beds and intertidal flats.

In 2001-2005 WWF implemented two projects based on Bazaruto multiple resource use and the Bazaruto community with the main aim of ensuring government commitment in the approval of a proposal to extend the limits of the national marine park and continuing to implement the Bazaruto National Park Management Plan for the next five years (WWF, 2005). This file was used as an additional document to describe this area in Mozambique.

Location

Bazaruto Archipelago is located up to 20 km off the Mozambique coast within latitudes 21^{o}30’-22^o 10’S and longitudes 35^{o}22’-35^o 30’E. This area meeting EBSA criteria also covers the Twelve Mile Reef at approx.21^0 21.300’S; 35^0 30.200’E. The climate in this region is moderately humid with an annual rainfall dominated by two climate systems, namely the Indian Ocean Subtropical Anticyclone System of the south-east trade winds zone and the southern end of the East African monsoonal system. The average annual temperature and precipitation on the archipelago is about 24°C and 978 mm, respectively. Since 1971 the area has experienced some legal protection, and further regulations have been proposed around Santa Carolina island to protect the vulnerable population of dugongs and sea turtles. Figure 1 depicts this area meeting EBSA criteria in central Mozambique.

Feature description of the proposed area

The Bazaruto Archipelago is made up of five islands. Bazaruto Island is the largest, with an area of about 12000 ha, Benguérua with 2 500 ha, Magaruque 600 ha, Santa Carolina (formerly called Paradise island) with 500 ha and the smallest island, Bangué, covering 5 ha. The main geomporfological features of Bazaruto are the unweathered yellow-white sand dunes of Holocene and modern age along the ocean margin of the islands.

The islands comprise a core of Pleistocene dunes that are exposed at several localities on the western margin of the islands as weathered and largely structureless sand with an orange-red colouration (Cooper & Pilkey 2002).

Offshore, submerged aeolianite ridges occur along the ocean margin of Bazaruto and mark former shoreline positions. In many instances, these have been colonized by coral growth. Irregular and reversing transverse dunes develop where sand has been blown off the beach and pioneer vegetation has been stabilized above the level of spring high tide and storm surge swash (Cooper & Pilkey 2002).

These islands are important due to the largest and most viable dugong population along the East African coast, with about 130 individuals in Bazaruto Bay (Cockcroft *et al.*, 2008). Rocky areas are present in the Archipelago and provide habitats for coral to colonize and form small reefs with suitable conditions to support a typical reef-associated fauna and protect the associated beach zone and infrastructure (Cockcroft *et al.*, 2008). Both soft and hard corals are abundant and diverse on the Bazaruto reefs (Schleyer & Celliers, 2005). Three types of reefs can be found in the archipelago, namely submerged sandstone reefs, submerged fringing reefs and patch reefs.

The reefs in the archipelago are concentrated around Bazaruto Island, making it the major attraction for the ecotourism industry. Most of corals found in the Archipelago have a wide Indo-Pacific distribution, although a new soft coral species (*Cladiella kashmani*) was found in the Bazaruto Archipelago, which appears to be limited in its distribution to East Africa (Benayahu & Schleyer, 1996).

Feature condition and future outlook of the proposed area

The area is vulnerable due to mineral exploration. Despite its benefits to the economic development of the country, mineral exploration could threaten the environment because of the proximity of gas blocks to the Bazaruto islands; poor management could cause damage to the environment.

Another source of vulnerability is the increased pressure by fisheries within and around Bazaruto Archipelago from artisanal fisheries, which in some places (Inhassoro and Vilanculos) has become unsustainable.

These regions, the archipelago and mainlands of Vilanculos, Inhassoro and Govuro, are prone to extreme events such as cyclones (three hit the region in the last 12 years leaving a trail of destruction) and floods that occur frequently in the Save River, impacting severely on the mangroves and peoples' livelihoods.

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** (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				**X**

<table>
<tr><td></td><td>communities, and/or (ii) unique, rare or distinct, habitats or ecosystems; and/or (iii) unique or unusual geomorphological or oceanographic features.</td><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="6">Explanation for ranking
• The most viable population of dugongs in the Western Indian Ocean. Existence of the largest dugong population in eastern Africa(estimated 250 individuals). Association with seagrass beds providing dugong with palatable food (Halodule uninervis and Halophila ovalis)
• Other megafauna: green sea turtles, humpback whales, large fishes such as marlin, sailfish and Spanish mackerel and sharks.
• Extensive mangrove areas at Govuro and Save estuaries that extend non-stop northwards for at least 100 km, sustaining massive artisanal fisheries (Save and Govuro estuaries are among the most productive artisanal fishiries in Mozambique – 20 tonnes of dried fish exported from Save Estuary weekly
• Nesting area for loggerhead and leatherback turtles
• Area visited by several species of oceanic dolphins and has few resident species of dolphins (humpback and bottlenose dolphins).
• Occurrence of tropical coral reefs at the margins of their distribution.
Birds: More than 180 species have been recorded in the Archipelago, and six species exceed 1% of the global population of the species.
• Humpback whales: new discoveries suggest Bazaruto may have one of the largest wintering populations of humback whales.</td></tr>
<tr><td>Special importance for life-history stages of species</td><td>Areas that are required for a population to survive and thrive (prosper)</td><td></td><td></td><td></td><td>X</td></tr>
<tr><td colspan="6">Explanation for ranking:
• Especially for dugongs
• Growing area for juvenile green turtles along the shallow meadows
• Nesting area of loggerhead and leatherback turtles
• Resting area for mother calf pairs of humpback whales, when returning to the southern ocean
• Breeding area for large pelagic fish
• Extensive seagrass beds due to extensive shoals
• Connection with extensive fisheries caught in artisanal fisheries</td></tr>
<tr><td>Importance for threatened, endangered or declining species and/or habitats</td><td>Area containing habitat for the survival and recovery of endangered, threatened, declining species or area with significant assemblages of such species.</td><td></td><td></td><td></td><td>X</td></tr>
<tr><td colspan="6">Explanation for ranking:
• Meadows of the seagrasses Halodule uninervis and Halophila ovalis guarantees food for the dugong.
• Dugongs and turtles are highly threatened species yet occur in relatively large number in this area.
• Whale sharks and manta rays visit occasionally the area. The area may serve as a refuge for these species due to the pressure caused by tourism further south.</td></tr>
<tr><td>Vulnerability,</td><td>Areas that contain a relatively high proportion</td><td></td><td></td><td>X</td><td></td></tr>
</table>

<table>
<tr><td>fragility, sensitivity, or slow recovery</td><td>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.</td><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="6">Explanation for ranking:
Extensive areas of the Bazaruto Archipelago National Park are in need of more management reinforcement
Gas and oil prospection
Beach seine fishing is a still a common practice
Floods and Cyclones: this is one of the most cyclone prone areas in Mozambique. Save River is usually flooded every year. Also some level of mangrove deforestation occurs.
A large proportion of the dugong population occurs outside the protected area, where they face a high risk of net entanglement. Habitat destruction, particularly of seagrass beds outside the park is a further concern for the dugong population.</td></tr>
<tr><td>Biological productivity</td><td>Area containing species, populations or communities with comparatively higher natural biological productivity.</td><td></td><td></td><td></td><td>X</td></tr>
<tr><td colspan="6">Explanation for ranking
The area is important for nursing and growth of coastal species due to the combination of mangroves and seagrass meadows. Invertebrates thrive successfully in the area.
Statistics of Save River fish production: 20 tonnes of dried fish sold weekly
high numbers of sand oyster (Pinctata capensis and P. imbricata “mapalo”) epiphytic on the seagrass Thalassodeondon ciliatum. High numbers of blue crabs (Portunus pelagicus).
A large tidal flux generates a massive turnover in the water mass enclosed in Bazaruto Bay through complex channels over its extensive sandbanks.</td></tr>
<tr><td>Biological diversity</td><td>Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.</td><td></td><td></td><td></td><td>X</td></tr>
<tr><td colspan="6">Explanation for ranking:
The area contains several species of turtles, dolphins, whales, sharks and fish species due to the combination of coastal and oceanic environments. One of the few places with high diversity. This is an ecologically rich tropical zone with a high diversity of icthyofauna of 280 species (Van der Elst and Santana Afonso 2008)
High diversity of sea cucumbers.
Further diversity will emerge with new research to be undertaken.</td></tr>
<tr><td>Naturalness</td><td>Area with a comparatively higher degree of naturalness as a result of the lack of or low level of human-induced disturbance or degradation.</td><td></td><td></td><td></td><td>X</td></tr>
<tr><td colspan="6">Explanation for ranking:
The area retains some level of naturalness because of limited access and development that has occurred. In addition the establishment of a national park which has been operational since 1989 has contributed to maintain the naturalness of its habitats. However, coastal regions located close to the main villages have suffered great transformation (Vilanculos and Inhassoro).
Extensive section of the mangroves in the Save River estuary are quite intact. Remoteness and low population densities help maintenance of the wellbeing of the mangrove forests.</td></tr>
</table>

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Maps and Figures

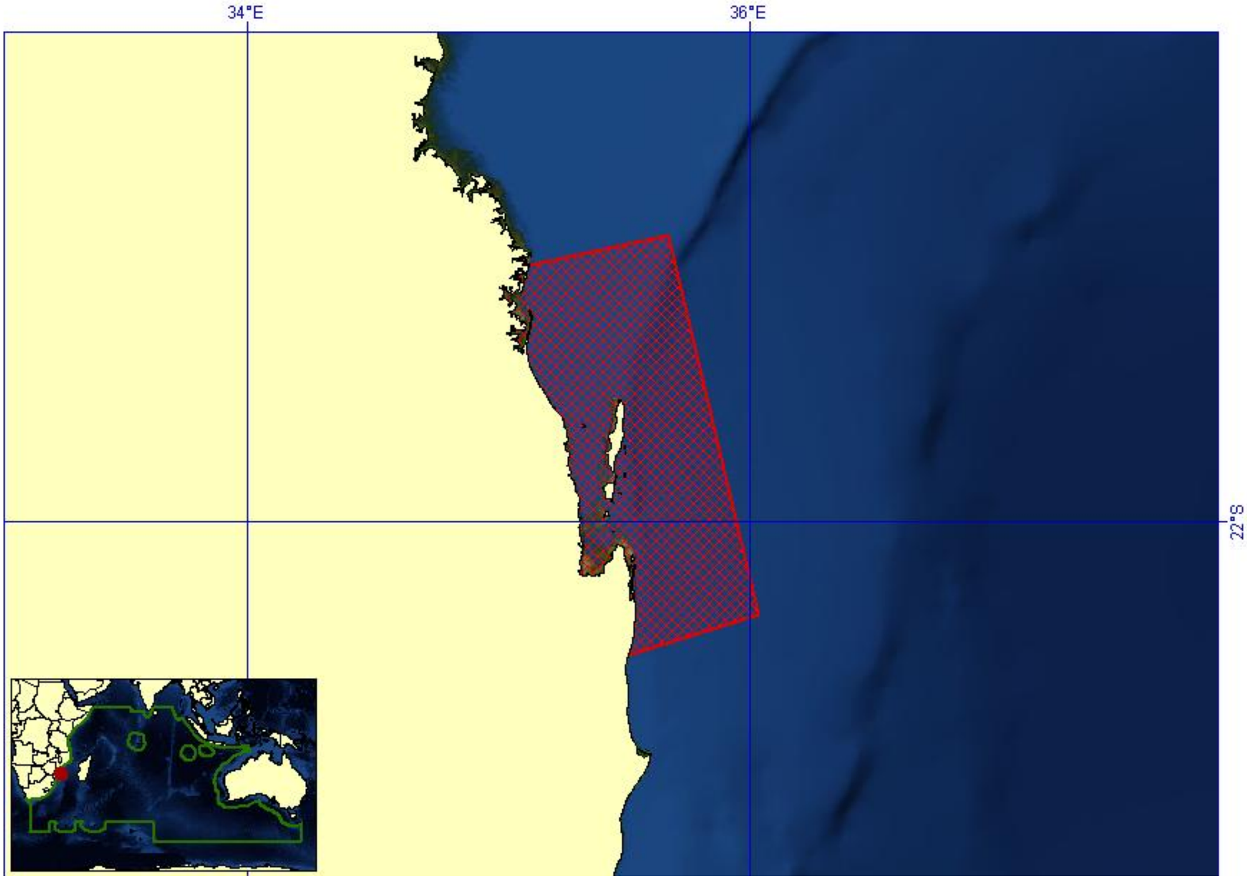
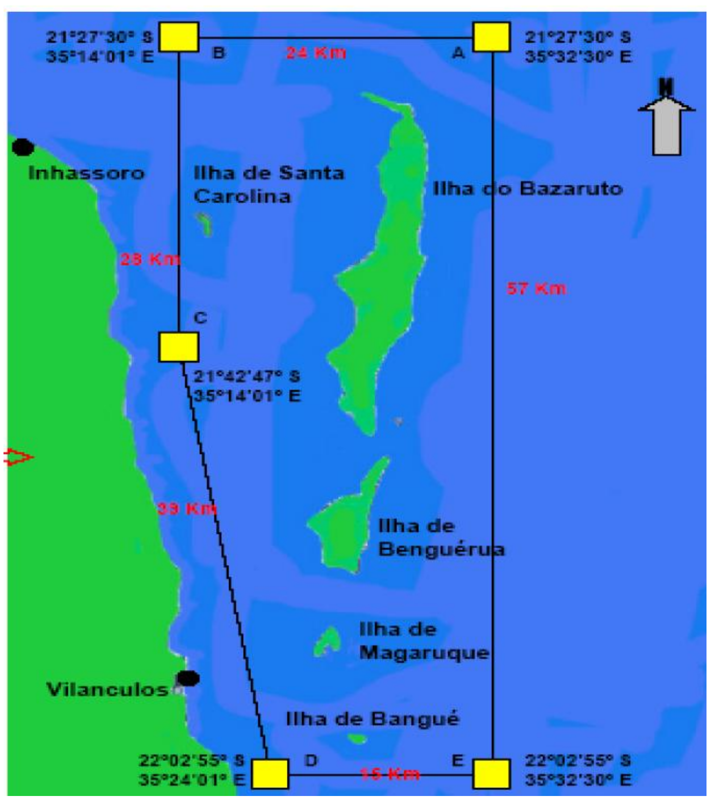


Figure 1. Map of area meeting EBSA criteria



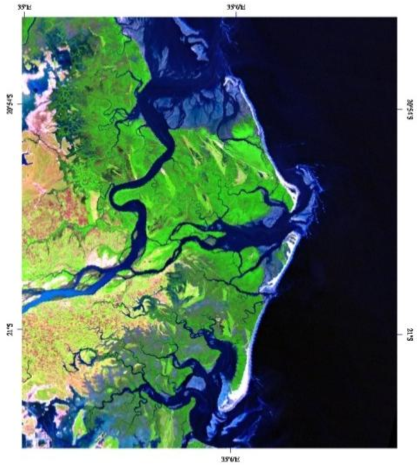


Figure 2. (a) Bazaruto Archipelago showing the five islands. (b) Save River estuary showing mangrove forests

Area No. 9: Morrumbene to Zavora Bay (Southern Mozambique)

Abstract:
This area meeting EBSA criteria has abundant megafauna, mainly the reef manta *Manta alfredi*, giant manta ray *Manta birostris*, and whale shark *Rhincodon typus*, described as among the largest populations in the world. The area also has dugongs, five species of turtle as well as coral reefs (one of which is unique) and mangroves forests with extensive seagrass beds, mainly around Morrumbene and Inhambane Bay. The area is quite new to research, and recent reports of new species of nudibranch around Pomene/Zavora support the value of this emerging hotspot of biodiversity in Mozambique.

Introduction

Mozambique has a long coastline (close to 3000 km) with a diversity of marine habitats supporting a great number of species from small organisms to megafauna such as dolphins, dugongs, whales and rays. The Inhambane coastline, although classified as parabolic dune coast, also has a great diversity of habitats and species and is the most important habitat for subtropical coral reef, dominated by seaweed and soft corals. These reefs are visited by one of the largest populations of manta rays (*Manta alfredi)* in the world. These sea mammals attract tourists and enhance tourism in the area. Marchall *et al*. (2011) conducted several studies on the size, structure, biology and ecology of populations of manta rays off the coast of Inhambane. Two species of manta rays are found, the reef manta *Manta alfredi* and the giant manta ray *Manta birostris,* making the distribution of these species sympatric. They are regular visitors to critical habitats such as feeding areas and cleaning stations along the coastline. The number of manta rays is estimated to be less than 1500 individuals off the Inhambane coastline as far as known to Zavora.

Apart from Manta rays, the area has also a presence of about 700 whale sharks (*Rhincodon typus*). This species is cosmopolitan, but is observed nearshore mostly between October and April, feeding on algae blooms.

Manta rays inhabit two sites off the Inhambane coast, namely Manta Reef, with 250 m^2 of rocky reef and associated corals in 20-25 m of water located approximately 20 km south of Inhambane harbour, and Giants Castle, a narrow, reef plateau in approximately 25-32 m of water, located 8 km south of the harbour. Establishing the range of manta rays off the Inhambane coast will prove a challenge. At Zavora, manta rays also occur on coral reefs. Humpback whales use the offshore area of the Inhambane coast between Zavora and Morrumbene for breeding. Several whales migrate through the area in winter. A diversity of sharks also occurs in the region, despite the illegal fishing that takes place due to the pressure of the global market. The diversity of reef fishes is also reasonable and some reefs, although unprotected, are in a good state. Zavora Bay is one of the most beautiful and wild areas in southern Mozambique, considered to be one of few places in the world with relatively pristine marine life, including the high abundance of manta rays (both *Manta birostris* and *Manta alfredi*). Morrumbene constitutes another important marine area on the Inhambane coastline with a distinctive mangrove area, and the reef at Paindane is unique, being a near mono-specific stand of an encrusting soft coral species.

Location
Morrumbene lays just north-west of the entrance to Inhambane Bay. The areas covers Inhambane Bay, the peninsula, and Tofo up to Zavora (covering regions of Pomene and Paindane).

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** (please mark one column with an X)			
		Don't Know	**Low**	**Some**	**High**

<table>
<tr><td>Uniqueness or rarity
One of the most largely population of mantas rays in the world</td><td>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.</td><td></td><td></td><td></td><td>X</td></tr>
<tr><td colspan="6">Explanation for ranking:

About 1500,00 individuals of manta rays are estimated to inhabit the Inhambane coastal-marine waters, including Zavora Bay.
About 700 hundred whale sharks are observed year-round</td></tr>
<tr><td>Special importance for life-history stages of species
Coral reefs</td><td>Areas that are required for a population to survive and thrive.</td><td></td><td></td><td></td><td>X</td></tr>
<tr><td colspan="6">Explanation for ranking:
Cleaning station for manta rays.
Feeding area for whale sharks.
Mating and breeding area for humpback whales.
Some unique coral reefs.
Dugongs observed around Inhambane/Morrumbene.</td></tr>
<tr><td>Importance for threatened, endangered or declining species and/or habitats</td><td>Area containing habitat for the survival and recovery of endangered, threatened, declining species or area with significant assemblages of such species.</td><td></td><td></td><td></td><td>X</td></tr>
<tr><td colspan="6">Explanation for ranking:
This is a unique area with high concentrations of manta rays and whale sharks due to the existence of algae blooms and a cleaning station.
Dugongs feed and live around Morrumbene and in Inhambane Bay. This area may serve as part of their range and alternative habitat to the Bazaruto Archipelago
Humpback dolphins have prime habitat in Inhambane Bay and also occur in the rocky reefs between Zavora and Barra.
Sea turtles nest on sandy beaches and feed on the reefs.
This is a mating and breeding area for humpback whales, which occur near shore during winter (June – November)</td></tr>
<tr><td>Vulnerability, fragility, sensitivity, or slow recovery</td><td>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.</td><td></td><td></td><td>X</td><td></td></tr>
<tr><td colspan="6">Explanation for ranking:
Coral reefs are more sensitive to disturbances.
Manta rays and sea turtles are also sensitive to fishing gear. Manta rays and whale sharks already appear to be declining.</td></tr>
</table>

• Mating behaviour of humpback whales may be disturbed when uncontrolled tourism intensifies in this region. • Erosion associated with extreme events such as cyclones threatens to degrade coral reefs..					
Biological productivity	Area containing species, populations or communities with comparatively higher natural biological productivity.				**X**
Explanation for ranking: • The area has a sufficient biological productivity to support large populations of manta rays and whale sharks. • The shallow sea inshore seagrass and mangrove areas of Morrumbene and Inhambane Bay support inshore fish and invertebrate species (clams, crabs and oysters). The shallow offshore reefs between Tofo and Zavora also support a rocky shore with banks of oysters of high productivity • Cabo da Correntes (translated as cape of storms) is an upwelling area that generates high productivity. Apparently this might aggregate biodiversity. Therefore this area merits further study.					
Biological diversity	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.				**X**
Explanation for ranking: The area has a large diversity of species ranging from megafauna (manta rays, whale sharks, sharks, turtles and dolphins), fishes and invertebrates, including rock reefs, sandy beaches, mangroves and seagrass meadows. (Nevertheless research results are limited for this new area, though studies may confirm the area's importance).					
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**		
Explanation for ranking: The coastal areas still possess natural areas due to their remoteness, however diving and fishing appear to be transforming in some parts of this area.					

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www.zavoralab.com 2012

Maps and Figures

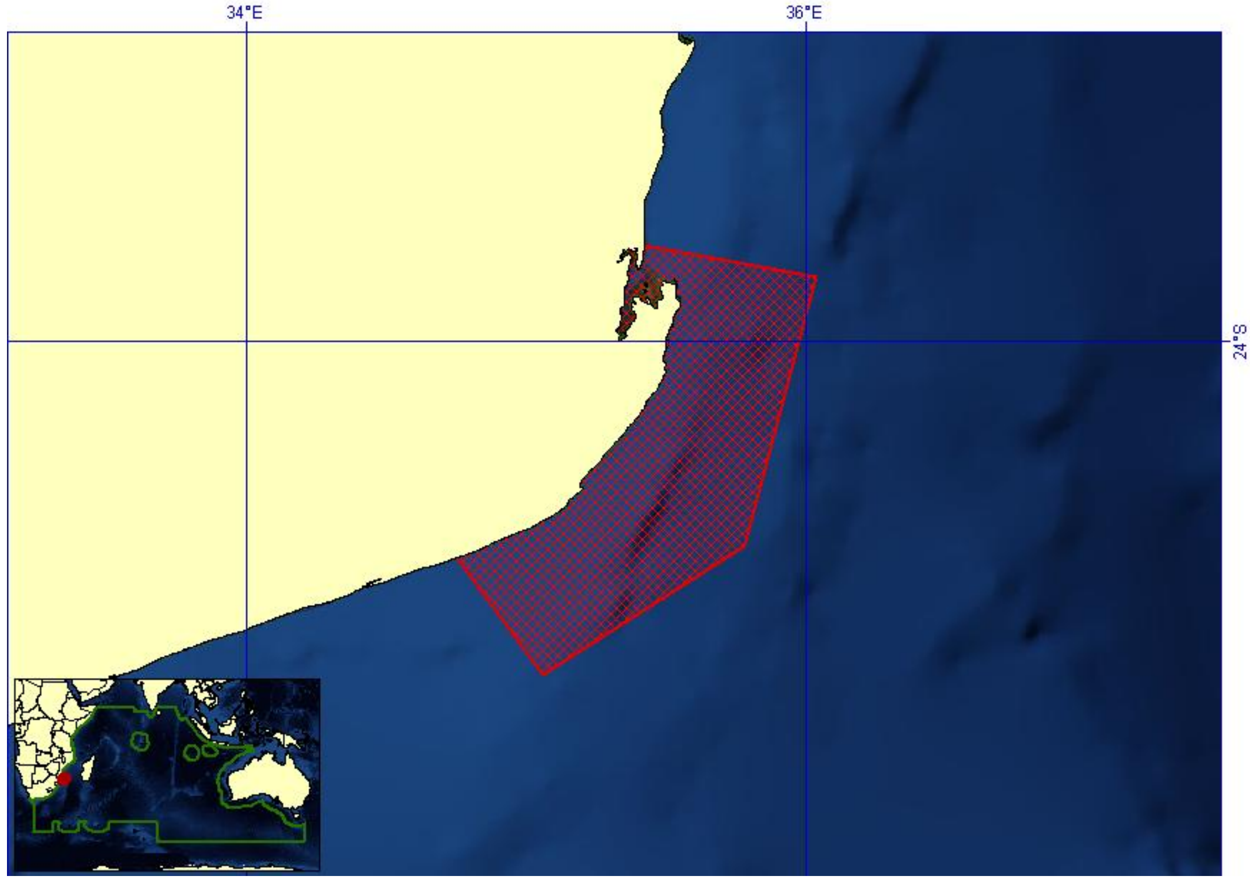

Figure 1. Map of area meeting EBSA criteria

Area No. 10: Quelimane to Zuni River (Zambezi River Delta)

Abstract
This area meeting EBSA criteria covers the region between Quelimane (river of Bons Sinais) and Zuni River, both northern and southern boundaries of the Zambezi River delta down to the coastal shelf of the Sofala Bank. The immediate seas of the delta give rise to the Sofala Bank, which extends from Save River to the chain islands of Ilhas Primeiras e Segundas, the largest and and among the most productive fisheries area in Mozambique attaining close to 50% of the entire industrial catches (some 50 000 Tones in 2002). Sofala Bank is here represented by the Zambezi delta (Quelimane to Zuni River, about 200 km coastline). The productivity of this area for fisheries is directly related to the extensive mangrove forests of the Zambezi River delta, the largest mangrove stand in all of East Africa, covering some 100,000 ha. Further data on fish and shrimp in this region is presented here.

Introduction
The Zambezi mangrove delta is an extensive system covering 200 km of coastline from Quelimane City at the intertidal river (Rio dos Bons Sinais) south to the Zuni River. Mangrove forests are a dominant feature in the Zambezi delta. Statistics indicate that Africa contains approximately 21% of the mangroves in the world (Murdiyarso and Kauffman, 2011). The current estimate of mangrove forest area in Mozambique varies from 396,100 ha (Barbosa *et al.* 2001, Beentje & Bandeira, 2005) to 291,146 ha (Fatoyimbo *et al.*, 2008). Based on a recent assessment, 28% of Mozambique mangroves occur in the Zambezi delta (81,521 to 110,908 ha). Globally, Mozambique ranks 13th in mangrove coverage, equivalent to approximately 2.3% of the global mangrove forest area (Giri *et al.* 2011). Because of the presence of the most productive mangrove and estuarine habitat, the adjacent marine area, the Sofala Bank, is a highly productive fishing ground. The Sofala Bank is the most productive region in Mozambique attaining some 50% of the country's industrial fisheries catch; fish comprise the majority of the catch, followed by the shrimp species *Fenneropenaeus indicus* and *Metapenaeus monoceros* (Sumale, 2005).

Location
The Zambezi delta coastline is 200 kilometres long, extending from the river dos Bons Sinais (Quelimane town) and the Zuni River in the south (mid-way from Chinde, main delta branch to Beira city).

Feature description of the proposed area
The delta is characterized by extensive mangrove forest. On the coast there are humpback and minke whales, as well as bottlednose, humpback and rough-toothed dolphin.
Mangroves are the most extensive on the east coast of Africa and support the most lucrative shrimp and fishing industry of the Sofala Bank (Brito *et al.* 2001). This fishing ground extends to most of the Mozambique EEZ and beyond and earns some 40% of the country's industrial fish catches. Fish comprise the majority of the catch, followed by the shrimp species *Fenneropenaeus indicus* and *Metapenaeus monoceros.*

Mangrove habitats area grouped into six larger communities, that is, six different types of mangrove forest: *Ceriops tagal, Avicenia-marina, Rhizophara-mucronata, Soneratia-alba, Xilocarpus-granatum* and *Avicenia-mucronata;* the most dominant are depicted in Figure 1. There are eight mangrove tree species in Mozambique: *Avicennia marina* (Forssk.) Vierh., *Bruguiera gymnorhiza* (L.) Lam., *Ceriops tagal* (Per.) C.B. Robinson, *Rhizophora mucronata* Lam. and *Sonneratia alba* Smith, *Heritiera littoralis* Aiton, Lumnitzera racemosa Willd. and *Xylocarpus granatum* Koenig.

Feature condition and future outlook of the proposed area

The area proposed represents the Sofala Bank, the largest fishing ground in East Africa. Fish catches attain some 60 000 tonnes a year on this bank (data from 2002).

In regards to shrimp, two groups of shallow-water shrimp were present on Sofala Bank; the Penaeid and Caridea. Penaeid shrimps were distributed almost all over the surveyed area and included the species with greatest commercial value (*Fenneropenaeus indicus* and *Metapenaeus monoceros)*. Caridean shrimps, confined to a much more restricted area, were present in very high densities in the 1980s. During this period (1980s) penaeid shrimps were found from 5 to 76 m depths but mostly between 5 and 45 m. The distribution of penaeid shrimps north of the Zambezi River is shown in Figure 3. *F. indicus, M. monoceros* and *P. latisulcatus* were the dominant species. *F. indicus* was the most important species in the northern part of Sofala Bank and had a near-shore distribution, with the highest yields—about 85% (2.322 tons) of biomass from all six penaeid species, in depths shallower than 15 m. This species was not found below 40 m. *M. monoceros* dominated the catches over the southern part of Sofala Bank with 271 tons. South of the Zambezi River the highest catches were found between 25 and 35 m; north of this river the main concentrations were found between 5 and 15 m. This species did not occur in waters deeper than 35 m. *P. latisulcatus* was confined to a smaller area than the previous species. The yields increased in waters deeper than 35 m, and important concentrations occurred only between Quelimane and Moma. Important fish catches are presented in the figures 4 and 5.

When the mangroves and fluxes/plumes from the Zambezi River delta are considered, this proposed area contributes significantly to nutrient budgets in the Sofala Bank. Several megafauna observed and documented on this bank.

Assessment of the area against CBD EBSA Criteria

<table>
<tr><td rowspan="2">CBD EBSA Criteria
(Annex I to decision IX/20)</td><td rowspan="2">Description
(Annex I to decision IX/20)</td><td colspan="4">Ranking of criterion relevance
(please mark one column with an X)</td></tr>
<tr><td>Don’t Know</td><td>Low</td><td>Some</td><td>High</td></tr>
<tr><td>Uniqueness or rarity</td><td>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.</td><td></td><td></td><td></td><td>X</td></tr>
<tr><td colspan="6">Explanation for ranking
The area meeting EBSA criteria covers a portion of the largest fishing ground in Mozambique, the Sofala Bank, with biomass attaining 2.721 tons of six penaeid species in the area adjacent to the Zambezi River (Hoguane 1997; Brito et al. 2001).
Largest productive mangrove area in East Africa. Also the tallest mangrove stands, reaching some 25-30 metres in height.</td></tr>
<tr><td>Special importance for life-history stages of species</td><td>Areas that are required for a population to survive and thrive.</td><td></td><td></td><td></td><td>X</td></tr>
<tr><td colspan="6">The most extensive mangrove system on the east coast of Africa; supports a high level of fish biomass in the adjacent marine area, the Sofala Bank (Hoguane, 1997).</td></tr>
<tr><td>Importance for threatened, endangered</td><td>Area containing habitat for the survival and recovery of endangered, threatened, declining species or area with significant assemblages of such species.</td><td></td><td></td><td>X</td><td></td></tr>
</table>

<table>
<tr><td>or declining species and/or habitats</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="6">Explanation for ranking:
Sofala Bank’s high level of fish and shrimp biomass (Brito et al. 2001) depends on the mangroves and fluxes from Zambezi River. Therefore Sofala Bank and mangroves in this area proposed as an EBSA are vital to the shrimp (Penaeus indicus and Metapenaeus monoceros) and several fish species (see figures 3 to 5 below).
Resident megafauna, such as dolphins, rely on the system of Sofala Bank for their survival.</td></tr>
<tr><td>Vulnerability, fragility, sensitivity, or slow recovery</td><td>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.</td><td></td><td>X</td><td></td><td></td></tr>
<tr><td colspan="6">Explanation for ranking:
Marine regimes (tides, cyclone impacts and associated floods) may influence water and sediment regimes, therefore causing fluctuations of fisheries biomass.</td></tr>
<tr><td>Biological productivity</td><td>Area containing species, populations or communities with comparatively higher natural biological productivity.</td><td></td><td></td><td></td><td>X</td></tr>
<tr><td colspan="6">Explanation for ranking
• Sofala Bank produces the highest level of fisheries biomass and productivity in East Africa—about 3555 tons in monthly catches for penaeid shrimps (Brito et al. 2001).
• The proposed shoreline of this area attains the most extensive, the tallest, widest and most diverse mangrove forest in East Africa</td></tr>
<tr><td>Biological diversity</td><td>Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.</td><td>X</td><td></td><td></td><td></td></tr>
<tr><td colspan="6">Explanation for ranking
Faunal diversity is considered moderate to high. More studies are needed.</td></tr>
<tr><td>Naturalness</td><td>Area with a comparatively higher degree of naturalness as a result of the lack of or low level of human-induced disturbance or degradation.</td><td></td><td></td><td>X</td><td></td></tr>
<tr><td colspan="6">Explanation for ranking
Fish/shrimp biomass in the Sofala Bank has been intense. However, most of the coastline (mangrove) is rather pristine.</td></tr>
</table>

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Maps and Figures

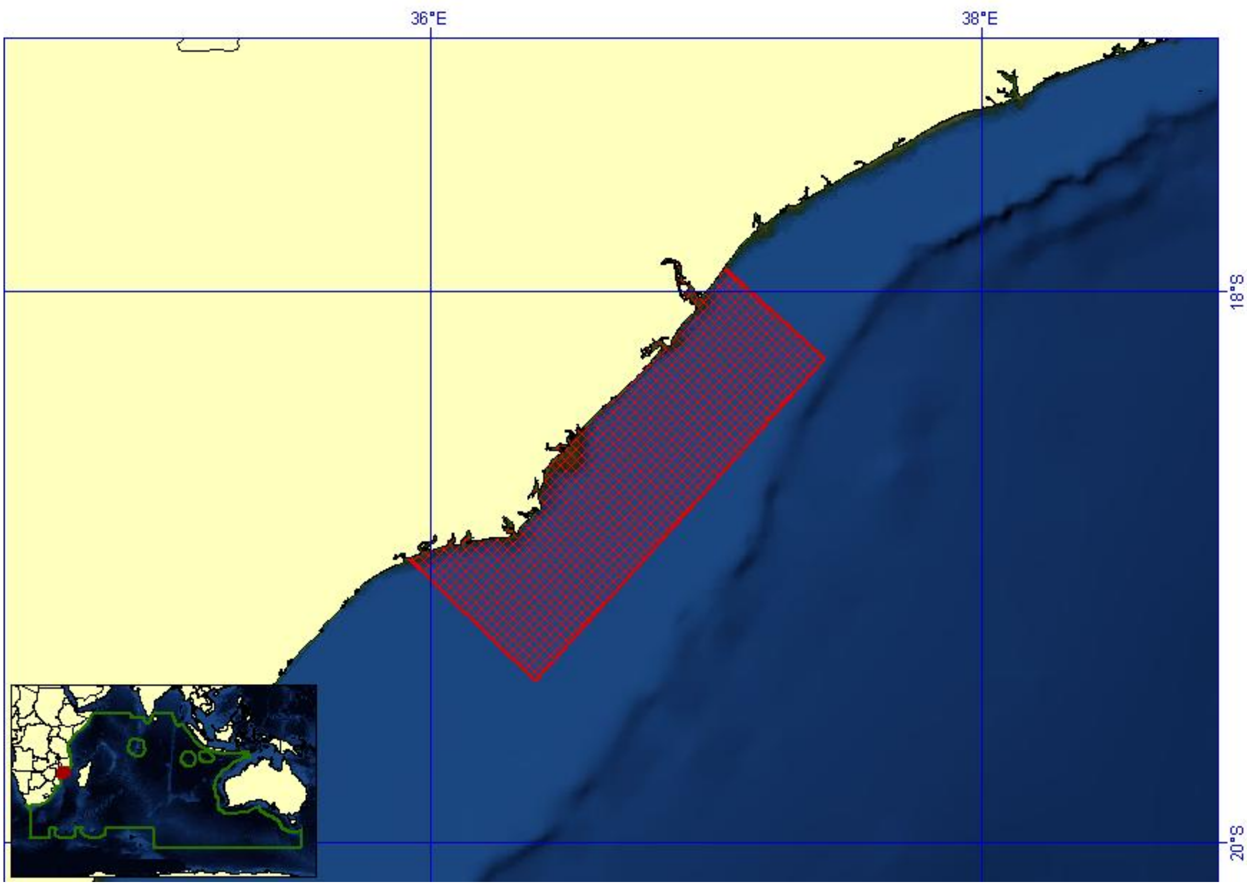

Figure 1. Map of area meeting EBSA criteria

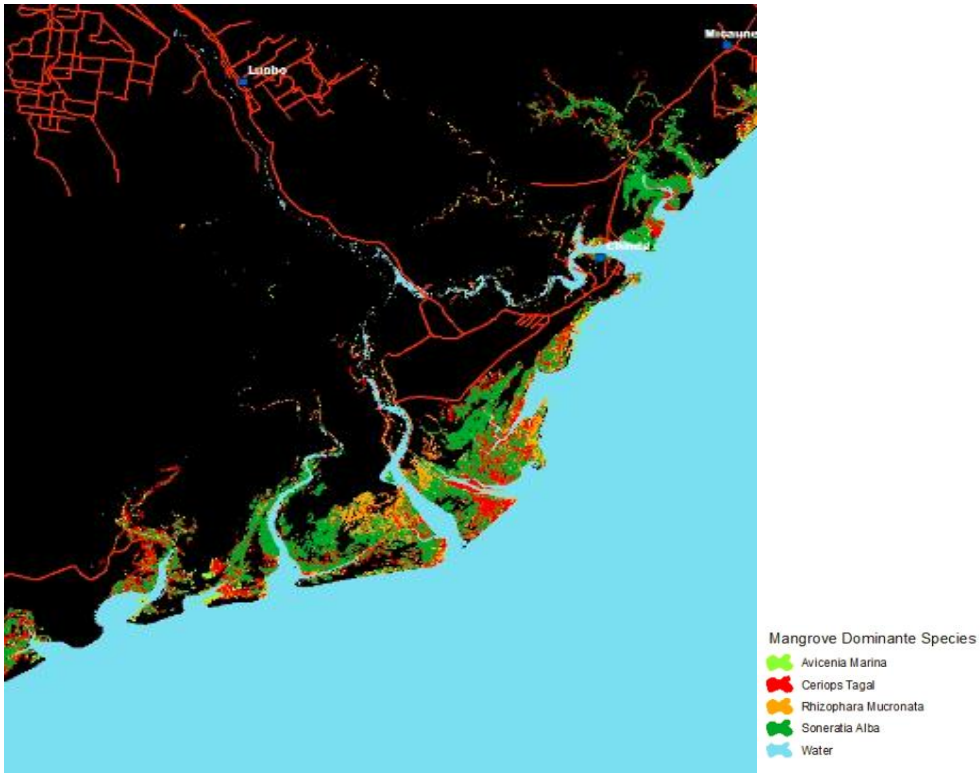

Figure 2. Strata of Zambezi delta predominant species habitats in 2012.

Figure 3. Forest of red mangrove (*Rhizophora mucronata*), one of the driving species for the abundance of shrimp in Sofala Bank.

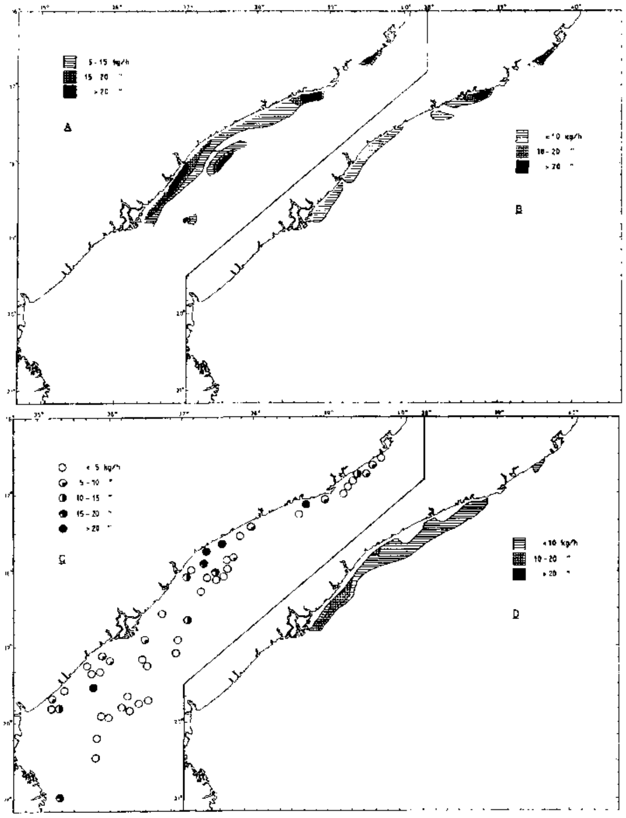

Figure 4. Pennead shrimp distribution in the Sofala Bank off Zambezi delta and surroundings in the 1980s

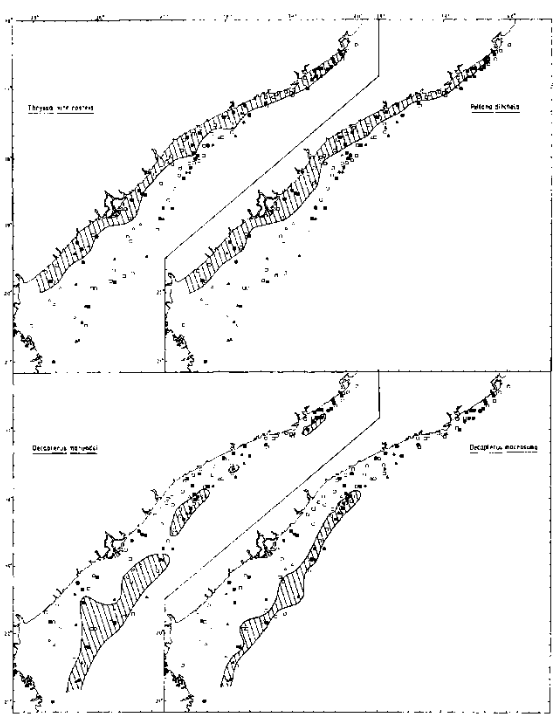

Figure 5.Catches of pelagic fish species in Sofala bank in the 1980s

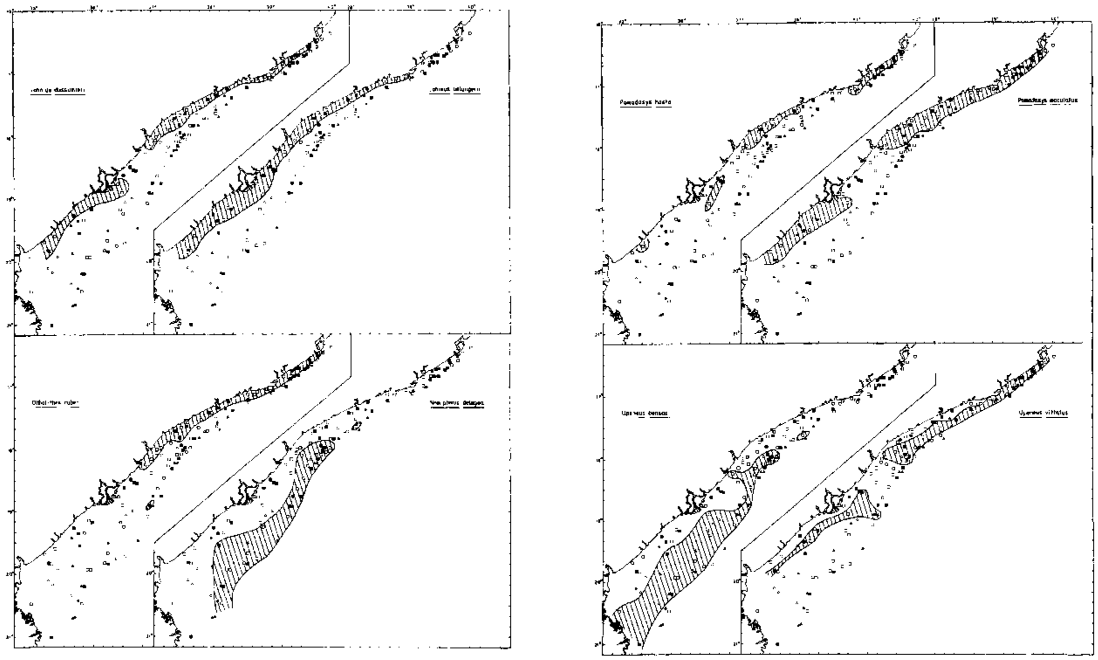

Figure 6a & b. Catches of demersal fish species in Sofala Bank in the 1980s.

Area No. 11: Agulhas Front

Abstract
The Agulhas Front is the eastward extension of the Agulhas Current, which connects water from south-western Africa to the subtropical and sub-Antarctic waters as far east as the French southern territories of Amsterdam and St Paul islands. The site has uniquely high productivity within areas beyond national jurisdiction (ABNJ) of the Indian Ocean and supports a significant diversity of biota, including charismatic and threatened species such as southern bluefin tuna, southern right whales, pinnipeds and seabirds, including the endemic critically endangered Amsterdam albatross.

Introduction
The Agulhas Front is the eastward extension of the Agulhas Current, which connects water from south-western Africa to subtropical and sub-Antarctic waters (Belkin and Gordon 1996, Kostianoy, *et al.* 2004). The Agulhas Front is a region of high productivity, ranging from approximately 900 mg C/m2 to 400 mg C/m2. These levels of productivity are not seen elsewhere in ABNJ in the Indian Ocean. This productivity supports a large number of species, including a high diversity of seabird species, pinnipeds, extensive areas of southern bluefin tuna and historically large numbers of southern right whales. There is limited information on other taxa but given many of the above are top predators, their associated food chains must be occurring within the area.

Location
The area is bounded by a box from 20°E to 83° E and from 36°S to 44°S. The site includes an extensive area of ABNJ in the west and extends to Amsterdam and Saint-Paul islands in the east. Saint-Paul Island (38°43’S, 77°31’E) and Amsterdam Island (37°50’S, 77°31E) are within French jurisdiction. They constitute one district of the Terres Australes et Antarctiques Françaises (TAAF) (French Southern and Antarctic Lands), which is the management authority of this protected areaa. These islands are separated by 85 km.
The area includes a range of depths and bathymetric features, but the boundary is based on the productivity front and known distribution of seabirds and right whales associated with this dynamic feature.

Feature description of the proposed area
At Saint-Paul and Amsterdam islands, 125 species of marine fishes have been identified (29 neritics, 72 pelagics, 24 deep-sea fishes (Duhamel, synthesis in progress) as well as three species of pinnipeds (*Milounga leonina*, *Hydrurga leptnonyx* and *Arctocephalus tropicalis)* and one endemic bird, the Amsterdam Albatross (*Diomedea amsterdamensis)*, which breeds only on Amsterdam Island, reproduces only one recruit every second year and numbers only 30 pairs per year.

The rest of the area is used as a feeding area by very large numbers of seabirds that travel here from colonies in sub-Antarctic, tropical and temperate areas, both within and beyond the Indian Ocean. Tracking data from PTT, GLS and GPS devices has shown that it is a globally significant feeding area for five threatened species of seabirds from nine colonies and is used during 16 life-history stages.

This data has shown that the Critically Endangered Amsterdam albatross feeds in this area in globally significant numbers in all months of the year and that the site is particularly important for various life-history stages, including incubation and post-guard breeding stages, as well as during juvenile stages and during the non-breeding season.

Other species found here include:

- Endangered Barau’s petrel tracked from Reunion Island using GLS occur in this area in globally significant numbers to feed between November and May (Pinet *et al.* 2011a, b, in press).

- Endangered Indian yellow-nosed albatross tracked from Amsterdam Island during incubation, and from Prince Edward Island during post-guard period
- Endangered sooty albatross from Crozet Island during incubation and non-breeding.
- Vulnerable wandering albatross from Crozet Island during the post-guard breeding period and during immature and juvenile stages; from Prince Edward Island during the post-guard breeding period; and from South Georgia during fledgling and immature stages.

Feature condition and future outlook of the proposed area

Waters around Saint-Paul and Amsterdam islands are protected and managed.

Albatross species are particularly susceptible to by-catch in fisheries, which have been identified as the main cause of significant declines for several of the species found in this area (Anderson *et al.*, 2009).

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** (please mark one column with an X)			
		Don't Know	**Low**	**Medium**	**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

Explanation for ranking

This is the only high productivity oceanographic feature in the southern Indian Ocean (UNEP/CBD/RW/EBSA/SIO/1/2) and one of the most important feeding areas for seabirds in the southern oceans (www.seabirdtracking.org)

Amsterdam Albatross breeds only on the french territory of Amsterdam Island, and its key areas are found within this area meeting EBSA criteria.

Special importance for life-history stages of species	Areas that are required for a population to survive and thrive.				X

Explanation for ranking

Whaling records from the 19th century indicate that this is an area with high concentrations of southern right whales (UNEP/CBD/RW/EBSA/SIO/1/2).

Tracking data shows that the area is known to be of global significance for 16 life-history stages of seabirds (www.seabirdtracking.org). These include:

- Amsterdam Albatross from Amsterdam Island in various life history-stages, including incubation and post-guard breeding stages as well as during juvenile stages and during the non-breeding season.
- Barau's petrel from Reunion Island during breeding season (Pinet *et al.* 2011a, b, in press)
- Indian yellow-nosed albatross from Amsterdam Island during incubation
- Indian yellow-nosed albatross from Prince Edward Island during post guard period
- Sooty albatross from Crozet Island during incubation and non-breeding season,
- Sooty albatross during juvenile stage.
- Wandering albatross from Crozet Island during the post-guard breeding period and during immature and juvenile stages;
- Wandering albatross from Prince Edward Island during the post-guard breeding period
- Wandering albatross from South Georgia during fledgling and immature stages.

Other species breeding on Prince Edward Island known to feed here, include Antarctic tern, white-bellied storm-petrel and sooty albatross. It is also likely to be of key importance for a number of other un-tracked seabird species from the other island groups in the region.

Importance for threatened, endangered or	Area containing habitat for the survival and recovery of endangered, threatened, declining species or area with significant assemblages of such				X

declining species and/or habitats	species.				
Explanation for ranking Critically Endangered southern bluefin tuna occur throughout the area meeting EBSA criteria. Tracking data shows that five species of threatened albatross, from nine colonies, are found within the area; these are: Critically Endangered Amsterdam albatross, Endangered Barau's petrel, Endangered Indian yellow-nosed albatross, Endangered sooty albatross, Vulnerable wandering albatross					
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	
Explanation for ranking Southern Right Whales are subject to mortality due to entanglements in fishing gear and collisions with shipping (IWC 2001). All seabird species are long-lived and slow at reproducing, leaving them prone to slow recovery after population declines, which often occur as a result of fisheries by-catch (Anderson *et al*. 2009).					
Biological productivity	Area containing species, populations or communities with comparatively higher natural biological productivity.				X
Explanation for ranking The area shows high productivity, calculated from the vertically generalized production model (Behrenfeld and Falkowski, 1997, UNEP/CBD/RW/EBSA/SIO/1/2)					
Biological diversity	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.			X	
Explanation for ranking The seabird community found within this area is one of the most diverse in the world. There is limited information on other taxa but given that many of the species known to occur here are top predators, their associated food chains must be occurring within the area, suggesting there is likely to be at least "medium" biological diversity.					
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		
Explanation for ranking The area has seen significant use since the 18th century and has an extensive history of whaling and fishing (UNEP/CBD/RW/EBSA/SIO/1/2). However, the area remains naturally highly productive, and there are still large numbers of seabirds feeding here, suggesting the system is at least partly still natural (UNEP/CBD/RW/EBSA/SIO/1/2). Areas within the French EEZ are considered to exhibit a high degree of naturalness.					

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**	**Medium**	**High**
Add relevant criteria	BirdLife Important Bird Areas Criteria (BirdLife 2009, 2010) A1 Regular presence of threatened species A4ii >1% of the global population of a seabird				X
Explanation for ranking The areas included here meet one or more of the BirdLife criteria for defining Important Bird Areas. (BirdLife International, 2010)					

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www.seabirdtracking.org – tracking contributors who provided data presented at this workshop are: Maria Ana Dias, Paulo Catry, Teresa Catry, Robert Crawford, Richard Cuthbert, Karine Delord, Jacob Gonzalez-Solis, Jano Hennicke, Matthieu Le Corre, Deon Nel, Malcolm Nicoll, Jose Pedro Granadeiro, Samantha Petersen, Richard Phillips, Patrick Pinet, Jaime Ramos, Jean-Baptiste Thiebot, Ross Wanless, Henri Weimerskirch, Vikash Tatayah

www.birdlife.org/eu/pdfs/Marine_IBA_Toolkit_2010.pdf

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Maps and Figures

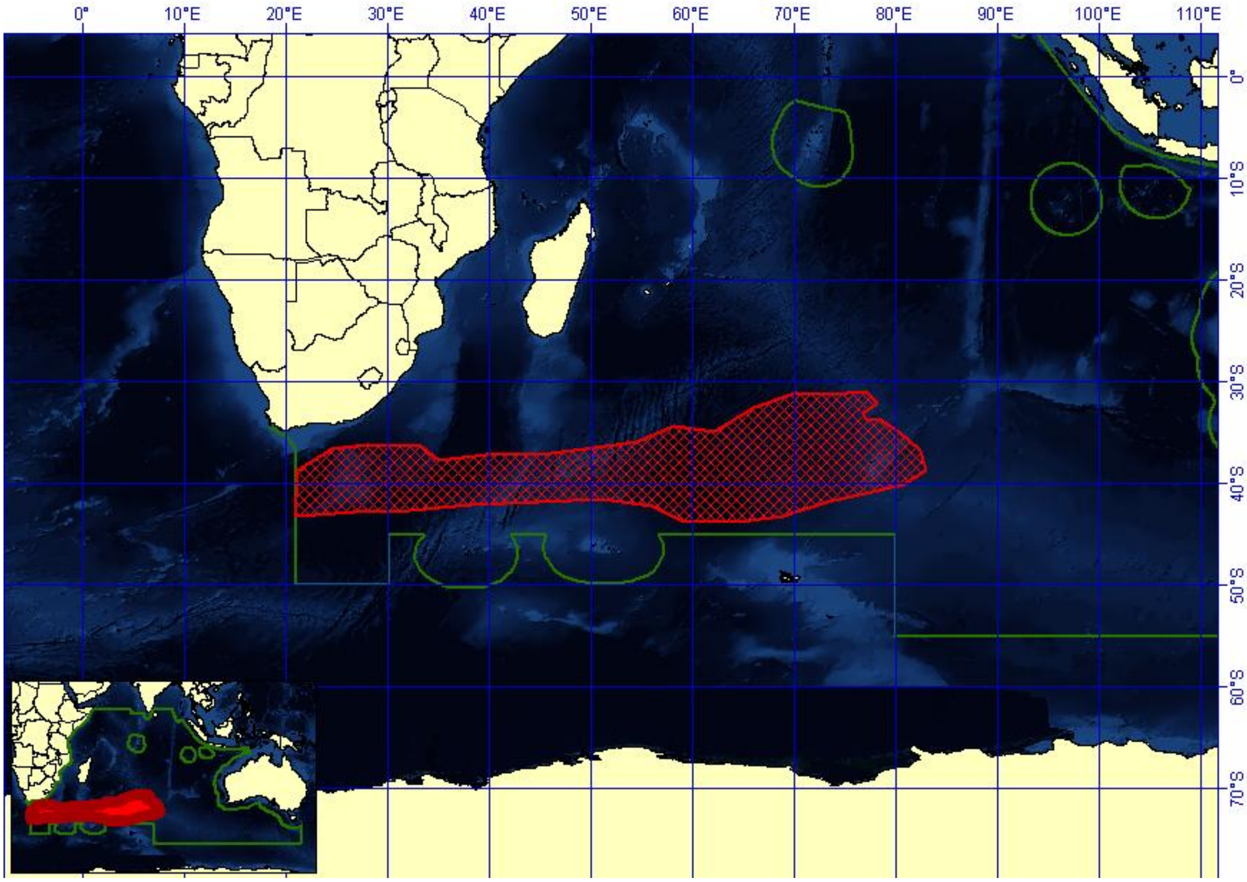

Figure1: Map of area meeting EBSA criteria

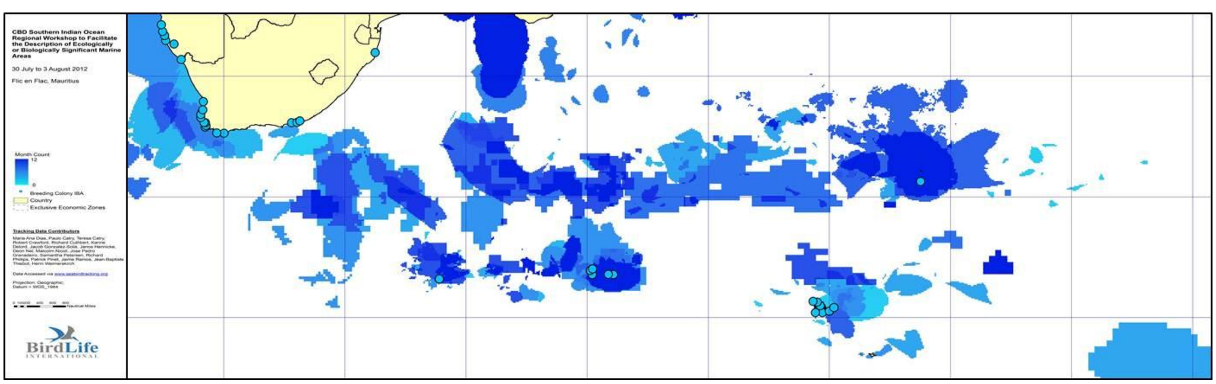

Figure 2. Map showing seabird areas of global significance in the Southern Ocean, and the number of months during the year that different parts of the front are known to be used. www.seabirdtracking.org

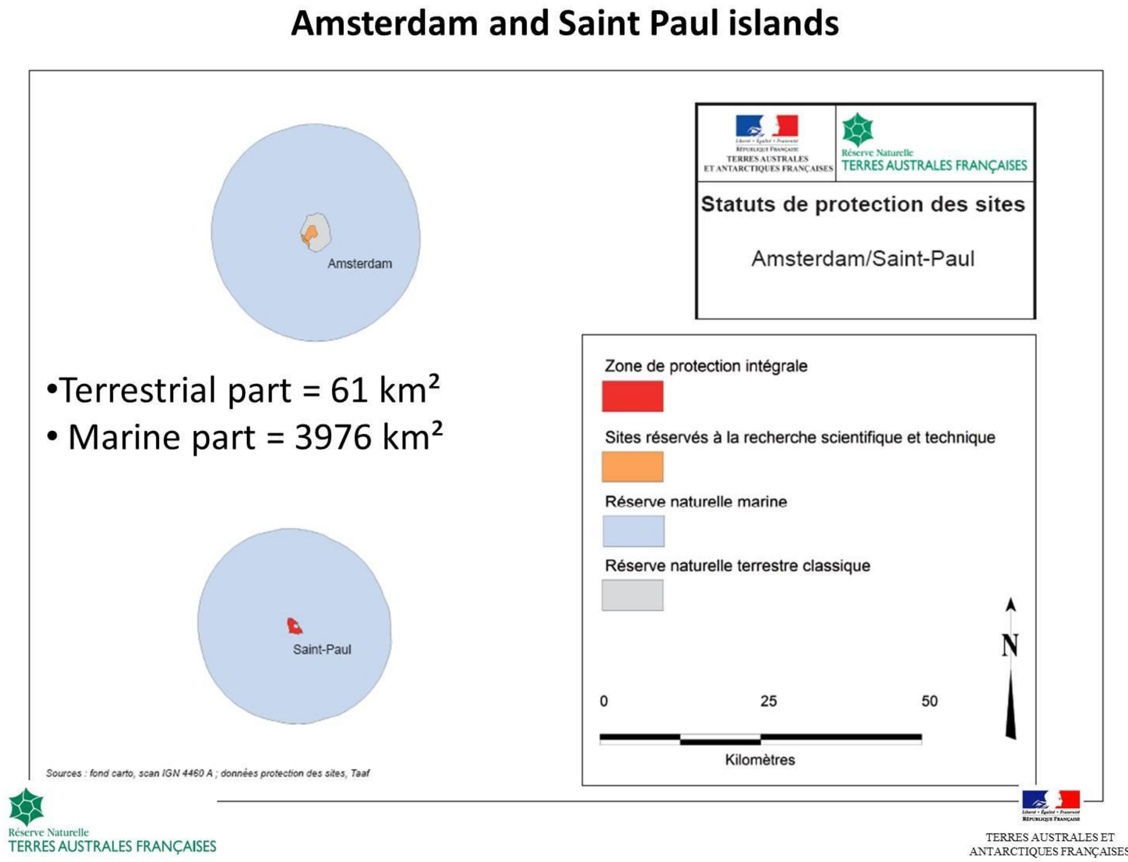

Figure 3. Marine protected areas of Amsterdam and Saint-Paul islands

Area No. 12: Tanga Coelacanth Marine Park

Abstract
Tanga Coelacanth Marine Park was formally established on 28 August 2009 through publication of Government Notice No: 307 of 2009. The park covers an area of 552.18 km^2, of which 80.5 km^2 are terrestrial. The main reason for gazetting the area as a marine protected area is the high number of coelacanth catches in the area during the previous eight years. Scientific research and the use of remotely operated videos in the area have shown coelacanths living in caves at depths between 150 and 200 metres.

Coelacanth (*Latimeria chalumnae*) is a fossil fish which was believed to have been extinct for the past 60 million years. The first recorded catch in Tanzania of coelacanth, one of the world's rarest and most enigmatic deep-water fishes, occurred in September 2003 at Kilwa. This stimulated considerable interest and was announced two days later at the World Parks Congress by Dr Sylvia Earle. Since then more than 52 captures of coelacanths have been reported by fishers in the fishing villages of Kigombe, Mwarongo and Mwambani, in Tanga Region, Mtwara, Lindi and Dar es Salaam using deep-set shark nets (locally called *Jarife*). By September 2005, 25 coelacanths had been caught in Tanzania, 19 in a six-month period. This is the greatest number of coelacanths caught in the shortest time anywhere in the world. The vast majority of fish were caught off the Tanga-Kigombe coast.

Introduction
The northern coast of Tanzania has in recent years become the centre of national and international attention, brought about by the significant numbers of coelacanths (*Latimeria chalumnae*) caught in its inshore waters. By September 2005, 25 individuals had been caught in Tanzania, 19 within a six-month period. This is the greatest number of coelacanth caught in the shortest period of time anywhere in the world, suggesting that the species is under new and considerable pressure in Tanzania and is in critical need of protection. The coelacanth catches raised awareness of the need for the protection of representative reef and deep-water ecosystems, to protect not only the endangered coelacanth, but also to ensure the maintenance of ecosystem processes and services on which so many coastal communities depend. As a result, the development of marine protected areas (MPAs) as well as conservation areas is now in progress.

Tanga Coelacanth Marine Park **(**TACMP) covers an area of approximately 552 km^2; 18 villages and Tanga City make up some 45,000 park residents. It hosts the bays of Tanga City and Mwambani, Tongoni estuary, and the three islands of Toten, Yambe and Karange within its boundaries. About 13 submerged and tidal reef formations, including stretches of intertidal fringing reef, are also located within the park.

WWF has identified the Tanga coastal region as an eco-regionally important seascape within its Tanga-Msambweni East African Marine Eco-region. Awareness of the coelacanth by-catch problem has been raised by conducting a scientific research cruise to survey the biophysical and oceanographic conditions of the species' ecology and abundance in Tanga (ACEP cruise report 2007/8). Conservation planning for coelacanths and other critical habitats in the area was initiated by stakeholders and concluded with participants' call for the establishment of a conservation area to protect the species and its environment.

Location
The Tanga Coelacanth Marine Park (TACMP) is located in Tanga Region, between 5° 03' 37"S 39° 14' 41"E and 5° 24' 13"S 39° 08' 12"E and 5° 21' 39"S 39° 01' 55"E and 5° 03' 21"S 39° 03' 21"E. It spans across the two districts of Muheza and Tanga Municipal, and covers a surface area of 552.177 km^2, of which some 85 km^2 are terrestrial and 467 km^2 are marine. TACMP extends on land from south of Kigombe village along the Pangani road to Mafuriko village and north of Tanga city. Off the coast from Mafuriko village it stretches to the port buoy north-east of Jambe Island, and from there southwards parallel to the shoreline to a buoy to the south-east of Southhead reef.

Feature description of the proposed area
The park area supports a number of ecologically important and diverse habitats. Inshore waters are characterized by fringing and patch coral reefs, seagrass beds, mangrove forests, and several estuaries and embayments. Major geographic features found within the northern part are Toten Island, the islands of Yambe and Karange, and Mwambani Bay. The islands are covered by stands of coastal forest, with steep submerged slopes leading eastwards into the Pemba Channel. The coastline between Tanga and Kiungani has substantive stands of mangrove habitat and intermittent beaches. The southern part of the park holds two deeper barrier reefs, Fungu Tongoni and Southead, with submerged slopes facing the Pemba Channel. The coastline south of Tongoni village is characterized by a large fringing reef stretch, intermittent smaller reef patches and mostly sandy shores.

The marine park includes within its boundaries a total of 9 villages and 9 localities within the city (Mitaa) with an approximated population of 45,000 residents, excluding the buffer zone. There is no other marine park in Tanzania that hosts a similar number and density of people within its boundaries as they are located in remote areas. This amplifies the critical need for a participatory, balanced and considerate resource management and conservation strategy, which must be based on multiple uses.

Geology and Topography
Tanga Region covers an area which rises from the sea to approximately 600 m above sea level. The coastal plains extend inwards from the shore for 20 to 30 km with a variety of grasslands, sisal plantations and trees. They are bordered by the Usambara Mountains to the northwest, where most of the high elevation points are found. The coastal plains are composed of both marine and terrestrial sediments. Much of the coast is of Pleistocene and more recent coral limestone. The soil types include dark clays on older alluvial deposits of volcanic origin, and grey bottomland soils. A belt inland from the coast contains continental and coastal deposits of limestone, sands and gravel. The marine rocks consist of marls, limestone and shells (UNESCO-IOC, 2009). The presence of a higher level of iron and manganese in groundwater along the Tanga coastline often results in turbid and coloured water supplies in some areas (UNEP, 2001).

Bathymetry
The continental shelf off Tanga Region is about 2,090 km² in area and comparatively narrow. It varies in width from 5 to 10 km between Tanga and Pangani to over 40 km near the Kenyan border (Bensted-Smith, 1988). The 200 m depth contour is approximately 4 km offshore (UNESCO-IOC, 2009) (Fig. 3).

The shallow waters of the continental shelf are characterized by a series of 96 submerged fringing and patch reefs, mangrove habitats, seagrass beds and sand banks, and the deeper shelf areas are characterized by many small ridge-like extrusions that form caves in which coelacanths have been found (Kaehler *et al.* 2007/8). Main elevations within TACMP are the outer coral rag islands of Toten Island, Yambe, and Karange, where most of the coelacanths have been found. A small sea-floor feature approximately 80m height was discovered to the east of Fungu Tongoni reef no earlier than 2007 (Kaehler *et al.* 2007/8). At approximately 80m depth, the shelf scarp increases rapidly to about 150m depth, and from there the seafloor tends to be flat and smooth.

Climate
The climate of the northern coast of Tanzania is tropical with warm and humid conditions. The humidity ranges between 60 and 80% (UNESCO-IOC, 2009). It is influenced by the seasonally changing monsoon winds of the Indian Ocean, creating two main seasons: the Northeast Monsoon (*Kaskazi*, November to February) with higher air temperatures and lower wind speeds, and the Southeast Monsoon (*Kusi*, April to September) with typically cooler air temperatures, higher wind speeds and rough seas. Between the changing monsoons there is usually a calmer period (*Matlai*), March / April and October / November)

Weather Conditions

The North-East Monsoon is normally associated with air temperatures of 28 to 32°C and high surface water temperatures of up to 31°C, with few showers and moderate to strong winds. Beyond June, into the Southern Monsoon, the climate is cooler and drier (approx. 23°C), but consistently has the strongest winds until approximately November.

The rainfall pattern is bimodal with amounts ranging between 800 and 1600 mm/year on average (differs from one district and year to the other). January and February are generally dry. From March to May the coast experiences long comparatively heavier rains, and short rains between November and December (UNESCO-IOC, 2009).

The coral bleaching event (March to May 1998) coincided with increased rainfall and lower ocean salinity, due to higher than normal seawater temperatures (Muhando, 1999).

El Niño - Southern Oscillation (ENSO)

In 1998 a major El Niño took place which increased sea surface temperatures and severely affected Indian Ocean ecosystems, particularly coral reefs. In Tanga, this resulted in about 50% loss in coral cover on all reefs inside the present marine park (decrease from 67% to 12.5% coral cover between 1997 and 1999). Gradual recovery from this bleaching event was however seen again from 2000.

Currents

The major currents prevailing in the coastal waters of Tanzania, including TACMP, are the South Equatorial Current (SEC) flowing westwards around 12°S (approximate border area of Tanzania and Mozambique), and the East Africa Coastal Current (EACC) flowing northwards from there along the coast. The EACC is a steady current, strongest during the Southern Monsoon (April - October) when surface currents can exceed 3 m/s, and weaker during the Northern Monsoon (November-March) with an average speed of 0.5 m/s 8 (UNESCO-IOC, 2009). Depending on the strength of the north-east monsoon, the northward flowing EACC can change direction to flow eastward and offshore as equatorial counter current (ECC) at any particular time of the year.

For TACMP, speeds of over 1 m/sec were recorded in TACMP waters in October 2007. Island wake upwelling with enhanced chlorophyll production seems to prevail in the northern reaches around Pemba Island. Investigation of several eddies and upwelling cells for primary production, phytoplankton, zooplankton, trophic links and nutrient sources had been undertaken with results forthcoming. Generally, chlorophyll productivity is comparatively low in Tanzanian waters with 0.4 -1.4 mg/m" where no upwelling is served. Salinity values are generally lower during May due to freshwater outflow, and highest in November (UNEP, 2001).

Tides

Tides are semi-diurnal with high and low waters occurring twice a day. Mean spring tide for Tanzania is about 3.5 m and mean neap tide about 2.5 m (UNESCO-IOC, 2009). For Tanga, a maximum diurnal range of about 4.5 m has been recorded. During the low water - spring tides, biggest changes are seen over the area of Mwambani Bay where an extensive area of sand and seagrass gets exposed. Seawater visibility is clear most of the times. Tides not only influence ecological processes in the coastal waters and likely the distribution pattern of coelacanths, but also largely determine resource use activities by coastal communities, such as skin diving for octopus and spiny lobsters during neap tides and use of scoop nets from shore. Scientists recommend the installation of a permanent tide gauge in the park.

Surface Water Temperature

The sea surface temperatures are seasonal in the coastal waters, varying between 25°C in July-September and 28 to 29°C in shallow areas during the north-east monsoon from January to March. The depth of the upper mixed layer varies from 20m (March and November) to 100m (June and July), due to the seasonal variations of wind speed and direction (UNEP, 2001).

The Natural Environment

Mangrove Forests
Tanga region has Tanzania's third-largest mangrove forest cover, approx. 13,192 ha (MMP, 2000), after Rufiji and Kilwa. Between 1998 and 2003, 176.4 ha of mangrove area were replanted (Wells *et al.* 2007). Natural mangrove cover is said to have been largely maintained in Muheza District and that large areas have been replanted (a total of over 200 ha, with 400,000 seedlings). In TACMP, mangroves are predominant in river estuaries as well as on Yambe and Karange. A large area of mangrove forest spans the villages of Mtambwe, Ndumi, Mwambani Mchukuuni, Jambe Island and Geza as well as Mwarongo, Tongoni and a small strip south of Kigombe.

Nine species of mangroves exist inside the park area: *Avicennia marina, Bruguiera gymnorhiza, Ceriops tagal, Heritiera littoralis, Lumnitzera racemosa, Rhizophora mucronata, Sonneratia alba, Xylocarpus granatum* and *Xylocarpus molluccensis.*

Regular mangrove monitoring is carried out in Chongoleani mangrove forest (551ha) in Tanga Municipality since 2003. The national Mangrove Management Project implements the Mangrove Management Plan (MMP, 1991) at a nationwide scale, which also encourages participatory monitoring with coastal villagers and includes regular replanting activities (Wells *et al.* 2007).

Muddy Shores / Mud Flats
Mud flats occur in shallow calm water bays from Kilanje Creek at Mtang'ate Bay northwards to the Kenyan border (UNEP, 2001), and in Tongoni. These ecosystems support a variety of aquatic fauna and avifauna, including seabirds, mangrove kingfisher, coastal waders and pelicans.

Seagrass Beds
There are numerous and extensive seagrass beds within the park area, but their extent and ecological patterns inside the marine park are not well documented to-date (Kaehler *et al.* 2007). Seagrass beds are considered highly vulnerable to human activities, such as prawn trawling, seine and drag nets. The habitat is particularly critical as a nursery ground for juvenile fish of the majority of fish species exploited in TACMP, as major contributor to coastal productivity, and as feeding habitat for endangered species like dugong and green turtle.

Rocky Shores and Macro-algae / Seaweeds
Rocky shores in TACMP mainly consist of marine fossils dating at least 15.000 years back, when ancient coral reefs were exposed during the last ice age. The forms of rocky shores include the outer coral rag islands of Toten, Yambe and Karange. Mwambani Bay is fringed with limestone cliffs.

Over 340 species of red, green and brown intertidal Macro-algae (referred to as seaweeds or *mwani* in Kiswahili) are recorded to occur in Tanzania (Oliveira *et al.* 2005). On the TACMP coastal rocky shore, 105 macroalgal species have been initially identified. TACMP species were to 43% red algae of small size and substrate cover; 26.6% of green algae dominating the upper and middle intertidal; 29% brown algae of greater biomass (supporting the highest productivity), greater substrate cover and dominant in lower intertidal areas (Buriyo *et al.*, 2009). Intertidal rocky shores in TACMP are richer in macroalgal species, particularly in Kibaoni, Dahali, followed by Kigombe, than coral reefs and muddy substrates. Most abundant genera are (red) *Hypnea*, *Gracilaria*, *Jania* and *Amphiroa;* (brown) *Dictyota*, *Padina*, *Sargassum*, *Turbinaria*; and (green) *Caulerpa*, *Chaetomorpha*, *Halimeda* and *Ulva* (Buriyo *et al.*, 2009).

Coral Reefs
Of the 407 km of coastline in the Tanga region, 97 km are bordered by distinct sections of fringing reefs and there are at least 55 outer and inner patch reefs recognized in the area, yielding a total of 376 km of

reef edge in the region (Horrill *et al.* 2000). Fringing reefs occur along the coast, shallow patch reefs are found in the inshore waters, and offshore there are deeper reefs near the drop-offs.

The reefs in the Tanga region are generally rich in marine biodiversity, and support a large local fishing community (McClanahan *et al.* 1999). In 1968, Tanga reefs were perceived as ranking among the 'best' along the Tanzanian coastline (Ray, 1968). A total of 47 coral genera have been recorded with diversity increasing from 20 genera on the inshore fringing reefs, to 24 on the inner patch reefs and 28 on the outer patch reefs (Horrill *et al.* 2000). Reef communities vary both from north to south and from inshore to offshore (Othina and Samoilys, 2005).

Coral cover and structural reef damage has a long history in Tanga. In 1987 reefs were reported as being in poor condition with an average 10 to 20% of live coral cover (Bensted-Smith, 1988). In 1995, 12% were estimated to be completely destroyed, 64% in poor or moderate condition, and 24% in good condition. Abundance of commercially important fish families, such as snappers, emperors, and rabbitfish, was low on 90% of the reefs, as were populations of commercially important lobster, sea cucumbers, and molluscs (Horrill *et al.* 2000). Corals declined further from bleaching effects of El Niño in 1998 (by 50% on all reefs in Tanga) and coral disease in 2003. In 2006, highest coral cover was 40 to 50% on closed and inner reefs, largely due to successful management measures by the Tanga Coastal Zone Management and Conservation Project (TCZCDP). In 2007, it was confirmed that habitats have degraded quickly due to resurfaced dynamite fishing and that biodiversity, community structure and species richness were all negatively affected with signs of succession by secondary colonizers like microphytes and algae (Kaehler *et al.* 2007/8).

Most of the decline in reef health has been attributed to structural damage from dynamite fishing, particularly to the south of TACMP (off Kigombe) and in close vicinity to Tanga City. Weighted nets, boat anchors and hulls flattening the top of shallow reefs, and trampling of those reefs exposed at spring low tides may play an additional role, and the large increase in fishers may play a role in the comparatively low fish abundances on reefs (Wells *et al.* 2005).

Phytoplankton

Phytoplankton communities around Pemba Channel are dominated by small flagellates. Diatoms are more important at greater depth, whereas prokaryotes are significant in surface waters to 25m (Kaehler *et al.* 2007/8). Generally, phytoplankton and chlorophyll-a concentration data are still scarce for Tanzania.

Fish Community Structure and Populations

Some 380 fish species have been identified for Tanga waters (Spalding *et al.* 2001, Mhitu, 2007), mostly from landed catches and observations during underwater surveys. The most important families in reef fish catches are Lethrinidae, Lutjanidae, Siganidae, Scaridae, Labridae and Mullidae. There are large-scale differences in ecology and fish communities between reef areas to the south of the park and those inside TACMP, whereas fish community structure on reefs previously closed tends to be similar. Reef cluster according to similarity in fish communities (the closer the reefs are connected the more similar the reef fish community) (Othina and Samoilys, 2005).

Fish community structure on reefs near Tanga appeared significantly altered due to overexploitation and destructive fishing (Kaehler *et al.* 2007/8, Horrill *et al.* 2000). 53% of the species were from major reef fish families, however there was a noticeable lack of predatory reef fishes and on average the fish were too small (75% under 40cm, most around 20cm), being clear signs of overexploitation. Triggerfish, which are important sea urchin predators and contributed to reef health, were scarce on the reefs inside the area presently designated as a park, and damaged reefs in the northern part had high sea urchin densities. Demersal and large pelagic fish had notable low catch rates, which also indicates overexploitation (Horrill *et al.* 2001). Regular monitoring between 1995 and 2008 confirmed the low fish abundance and biomass in commercially exploited species, particularly groupers, snappers, emperors, grunts and rabbit fish.Despite a gradually increasing trend 1998-2001 in population densities of these species especially on closed reefs, fish abundance was largely declining since 2003 (Wells *et al.* 2007). Snappers, emperors, grunts and rabbitfish were the most important fisheries target groups. The biomass of this group was considered very low (at about 8kg/ha) compared to an average biomass of 250 to 300kg/ha on closed reefs (McClanahan *et al.* 2005).

A large number of species are taken, and composition varies according to gear type, season and habitat (e.g. whether reefs or seagrass beds), and other fishing grounds. The predominant finfish groups are emperors and snappers (changu), rabbitfish (chafi), rays, sharks, kingfish, and other large fish, and small sardines (dagaa). Handlines are mostly catching snappers and emperors (39%) and rabbitfish (19%); fish traps predominantly rabbitfish (81%); and shark nets catch mostly rays (71%) (Anderson, 2004).

An analysis of catches landed at Kigombe village from 1995-1999 showed that 40% was inshore fish, 32% rays, 21 fished include % offshore fish, 6% sharks, and 1% other species (Horrill, 1999).

The Coelacanth, *Latimeria chalumnae*
One of the most notable fish in the region is the coelacanth, *Latimeria chalumnae*. Often referred to as a “living fossil fish”, its conservation status is considered endangered (CITES - Annex 1 species). Within the park area, coelacanths seem to occur mainly along the outer island drop-offs.

The northern coast of Tanzania has been at the centre of national and international attention since 2003 when coelacanths were rediscovered in the area. One fish was caught off the coast of Songo Mnara near Kilwa by deep-set gill net in September 2003. In 2004, fishers from Kigombe caught 4 specimens when using deep-set shark nets set on the inshore seabed between 50-200m depth. In a period of 3 months, 15 coelacanths were caught off the coast of Kigombe.

As of January 2011, at least 37 specimens were captured as by-catch in the park, mainly in the fishing villages of Kigombe, Mwarongo and Mwambani. The major reason for the sudden appearance of coelacanths in catches is that shark nets had been set in deeper waters over the last 10 years, due to diminishing fisheries catches in the inshore waters.
The unprecedented catch incidents of coelacanths in Tanga area called for urgent management measures to protect the species in Tanzania, to sustain representative reef and deepwater ecosystems and ensure maintenance of the ecosystem processes on which coastal communities as well as coelacanths depend.

Invertebrates

Octopus
Densities of octopus are comparatively low with about 0.05 individuals/50m², possibly due to severe overfishing or inadequate sampling during TCZCDP regular monitoring (Wells *et al.* 2007). Octopus species grow extremely fast, increasing in weight by up to 200g in 10 days, and can potentially support a highly productive fishery if it is well-managed. Population trends should be carefully explored for that purpose.

Lobsters / Crayfish
Mainly spiny lobsters are exploited and reported from the Park area. A 1995 survey found low counts of lobsters on coastal and inner patch reefs, and no dedicated surveys had been conducted since then. Reef health monitoring recorded that spiny lobster densities seemed to vary largely between closed and open reefs (Wells *et al.* 2007), and tended to be higher on closed reefs and should be continuously monitored.

Molluscs / Shells
Low counts of giant clams (*Tridacna* spp.) and spider conches (*Lambis* spp.) were recorded for coastal and inner patch reefs (Wells *et al.* 2007). Populations seemed to have remained relatively stable.

Urchins and Starfish
Densities of the non-fishery sea urchins and starfish seemed highly variable and differed significantly between open and closed reefs in the park area. At two reefs that were reopened in 2000, a decrease of 50% density in urchins was noted (Verheij *et al.* 2004). In 2005, sea urchins were more abundant on offshore reefs to the north of the park, as well as on open reefs, which tend to be more damaged (Othina and Samoilys, 2005). An outbreak of Crown of Thorns Starfish (*Acanthaster planci,* COTs), known as highly damaging to coral reefs, was reported just north of the park on Mijimile Ndogo reef and removed in 2004.

Sea Cucumbers
Population densities of sea cucumbers vary largely, with drops in March and peaks in November, but overall the populations have remained stable between 2000 and 2007, with 0.7-1.0 specimen per 50m². Sea cucumber densities in Tanga are considered to be low, and population trends need to be further explored (Wells *et al.* 2007).

Marine Turtles
Three species of marine turtles are found in Tanga waters: olive ridley (*Lepidochelys olivacea*), green turtle (*Chelonia mydas*) and hawksbill (*Eretmochelys imbricata*). All three species are endangered. Turtle populations in Tanzania have generally declined, mainly due to loss of the nesting sites (e.g. Maziwe Island south of the park boundary no longer supports nesting populations of these species) but also due to incidental and deliberate capture in gill nets. Pangani District, south of the park boundary, is still considered an important feeding and nesting area for marine turtles. Taking of turtles is prohibited (section 13 of Fisheries Regulations 1989).

Marine Mammals
The dugong (*Dugong dugong*) is considered endangered in Tanzania and worldwide and is protected under the Marine Parks and Reserves Act No. 29 of 1994. Dugongs were known to inhabit seagrass beds off the Tanga coast. Today sightings are highly irregular: In May 2006 a dugong was sighted by divers at 10m depth near Kigombe, one was caught in 2000 at Buyuni near Pangani, and a small population might still exist near the Kenyan border at Mbaya / Kigomeni.

Dolphins used to be seen regularly, however sightings have become rarer over the last 10 years (Wells *et al.* 2007). The most common species are spinner (*Stenella longirostris*) and humpback (*Sousa chinensis*). Humpback whales, *Megaptera novaeangliae*, pass by the Tanga coast on the migration around August and September.

Shorebirds
The mangrove swamps, coastal wetlands, salt pans and sand banks in the park area provide suitable feeding and roosting habitats for a number of bird species, such as egrets and migrant waders. Important species that can be found in the Tanga region include the greater sand plover (*Charadrius leschenaultii*), curlew sandpiper (*Calidris ferruginea*) and crab plover (*Dromas ardeola*). Kibo Saltpans (300 ha) in northern Tanga is an Important Bird Area. An area 4400ha South of Tanga and just outside the park is an Important Bird roosting / feeding area.

Feature condition and future outlook of the proposed area

The condition of resources in the area varies with human resource use practices. The area facing several unsustainable resource use practices affecting the biodiversity. The main challenges are the use of dynamite for fishing, cutting of mangroves, use of dragnets (beach seining), use of poison and killing of turtles. The situation was serious twelve years ago but was partially improved during the Tanga Coastal Zone Development and Conservation Project, which did a good job in community awareness and enforcement. During the project life, coral reefs started to regenerate and fish communities followed suit.

However, when the project ended unsustainable fishing practices resurfaced. Containing such practices has become a big challenge to the newly established marine park, which has, therefore, formulated various objectives to attain its conservation goal.

Assessment of the area against CBD EBSA Criteria

<table>
<tr><th rowspan="2">CBD EBSA Criteria
(Annex I to decision IX/20)</th><th rowspan="2">Description
(Annex I to decision IX/20)</th><th colspan="4">Ranking of criterion relevance
(please mark one column with an X)</th></tr>
<tr><th>Don’t Know</th><th>Low</th><th>Medium</th><th>High</th></tr>
<tr><td>Uniqueness or rarity</td><td>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.</td><td></td><td></td><td></td><td>X</td></tr>
<tr><td colspan="6">Explanation for ranking

The area is home to CITES-listed and emblematic coelacanth, Latimeria chalumnae, the species that was previously considered extinct.</td></tr>
<tr><td>Special importance for life-history stages of species</td><td>Areas those are required for a population to survive and thrive.</td><td></td><td>X</td><td></td><td></td></tr>
<tr><td colspan="6">Explanation for ranking

Some of the marine turtles are nesting in this area.</td></tr>
<tr><td>Importance for threatened, endangered or declining species and/or habitats</td><td>Area containing habitat for the survival and recovery of endangered, threatened, declining species or area with significant assemblages of such species.</td><td></td><td></td><td></td><td>X</td></tr>
<tr><td colspan="6">Explanation for ranking

The area harbours habitat for Coelacanth, which is considered to be endangered according to the CITES list.</td></tr>
<tr><td>Vulnerability, fragility, sensitivity, or slow recovery</td><td>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.</td><td></td><td></td><td>X</td><td></td></tr>
<tr><td colspan="6">Explanation for ranking

Coelacanths and corals are highly susceptible to human degradation. While corals are highly sensitive to temperature changes and salinity.</td></tr>
<tr><td>Biological productivity</td><td>Area containing species, populations or communities with comparatively higher natural biological productivity.</td><td></td><td>X</td><td></td><td></td></tr>
<tr><td colspan="6">Explanation for ranking

The area is productive in terms of fisheries of finfish and shellfish.</td></tr>
<tr><td>Biological</td><td>Area contains comparatively higher diversity of</td><td></td><td></td><td></td><td></td></tr>
</table>

diversity	ecosystems, habitats, communities, or species, or has higher genetic diversity.			X	
Explanation for ranking The area is considered to have very high biodiversity ranging from fish communities, corals, invertebrates and seagrasses.					
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		
Explanation for ranking There is high degree of human disturbance due to unsuitable fishing techniques.					

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**	**Medium**	**High**
Add relevant criteria					
Explanation for ranking The area is a newly established marine park.					

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Maps and Figures

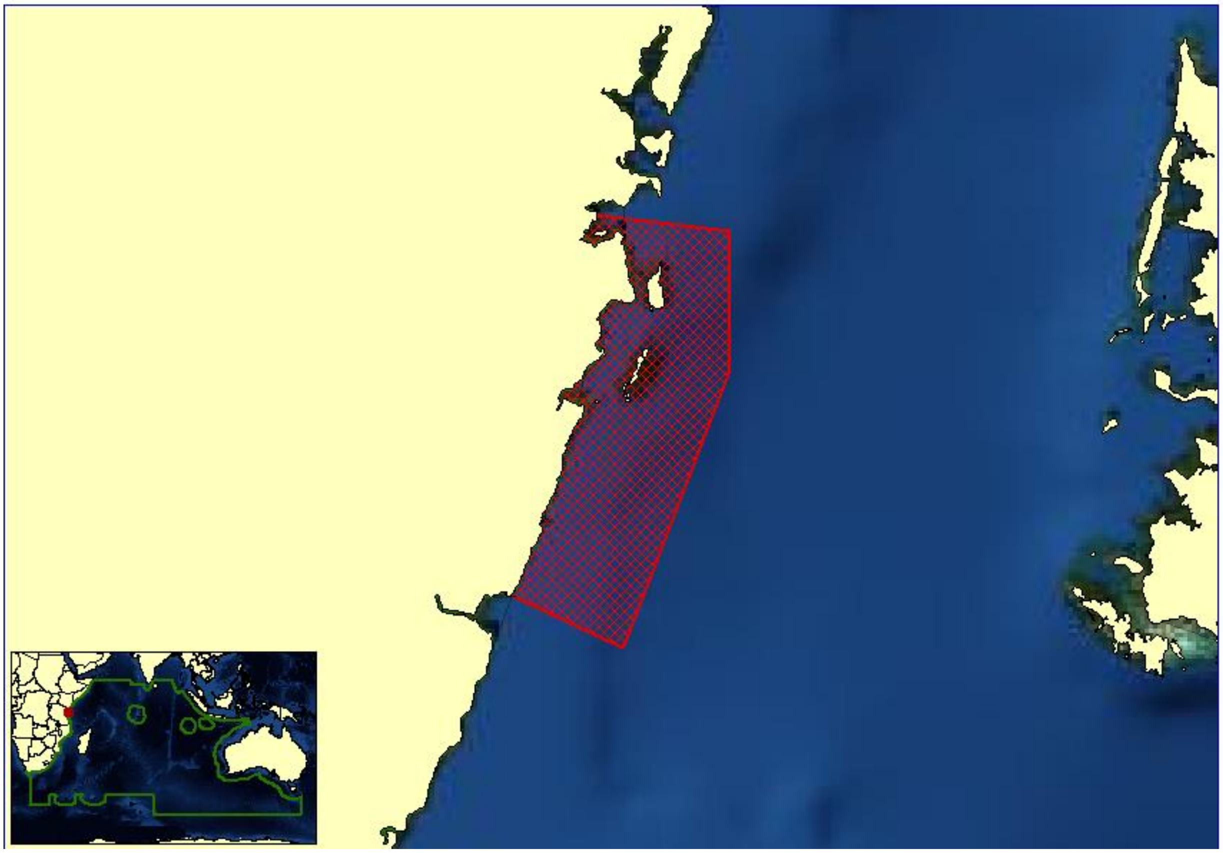

Figure 1. Map of area meeting EBSA criteria

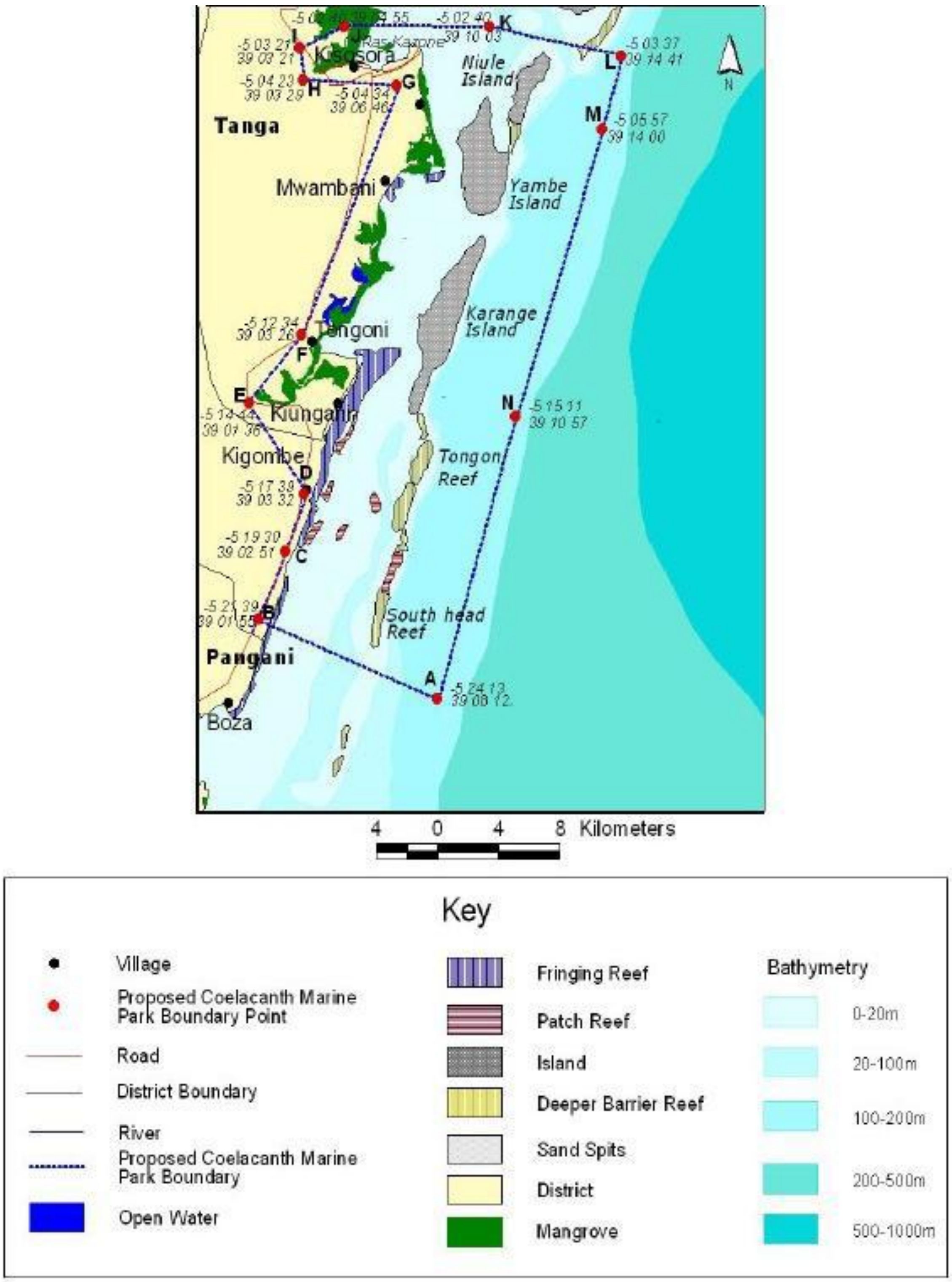

Figure 2. Location of Tanga Coelacanth Marine Park on the Tanzanian coast

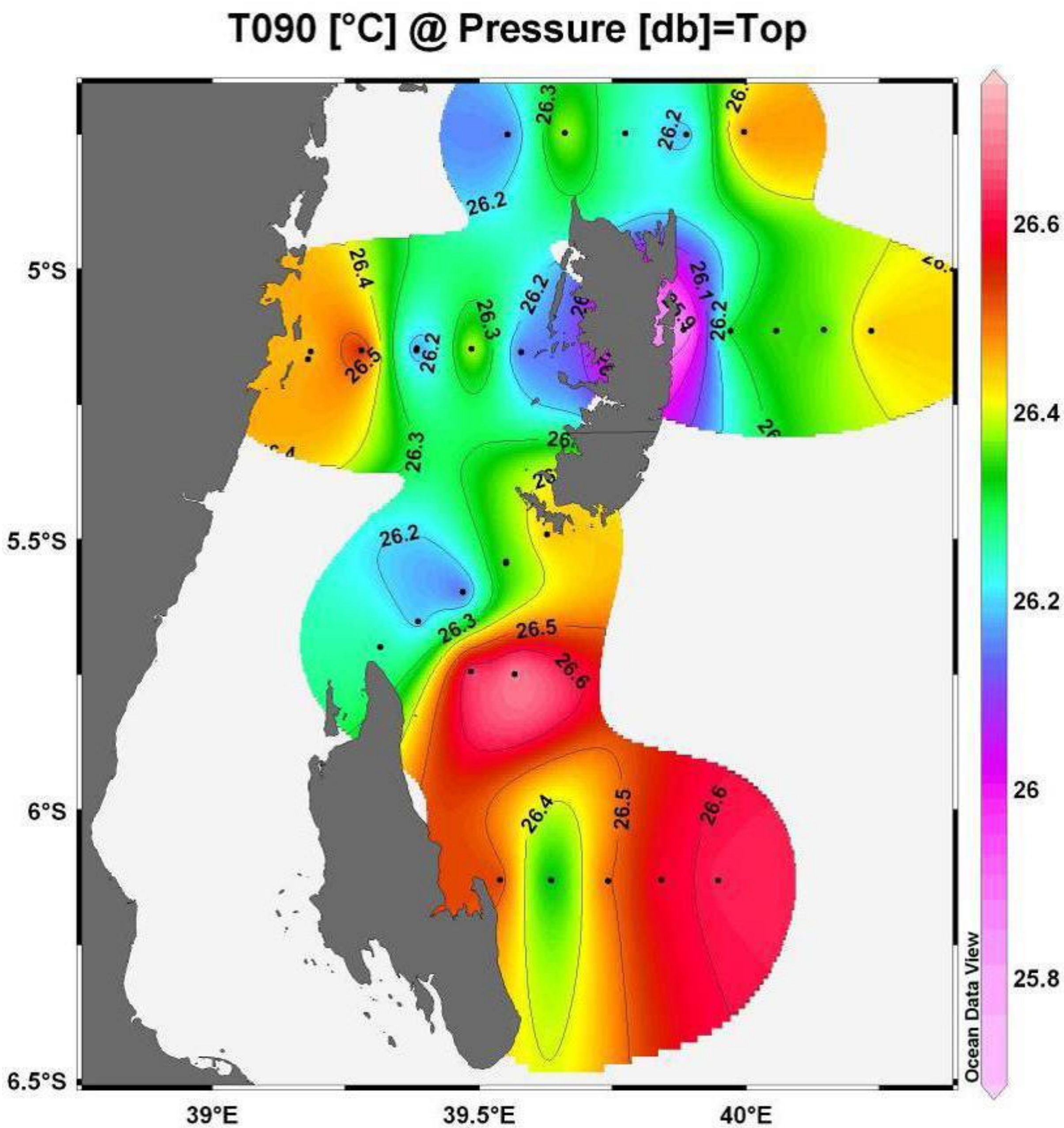

Figure 3. Surface temperature plot showing warm water temperature for Tanga Region, colder waters in the Pemba Channel and cold upwelling around Pemba Island.

Area No. 13: Pemba-Shimoni-Kisite

Abstract

The Pemba Channel is the strait separating the eastern coast of mainland Africa from Pemba Island. The northernmost part of the channel faces the coast of Kenya near the Shimoni area, while the rest of it faces mainland Tanzania. The Pemba Channel has a high fish diversity comprising pelagics, turtles, dolphins, dugongs and occasional whales. The Pemba Channel has fast flowing East African current flowing from south to north up the channel where it is forced up by the lip in the north of the channel, creating amazing rips and eddies, and bringing nutrients to the surface.

The Kisite-Mpunguti area, located in the Shimoni area on the southern coast of Kenya, incorporates the Kisite Marine Park, the largest no-take area in Kenya (28 km²), and the adjacent Mpunguti Marine Reserve, Kenya's smallest reserve (11 km²). The area covers shallow waters (0-15 m) and supports a high diversity of marine life, including corals, reef fish and sea turtles and is important for the life history of the coconut crab, a rare and endemic species. Kisite Island is an Important Bird Area (IBA), hosting species such as the sooty tern (*Sterna fuscata*) and large numbers (up to 1000 breeding pairs recorded) of crested tern (*Thalasseus bergii*) and roseate terns (*Sterna dougallii*), and encompasses a wide range of habitats, including mangrove forests, coral reefs, seagrass beds and offshore waters, which are considered important fish nursery grounds. The Pemba-Shimoni-Kisite area thus provides prime habitat for sea mammals and various types of corals and associated fish species.

Introduction

Pemba-Kisite-Mpunguti is a transboundary area meeting EBSA criteria, located at the border of Tanzania and Kenya. The area is an Eastern African Marine Eco-region, which contains a high level of biodiversity, important feeding and breeding areas, and a migratory route for endangered mammals.

Pemba is a remarkable and unique island in the Western Indian Ocean (WIO) with depths of 1,000 metres in the Pemba Channel separating it from the Tanzanian mainland. Its west side in particular has a heavily indented coastline with numerous bays, islets and deep braided channels that form the physical basis for its diverse range of marine habitats.

Pemba Island falls under Tanzania's jurisdiction while Kisite-Mpunguti lies at the south coast of Kenya and comprises a marine area with four small islands surrounded by coral reef (Figure 1). The area includes shallow waters (0-15 metres) and has high productivity with unique biodiversity. Seagrasses *Cymodocea serrulata* and *Syringodium isoetifolium* cover a large area of the sub-littoral zone of the reef. Marine algae include *Padina commersonii, Dictyota bartayresiana, Bostrychia binderi*, *Ulva lactuca*, *Dictyosphaora sp.*, *Udotea indica*, and *Halimeda opuntia.*

Both Pemba Island and Kisite –Mpunguti areas have well developed coral gardens and a large variety of fish species. Coconut crab (*Birgus latro)* the largest land-living arthropod, is endemic to lower Mpunguti Island. Mating occurs on dry land, but the females migrate to the sea to release their fertilised eggs as they hatch. The larvae are planktonic for three to four weeks before settling to the sea floor and entering a gastropod shell.

Pemba-Kisite-Mpunguti transboundary marine ecosystem covers an area around the border of Tanzania and Kenya. The area is separated from the Tanzania mainland by the Pemba Channel, whose highly diverse and productive marine habitats, including coral reefs, seagrass beds and extensive mangrove stands, are generators of biodiversity and biomass that undoubtedly influence the entire region. Consequently the area was classified as a regionally important site in the Eastern African Marine Ecoregion during the Eastern African Marine Eco-region Visioning Workshop held in 2001, although the report published by the World Wildlife Fund (WWF) notes that there was debate as to whether the site should be globally or eco-regionally important, and that it was put in the latter category because of lack of data to compare it with other known marine areas.

Pemba is a remarkable and unique island in the Western Indian Ocean (WIO). Together with Unguja Island it forms Zanzibar, an archipelago about 40 km off the East African coast that is part of the United Republic of Tanzania (URT). Pemba Island is a strong generator of marine resources for the region due to highly productive and relatively pristine and diverse habitats that are closely linked and functionally connected. Located not far from the African continent, Pemba Island creates a centre for production of marine resources, as many species of fish and other marine organisms are attracted to its shores for foraging and breeding. Pemba increases the marine diversity in the East African region simply by forming a nucleus of productivity in the Pemba Channel that exports marine life to adjacent areas including deep and shallow waters around the island and mainland. The marine habitat diversity is reflected in the diversity of fish species. The North Pemba Channel, with its steep drop off causing upwelling, supports important concentrations of sailfish, black marlin and tuna. The Pemba Banks, together with the North Kenya Banks (Kisite and Shimoni) and Latham Island, host globally important congregations of black marlin (*Makaira indica*) that only occur in these densities in East Africa and Australia.

Along the west side of Pemba Island there are significant numbers of whales in the inshore waters, and it is estimated that five or more whales are sighted from one spot on land per day. Humpback whales (*Megaptera novaeangliae*) and sperm whales (*Physeter catodon*) are regularly sighted in the Pemba Channel.

Pemba Island is an Important Bird Area in the WIO. The tentative list of bird species for Pemba island contains 26 species, including three subspecies endemic to Pemba: the Pemba African Goshawk *(Accipiter tachiro pembaensis),* the Bronze-naped Pigeon *(Columba delegorguei ssp.)* and the Pemba Black-breasted Glossy Starling *(Lamprotornis corruscus vaughani)* — and four species endemic to Pemba classified by the World Conservation Union (IUCN) as globally threatened: the Green Pigeon *(Treron pembaensis),* the Russet Scops Owl *(Otus pembaensis),* the Pemba Sunbird *(Nectarinia pembae)* and the Pemba White-eye *(Zosterops vaughani).*

The Kisite and Mpunguti Area incorporates Kisite Marine Park, the largest no-take area in Kenya (28km²), and the adjacent Mpunguti Marine Reserve, Kenya's smallest reserve (11 km²). The area covers shallow waters (0-15 m) and supports a high diversity of marine life, including corals, reef fish and sea turtles (KWS report, 2010) and is important for the life history of the coconut crab, a rare and endemic species. The area also provides prime habitat for sea mammals and various types of corals and associated fish species.

The Kisite-Mpunguti lies at the south coast of Kenya and comprises a marine area with four small islands surrounded by coral-reef. The area includes shallow waters (0-15 metres and has high productivity with unique biodiversity. Seagrasses *Cymodocea serrulata* and *Syringodiumi soetifolium* cover a large area of the sub-littoral zone of the reef. Marine algae include *Padinacommersonii*, *Dictyota bartayresiana, Bostrychia binderi, Ulvalactuca, Dictyosphaora sp., Udoteaindica,* and *Halimeda opuntia.*

The area has a high concentration of Indo-Pacific bottlenose dolphin and Spinner dolphins. Other marine species include parrotfish, trigger fish, moray eels, butterfly fish, angelfish, groupers, wrasses, scorpion fish, puffer fish, damselfish, rays and snappers. Green sea turtles, hawksbill turtles, sharks and stingrays are also common. Sightings of humpback whales and whale sharks have been made. Corals documented in the area include staghorn, brain, mushroom, lilac-blue, and lavender corals. A wide variety of coral fish, including yellow and red tuna and snappers, as well as barracudas, marlins, sailfish and kingfish are abundant in the area.

Five species of sea turtles can be found in the WIO, four of which have been recorded on Pemba Island (green turtle, hawksbill, leatherhead and loggerhead) although only the green and hawksbill turtles are known to nest.

Dolphins are found around Pemba, and the target area is considered a significant area for dolphins in the region based on regular sightings by fishers and commercial diving operations. Indo-Pacific bottlenose dolphins (*Tursiops aduncus*), Indo-Pacific humpback dolphins (*Sousa chinensis*) and spinner dolphins (*Stenella longirostris*) are the species most often encountered in Zanzibar coastal waters. Spinner dolphins (*Stenella sp.*) have been recorded around Misali, and there are occasional sightings of humpback dolphins (*Sousa sp.*) in the bay between Misali and the main island of Pemba (Ras Tundaua). In Zanzibar, high by-catch was reported in gillnet fisheries (Amir & Jiddawi 2001, Wamukoya *et al.* 1996, Borobia 1997). Their habitat was purportedly threatened by direct hunting for their meat, medicine as well as bait in sport and line fisheries (Stensland *et al.* 1998). In Kenya five species were identified in an aerial survey conducted in 1994 (Wamukoya *et al*. 1996)

The area has well developed coral gardens and a large variety of fish species. Coconut crab (*Birgus latro)* is endemic to the lower Mpunguti Island. Coconut crab is the only of the genus *Birgus* and is the largest land-living arthropod. Mating occurs on dry land but the females migrate to the sea to release their fertilised eggs as they hatch. The larvae are planktonic for three to four weeks before settling to the sea floor and entering a gastropod shell. Like hermit crabs, juvenile coconut crabs use empty shells for protection before developing a tough exoskeleton on their abdomen at maturity.

Location

The Pemba – Kisite – Shimoni area lies between latitudes 04º 50’S and 05º 30’S. In the deeper waters are seamounts in the open ocean, which form part of a ridge perpendicular to the current, creating massive upwellings and prolific fishing.

This transboundary area is influenced by the monsoon winds of the Indian Ocean. The north-eastern monsoon blows from December to March, bringing calm weather, with low wave height and temperatures from 28 to 32ºC. The south-eastern monsoon blows from May to October, usually bringing windy, rough seas and cool temperatures (24-26ºC). The transition periods are characterized by variable and weaker winds. Rainy periods occur between the monsoon seasons with the long rains occurring from March to May and the short rains from October to December, with a mean annual rainfall ranging from 1000 to 1600 mm.

Feature description of the proposed area

The Kisite-Mpunguti area, which includes Kisite-Mpunguti Marine Protected Area (38 $km^{2)}$, has been recognised by its diverse ecosystems and habitats including, coral reefs, seagrass meadows and mangrove forests, which support a rich biodiversity including sea turtles, dolphins, whales and coral reef fish species.

This area has 2.8 times the biomass of the Tanga district, in northern Tanzania (McClanahan et al. 2006) and the highest number of species recorded in visual transects along the Kenyan coast (McClanahan et al. 2010), highlighting the ecological importance of the area as a food resource for Indo-Pacific bottlenose dolphins.

Pemba Island contains the only oceanic reefs in the Eastern African Marine Eco-region (EAME), with high diversity and coral growth in excess of 64 metres depth, and possibly the deepest seagrass beds. Common genera are *Thallassia*, *Thallasodendron* and *Zostera*. S of sailfish, black marlin and tuna are also found in abundance. Pemba Island is thought to be a unique example of a diverse and deep-water coral community on a granitic island with spectacular underwater scenery that has been considered as a potential area for World Heritage listing. The 1,100 km of coral reef around Pemba Island represent 50% of the coral reefs in Tanzania and supports a high diversity of coral genera, fish and over 40 species of sponges. Coral cover in Pemba Island was 40 to 60% with 40 genera observed, representing two thirds of the coral genera known to occur in Tanzania. The dominant species are *Porites spp.*, *Montipora spp.*, *Montastrea spp.*, *Diploastrea spp, Acropora spp.* and *Galaxea spp.*

The Pemba marine area has 10 extensive stands of mangrove species (*Avicennia marina, Ceriops tagal, Lumnitzera racemosa, Xylocarpus granatum, Xylocarpus molucensis, Heritiera littoralis, Bruguiera gymnorrhiza, Rhizophora mucronata, Sonneratia alba*, and *Pemphis acidula*) and is often associated with extensive seagrass and algal beds. The mangrove stands in Pemba Island appear to be in higher quantities than those in Unguja—Pemba Island has a mangrove area of 12,000 ha. Seagrass beds provide shelter, food and nursery area for some important and valuable species of fish and shellfish, as well as for the green turtle.

Feature condition and future outlook of the proposed area

Vulnerabilities and threats to the area include:

1. Destructive fisheries and overexploitation
2. Mangrove deforestation and unsustainable extractive use of mangroves
3. Coastal development leading to habitat loss
4. Tourism related development
5. Solid waste pollution
6. Human population increase
7. Coral Bleaching

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** (please mark one column with an X)			
		Don't Know	**Low**	**Medium**	**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**
Explanation for ranking Area contains distinct ecosystems including coral reefs, seagrass meadows and mangrove forests. Kisite island is an internationally recognized Important Bird Area (IBA) for migratory seabirds. Pemba Island is a strong generator of marine resources for the region due to highly productive and relatively pristine and diverse habitats that are closely linked and functionally connected (Frontier-Tanzania, 2004).					
Special importance for life-history	Areas that are required for a population to survive and thrive.			**X**	

<table>
<tr><td>stages of species</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="6">Explanation for ranking

The Pemba-Shimoni area provides foraging grounds for sea turtles. The Shimoni area is an important breeding ground for the rare and endemic coconut crab Birgus latro, the <u>only species</u> of the <u>genus</u> Birgus and the largest land-living <u>arthropod</u>. Mating occurs on dry land but the females migrate to the sea to release their fertilized eggs as they hatch. The larvae are <u>planktonic</u> for 3–4 weeks before settling to the sea floor and entering a gastropod shell. Hundreds of species of reef fish depend upon this ecosystem for feeding, breeding etc. About 1,000-3,000 Sterna dougalii (Roseate terns), also considered to be globally significant, breed 10 km offshore of the Kisite area..
The area has a high diversity of coral species (Horrill J.C, 1992).

The area provides foraging grounds for several species of cetaceans, such as the Indo-Pacific bottlenose dolphin (Tursiops aduncus), Indo-Pacific humpback dolphin (Sousa chinensis), spinner dolphin (Stenella longirostris), humpback whale (Megaptera novaengliae) and dugong (Dugong dugon) (GVI, Rapid Assessment of the Proposed Pemba Channel Conservation Area (PECCA report, 2004).

The area provides important nesting and foraging grounds for sea turtles (KWS report. Conservation and Management Strategy for Sea Turtles in Kenya, 2010-2014).</td></tr>
<tr><td>Importance for threatened, endangered or declining species and/or habitats</td><td>Area containing habitat for the survival and recovery of endangered, threatened, declining species or area with significant assemblages of such species.</td><td></td><td></td><td>X</td><td></td></tr>
<tr><td colspan="6">Explanation for ranking

Five species of sea turtle with a status ranging from threatened to critically endangered (KWS report, 2010).
Threatened and declining species of coconut crab, dolphin, dugongs, and whales ((GVI, Rapid Assessment of the Proposed Pemba Channel Conservation Area (PECCA report, 2004).
Coral reefs, seagrass meadows and mangrove forest are threatened and declining (McClanahan and Obura, 1995).</td></tr>
<tr><td>Vulnerability, fragility, sensitivity, or slow recovery</td><td>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.</td><td></td><td></td><td>X</td><td></td></tr>
<tr><td colspan="6">Explanation for ranking

Due to its relatively small size and increase in human population and associated activities the area is vulnerable.

The area is vulnerable to destructive fisheries and overexploitation, unsustainable extractive use of mangroves, coastal development leading to habitat loss, uncoordinated tourism development, solid waste pollution, and coral reef bleaching</td></tr>
<tr><td>Biological productivity</td><td>Area containing species, populations or communities with comparatively higher natural biological productivity.</td><td></td><td></td><td>X</td><td></td></tr>
<tr><td colspan="6">Explanation for ranking

The area includes coral reefs, seagrass meadow and mangrove forest ecosystems with high levels of</td></tr>
</table>

biodiversity and/or biological productivity (Rapid Assessment of the Proposed Pemba Channel Conservation Area (PECCA) The area generates marine resources for the region due to highly productive and relatively pristine and diverse habitats that are closely linked and functionally connected.					
Biological diversity	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.			**X**	
Explanation for ranking Coral reef biodiversity ranks as high. Pemba Island is pristine due to a smaller human footprint. The area has high biodiversity of flora and fauna. Coral reef biodiversity ranks as high (Horrill J.C, 1992).					
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**		
Explanation for ranking The currently protected area covers a relatively a small sea area of Kenya's 500km coastline. Some places are pristine while others clearly show stress. Anthropogenic activities are increasingly impacting negatively on the ecosystem.					

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Maps and Figures

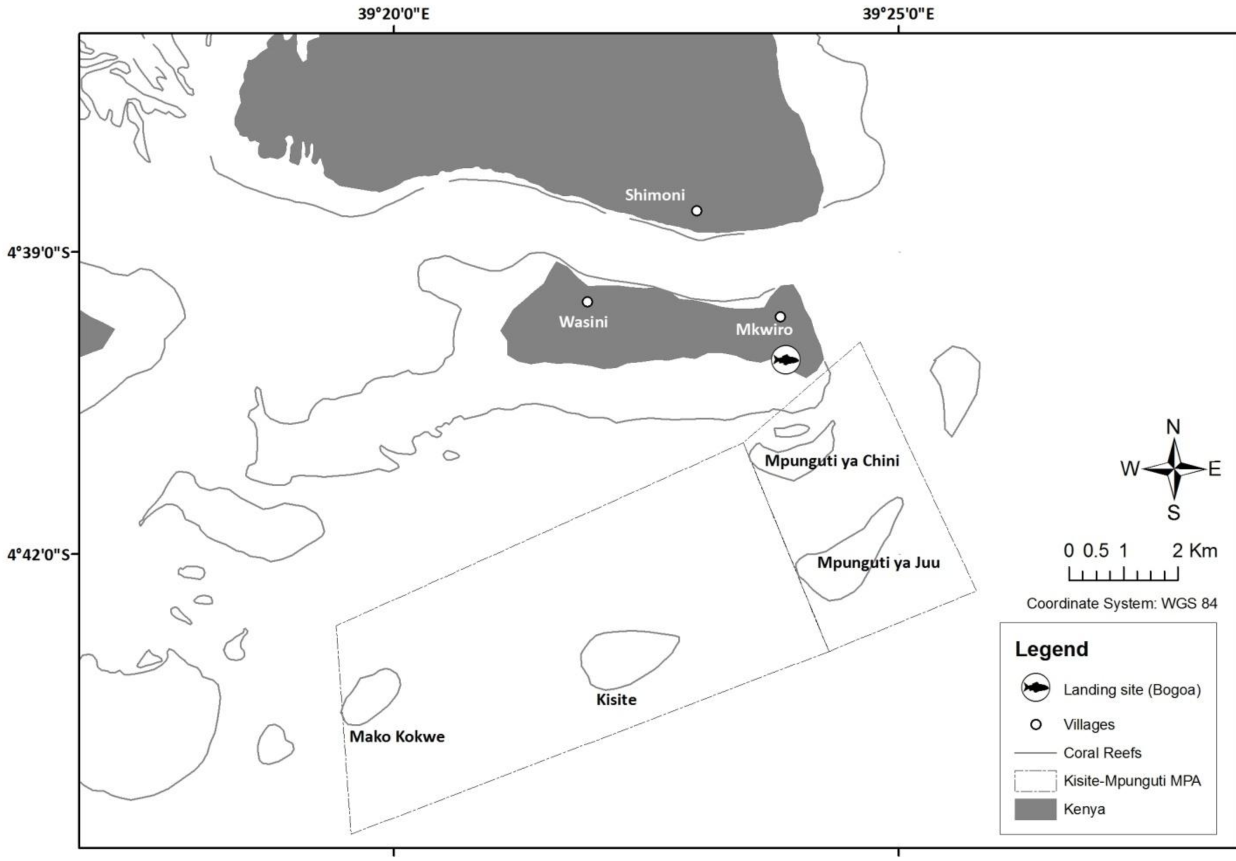
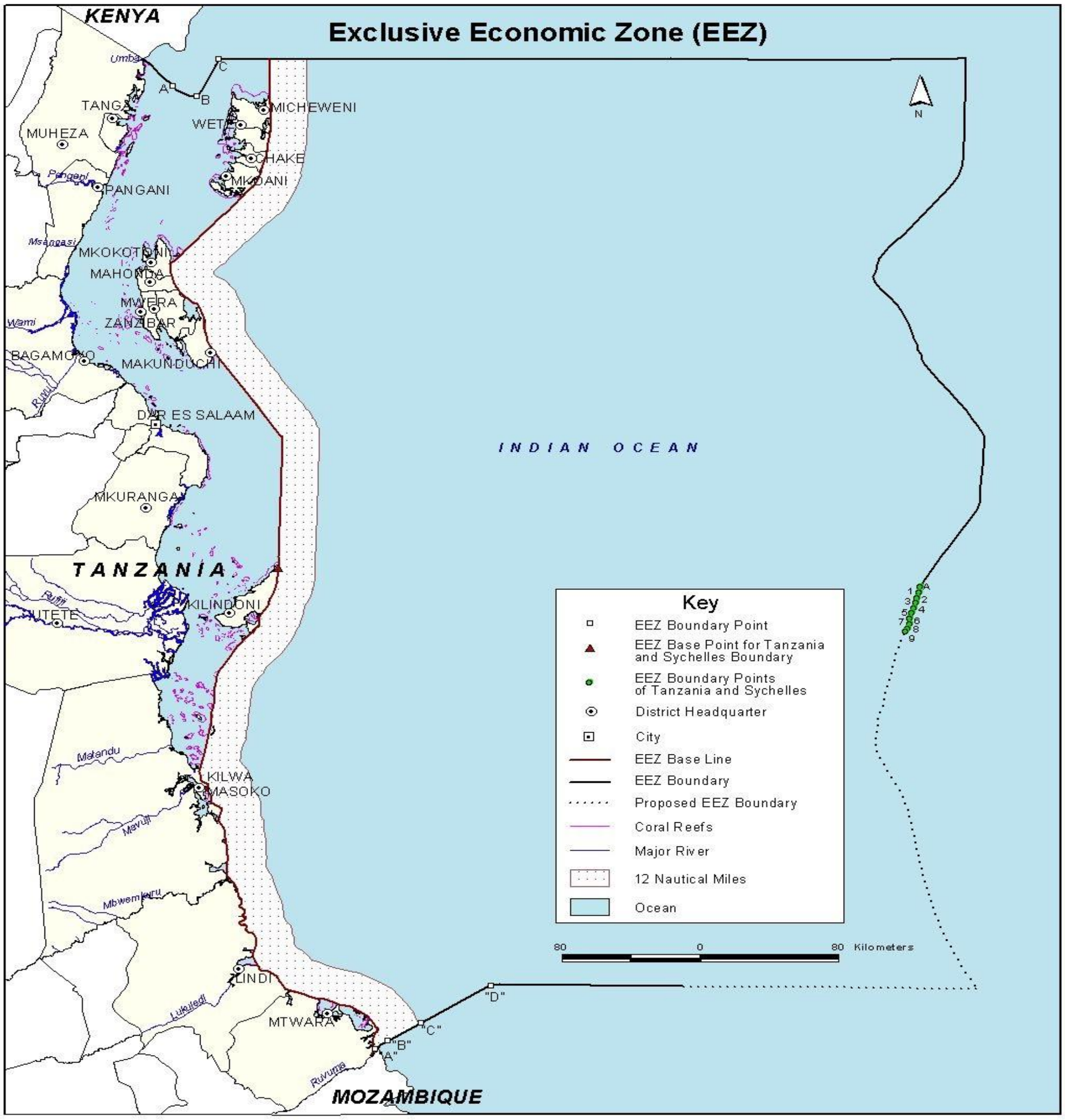


Figure 1. Kisite Marine Park and Mpunguti Marine Reserve and adjacent areas within Kenyan national jurisdiction.


Exclusive Economic Zone (EEZ)
KENYA
TANZANIA
MOZAMBIQUE
INDIAN OCEAN
TANGA
MUHEZA
PANGANI
MICHEWENI
WETE
CHAKE
MKOANI
MKOKOTONI
MAHONDA
MWERA
ZANZIBAR
BAGAMOYO
MAKUNDUCHI
DAR ES SALAAM
MKURANGA
KILINDONI
UTETE
KILWA MASOKO
LINDI
MTWARA
Key
EEZ Boundary Point
EEZ Base Point for Tanzania and Sychelles Boundary
EEZ Boundary Points of Tanzania and Sychelles
District Headquarter
City
EEZ Base Line
EEZ Boundary
Proposed EEZ Boundary
Coral Reefs
Major River
12 Nautical Miles
Ocean
80 0 80 Kilometers

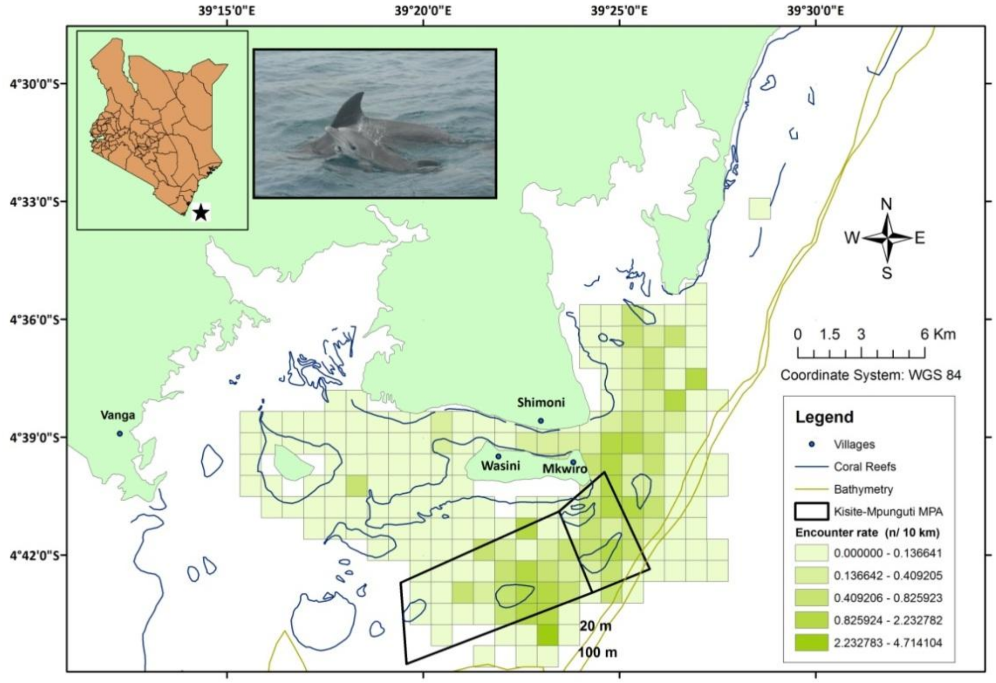


Figure 2. Map showing Kisite-Mpunguti Area and the Indo-Pacific bottlenose dolphin (*Tursiops aduncus*) encounter rate (number of observations/boat survey effort) in the area. (Source GVI).

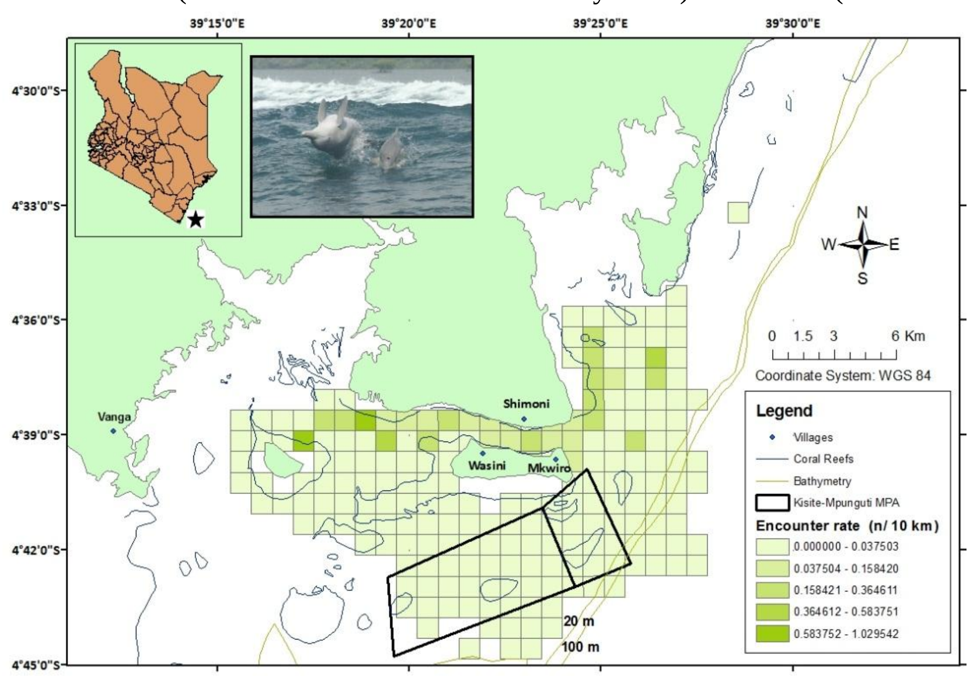


Figure 3. Map showing the Indo-Pacific humpback dolphin (*Sousa chinensis*) encounter rate (number of observations/boat survey effort) in the Kisite-Mpunguti Area. (Source GVI)

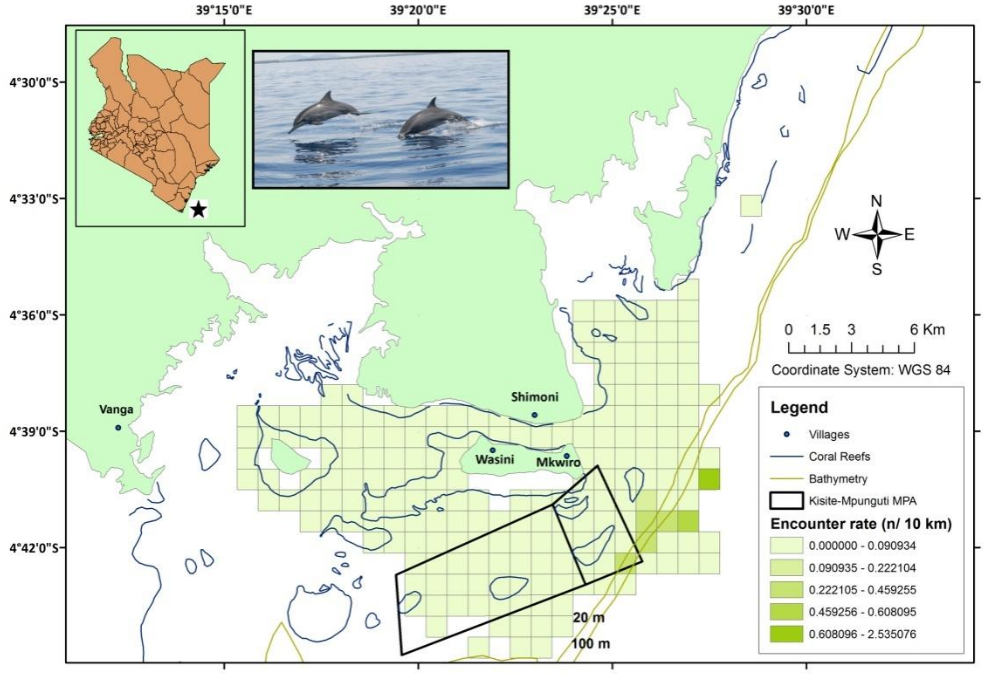


Figure 4. Map showing the spinner dolphin (*Stenella longirostris*) encounter rate (number of observations/boat survey effort) around Kisite-Mpunguti Marine Protected Area. Source GVI)

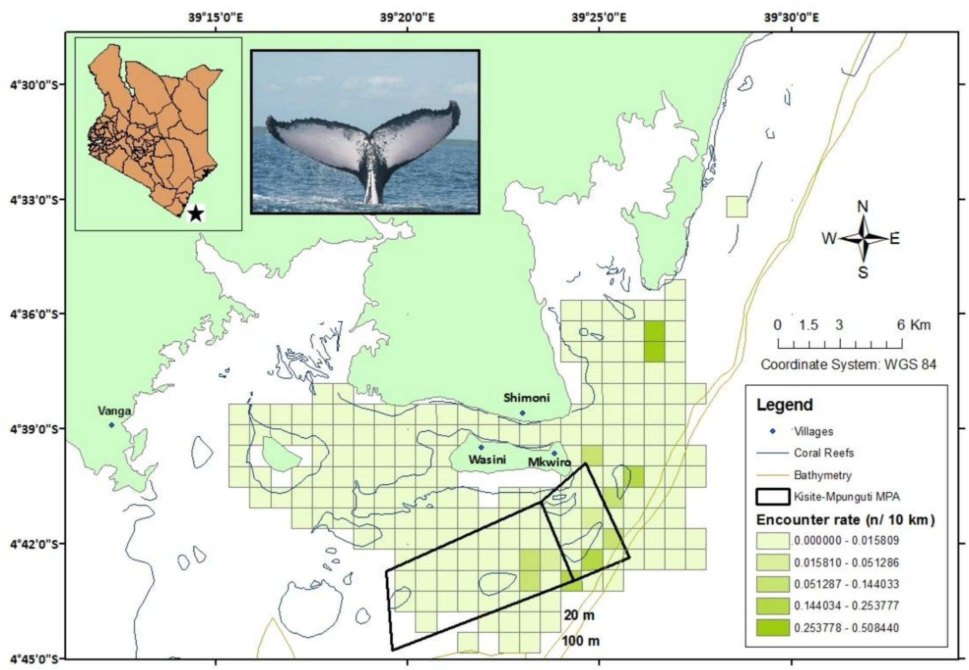


Figure 5. Map showing the humpback whale (*Megaptera novaengliae*) encounter rate (number of observations/boat survey effort) around Kisite-Mpunguti Marine Protected Area (Source GVI)

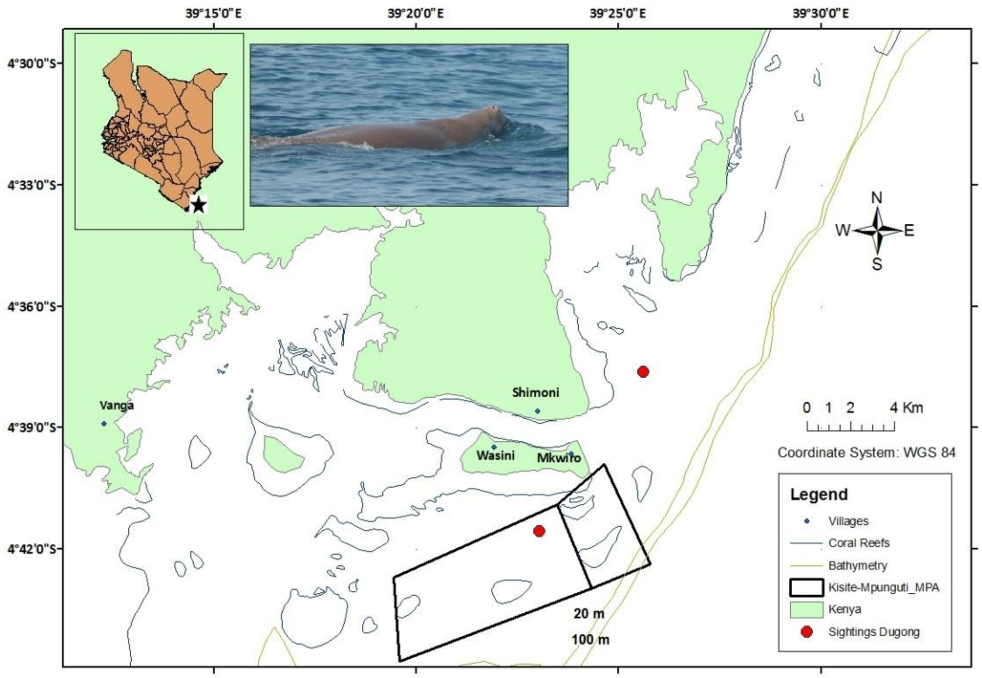
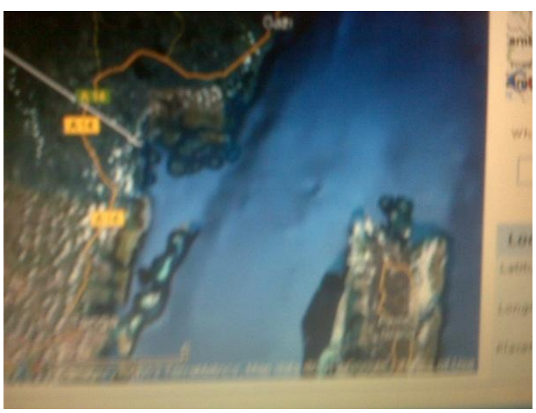
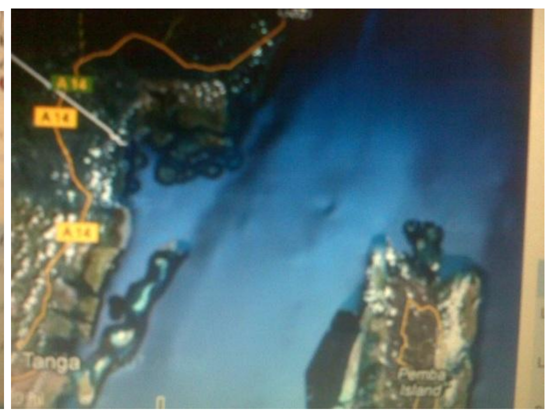


Figure 6. Map showing dugong (*Dugong dugon*) sightings around Kisite-Mpunguti Marine Protected Area (Source GVI)





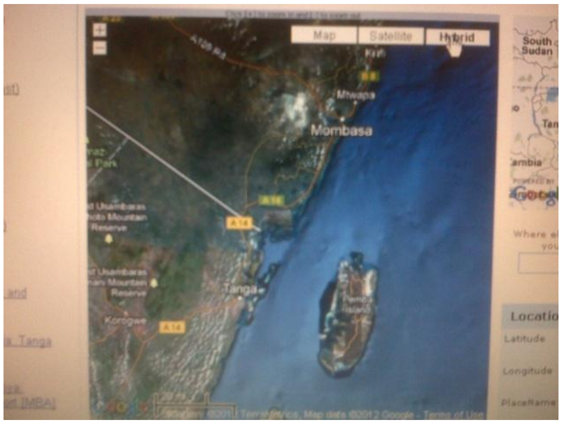


Figure 7. Satelite maps showing Pemba-Shimoni-Kisite

(This image is courtesy of villasdiani.com)

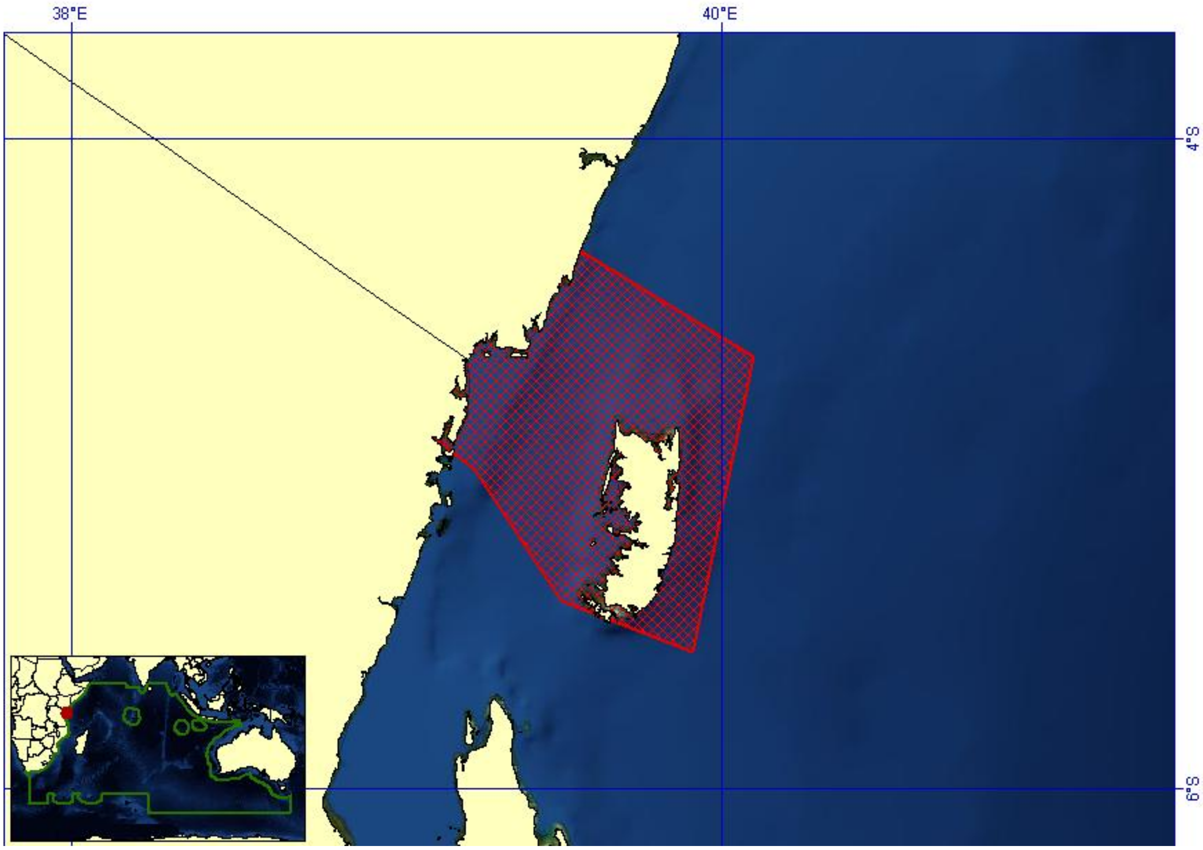


Figure 1. Map of area meeting EBSA criteria

Area No. 14: Baixo Pinda – Pebane (Primeiras and Segundas Islands)

Abstract

This area meeting EBSA criteria covers the highly productive areas of the Primeiras and Segundas islands, with probably the most pristine coral reefs in Mozambique, located in the northern boundary of the Sofala Bank. It also covers the fishing ground of São Lazaro (located from Angoche south to Nacala/Ilha de Moçambique). Baixo Pinda is located in Memba district (north of Nacala) and is the best representative of a unique coastal region in Mozambique with complex lagoons and intertidal areas. Unique fisheries and an endemic macrolagae, *Kapaphycus alvereii,* are found in the area. Furthermore, there are several canyons off Nacala and Ilha de Moçambique

Introduction

The Primeiras and Segundas islands as well as areas of Nacala and Mussoril have in the past been identified as important areas in the East African Marine Ecoregion (EAME) due to their peculiarities in species biodiversity and habitat. Recent visits to this region have yielded more information, both documented and anecdotal. The bank of São Lázaro is probably the third most productive area in Mozambican fisheries. Furthermore, this area possesses several canyons that are more than 100 m deep near the coast, constituting potential areas for the rare coelacanth.

Publications for this region cover general fisheries (Hoguane 2007), artisanal fisheries on the Sao Lázaro Bank (Moreira, 1986), coral reefs (Schleyer 1999; Schleyer & Celliers 2000) and seagrass and macroalgae (Massingue & Bandeira 2005).

Location

Between Baixo Pinda (north of Nacala, Memba district) and Ilhas Primeiras e Segundas, from latitude 14.2°S to 18°S and from longitude 38°E to 41.5°E .

Feature description of the proposed area

The area has two strings of islands running from the south (the Primeiras) to the north (the Segundos) with near pristine coral reefs mostly in the form of fairly steep, radial spur and groove formations. These are surrounded by sandy substrata constituting the northern limits of the Sofala Bank, fringed by sandy beaches on the mainland coast and the island shores. The sandy substrata are productive and are trawled for prawns, the beaches provide nesting sites for turtles, and the reefs provide habitat for corals and reef fish. Birds are scarce as the islands are rat-infested, preventing their use as nesting sites.

Feature condition and future outlook of the proposed area

While the reefs associated with the islands can presently be considered pristine, resort development is occurring throughout the island chains. Heavy mineral sand trans-shipment has commenced adjacent to Ilha Caldeira. Artisanal fishing and frequent commercial trawling occurs on the surrounding soft substrata, and the turtles are heavily harvested.

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** (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**	
• Ilhas Primeiras and Segundas constitute the southern limit of the coral coast and the northern limit of Sofala Bank, a highly productive area in terms of fisheries in Mozambique. • The São Lázaro Bank is the third most productive marine area in Mozambique.					
Special +importance for life-history stages of species	Areas that are required for a population to survive and thrive.			**X**	
• Canyons constitute potentially important refugia for rare fish species, such as coelacanth.					
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**	
• Good refugia for important fish stocks. • Extensive habitats such as the coral reefs support interconnected biodiversityarea meeting EBSA criteria • This is the southern limit of the coral coast of northern Mozambique • Canyons constitute potentially important refugia for rare fish species, such as coelacanth.					
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**	
• Coral reefs in the archipelago of Ilhas Primeiras e Segundas are still rather pristine but are vulnerable to bleaching and ship groundings. • Risk of overfishing in future. • Industrial sand mining occurring nearby may be a risk. • Cyclone-prone area.					
Biological productivity	Area containing species, populations or communities with comparatively higher natural biological productivity.			**X**	
Highly productivity in Mozambique (especially Ilhas Primeiras e Moçambique).					

Biological diversity	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.				X
• Known high coastal habitat biodiversity • The coral communities in the Primeiras and Segundas comprise important links in N-S reef connectivity.					
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	
• Coral reefs in the area can be considered pristine. • The Ilhas Primeiras and Segundas as well as Baixo Pinda have some degree of naturalness. • Canyons occur in the area.					

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Maps and Figures

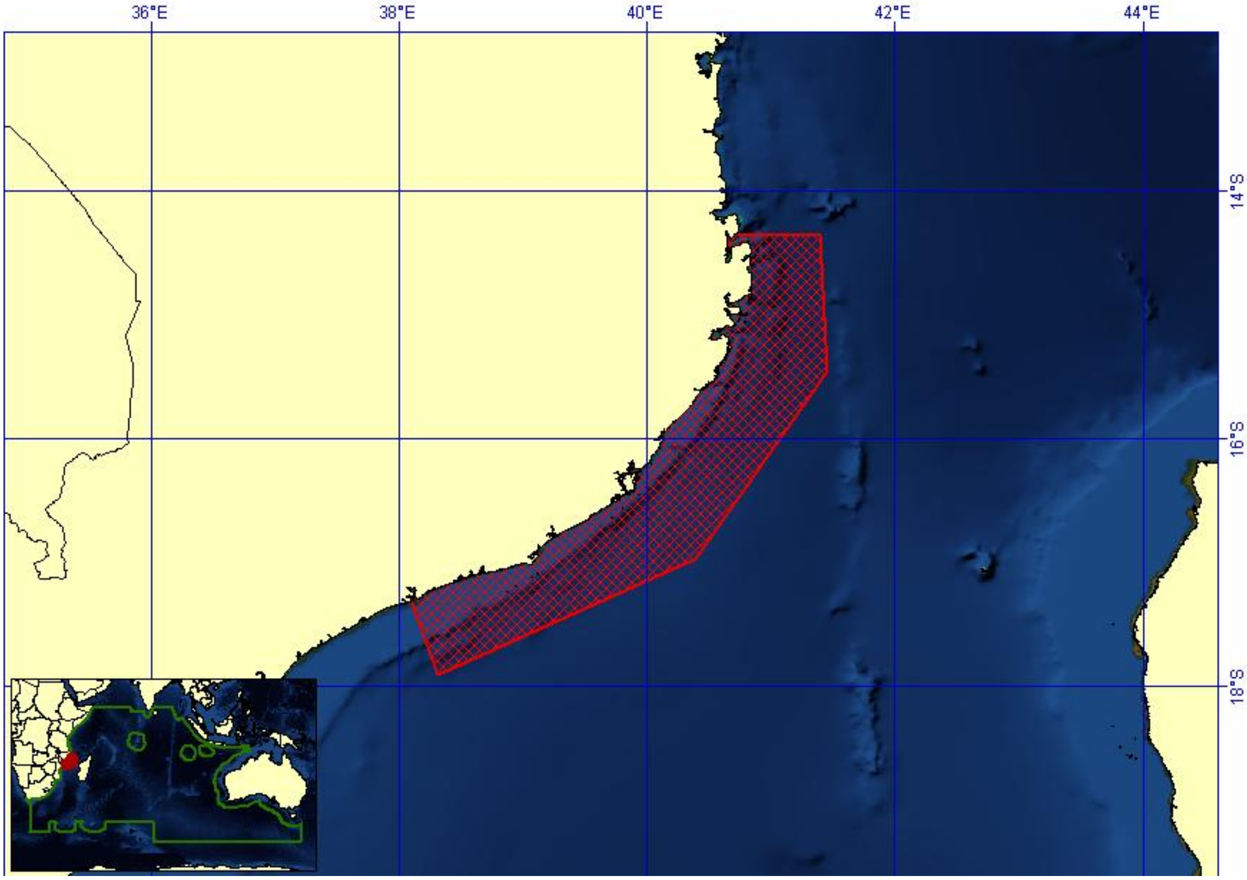

Figure 1. Map of the area meeting EBSA criteria

Area No. 15: Zanzibar (Unguja) – Saadani

Abstract

The Zanzibar (Unguja) – Saadan is known to have relatively high concentrations of biologically important species such as sharks, dolphins, dugongs, prawns, and sea turtles. The area provides habitats to many fin fish and shellfish and also is very famous worldwide in terms of coastal tourism due to its attractive biological diversity of corals, fin fish and shellfish.

The Tourism Zoning Plan for Zanzibar (Revolutionary Government of Zanzibar, 1993), identifies three zones on Unguja and two on Pemba: north-east coast of Unguja, with Mnemba; north-west coast of Unguja, north of Stone Town; south-east coast of Unguja, to Paje; north-west coast of Pemba, north of Njao Gap and in the area adjacent to Ngezi Forest; west coast of Pemba, including Masali l. The rapid growth of tourism is demonstrated by the fact that, whereas in 1988 there were no hotels on the east coast of Unguja, by 2000 there were some 22. Implementation of the tourism plans for Zanzibar need to take into account the distribution and status of sandy beaches and of coral reefs in particular, both of which are key resources for holiday-makers.

Introduction

Unguja Island is elongated and indented sparsely with a stand of mangroves. The topography of Unguja Island is generally flat but with a central ridge running from north to south whose highest point is at Masingini, about 120m above sea level. The ocean surrounding Unguja Island and the related islands consists of a confluence of ocean currents that culminate in the East Africa Coastal Current (EACC), which mostly flows northwards, however pockets of residual currents flowing southwards have been recorded. It is believed that the northward flows are common during the Southwest Monsoon (April to October) and southwards flows during the Northeast Monsoon (November to March).

Unguja and Saadani are separated by the Zanzibar Channel, which is a migratory route for several fish species, as well as humpback whales. Several seabirds feed along the shore of Saadani National Park,

Location

The area is situated between latitude 5.50°S to 6.9° S and longitude 38.7° to 39.8°E

Feature description of the proposed area

Unguja is a limestone island on the continental shelf that was probably part of a Pleistocene inshore coral reef system, now separated from the mainland by relatively shallow (30-50 m deep) channels. The island as well as some mainland coastal areas are formed of porous fossil reef and have extensive groundwater systems with under-water seepages that have a considerable influence on inshore waters. Abundant and healthy coral reefs are found in many places along the entire coastline of the island. Most of the coral reefs are composed of fringing reefs (originating from mainland, islands or raised-sea bottom). Patchy reefs occur on shallow sandy habitats. High concentrations of coral reefs or coral priority areas include west Unguja and north Unguja zones.

Seagrass species recorded in coastal waters around the island include: *Cymodocea rotundata, Cymodocia serrurata, Hallodule univervis, Hallodule wrightii, Halophila minor, Halophila ovalis,* *Halophila stipulaceae, Halophila cuinervis, Syringodium isoetifolium, Enhalus acoroides, Thalassia hemprichii* and *Thallasodendron ciliatum* (TCMP 2001, Mgaya 2000). They also occur extensively on the western side of Pemba and Mafia islands. Seagrass is under stress in areas with excessive sedimentation in some estuarine environments.

Mangroves are found in many coastal areas off the islands and on Unguja; the largest area is around Chwaka Bay. Tanzania's mainland mangroves cover about 108,300 ha (Wang *et al.*, 2003); those on Zanzibar cover about 18,000 ha (6000 ha in Unguja, and 12,000 ha in Pemba) (Francis *et al*, 2001). Many marine species use mangroves for breeding, feeding and shelter.

Feature condition and future outlook of the proposed area

There was a small decline (3830 ha) in mangrove cover on the Tanzania mainland between 1990, when total cover was estimated at 112,130 ha, and 2000 (Wang *et. al*., 2003). In some areas, mangrove coverage has in fact increased slightly. The relatively small decline and the recovery noted in many areas have been attributed to increased awareness and conservation efforts as a result of local initiatives. For example, villages have replanted extensive areas. Furthermore, all mangroves are protected as forest reserves and are managed through the Mangrove Management Project. This may have resulted in a reduction in the amount of clear felling and clearance for agriculture, construction of salt pans, and coastal development. However, the amount of mangrove cleared for salt harvesting increased from 2,199 ha in 1990 to 3,679 ha in 2000 (Wagner, 2003).

Mangrove condition or quality, however, varies from locality to locality and is primarily related to the extent to which the forests have been affected by cutting for domestic (firewood, building houses, fences, boat making, fish traps and medicine) or commercial use (timber, fuel for lime production). There has been a severe deterioration of mangrove quality near urban centres such as Maruhubi in Zanzibar (Unguja) as a result of over-exploitation (Wagner, 2003).

Seagrass beds have been damaged by natural and human activities that include illegal fishing methods (beach seining and shallow-water trawling), regular anchoring of fishing and tourist boats, excessive sedimentation increasing turbidity and reducing light penetration, shoreline dynamics, and predation by sea urchins and dugongs.

The two key factors determining reef health are considered to be destructive fishing methods and coral bleaching, both of which caused major damage in the 1990s, but from which many reefs are starting to recover slowly. Many of the reefs were severely affected by the coral bleaching event of 1997/1998, triggered by El Niño, which reduced average live hard coral (LHC) from 52% to 26-27%. Corals on shallow reefs were most affected. Of the reefs that have been monitored on a regular basis by the Institute of Marine Science (IMS), highest mortalities (60-90%) were found on the outer reefs on the south-eastern side of Mafia (Tutia, Juani and Mange) and around Misali; medium to high mortality was found on the reefs around Mnazi Bay, Songo Songo and Kunduchi (north of Dar es Salaam), and the least affected reefs were those around Unguja (10-25% mortality), perhaps due to the intrusion of cold water here in mid-March (Francis *et al.*, 2001). Follow-up assessments and monitoring indicated that although the impacts of bleaching were not uniform, recovery from bleaching has been very slow; nevertheless the dead structure is still largely intact, and some level of recovery has been observed at all sites (Mohammed *et al*,. 2002; Muhando and Mohammed, 2002).

In some MPAs and managed areas much of the destructive fishing has been stopped, particularly dynamiting, although it still tends to resurface periodically, as well as illegal beach seining and other damaging methods. In other parts of the country, it is still a serious problem. A more localised but serious problem is the mining of live corals from reefs to make lime. This has been a particular problem in some coastal areas.

Assessment of the area against CBD EBSA Criteria

<table>
<tr><th rowspan="2">CBD EBSA Criteria
(Annex I to decision IX/20)</th><th rowspan="2">Description
(Annex I to decision IX/20)</th><th colspan="4">Ranking of criterion relevance
(please mark one column with an X)</th></tr>
<tr><th>Don't Know</th><th>Low</th><th>Medium</th><th>High</th></tr>
<tr><td>Uniqueness or rarity</td><td>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.</td><td></td><td></td><td>X</td><td></td></tr>
<tr><td colspan="6">Explanation for ranking
Migratory route for humpback and sperm whales,
Many unique species such as dugong, whale sharks and dolphins
Nesting sites for sea turtles
Unique ecological habitats such as mangrove forests, coral reefs, rocky shores and seagrass beds.</td></tr>
<tr><td>Special importance for life-history stages of species</td><td>Areas that are required for a population to survive and thrive.</td><td></td><td></td><td>X</td><td></td></tr>
<tr><td colspan="6">Explanation for ranking
Spawning ground for prawns, lobsters, and variety of fin fish
Nesting and foraging sites for sea turtles,
Important feeding ground for a variety of fish, shellfish and birds</td></tr>
<tr><td>Importance for threatened, endangered or declining species and/or habitats</td><td>Area containing habitat for the survival and recovery of endangered, threatened, declining species or area with significant assemblages of such species.</td><td></td><td></td><td>X</td><td></td></tr>
<tr><td colspan="6">Explanation for ranking

The area provides habitat for endangered species like sea turtles, whales, coconut crabs and dugongs. Furthermore, the area is a migratory route for endangered humpback and sperm whales.</td></tr>
<tr><td>Vulnerability, fragility, sensitivity, or slow recovery</td><td>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.</td><td></td><td></td><td>X</td><td></td></tr>
<tr><td colspan="6">Explanation for ranking

Increased human activities in the area, especially tourism, and slow recovery of coral reefs.</td></tr>
<tr><td>Biological productivity</td><td>Area containing species, populations or communities with comparatively higher natural biological productivity.</td><td></td><td></td><td>X</td><td></td></tr>
<tr><td colspan="6">Explanation for ranking</td></tr>
</table>

The area is productive in terms of coral reefs, seagrasses, mangrove forests and fisheries					
Biological diversity	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.			**X**	
Explanation for ranking • Variety of both pelagic and benthic species of fauna and flora. • 10 species of mangroves, 183 species of birds, 8 species of dolphins, about 5 species of turtles, 287 species of seaweeds,					
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**	
Explanation for ranking Within the area there is a number of marine conserved areas as follows: Saadan National Park, Menai Bay Conservation Area, Chumbe Reef Sanctuary, Misali Island Conservation Area, Mnemba Island Conservation Area, Kiwengwa Controlled Area and Jozani -Chwaka Bay National Park.					

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**	**Medium**	**High**
Add relevant criteria					
Explanation for ranking The Zanzibar (Unguja) – Saadani area encompasses a number of conserved marine areas and national parks					

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Maps and Figures

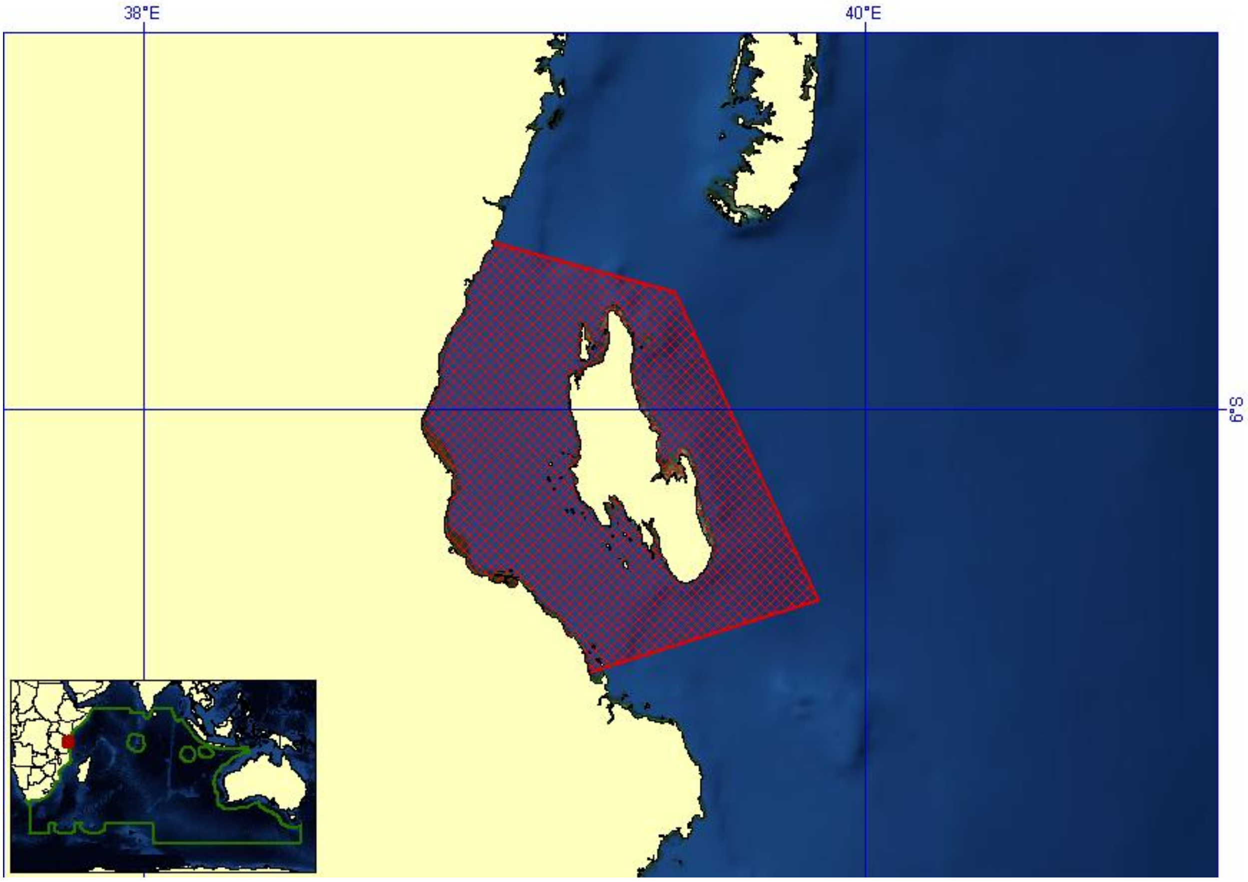

Figure 1. Map of area meeting EBSA criteria

Area No. 16: Rufiji – Mafia- Kilwa

Abstract

Rufiji – Mafia – Kilwa are areas with significant populations of a variety of endangered marine species, such as dugong, sea turtles, coelacanth and other fin fish, shellfish and birds. The largest continuous mangrove areas are to be found on the coasts of Mafia, Kilwa and the delta of the Rufiji River.

A single square kilometre of mangrove forest contributes about 600 tonnes of plant material each year to the estuarine food chain. Mangrove forests hence form nutrient-rich environments, which promote a variety of food chains, and therefore function as feeding and nursery ground to many species of finfish, shellfish, prawns and crabs. For example, the mangrove forest of the Rufiji delta is said to provide 80% of the nursery grounds for prawn and shrimps.

Introduction

South and east of the Rufiji River delta, where the continental shelf widens, the shallow waters of the Mafia and Songo Songo archipelagos support luxurious coral reefs. A fringing outer reef runs down the eastern side of both archipelagos to meet the mainland south of Kilwa Masoko, and from there it continues south to the Mozambique border – broken in places by deep water channels, river outlets and bays. The largest bays are around Mtwara, and these support shallow patch reefs (Darwall and Guard, 2000).

Geologically, Mafia Island and its environs are on the continental shelf off the Rufiji River, with a shallow channel (< 50m) separating it from the mainland. The outer fringing reef is relatively (continuous with the Songo Songo archipelago (*Hard coral biodiversity surveys, Mafia Island Marine Park 2)* and reef system to the south, forming a partial barrier trapping outflow from the Rufiji in the large basin (Darwall and Guard 2000). As a result, the western side of Mafia Island is heavily sediment influenced, while the eastern part is under more oceanic influence. Most of the Mafia Island platform varies between 6 and 12 m deep (Gaudian and Richmond 1990), though with deeper channels in some locations, thus strong currents occur due to tidal forcing in the semi-diurnal tidal regime of the area, with complex patterns and flows through the various channels between the islands.

Location

The area is located from latitude 7.1^0 S to 9.0^0 S and longitude 39.2^0 E to 40.6^0 E.

Feature description of the proposed area

Some of the best coral reefs and seagrass beds in Tanzania are found in the Rufiji, Mafia and Kilwa (RUMAKI) seascape as well as the largest continuous mangrove area in East Africa. Coral reefs, seagrass and mangroves are vitally important for breeding and providing a haven for a wide variety of fish and other marine life. The area is also home to a range of endangered species, including five species of marine turtle, the dugong, whale sharks, the humphead wrasse, coelacanth, and seahorses.

Feature condition and future outlook of the proposed area

Commercial fishing is limited to prawn trawling adjacent to mangrove areas, and small-scale exploitation of pelagic resources offshore (deep-sea waters), fishing for finfish, shellfish and molluscs. In terms of production the commercial fisheries account for only about 5% of the total marine production. The commercial prawn trawl fishery is basically for the export market. The most abundant and marketable types of prawns/shrimps include *Penaeus monodon*, *Penaeus japonicus*, *Penaeus indicus*, *Metapenaeus monoceros* and *Penaeus semisulcatus*. The most important prawn-fishing grounds are found around the inshore reefs, deltas and river mouth in waters around Rufiji, Mafia and Kilwa.

The subsequent captures of endangered species around Rufiji, Mafia and Kilwa areas indicate the existence of small but threatened populations in the area. For example, records since 2000 suggest that eight to ten dugongs are killed annually for their meat and oil, but accidental entanglement and drowning in gillnets occurs often (Muir 2007).

In Tanzania the main threat to the endangered species is heavy exploitation by local people for meat, oil and leather. It is also sought after for medicinal/aphrodisiac products. For example, accidental drowning at times kills dugongs when caught in gillnets. Other threats include degradation of habitats like seagrass beds, coral reefs and mangrove forest (Muir 2002). Although endangered species are protected by national and international legislation, enforcement is inadequate.

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** (please mark one column with an X)			
		Don't Know	**Low**	**Medium**	**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**	
Explanation for ranking The area has many unique species such as coelacanth, dugong, whale sharks and dolphins; The area has nesting and foraging sites for sea turtles; The area has unique ecological habitats such as mangrove forests (largest in East Africa), coral reefs, seagrass beds and mudflats;					
Special importance for life-history stages of species	Areas that are required for a population to survive and thrive.			**X**	
Explanation for ranking The area is a spawning ground for prawns, lobsters, sea cucumber and variety of fin fish. Nesting site for sea turtles, It is extremely important feeding ground for a variety of fish, shellfish and birds.					
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**	

Explanation for ranking The area provides habitat for endangered species like coelacanth, sea turtles, whale sharks and dugongs.					
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**	
Explanation for ranking Increased human activities in the area and slow recovery of coral reefs.					
Biological productivity	Area containing species, populations or communities with comparatively higher natural biological productivity.				**X**
Explanation for ranking The area is one of the most productive in the region in terms of fisheries.					
Biological diversity	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.			**X**	
Explanation for ranking The area has a variety of both pelagic and benthic species of fauna and flora. There are more than 270 species of corals, 9 species of mangroves, about 12 species of seagrasses, more than 400 species of reef fish, about 160 species of seabirds, 6 species of lobsters, 5 species of marine turtles.					
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**	
Explanation for ranking Within the area there is Mafia Island Marine Park, which is relatively pristine.					

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Maps and Figures

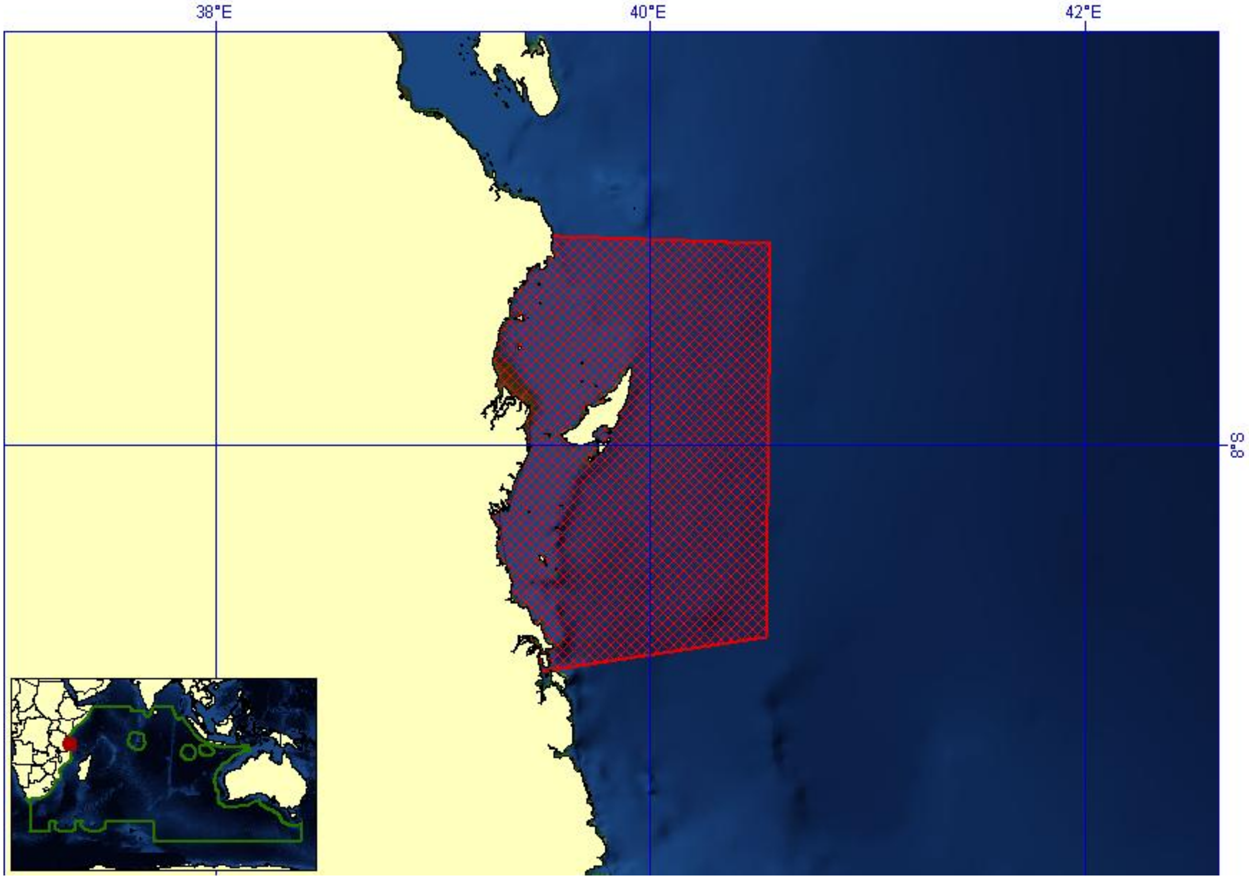

Figure 1. Map of area meeting EBSA criteria

Figure 2. Rufuji, Mafia and Kilwa

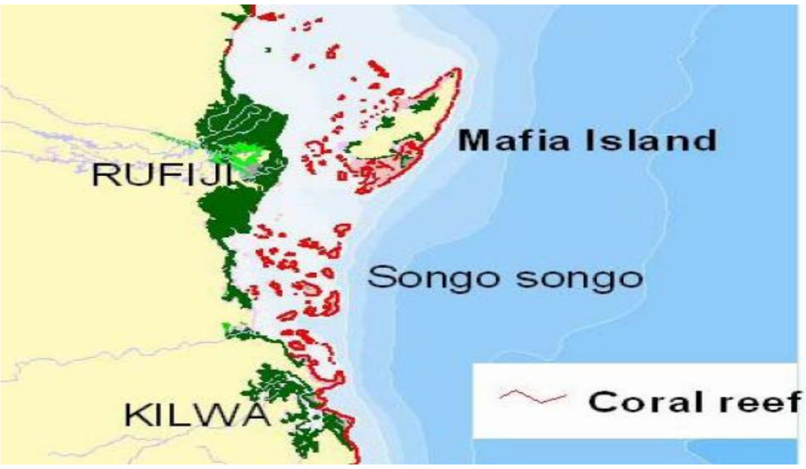

Figure 3. Distribution of coral reefs in the Rufuji, Mafia and Kilwa area

Area No. 17: Watamu area

Abstract

Watamu area encompasses a marine park and reserve, populated by resident dolphin. Relatively little is known about marine mammal species in Kenyan waters. The scarce knowledge on these species is based on data collected during aerial surveys conducted between 1994 and 2001, and information from stranded animals. Since then, some of these species have been in constant decline in the Western Indian Ocean, facing real threats such as by-catch in fishing gears, loss of habitat, over-fishing or whale/dolphin-watching activities. To address this the Kenyan Marine Mammal Network was established in 2011 and is a partnership between Global Vision International, Watamu Marine Association, Kenya Wildlife Service, Kenya Association of Sea Anglers and Kenya Marine and Fisheries Research Institute to provide the first consistent data on occurrence and abundance of marine mammals along the Kenyan coast.

Introduction

Feature description of the proposed area

The Watamu area has Watamu National Park as part of a complex of marine and tidal habitats along Kenya’s north coast. It is enclosed by the Malindi Marine National Reserve, which also encloses Malindi Marine National Park. Habitats include intertidal rock, sand and mud, fringing reefs and coral gardens, coral cliffs, sandy beaches and the Mida Creek mangrove forest. Marine life attractions include fish, turtles, dugongs and crabs. The area is surrounded in part by the Mida Creek forest and has a high diversity of mangrove species, including *Ceriops tagal, Rhizophora mucronata, Bruguiera gymnorrhiza, Avicennia marina* and *Sonneratia alba*. These provide refuge to a variety of both resident and migrant bird species.

Watamu/Malindi Marine Parks and Reserve (WMMPR) is located on the north coast near Malindi town. It covers an area of 229 km^2 and is part of a United Nations Biosphere Reserve that also includes the Arabuko Sokoke Coastal Forest. The WMMPR consists of two marine parks: Malindi in the north, and Watamu in the south. This amounts to approximately 30km of coastline, with a fringing reef along its entirety, as well as numerous patch reefs. The fringing reef forms several lagoons, some of which are still rich in coral and fish species. The parks and reserves provide an important residing and feeding habitat for sea turtles, while the 5km beach within Watamu Marine Park is a key turtle nesting ground in the country, with an area of 10 km^2. It is humid, with mean annual temperatures ranging from 22° to 34°C. Annual rainfall is about 500 mm. The Watamu area experiences mixed semi-diurnal tides of 2 to 4 m amplitude, creating strong tidal currents that flush the lagoons during ebb tide. They have approximately two tidal cycles every 24 hours.

The northern section of the Watamu coast is dominated by sandy-substrate habitats influenced by Kenya's two largest rivers, the Tana and Sabaki. It has a coral garden, mangrove swamps, seagrass beds, and intertidal habitats, which are closely interconnected. These systems are known to have rich biodiversity, much of which is not yet described or discovered.

The coral gardens in Watamu are merely 300 metres (980 ft) from the shore and are home to approximately 600 species of fish, 110 species of stony coral (Musangu, 2012) and countless invertebrates, crustaceans and molluscs. Water temperature varies from 20°C (June to November) to 30°C (December to May). The park was designated as a UNESCO Biosphere Reserve in 1979. The Watamu area has reef-building schlerantina species.

Seagrass Beds

Seagrasses occur in extensive beds that cover the largest proportion of shallow reef slopes and form an important habitat for many species living in them and adjacent systems. Of the 12 seagrass species identified in Kenya, ten species are found in Watamu, namely *Halophila ovalis, Halophila stipulacea, Halodule uninervis, Halodule wrightii, Syringodium isoetifolium, Cymodocea rotundata, C. serrulata, Thalassia hemprichii,* and *Enhalus acoroides (*Daudi, 2006).

Mida Creek has important mangrove forests, with a high diversity of species, including *Ceriops tagal*, *Rhizophora mucronata*, *Bruguiera gymnorrhiza*, *Avicennia marina* and *Sonneratia alba*. It is a key spawning ground for many fish species. The marine reserve and national parks are important for the conservation of the fringing reefs, the famous coral gardens within the lagoons, and the seagrass beds, all with their attendant, diverse marine fauna and flora. The Important Bird Area includes several coral islets, notably Whale Island at the entrance to Mida Creek and within the Watamu Marine National Park. The regionally threatened *Casmerodius albus* occurs in small and variable numbers (maximum 15).

Green turtle *(Chelonia mydas)*, hawksbill turtle *(Eretmochelys imbricate)* and olive ridley *(Lepidochelys olivacea)* are reported to nest in the Watamu area *(Watson, 2006; KWS report, 201;* Okemwa et al., 2004; Okemwa et al., 2005; Olendo, 1993; Thomas 2006; Wamukota and Okemwa, 2009; Wamukoya et al. 1995; Watson, 2006; Zanre, 2005). Malindi-Watamu area has five designated Important Bird Areas (IBAs), designated because of their international importance. One IBA, Whale Island, is the only marine IBA on the Malindi – Watamu coastline; it is a stretch of reef and beach that holds up to several thousand roosting terns and gulls at certain times of year. Whale Island is the largest breeding colony on the Kenyan coast for roseate terns (up to 1,500 pairs) as well as some sooty terns and one or two pairs of brown noddy (www.birdlife).

Cetacean research on species populations and distribution has been carried out since 2010 and is ongoing. 87 individual bottlenose dolphins have been identified in the Watamu sea area, which is also a section of a migratory route for humpback whales (see Kenyan Marine Mammal Network Newsletter Issue 1 May 2012, **http://www.watamuturtles.com/**).

Consistent research on sea turtle nesting, distribution, populations and by-catch is ongoing in the area (Wamukoya et al., 1995; Watson, 2006; Zanre, 2005). Five species of sea turtle are found in Watamu waters, two of which use the marine park beaches for nesting. The Bycatch and Release Programme is the longest running in the world and has released more than 8,000 sea turtles from by-catch in fishing gears.

Location

This area is located between 39.9°E, 3.5°S and 40.2°E, 3.3°S.

Watamu is located on the north coast of Kenya near Malindi town and about 100 km north-east of the city of Mombasa. Climatic conditions are characterized by two dominant monsoon seasons: the South East Monsoon (March-September) and the North East monsoon (September-March). Watamu Marine National Reserve (WMNR) was protected in 1968 when the Malindi and Watamu Marine reserves were created to regulate the exploitation of marine natural resources. At present, part of the Watamu Marine Reserve has been upgraded to a marine park while a part of it remains a marine reserve.

Feature condition and future outlook of the proposed area

McClanahan and Obura, 1995; Obura, 2001; Obura et al., 2008; Obura and Grimditch 2009.

Assessment of the area against CBD EBSA Criteria

<table>
<tr><td rowspan="2">CBD EBSA Criteria
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<tr><td>Don’t Know</td><td>Low</td><td>Medium</td><td>High</td></tr>
<tr><td>Uniqueness or rarity</td><td>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.</td><td></td><td></td><td>X</td><td></td></tr>
<tr><td colspan="6">Explanation for ranking

Area contains distinct ecosystems, including coral reefs, seagrass meadows (10 spp) and mangrove forests (Government of Kenya, 2008). Watamu area has coral gardens of reef building species (>276 spp) (Cnidaria: Scleractinia) (Lemmens, 1993; McClanahan and Obura, 1995; Obura, 2001 ; Obura et al., 2008; Obura and Grimditch 2009). The area is also an internationally recognized Important Bird Area (IBA) for migratory seabirds and wading birds (Jackson. C, 2010). The Watamu area is south of the confluences of the Sabaki and Tana rivers, which brings sediments to the ocean. It’s an area with turtles, giant guitarfish, giant reef rays, ghost pipe fish, sea moths, banded snake eels, lobsters, cuttlefish, frog fish, leaf fish and typical residents of coral reefs, such as snappers, gaterins, groupers and angel fish.</td></tr>
<tr><td>Special importance for life-history stages of species</td><td>Areas that are required for a population to survive and thrive.</td><td></td><td></td><td>X</td><td></td></tr>
<tr><td colspan="6">Explanation for ranking
Green and hawksbill turtles are endangered and nest in sandy beaches with leafy plant canopies and no noise or light. About 3,000 to 4,000 roseate terns (Sterna dougalii) breed in the Watamu area 10km offshore, and they are also considered to be globally significant (www.birdlife). About 150 species of reef fish depend upon the above-mentioned ecosystems for feeding and breeding. The area provides foraging grounds for several species of cetaceans (humpback dolphins- Sousa chinensis and bottlenose dolphins- Tursiops truncatus) and for whale sharks and giant groupers. The northern part towards the Malindi area is a muddy high-nutrient bay with sudden drop-off, providing a nursery for sharks and globally important feeding area for sailfish, marlin and swordfish.</td></tr>
<tr><td>Importance for threatened, endangered or declining species and/or habitats</td><td>Area containing habitat for the survival and recovery of endangered, threatened, declining species or area with significant assemblages of such species.</td><td></td><td></td><td>X</td><td></td></tr>
</table>

Explanation for ranking Roseate terns *(Sterna dougalii*) palaearctic migrants breed around Watamu. Globally significant colonies of 3,000 to 4,000 birds have been reported (Tree, 2005, www.birdlife.org). The seagrass beds provide a habitat for fish juveniles and food for herbivorous fish (Daudi, 2006). The coral reefs are diverse and are habitat for reef fishes. Breeding populations of olive ridley, hawksbill and green turtles (KWS report, 2010). Humpback dolphins (*Sousa chinensis*) and bottlenose dolphins (*Tursiops truncates*) are resident in this area (http://www.watamuturtles.com/).					
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**	
Explanation for ranking Coral reefs and seagrass are vulnerable to both natural and anthropogenic impacts, and their recovery is very slow. The corals in Watamu are the most southerly coral reefs in the ecoregion, separated by those in Lamu area by the confluence of the Sabaki and Tana rivers. Development of hotels and residential buildings along the beaches reduces areas for turtle survival (Okemwa, et. al. 2004). Erosion, sedimentation and accretion of the beaches are increasing in some turtle nesting areas.					
Biological productivity	Area containing species, populations or communities with comparatively higher natural biological productivity.			**X**	
Explanation for ranking Has high fish density but low diversity - acts as replenishing grounds for the heavily fished nearshore reefs. The area includes coral reefs, seagrass meadow and mangrove forest ecosystems with high levels of biodiversity and/or biological productivity (McClanahan and Obura, 1995; Obura 2001 ; Obura et al, 2008; Obura and Grimditch 2009).					
Biological diversity	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.			**X**	
Explanation for ranking There are coral gardens and crevices that have unique species of coral and fish species.					
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**	
Explanation for ranking Some areas are pristine and support endangered sea turtles (Okemwa, et. al. 2004, Thomas, 2006). It was designated as a United Nations Biosphere Reserve by UNESCO in 1976 and thus gained international recognition.					

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**	**Medium**	**High**
Add relevant criteria	**Database or synthesized data**		**X**		
Explanation for ranking Important Bird Area (IBA) for migratory seabirds and wading birds.					

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Maps and Figures

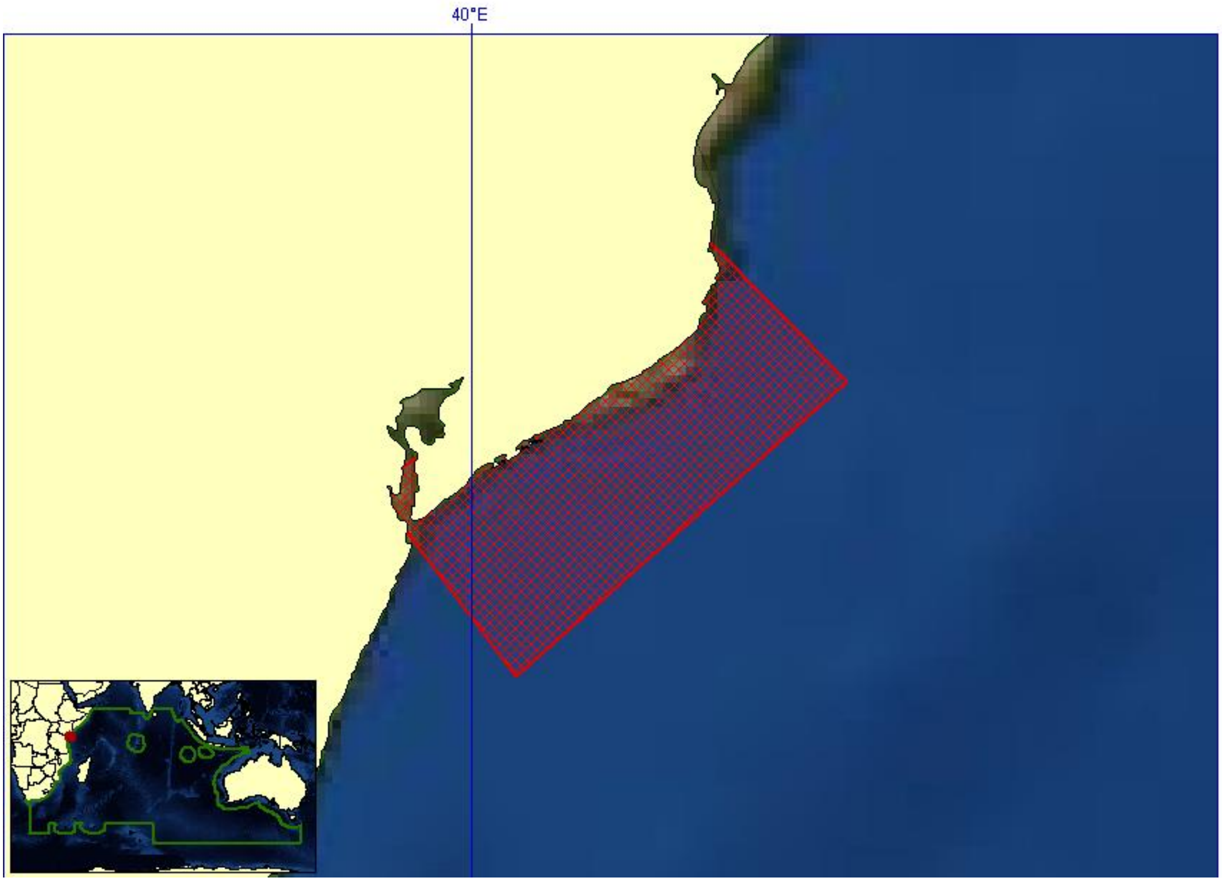

Figure 1. Map of area meeting EBSA criteria

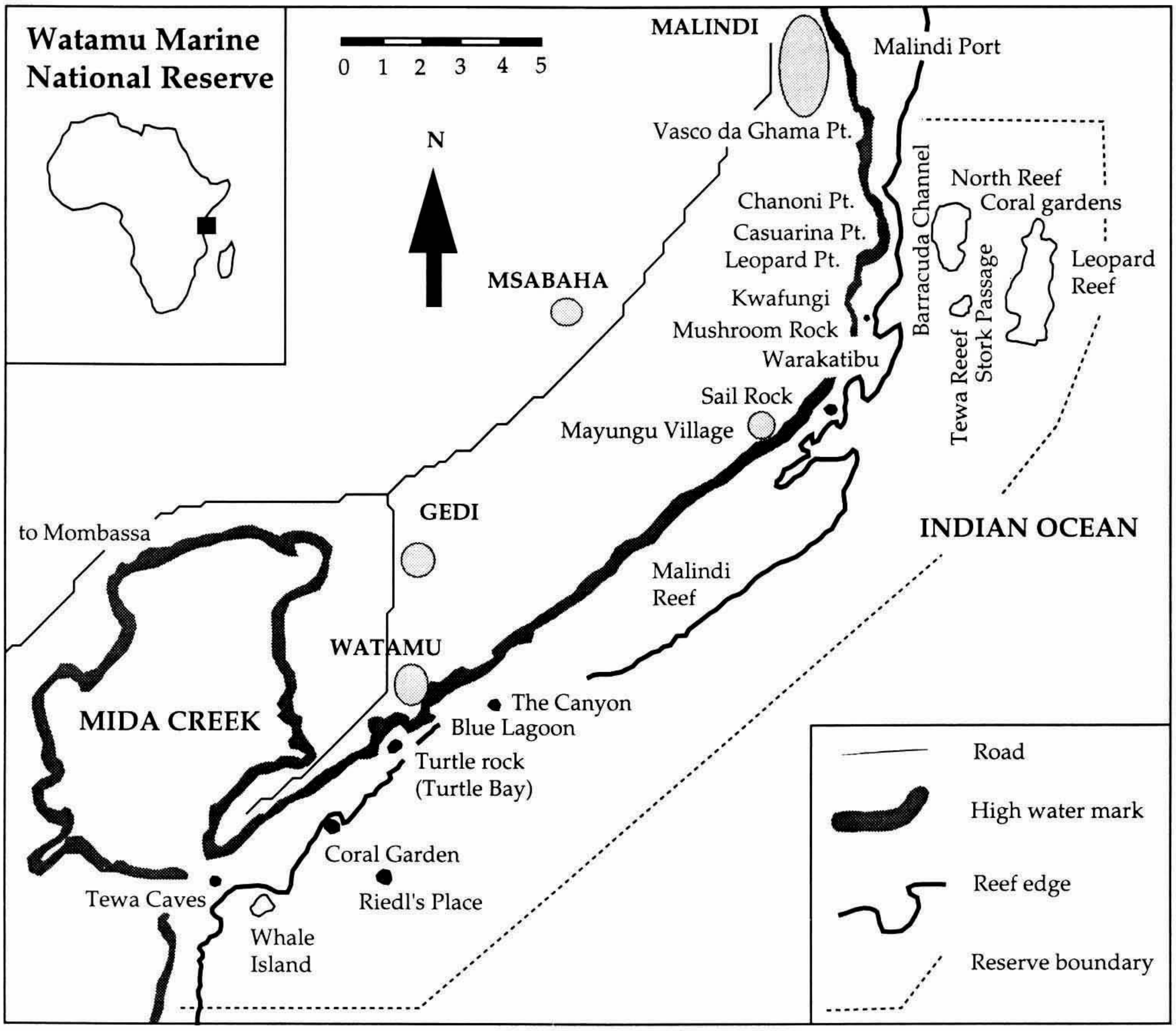

Figure 2. Watamu National Reserve adopted from J. W.T.J. Lemmens 1993

Figure 3. Roseate tern sightings along the WIO region (from Tree 2005).

Figure 4. Turtle-nesting grounds along the Kenyan coast (from the KWS report, 2010. Conservation and Management Strategy for Sea Turtles in Kenya, 2010-2014).

Figure 5. Map showing dolphin and whale common sighting areas in the Malindi and Watamu Marine Reserves (from GVI report)

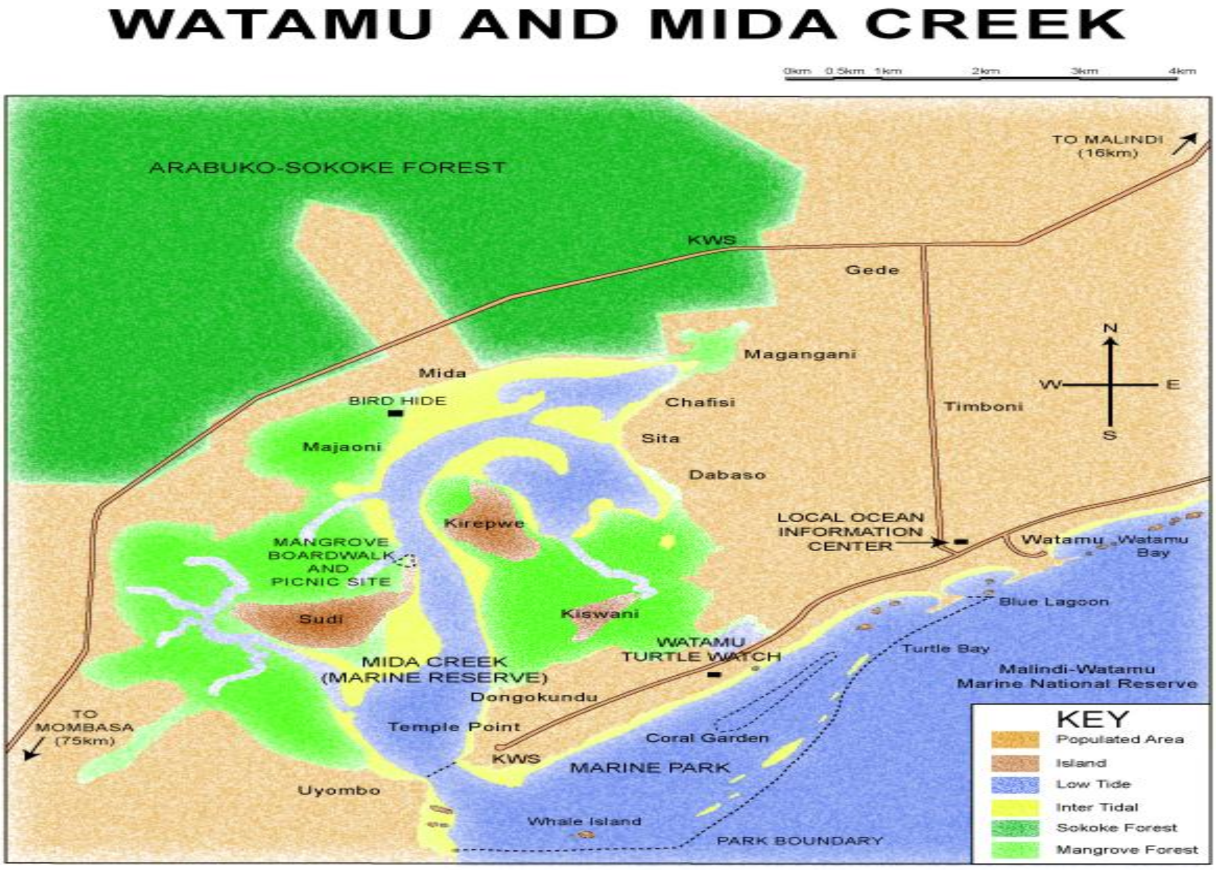

Figure 6. Watamu Marine Park boundary and Mida Creek Marine Reserve

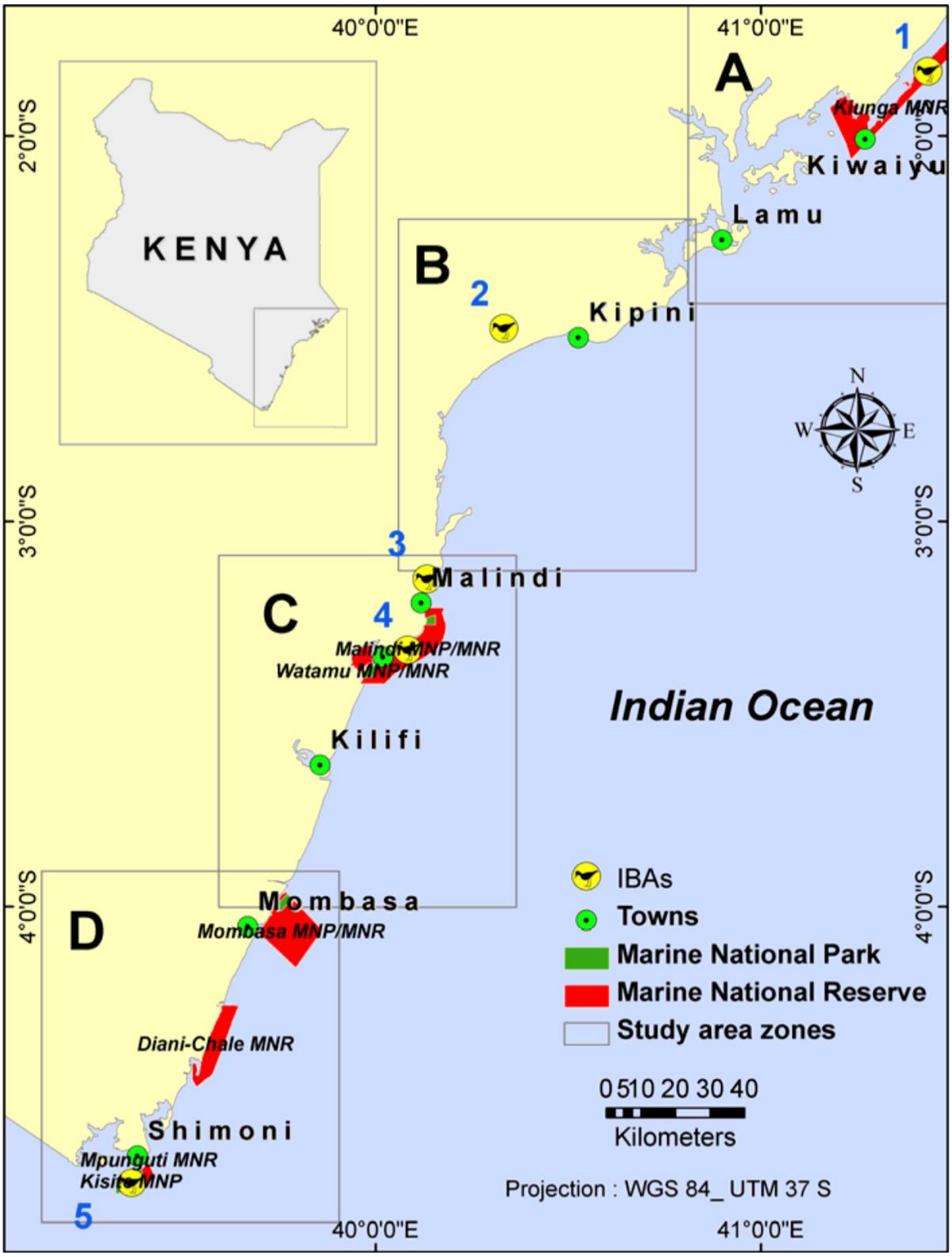

Figure 7. Important Bird Areas along the Kenyan coastline inclusive of the 200 NM of the continental shelf (from Musangu, 2012).

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Contact stevetrott@watamu.biz for the information of dolphins in Watamu area.

Area No. 18: Pemba Bay - Mtwara (part of the Mozambique Channel)

Abstract

The Quirimbas Archipelago is a string of coastal islands extending from Pemba Bay in northern Mozambique, 400 km to the Ruvuma estuary and the Mtwara-Mnazi Bay reef system in southern Tanzania. The archipelago has the highest diversity of corals recorded in the WIO (along with northern Mozambique), with almost 300 species in 60 genera. Charismatic species include turtles, dugongs and elephants, and many rare and endemic plant species.

Introduction

The Quirimbas Archipelago comprises some 28 islands and the offshore Lazarus Bank. The archipelago has the highest diversity of corals recorded in the WIO (along with northern Mozambique), with almost 300 species in 60 genera. The Quirimbas National Park protects a portion of the south-central part of the archipelago and mainland, including approximately 6,000 km^2 of mainland and 1,500 km^2 of marine and island habitats. Eleven coral islands lying close offshore and stretching for 100 km along the coast, are included in the park. In the north, consortia comprising villages and private operators have established protected zones around Vamizi and Metundo islands.

Location

The Quirimbas Archipelago is a string of coastal islands extending from Pemba Bay in northern Mozambique, 400 km to the Ruvuma estuary and the Mtwara-Mnazi Bay reef system in southern Tanzania. A series of submarine canyons continue farther south in Mozambique, to approximately Nacala in Nampula province, and we use this to define this region where submarine canyons, deep sheltered bays and coastal islands interact with the South Equatorial Current (SEC) and eddies of the northern Mozambique channel.

This complex is located in the centre of the East Africa Marine Ecoregion (EAME) of the WIO, where the South Equatorial Current (SEC) and unique oceanographic features of the Mozambique Channel meet the mainland African coast. At the northern end of this region, the EACC flows north throughout the year, forming a one-way conveyor for marine larvae dispersed northwards to Tanzania and Kenya. At the southern end of this region, upwelling and the Zambezi delta system influence marine habitats, and past the constriction in the channel at 17^{o}S, flow is predominantly southwards. Between these two points, clockwise and anticlockwise eddies may push water in any direction, and the consistent marine climate results in the highest diversity in coral reef species west of the Andaman islands in the Indian Ocean.

Mnazi Bay is enclosed by sandy shores to the west and the Ruvula-Msimbati spit and string of rock islands and reefs to the east. The bay varies in size from 67 to 150 km^2 at low and high tides, respectively, with only one major deep channel, the Ruvula channel in the south. As a result, the channel experiences very high tidal currents (up to 6 knots) creating a complex range of coral reef and other habitats, making it an unusual feature for East African reefs. The distinctness of the Mnazi Bay–Ruvuma Estuary Complex was recognized by the Tanzanian Government for its biodiversity value in 2000, and gazetted as Tanzania’s second marine protected area, the Mnazi Bay – Ruvuma Estuary Marine Park (MBREMP) covering an area of 650 km^2, of which, 200 km^2 is marine, including islands, coral reefs and mangrove forests.

Feature description of the proposed area

The northern Mozambique coast experiences extremely high mixing due to cyclonic and anticyclonic eddies generated in the north of the Mozambique channel, and is defined by breakpoints to the north, where the EACC touches the Tanzania coastline flowing north all year, and to the south where the narrowest part of the Mozambique channel induces changes in currents and upwelling features on the Mozambique coast.

Three species of marine turtles are known to feed and nest in the region, namely the olive ridley and green, with high abundance off Ibo Island, and hawksbills off Quilalea and Sencar. Dugong are known to reside in the Quirimbas National Park area, but are scarce and their actual numbers unknown. Dolphins, whales (namely the humback whale), sharks including bull shark, white tip shark, whale sharks and large populations of manta rays are known to frequent the islands.

Diversity: the complex is a critical node for accumulation and dispersal of marine organisms.

Corals: The point of contact of the SEC with East Africa introduces the richest coral fauna found on this coast.

Fish: The highest fish diversity in the WIO, with high abundance found in deeper waters such as the St Lazarus bank

Turtles: notable nesting site for greens and hawksbills and foraging ground for olive ridleys, loggerheads and leatherbacks.

Marine mammals: important humpback whale mother/calf nursing zone.

Sharks and Rays: A superlative reef shark site between Vamizi/Metundo islands shows the influence of variable currents in aggregating the sharks, and in protecting them from use.

Birds: High densities of migrating crab plovers, and breeding populations of varied birds on remote islands and rocks.

Feature condition and future outlook of the proposed area

National marine protected areas have been designated at the southern (Quirmbas National Park) and northern (Mnazi Bay – Ruvuma Estuary Marine Park, MBREMP) parts of this region, providing a foundation for trans-boundary initiatives. Further, private initiatives between villages/communities and the private sector are establishing successful reduced- or no-take areas (e.g. Vamizi, Metundo) with benefit-sharing with the local communities. However, to deal effectively with growing threats, in particular fishing, climate change and mining, these efforts will need to be integrated, the area of well-managed parts of the region will need to be expanded, and active transboundary initiatives will be needed.

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** (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**
Highest coral diversity site in the WIO with key endemic species (Obura, 2004).					
Special importance for life-history stages of species	Areas that are required for a population to survive and thrive.			**X**	
Nursing/calving grounds for humpback whales.					

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**	
Many habitats are under threat/declining (Wagner *et al.*, 2004; www.transmap.fc.ul.pt).					
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**
The region's coral reefs are highly susceptible and fragile to global warming (Obura 2004; www.transmap.fc.ul.pt).					
Biological productivity	Area containing species, populations or communities with comparatively higher natural biological productivity.				**X**
Mesoscale dynamics of the Mozambique Channel drive highly productive pelagic communities, mobile within eddies as they move through the channel (Ternon *et al.*, 2012; www.transmap.fc.ul.pt).					
Biological diversity	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.				**X**
Diversity: the complex is a critical node for accumulation and dispersal of marine organisms (www.transmap.fc.ul.pt). Fish: The highest fish diversity in the WIO, with high abundance found in deeper waters such as the St Lazarus bank (Samoilys et al., 2011) Turtles: notable nesting site for greens and hawksbills and foraging ground for olive ridleys, loggerheads and leatherbacks. Marine mammals: important humpback whale mother/calf nursing zone. Sharks and Rays: A superlative reef shark site between Vamizi/Metundo islands shows the influence of variable currents in aggregating the sharks, and in protecting them from use. Birds: High densities of migrating crab plovers and breeding populations of varied birds on remote islands and rocks. Corals: a rich biodiversity gradient that includes regional endemics.					
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**		
Many locations already highly impacted, but some are still in good natural state (www.transmap.fc.ul.pt).					

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Maps and Figures

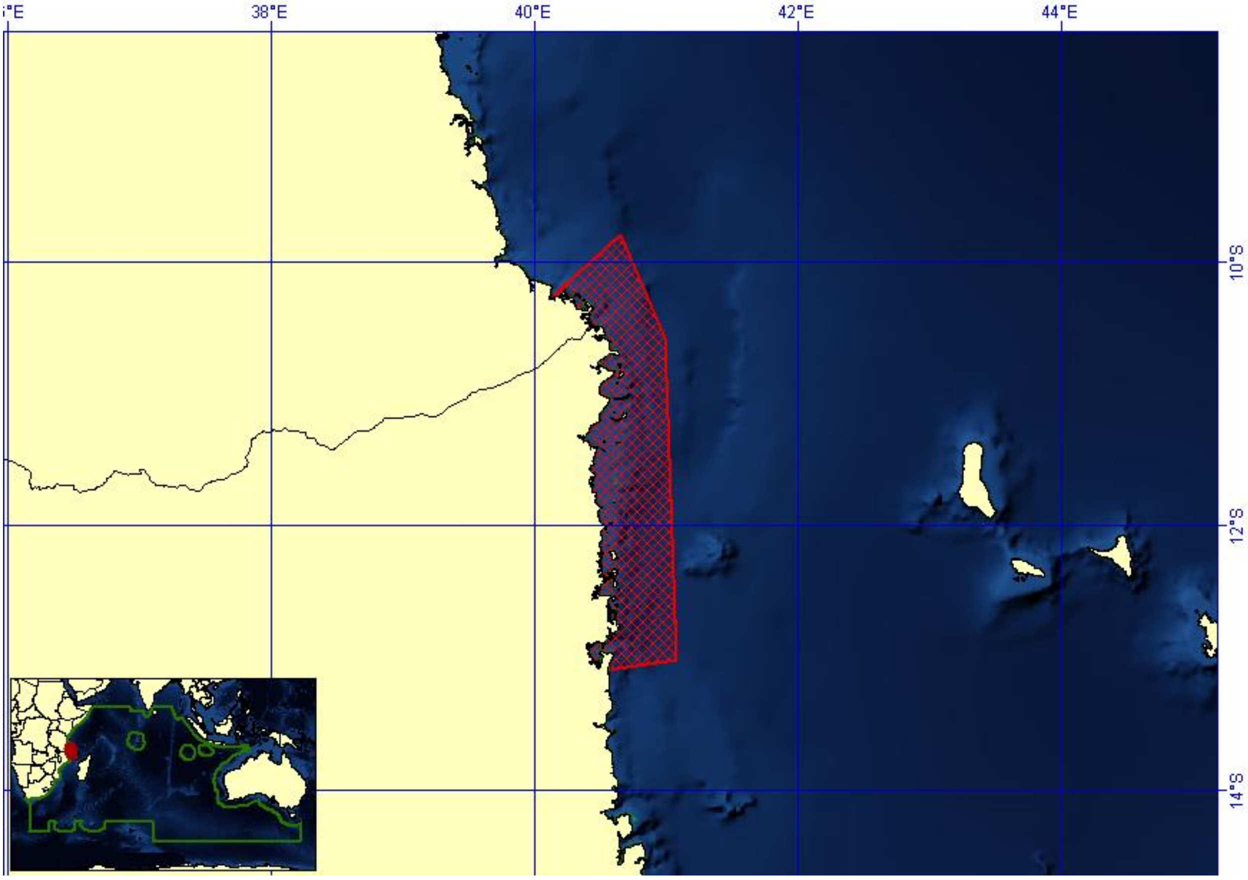

Figure 1. Map of area meeting EBSA criteria

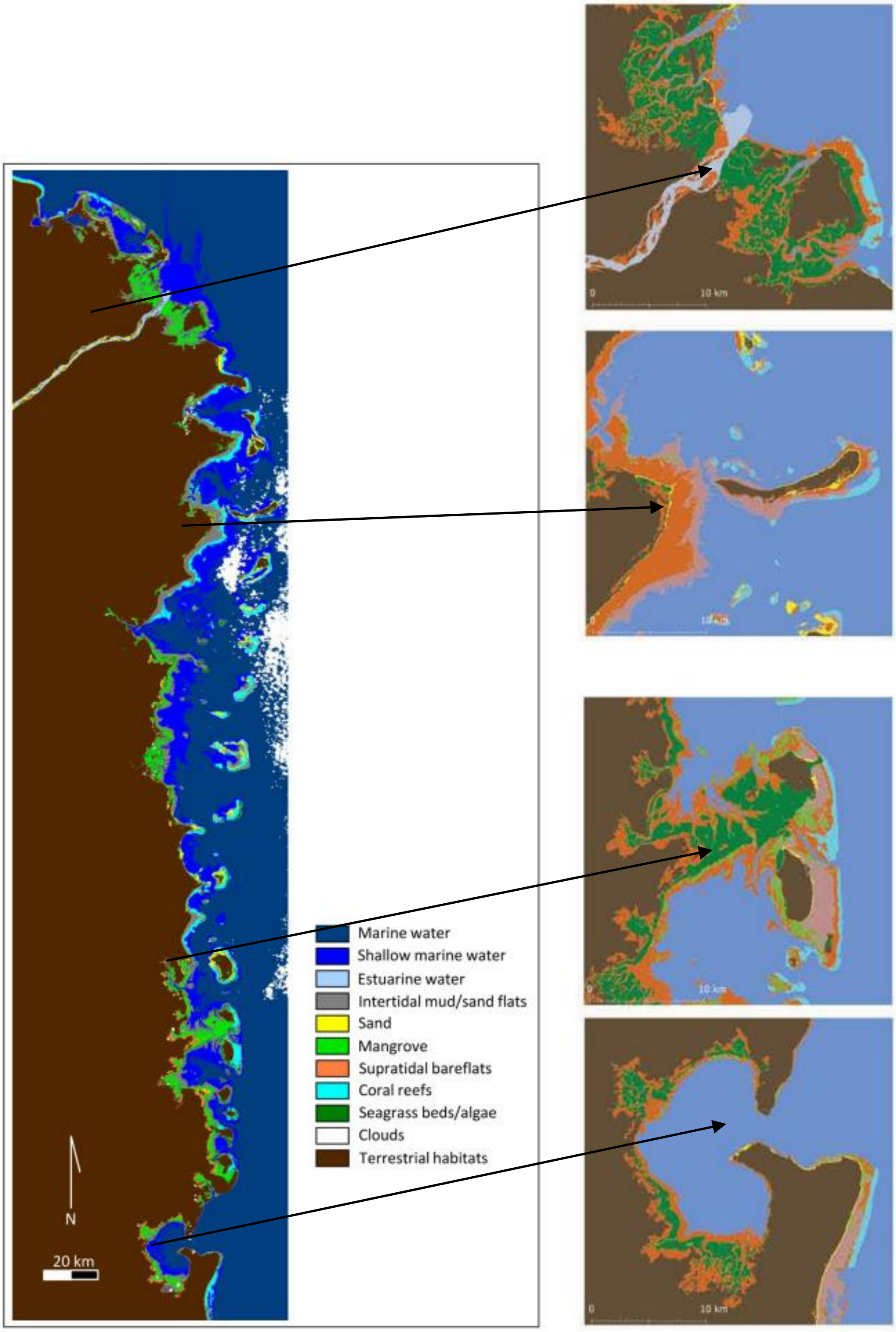

Figure 2. Map of Pemba Bay to Mtwara with TRANSMAP data.

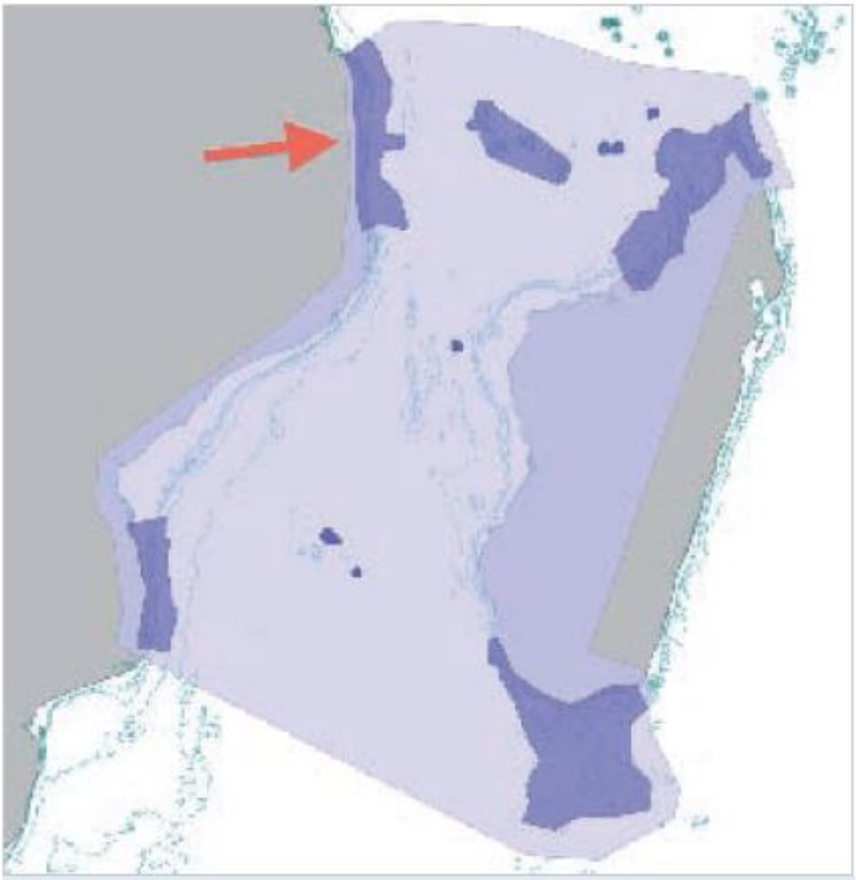

Figure 3. Location of the area meeting EBSA criteria in the Mozambique Channel.
The SEC touches the African coast at the northern point of the site boundary. ©David Obura

Figure 4. Coral reefs of the Quirimbas-Mtwara region are among the most diverse and robust in the region, both in the shallows (left, Vamizi island) and on deeper platforms and slopes (right, Pemba Bay). ©David Obura

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Text is from a soon-to-be published UNESCO World Heritage report: *Assessing Marine World Heritage from an Ecosystem Perspective: The Western Indian Ocean*, by David Obura, Julie Church, Catherine Gabrié. Fig. 1 is derived from TRANSMAP data.

Area No. 19: Mozambique Channel

Abstract

The Mozambique Channel and southward extension of its associated water flow into the Agulhas Current can be characterized in its entirety as an area meeting EBSA criteria, or can be broken down into sub-regions, each with their own particular significance. The ecology of the area is driven by the oceanography of currents, strong eddies and mixing, producing a highly productive ecosystem that attracts a wide range of species, many of them threatened and endangered.

Introduction

The Mozambique Channel is bounded by the oldest coastlines and seabed of the Indian Ocean and marks the first stages in the tectonic movements that created the ocean.

The eddy and gyre dynamics in the channel are globally unique, contributing to the Agulhas Current, a major western boundary current in the Indian Ocean that plays a role in the global conveyor belt of ocean circulation and regulation of the climate system. Upwelling eddies form on the Madagascar Plateau, flowing into the southern Mozambique Channel, which joins the East Madagascar Current and forms the Agulhas Current system. The geology and oceanography of the channel thus profoundly affect the ecosystem dynamics and habitats of the channel. The unique eddy dynamics of the channel and upwelling on the Madagascar Plateau contribute to the highly connected and highly productive shallow benthic and pelagic marine communities, affecting the productivity of coral reefs, planktonic and pelagic communities, and the spatial and temporal activity of faunal groups, including large fish, marine turtles, seabirds and marine mammals.

Location

The area under consideration runs from a line across the Mozambique Channel from Mtwara in southern Tanzania to the north-eastern corner of Madagascar, southwards to the south-eastern tip of Madagascar and St Lucia Lighthouse in South Africa. The area falls entirely within the EEZs of the neighbouring countries, which include Tanzania, Mozambique, South Africa, Madagascar, Comoros and France.

Feature description of the proposed area

The oceanography of the Mozambique Channel was unknown until ten years ago, when the existence of highly variable eddies several hundreds of kilometres across, often in dipoles (an anticyclonic and cyclonic eddy pair) that formed in the region around the Comoros, were discovered. As a result of vorticity imparted into the flow of the SEC as it flows around the tip of northern Madagascar, both cyclonic (clockwise) and anticyclonic (anticlockwise) eddies are generated. At times, a larger gyre is also formed that circulates around the Comoro islands. Further dynamism in these features is imparted by Rossby waves that cross the Indian Ocean, interacting with the narrow constriction of the channel at 16°S. Often eddies are generated in pairs that move southwards through the channel, and six to eight pairs may be formed through the course of a year.

The consequences of eddy formation ramify throughout the channel and at all levels of biological function. Because water flows in all directions as a result of the eddies, genetic connectivity throughout the Mozambique Channel is likely very high, particularly in the north, resulting in high retention and recruitment of larvae in pelagic and shallow marine ecosystems, and thereby high resilience of communities and populations. Due to the rotation of the eddies, they also result in down- and up-welling of water, and warmer and cooler temperatures in the centres of the eddies, and this transfers nutrients across the thermocline. Further, the eddies reach throughout the water column to at least 1000 m depth and, as these touch the continental shelves, they draw nutrients off the slopes and into the water column. These eddy dynamics profoundly affect pelagic biological communities, including phytoplankton, zooplankton, larger invertebrates, fish and marine mammals, and birds. While the full biological consequences of the eddy dynamics are not yet known, these count as a unique oceanic system and are likely to be critically important not only for the biology of species and ecosystem processes in the Mozambique Channel, but also for fisheries and other economic uses.

Finally, the highly dynamic eddies and net current in the channel contribute a substantial proportion of the water transported into the Agulhas Current, forming a link in the chain of water transport from the Pacific back to the Atlantic. This contribution of water from the Indian to the Atlantic oceans may be a significant factor in climate regulation on a planetary scale, and a justification for new research to address this question.

The interaction of East Madagascar Current water flowing southwards and over the Madagascar Plateau results in highly dynamic and productive coastal and offshore upwelling. Due to the continuity of the Madagascar Plateau with Madagascar, and similar turbulent interactions between the geology and ocean currents at northern and southern tips of the island, this Plateau is used here to extend what is normally considered as the Mozambique Channel boundary farther south, beyond the tip of Madagascar. Turbulent currents and upwelled water from the Madagascar Plateau derived largely from the East Madagascar Current flow into the southern part of the Mozambique Channel, interacting with the waters here (and hence also influencing channel dynamics farther north within eddies), and merging with the Mozambique eddies to form the Agulhas Current off South Africa. To capture these interactions, the Mozambique Channel as described here, includes features of the oceanography of the Madagascar Plateau and the island's south-eastern tip.

Over an evolutionary timescale, the geology and oceanography of the Mozambique Channel may have played a key role in driving the evolutionary dynamics of the Western Indian Ocean, maintaining and accumulating species in the northern Mozambique Channel in a biodiversity centre second in absolute numbers to the Coral Triangle, but with a unique evolutionary history and genetic diversity.

Genetic connectivity in the Mozambique Channel shows several overlapping patterns – one of high mixing from north to south but distinct from points farther north (coelacanths), and one showing a barrier at the narrow constriction of the channel, showing southern and northern populations (green turtle). Corals show highest diversity and indications of high connectivity in the northern Mozambique Channel. Further south, there is evidence of a genetic disjunction north and south of the point where the Agulhas Current first impinges on the African coast. Oceanographic and genetic connectivity between southern Madagascar and South Africa is thus soon to be investigated in ACEP III.

Fish: the area has highest fish diversity in the WIO, with a high abundance in deeper waters, such as the St Lazarus bank.

Turtles: notable nesting sites for greens, hawksbills and leatherbacks, and foraging ground for olive ridleys and loggerheads.

Marine mammals: important humpback whale mother/calf nursing zone.

Sharks and Rays: a superlative reef shark site between Vamizi/Metundo islands shows the influence of variable currents in aggregating the sharks, and in protecting them from use.

Birds: the oceanic islands in the Mozambique channel, most notably Europa and Juan de Nova, are host to globally or regionally significant populations of several seabird species. Around 10% of the world's sooty terns *Sterna fuscata* breed at Juan de Nova (2 million pairs) and Europa Island (1 million pairs) (Le Corre and Jaquemet 2005; Wanless 2012). The second-largest regional colony of frigatebirds *Fregatta ariel* and *F. minor* (seven thousand) and the largest colony of red-tailed tropicbirds *Phaethon rubricauda* (five thousand pairs) breed at Europa Island. The waters surrounding these islands are critical to these species during the breeding season.

Feature condition and future outlook of the proposed area

At the level of the channel, and with respect to oceanographic processes, management within the channel is nascent. Individual countries have taken steps towards site-based management in MPAs (Mozambique and Madagascar in coastal MPAs, France in whole-EEZ MPAs in Mayotte and Glorieuses, South Africa in an MPA and World Heritage Site) requiring additional instruments relevant to integrated coastal zone management, EEZ and fisheries instruments to regulate threats sufficiently to meet World Heritage designation for individual sites, or the channel as a whole. The Nairobi Convention is the prime convention relevant to marine and coastal management, and all countries bordering the channel are party to it.

Assessment of the area against CBD EBSA Criteria

<table>
<tr><th rowspan="2">CBD EBSA Criteria
(Annex I to decision IX/20)</th><th rowspan="2">Description
(Annex I to decision IX/20)</th><th colspan="4">Ranking of criterion relevance
(please mark one column with an X)</th></tr>
<tr><th>Don’t Know</th><th>Low</th><th>Medium</th><th>High</th></tr>
<tr><td>Uniqueness or rarity</td><td>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.</td><td></td><td></td><td></td><td>X</td></tr>
<tr><td colspan="6">The area encompasses the East African Coral Triangle, second in biodiversity to the Coral Triangle centred around Indonesia, Malaysia and Papua New Guinea (Obura 2012). A biodiversity gradient as one moves south introduces other unique components in areas of high productivity and the migration routes of diverse biota. See Schleyer & Benayahu (2009) regarding soft corals.</td></tr>
<tr><td>Special importance for life-history stages of species</td><td>Areas that are required for a population to survive and thrive.</td><td></td><td></td><td></td><td>X</td></tr>
<tr><td colspan="6">Many threatened and endangered species (turtles, mammals, birds) use the area for nesting and breeding. The most important example is that of the dugong, the Bazaruto region having the last viable population of this marine mammal in the WIO.</td></tr>
<tr><td>Importance for threatened, endangered or declining species and/or habitats</td><td>Area containing habitat for the survival and recovery of endangered, threatened, declining species or area with significant assemblages of such species.</td><td></td><td></td><td></td><td>X</td></tr>
<tr><td colspan="6">Fish: the highest fish diversity in the WIO, with high abundance found in deeper waters such as the St Lazarus bank.

Turtles: notable nesting site for greens and hawksbills and foraging ground for olive ridleys, loggerheads and leatherbacks.

Marine mammals: important humpback whale mother/calf nursing zone.

Sharks and Rays: a superlative reef shark site between Vamizi/Metundo islands shows the influence of variable currents in aggregating the sharks, and in protecting them from use.

Corals: a rich biodiversity gradient that includes regional endemics.

Birds: Globally significant colonies of Sooty terns Sterna fuscata breed at Juan de Nova (2 million pairs) and Europa Island (1 million pairs) (Le Corre and Jaquemet 2005). The second-largest regional colony of frigatebirds Fregattaariel and F. minor (seven thousand) and the largest colony of red-tailed tropicbirds Phaethon rubricauda (five thousand pairs) breed at Europa Island (BirdLife South Africa</td></tr>
</table>

unpubl. data, Wanless 2012). The waters surrounding these islands are critical to these species during the breeding season. The Endangered Barau’s petrel *Pterodro mabarau*iforages extensively in the southern portion of the proposed area (Le Corre *et al.* 2012).					
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
Coral reefs, including regional endemics, highly susceptible and fragile to global warming.					
Biological productivity	Area containing species, populations or communities with comparatively higher natural biological productivity.				X
Mesoscale dynamics of the Mozambique Channel drive highly productive pelagic communities, mobile within eddies as they move through the channel (Beal *et al.*, 2010). Linkages with habitats such as mangroves and seagrass beds provide crucial nursery areas for many species (www.transmap.fc.ul.pt).					
Biological diversity	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.				X
Highest diversity of coral reef species and coral habitats, and probably the highest diversity in the WIO of different marine (benthic and pelagic) habitats, with high genetic diversity and some important discontinuities.					
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	
Some areas are remote and have suffered less impact from human-induced disturbance, but as a whole, region-scale vulnerability is high.					

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**	**Medium**	**High**
Add relevant criteria					X
The area is under consideration for WHS status and has been identified as important in the WWF WIO marine eco-region process.					

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Maps and Figures

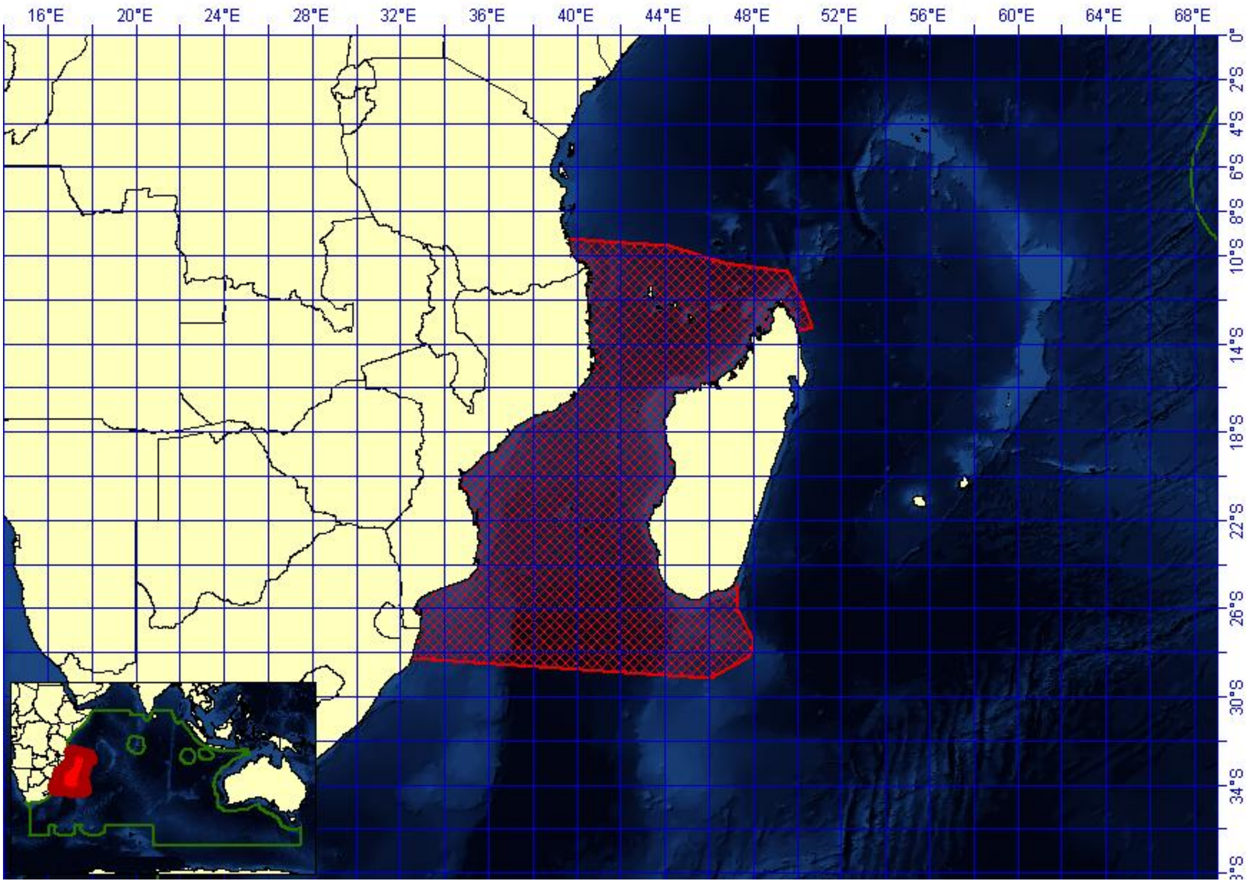

Figure 1. Map of area meeting EBSA criteria

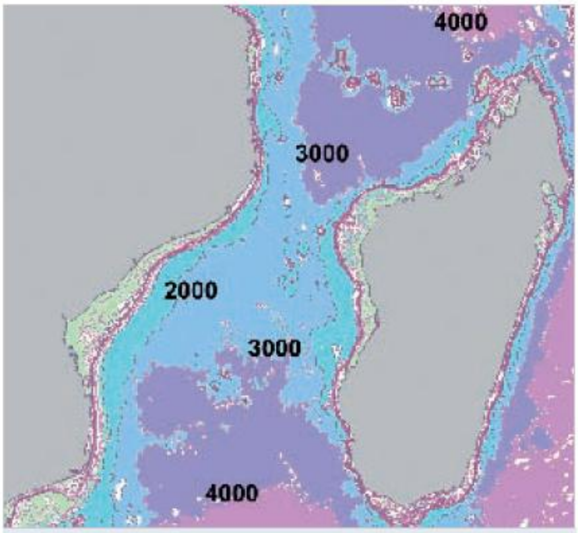

Figure 2. Depth in the Mozambique channel, showing the major transitions from 2000 m in the mid-point of the channel down to >4,000m towards the basins to the north and south. ©David Obura

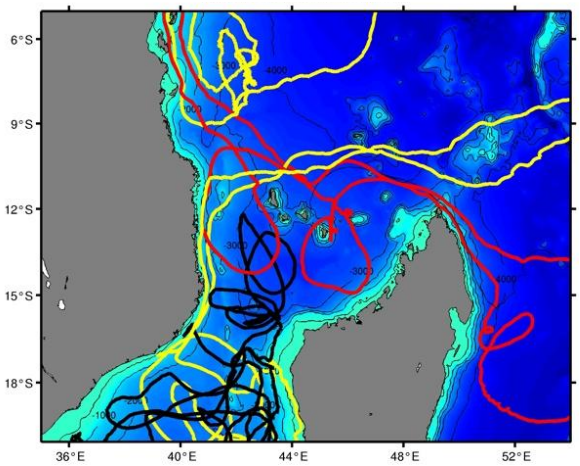

Figure 3. Connectivity patterns in the northern Mozambique Channel, showing drifter paths that move across the entire channel, and both north and south out of the northern channel region. Source: Roman, unpubl.

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Area No. 20: The Iles Éparses (part of the Mozambique Channel)

Abstract

Four of the five "Scattered islands" (literal translation of "*Iles Éparses*") stretch down the length of the Mozambique Channel, between the east coast of Africa and Madagascar: Europa, Bassas da India, Juan de Nova and Glorieuses. These islands are fairly remote and largely still intact, protected since 1972 and offering sites of high conservation value.

Introduction

The *Iles Éparses* are an administrative unit rather than a single geological unit, with the northern banks of Glorieuses located close to the Comoros archipelago, though they are not extensions of this volcanic hotspot (Guillaume et al. in press), while the middle (Juan de Nova) and southern islands (Europa and Bassas da India) are distinct geological features.

From an oceanographic perspective, the islands are bathed by the variable eddies of the Mozambique Channel, with resulting enhanced productivity driven by the eddies (Schouten et al 2003) and their interactions with the continental slopes and island slopes, but there is strong differentiation from north to south. In the north, the "Glorioso Front" was named for its proximity to Glorieuses Islands, and may mark the transition from the south equatorial current (SEC) to the waters of the channel (Belkin & Cornillon 2007). Juan de Nova is at a point off Madagascar's west coast with high productivity likely driven by interactions between eddies and the shallowest sections of the Davie ridge. Europa and Bassas de India, in the centre of the southern Mozambique Channel, experience mature eddy systems.

While the individual islands are all small, as a group they cover a large geographic range across the whole of the Mozambique Channel. The integrity of the serial/island group is very high as the islands are uninhabited, and human pressure is very low. All studies show that marine habitats are in good health despite recent climate change impacts, and the composition of the trophic chain, with abundant top predators, is a sign of good health. Nevertheless, each island has a distinctive character, and provided the productivity and dynamics of open sea areas that are critical for feeding and migration remain in good condition, each island has a high integrity.

Location

The *Iles Éparses* stretch down the length of the Mozambique Channel, between the east coast of Africa and Madagascar. Glorieuses islands (11.3°S), close to Mayotte, are in the north, Juan de Nova is in the centre, adjacent to the West Madagascar coast, Bassas da India and Europa (22.4°S) are in the south.

The *Iles Éparses* are under French jurisdiction, and since 2007 have been part of the "French Southern and Antarctic Lands" (*Terres australes et antarctiques françaises - TAAF*), which also includes the southern islands of Crozet, Kerguelen Archipelago, St. Paul, Amsterdam and Terre Adélie. The EEZ of the *Iles Éparses* measures 640,000 km^2 in total, about the same as the EEZs of neighbouring countries. The tropical islands are subject to claims from these neighbouring countries, including Madagascar (Bassas da India, Europa, the Glorieuses islands and Juan da Nova) and from the Comoros for the Glorieuses islands.

Glorieuses is a coral bank 17 km long, covering 165 km^2, with two main coral islands: Grande Glorieuse (7 km^2) and Lys island (600 m long). Grande Glorieuse is a sandy cay, with a set of dunes in the east and north-east that reach a maximum altitude of 12 m. Lys island and fossil outcrops on the coral bank appear to be the remains of Pleistocene coral growth 125,000 years old, suggesting that these reefs formed exclusively during the first MIS-5e sea-level highstand. This relative tectonic stability of these fossil terraces contrasts with the subsidence reported from nearby Mayotte Island, suggesting a different geologic setting for the Comoros and Glorieuses archipelagoes (Guillaume et al. *in press*).

Juan de Nova is a small coral island (about 6 km²) on a 250 km² coral reef platform. It consists of beachrock and sand dunes up to 12 m in height. The coral structures extend 12 km north and 2 km south of the island. The asymmetry of the reef bank, linked to the tilting of the island, results in different reef morphologies: in the south the island has a well-defined reef flat between 0 and 3 m depth, while in the north it slopes down slowly to 20 m deep before dropping to >2000 m to the channel bottom. On the island, phosphate deposits in the form of guano were exploited from 1900 to 1968.

Bassas da India is a sub-circular atoll 12 km in diameter, with a deep sandy lagoon and is almost entirely submerged at high tide. The reef slope is very steep, dropping to 3000 m to the bottom of the Mozambique Channel.

Europa is a raised atoll 6 to 7 km in diameter and 28 km² in area, a remnant of a Pleistocene atoll from 125,000 years ago (Battistini et al 1976). The island is a low sandy cay surrounded by a small cliff of raised dead coral, interrupted by sandy beaches. A dune fringe, to a maximum height of 6 to 7 m, in places is up to ten metres wide. The shallow inner lagoon, in the process of filling, covers about 900 ha with some 700 ha of mangrove.

Feature description of the proposed area

Oceanography: The oceanography of the Mozambique Channel is highly complex, and the placement of the Iles Éparses along the length of the channel results in variable hydrographic forcing factors on the islands and marine communities, such as the Glorioso Front, located north-west of Glorieuses and marking the northern boundary of the Mozambique channel.

Biogeography: the Iles Éparses are located at the western border of the West Indo-Pacific Realm, cover a range of latitudes between 11°S (les Glorieuses) and 22°S (Europa), from what is commonly considered to be the center of the high diversity of the northern Mozambique channel to the southern part of the channel, have small habitat size, which promotes speciation and extinction events and thus the generation and presence of endemic species.

Migratory species: the Iles Éparses are important places for migratory species, such as marine turtles, marine mammals, and seabirds, with both breeding and foraging zones of significance, and seasonal migrations determined by local and regional scale phenology. The extensive *Halimeda* facies, well represented in Glorieuses and Juan de Nova are unique in the context of the Indian Ocean islands, reflecting high productivity in surrounding waters. Green turtles show strong genetic differentiation into two populations, one in the north, the other in the southern and central Mozambique Channel (Bourjea et al. 2007). This may reflect the current patterns in the channel, which influence the dispersal of juveniles and separate sub-stocks for multiple species groups.

Europa - the breeding stock of green turtles is between 8,000 and 13,000 females, the third-largest nesting site for green turtles in the world and the largest in the Indian Ocean (Le Gall 1988, Lauret-Stepler 2007); with its mangrove, Europa is also known to be an important development habitat for green and hawksbill (*Eretmochelys imbricate*) turtles (Bourjea et al 2006; 2010; Bourjea et Dalleau 2011); blacktip reef sharks (*Carcharhinus melanopterus*), lemon sharks (*Negaprion acutidens*), shooling hammerhead sharks (*Sphyrna mokarran*); eight breeding seabird species including an endemic subspecies of the white-tailed tropicbird (*Phaethon lepturus europae*), the most diverse seabird fauna of the Iles Éparses, and the richest in the WIO; unique mangrove system (700 ha) in its lagoon.

Juan de Nova - Two species of marine turtles (*Chelonia mydas* and *Eretmochelys imbricata*) are known to nest on Juan de Nova, but in low abundance (<150 nests per year; Lauret-Stepler 2010). The lagoon of Juan de Nova is known to be an important development habitat for green and hawksbill turtles (Bourjea et al., 2007); nursery areas for grey reef sharks; largest population of sooty terns in the Indian Ocean and one of the largest in the world with > 2 million breeding pairs; presence of coconut crab *Birgus latro*.

<u>Glorieuses</u> – This is an important nesting sites for green turtles in the region (Le Gall et al 1986; Le Gall 1988), with an average of 1500 tracks in 26% of the available beach (Lauret-Stepler 2007), and it is estimated that more than 3000 female nest each year (Bourjea com pers.). The lagoon of Glorieuses is also known to be an important development habitat for green and hawksbill turtles (Ciccione et al., 2005; Bourjea et al., 2008; 2009). Glorieuses is home to the second-largest population of sooty terns, with 760,000 breeding pairs; presence of coconut crab *Birgus latro*. Humpback whales are present during the southern winter to breed and give birth.

<u>Bassas da India</u> - aggregations of juvenile sharks *Carcharhinus galapagensis*.

Feature condition and future outlook of the proposed area

<u>Threats</u>: The Iles Éparses are at not far from populated islands and the continental coastline, making them vulnerable to exploitation. Fisheries in the coastal waters surrounding the islands is banned but does occur by commercial boats, as well as recreational and small-scale targeting of reef fish, by fishers from e.g. Mayotte or South Africa, depending on the island. Moderate shipping traffic passes through the Mozambique Channel, thus there is a pollution risk from tankers. Two petroleum exploration permits within the EEZs of Juan de Nova were approved in December 2008, and exploration in the EEZs of neighbouring countries may have spillover impacts in the islands. As with other sites, climate change is a significant threat, with the added uncertainty of how changing water temperatures and currents will affect the dynamic eddies in the Mozambique Channel that influence these islands in areas such as connectivity, primary productivity, prey populations for higher order predators, and fishing stock dynamics.

<u>Management status</u>: Europa, Bassas da India, and Glorieuses were declared Nature Reserve in 1975 (*arrêté préfectoral* of 1975). Apart from the submerged atoll of Bassas da India, there is a permanent presence on the islands, for military purposes. As a result, access to the islands is strictly and effectively controlled, with permits only being given for research. In support of this, a Scientific Committee of the Scattered Islands (CSIE) has been established as an advisory body to the administration. In 2012, the whole the EEZ of Glorieuses was declared an MPA, and steps are underway to declare Europa as a national natural reserve. Europa was designated a Ramsar site in 2011.

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** (please mark one column with an X)			
		Don't Know	**Low**	**Medium**	**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**

Part of the unique Mozambique Channel ecosystem. Unique pristine insular mangrove in Europa.					
Special importance for life-history stages of species	Areas that are required for a population to survive and thrive.				**X**
Isolation makes them important for various species - spawning, feeding, calving, etc. Important nesting sites for marine turtles (Bourjea et al 2007)					
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**	
Many threatened and endangered species (turtles, mammals, birds), but lower diversity than Mozambique and Madagascar at same latitudes.					
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**
Reef and small island habitats are very vulnerable					
Biological productivity	Area containing species, populations or communities with comparatively higher natural biological productivity.				**X**
Part of the eddy / upwelling systems of the Mozambique Channel.					
Biological diversity	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.			**X**	
Significant, but lower diversity than Mozambique and Madagascar at same latitudes.					
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 integrity of the serial/island group is very high as the islands are uninhabited and human pressure very low. All studies show that marine habitats are in good health despite recent climate change impacts, and the composition of the trophic chain, with abundance of top predators, is a sign of good health.					

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Maps and Figures

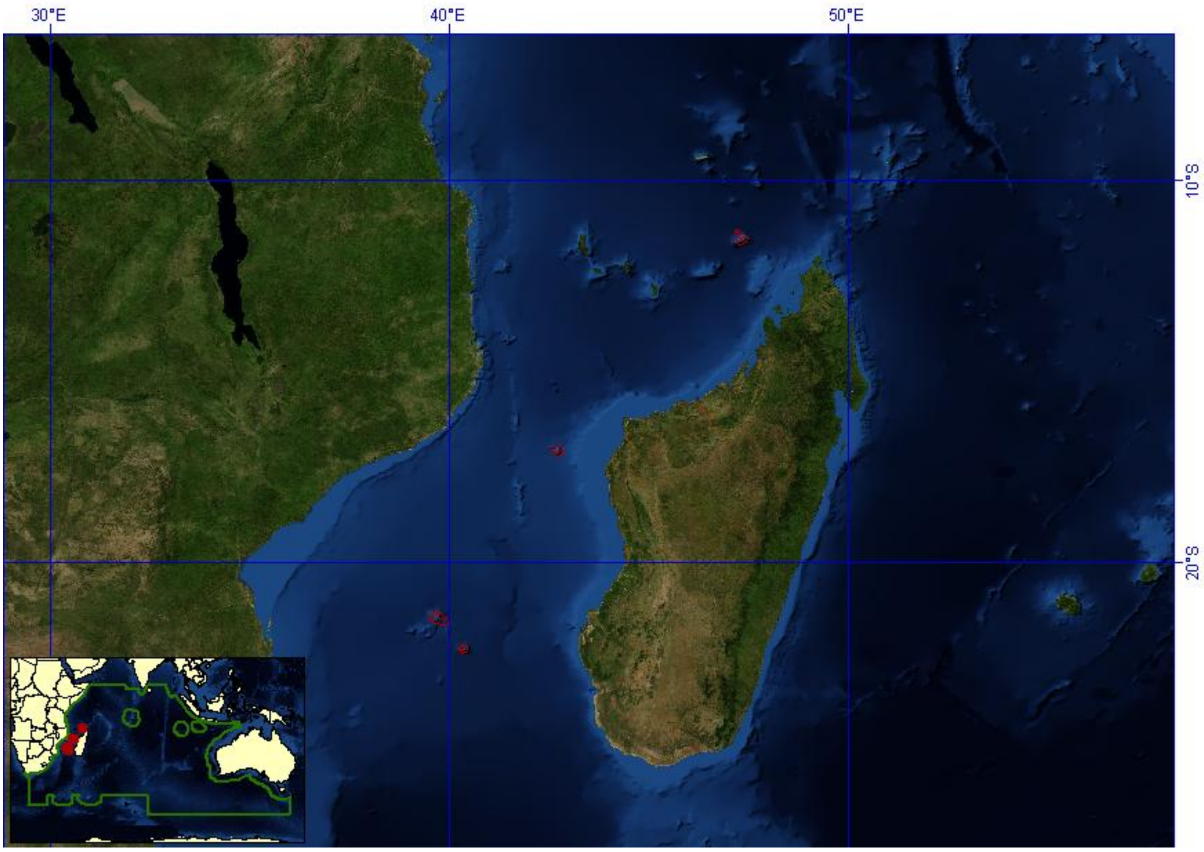

Figure 1. Map of area meeting EBSA criteria

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Text is from a soon-to-be published UNESCO World Heritage report: *Assessing Marine World Heritage from an Ecosystem Perspective: The Western Indian Ocean*, by David Obura, Julie Church, Catherine Gabrié. It has been globally reviewed by Mireille Guillaume, and Jérôme Bourjea reviewed the marine turtle component.

Area No. 21: Lamu-Kiunga area

Abstract

The Lamu-Kiunga area is considered part of six priority landscapes implementing climate change adaptation components in World Wide Fund for Nature (WWF) programmes. The mangrove and tidal flat habitats in the area of Lamu on the Indian Ocean coast of north-eastern Kenya, close to the Somali border, are known as some of the most extensive and species-rich along the entire coast of East Africa. They provide very important value in terms of biodiversity, climate protection (blue carbon), fishery, nature-based tourism and coastal protection.

Introduction

The Kenyan coast experiences two distinct monsoon seasons. The northeast monsoon (NEM) locally referred to as *kaskazi* and the southeast monsoon (SEM) locally referred to as *kusi*. SEM runs from May to September and NEM from November to March. In between the NEM and SEM there is a one- to two-month transition period characterized by variable and lower winds locally referred to as *matlai* (Church &Obura, 2004a).

The Lamu stratum, one of the seven districts within the coast province, extends from the Somali border to about 2° 22'S and includes the entire Lamu archipelago. The Lamu stratum is about 4,176 km^2 in area, which is about 22% of the total shelf area. The Lamu archipelago consists of several islands with numerous fishing villages and hubs, all which specialize in specific areas of the industry, with Kizingitini and Kiunga leading in fish landings.

Reef growth in the northern coastline is inhibited by cold nutrient-rich waters of the Somali Current upwelling system, which isolate the East African coast from the Red Sea, Gulf of Aden and Arabian Gulf to the north.

In Lamu district, the main species of catch are rabbit fish, scavenger, snapper, cat fish, cavalla jacks, mackerel, blackskins, barracuda, mullets, queen fish, sail fish, tuna, prawns, lobsters, crabs, and sharks/rays in dried form, sardines, oysters and octopus. Prawns are caught in areas like Dodori creek, exploited by fishers from Kipungani and Matodoni. Lobster and crab, which represent some of the best in the world, are caught in places like Kizingitini, Faza and Kiwayuu. Kiwayuu also produces sharks and rays for the dry fish market. Kiunga produce shells, lobster, crab and finfish.

Overall, the Lamu offshore, deep-water stratum has great potential for fisheries with nearly 85% of its continental shelf lying above 200m.

Lamu area is rich in marine species, such as coral reefs, reef and deep sea fishes, crustaceans like lobsters and marine mammals. The total mangrove stand is about 64,627 ha, with 67% occurring in Lamu, which is the highest mangrove stand.

Seagrasses occur in extensive beds that cover the largest proportion of shallow reef slopes and form an important habitat for many species living in them and adjacent systems. Of the 12 seagrass species found in Kenya, 11 are described in the Lamu-Kiunga area, including *Thallasondendron ciliatum*, which forms monospecific stands. Other common seagrass species found in Kenya are *Halophila ovalis, Halophila minor, Halophila stipulacea, Halodule uninervis, Halodule wrightii, Syringodium isoetifolium, Cymodocea rotundata, C. serrulata, Thalassiahemprichii, Zosteracapensis* and *Enhalusacoroides* (McMahon and Waycott, 2009).

The sea turtle is one of the flagship species for conservation, protection, research as well as a tourism in Kenya. Lamu-Kiunga has been documented as a nesting area for green turtle (*Chelonia mydas*), hawksbill turtle (*Eretmochelys imbricata*) and olive ridley (*Lepidochelys olivacea*).

Kenya's coral reefs are part of the northern end of the East African Fringing Reef System, decreasing in extent, size and diversity northwards towards and into Somalia. Warm water conditions along the South Coast reflect the predominant influence of the South Equatorial Current and East African Coastal Current, with cooler, more nutrient-rich conditions in the north influenced by the Somali Current upwelling system. Dominant coral species include the massive reef-building coral *Poriteslutea* and other *Porites spp*., regionally dominant species such as *Galaxeaastreata*, and a broad diversity of species in the genera *Acropora*, *Pocillopora*, *Favia*, *Favites* and others (Hamilton and Brakel, 1984). Primary reef fish families include the herbivorous parrotfish (Scaridae) and surgeonfish (Acanthuridae), as well as predators such as snappers (Lutjanidae), sweetlips (Haemulidae) and groupers (Serranidae).

The Lamu-Kiunga area is an ecotone due to the convergence of the Red Sea/Gulf of Aden waters, which results in a unique array of coral and fish species such as the coral species *Poritesnodifera, P. columnaris*, an undescribed Coscinaraea species and the angelfish *Apolemichthysxanthotus* (Hamilton and Brakel, 1984).

The Roseate tern *Sterna dougalii* has been reported to breed in Lamu-Kiunga. This area is considered to be globally significant, with about 6,000 birds, found 10 km offshore.

Location

This area covers 40.3° E and 3.2° S and 41.9° E and 1.5° S, which is within national jurisdiction.

Feature condition and future outlook of the proposed area

<table>
<tr><td rowspan="2">CBD EBSA Criteria
(Annex I to decision IX/20)</td><td rowspan="2">Description
(Annex I to decision IX/20)</td><td colspan="4">Ranking of criterion relevance
(please mark one column with an X)</td></tr>
<tr><td>Don't Know</td><td>Low</td><td>Medium</td><td>High</td></tr>
<tr><td>Uniqueness or rarity</td><td>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.</td><td></td><td></td><td>X</td><td></td></tr>
<tr><td colspan="6">Explanation for ranking:
North of Lamu, is an ecotone with diverse species from the Red Sea/Gulf of Aden evidenced by the changing patterns of coral abundance, and the presence of some fish species not seen farther south, such as the coral species Poritesnodifera, P. columnaris, an undescribedCoscinaraea species and the angelfish Apolemichthysxanthotus (Hamilton and Brakel, 1984). Coral bleaching probability decreases northwards with increasing depth and influence of Somali current. Lamu offshore, deep water stratum with a continental shelf lying above 200m undergoes upwelling from the Somali currents, hence high primary productivityas shown by the Cla reports</td></tr>
<tr><td>Special importance for life-history stages of species</td><td>Areas that are required for a population to survive and thrive.</td><td></td><td></td><td>X</td><td></td></tr>
<tr><td colspan="6">Explanation for ranking:</td></tr>
</table>

<table>
<tr><td colspan="6">Ziwayu and Kipini areas have been documented as the nesting areas forCheloniamydas, hawksbill turtle Eretmochelysimbricata and olive ridleyLepidochelysolivacea. The loggerhead turtle Carettacaretta and the leatherback turtle Dermochelyscoriacea are rare/occasional visitors (Frazier, 1975, KWS report, 2012).Colony of 6,000 Roseate Terns in Lamu-Kiunga area as a breeding site.</td></tr>
<tr><td>Importance for threatened, endangered or declining species and/or habitats</td><td>Area containing habitat for the survival and recovery of endangered, threatened, declining species or area with significant assemblages of such species.</td><td></td><td></td><td>X</td><td></td></tr>
<tr><td colspan="6">Explanation for ranking:

Kiunga has the most northerly and only remaining dugongs populationin Kenya which threatened (Muir, 2003, Wamukoya et al, 1996). Tracking data of Olive Ridley, Hawksbill and Green turtles and Dugong indicate that Lamu- Kiunga area is part of the migrating route.
The Sterna dougalii (Roseate terns) have been reported to breed in Lamu-Kiunga numbering about 6,000 birds and they are found 10 km offshore. This area is considered to be globally significant (Birdlife 2012).</td></tr>
<tr><td>Vulnerability, fragility, sensitivity, or slow recovery</td><td>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.</td><td></td><td></td><td>X</td><td></td></tr>
<tr><td colspan="6">Explanation for ranking:

The seagrass are vulnerable to upwelling, altered primary productivity, anthropogenic impacts and their recovery is very slow. The seagrass beds are vital foraging areas for the dugong populations (Wamukoya et al, 1996). The Lamu port development is going to extensively disturb the pristineness of some of the adjacent areas.</td></tr>
<tr><td>Biological productivity</td><td>Area containing species, populations or communities with comparatively higher natural biological productivity.</td><td></td><td></td><td>X</td><td></td></tr>
<tr><td colspan="6">Explanation for ranking:
Upwellings off Kiunga MPA. Has high fish density but low diversity - act as replenishing grounds for the heavily fished nearshore reefs. Lamu archipelago is the main lobster fishing ground. The key lobster fishing areas are Kizingitini, Kiunga and Kiwayu and the species are Panulirusornatus, P. longipes, P. penicillatus, P. versicolor, P. homarus and P. dasypus.</td></tr>
<tr><td>Biological diversity</td><td>Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.</td><td></td><td></td><td>X</td><td></td></tr>
<tr><td colspan="6">Explanation for ranking:
There is a north - dichotomy of marine species along the Kenyan coast. Due to the break at (Tana delta) on the fringing coral reef between the north and south of Kenya, areas located in the south of have relatively higher species diversity. Coral species found in Kiunga area also different from the Red Sea area.</td></tr>
<tr><td>Naturalness</td><td>Area with a comparatively higher degree of naturalness as a result of the lack of or low level of human-induced disturbance or</td><td></td><td></td><td>X</td><td></td></tr>
</table>

	degradation.				

Explanation for ranking:

Lamu-Kiunga area has a low anthropogenic foot print due to its remoteness. Most areas are pristine and support the rare and endangered dugong and sea turtles.

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**	**Medium**	**High**
Add relevant criteria			X		

Explanation for ranking
This area includes a designated as Man and Biosphere reserve hence its pristineness. Lamu Island is also considered as a World heritage site.

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Maps and Figures

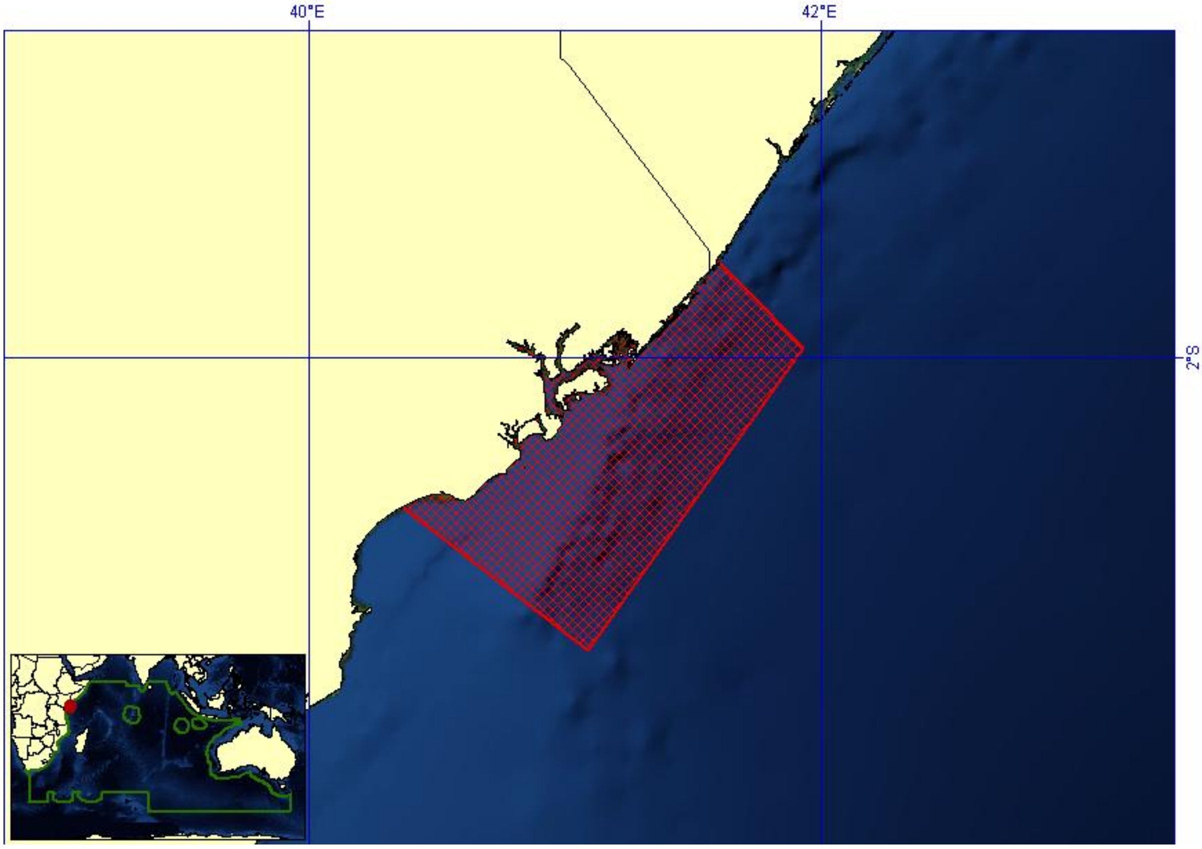

Figure 1. Map of area meeting EBSA criteria

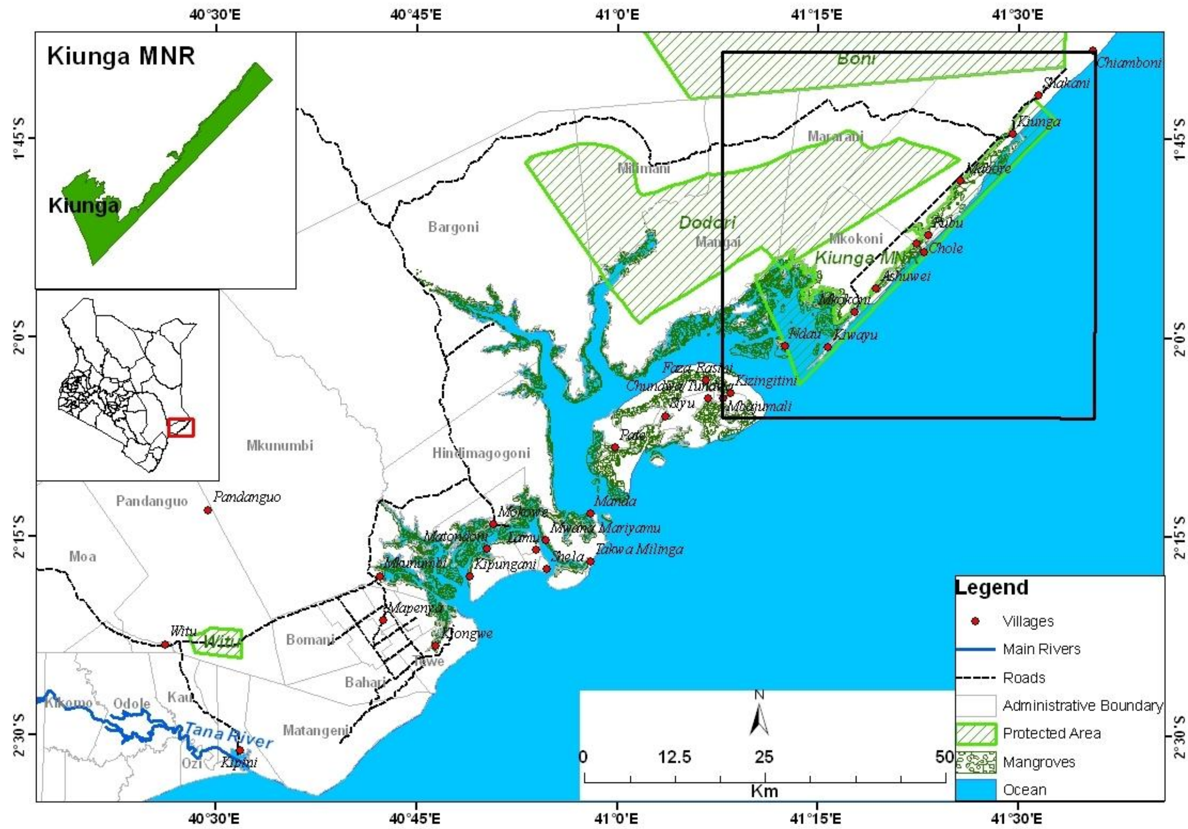

Figure 2. Features surrounding the area

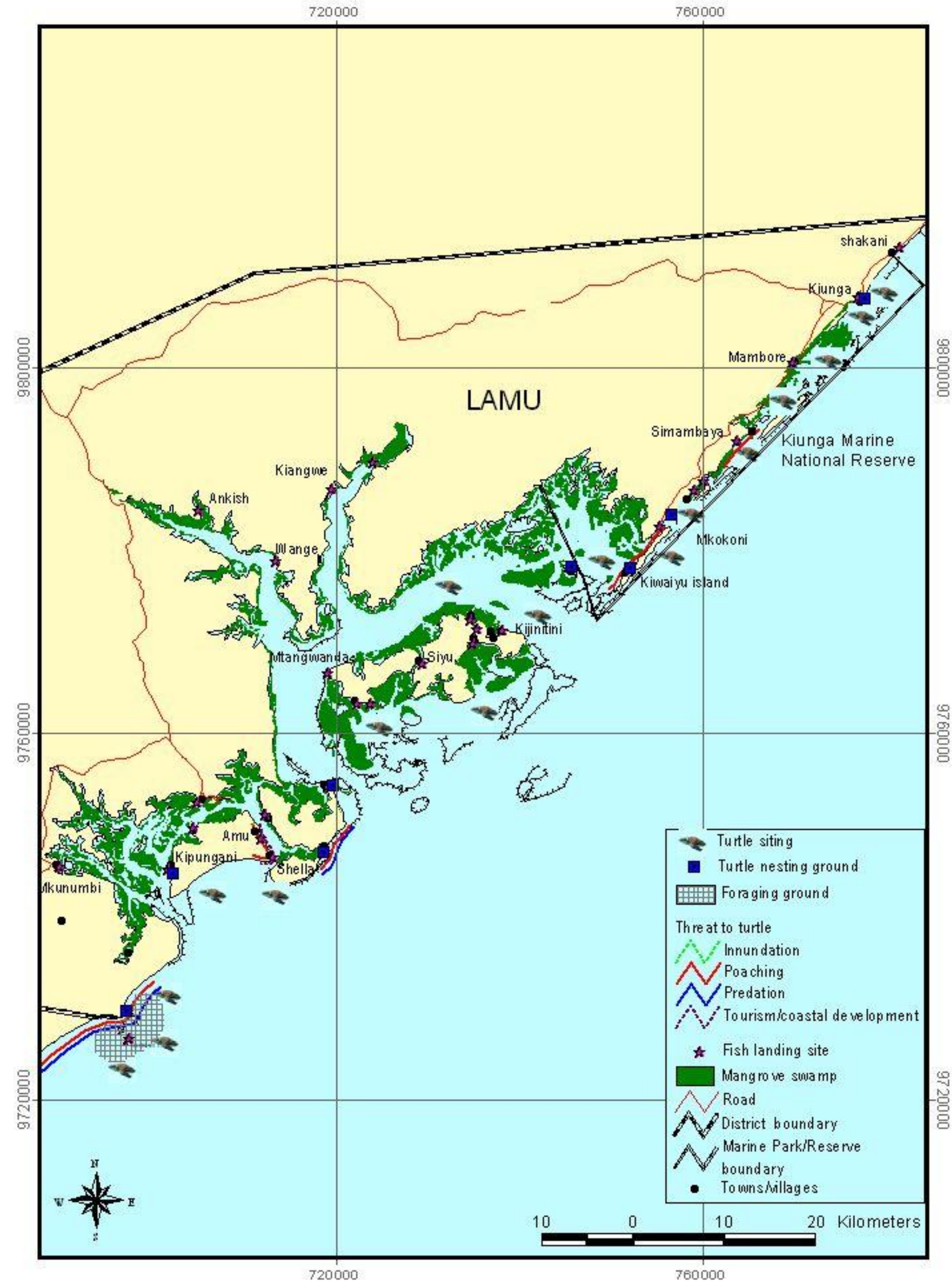

Figure 3. Map of MPAs and reserves in Kenya with turtle-nesting grounds

Area No. 22: Walters Shoals

Abstract

The Walters Shoals, on the southern part of the Madagascar Ridge are steep-sided and cone-shaped with flat tops (minimum depth 15m) covered by coral reefs of broken and jagged relief, especially long the outer edges. Their base is defined by the 800 m isobath.

They are the only known habitat of the recently described giant species of spiny lobster, *Palinurus barbarae* (Decapoda Palinuridae) (Charles Griffiths, pers. comm.) and 30 to 40% of the shallow water fish fauna of Walters Shoals is endemic to some part of the West Wind chain of islands and seamounts (Collette and Parin 1991).

Introduction

The Walters Shoals lie on the southern tip of Madagascar. The shoals are cone-shaped with flat tops (minimum depth 15m) and their base is defined by the 800 m isobath. The flat top is covered by coral reefs of broken and jagged relief, especially long the outer edges. The slopes of the shoals are steep; the angle of the incline ranges from 6 to 12°.

The Walters Shoals are the only known habitat of the recently described giant species of spiny lobster, *Palinurus barbarae* (Decapoda, Palinuridae) (Charles Griffiths, pers. comm.) and 30 to 40% of the shallow water fish fauna of Walters Shoals is endemic to some part of the West Wind chain of islands and seamounts (Collette and Parin 1991).

Finally, Walters Shoals are believed to be an important foraging area for leatherback turtles and possibly for the population of 450 pygmy blue whales in the area.

Location

Walters Shoals are an isolated series of seamounts reaching to within 18 m of the surface, located about 400 nautical miles south of Madagascar and 600 nm east of South Africa between 33°9-16'S, 43°49-56'E (Collette and Parin 1991). Their base is defined by the 800m isobath (Kanaev *et al.*).

Feature description of the proposed area

The Madagascar Ridge consists of a massive elevation of the bottom, extending between the micro-continent of Madagascar Island and the Western Indian Ridge for a distance of almost 700 miles. The ridge crest is wide and has depths from 1 000 to 2 500 m (at the positions of seamounts, up to 567 m). The minimum depth on the Walters Shoals is 15 m. The shoals are cone-shaped with flat tops, and their base is defined by the 800 m isobath. The flat top is covered by coral reefs of broken and jagged relief, especially long the outer edges. The slopes of the shoals are steep; the angle of the incline ranges from 6 to 12°. The sediments consist of foraminiferous ooze enriched with sand along the crests (Kanaev, Neyman and Parin 1975)(Romanov 2003)(Fig 1).

The shoals were discovered in 1963 by the South African Hydrographic Frigate SAS Natal captained by Cmdr Walters. When found, they were reported to support a large population of Galapagos sharks (*Carcharhinus galapagensis*). This species is classified as Near Threatened by the IUCN.Turbulent currents and upwelling waters from the Madagascar Plateau flow into the southern part of the Mozambique Channel, interact with the waters there (and hence may also influence channel dynamics farther north when carried north in eddies), and the two also merge to form the Agulhas Current off South Africa (Obura *et al.* 2012). Upwelling and turbulence features produced on the Madagascar Plateau feed into the southern Mozambique Channel and thence into the Agulhas Current system (Obura *et al.* 2012). It is believed that eddies that cross the Channel to South Africa are important in maintaining genetic connectivity.

Approximately 450 pygmy blue whales are estimated to occur south of Madagascar on the Madagascar Plateau. Based on acoustic observations, there is some evidence for range overlap of the different call type populations, with the Madagascar Plateau having only the Madagascar call type (Obura *et al.* 2012).

Walters Shoals are the only known habitat of the recently described giant species of spiny lobster, *Palinurus barbarae* (Decapoda, Palinuridae), which was found in an unexploited condition (Charles Griffiths, pers. comm.). This may be the unidentified *Palinus* species found by a Soviet fishing crew in 1981.

Three species, a carangid, *Trachurus longimanus*, a cheilodactylid, *Acantholatris monodactylus*, and a labrid, *Nelabrichthys ornatus*, are endemic to the West Wind Drift islands. A serranid, *Lepidoperca coatsii*, is known from four of the island groups and may also occur at Walters Shoals. Another serranid, *Serranus novemcinctus*, occurs only at the four Indian Ocean islands and seamounts. A common *Gymnothorax* is an undescribed species, probably endemic. A specimen of scorpaenid has been described as *Scorpaenodes immaculatus*, also probably endemic. A second species of *Gymnothorax* and a species of *Plagiogeneion* may also be endemic. Thus, 30 to 40% of the shallow water fish fauna of Walters Shoals is endemic to some part of this chain of islands and seamounts (Collette and Parin 1991).

Finally, Walters Shoals are believed to be an important foraging area for leatherback turtles.

Feature condition and future outlook of the proposed area

It was fished by Soviet exploratory fishing vessels in the 1980s (FAO History of Soviet and Ukranian fishing), but fishing activities seem to have been restricted to mid-water trawling (major reported catch: jack mackerel) and pot fishing for lobster. This report commented that more demersal fish were seen but the bottom was too rugged for fishing (Romanov 2003).

Assessment of the area against CBD EBSA Criteria

<table>
<tr><td rowspan="2">CBD EBSA Criteria
(Annex I to decision IX/20)</td><td rowspan="2">Description
(Annex I to decision IX/20)</td><td colspan="4">Ranking of criterion relevance
(please mark one column with an X)</td></tr>
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<tr><td colspan="6">Explanation for ranking
30-40% of shallow water fish thought to be endemic to this group of “west-wind islands”.
Only known habitat of recently discovered spiny lobster Palinus barbarae (Charles Griffiths pers.comm.)</td></tr>
<tr><td>Special importance for life-history stages of species</td><td>Areas that are required for a population to survive and thrive.</td><td></td><td></td><td>X</td><td></td></tr>
<tr><td colspan="6">It is an important foraging area for leatherback turtles (Haupt, 2010).</td></tr>
<tr><td>Importance for threatened,</td><td>Area containing habitat for the survival and recovery of endangered, threatened, declining species or area with significant</td><td></td><td>X</td><td></td><td></td></tr>
</table>

endangered or declining species and/or habitats	assemblages of such species.				
Reported to be important area for pygmy blue whales (Obura *et al.* 2012), and whales observed in area (Shotton 2006). Once reported to hold large population of the “Near Threatened” Galapagos shark.					
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**		
Predicted to contain habitat suitable for cold-water corals (Clark and Tittensor 2010; Davies and Guinotte 2011), but local habitat may not be suitable.					
Biological productivity	Area containing species, populations or communities with comparatively higher natural biological productivity.		**X**		
The Madagascar Plateau and the Madagascar Channel are the two most productive of the five foraging areas for seabirds in the WIO (Obura *et al.* 2012). However, this area may be outside the most productive areas and outside the area of high kinetic energy.					
Biological diversity	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.			**X**	
Covers high depth range so will have diversity of communities.					
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**
Fishing appears limited to mid-water trawling and lobster pot fishing in 1980s (Romanov 2003)					

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**	**Medium**	**High**
Add relevant criteria				**X**	
Eddies generated on the Shoals probably/possibly constitute an important link in the biological connectivity in the region (Lutjeharms, 2006).					

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Maps and Figures

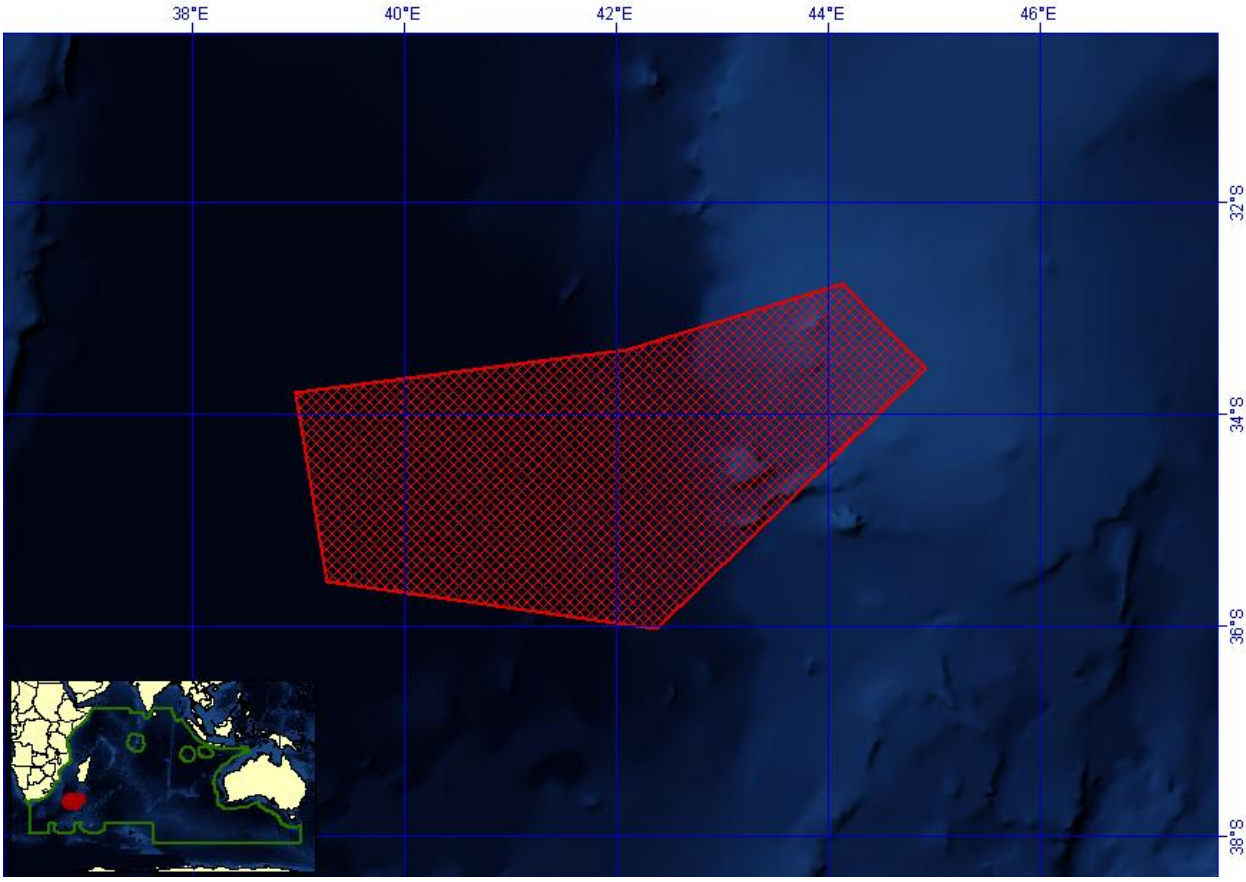

Figure 1. Map of area meeting EBSA criteria

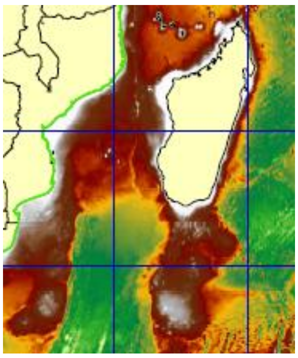
Figure 2. Bathymetry (GEBCO)

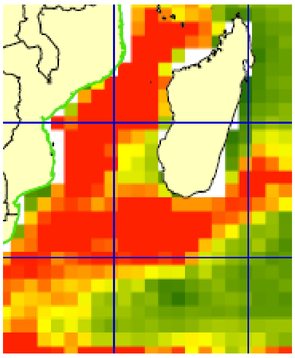

Figure 3. Eddy kinetic energy (CARS)

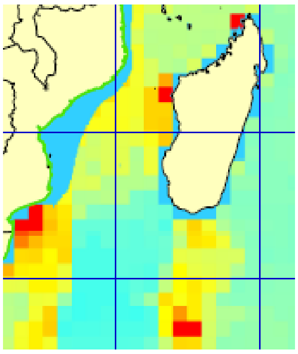

Figure 4. Bottom temperatures (from Harris and Whiteway 2009)

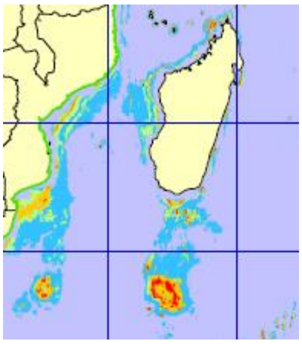

Figure 5. Predicted distribution of cold-water corals (Enallopsammia rostrata) (Davies and Guinotte 2011)

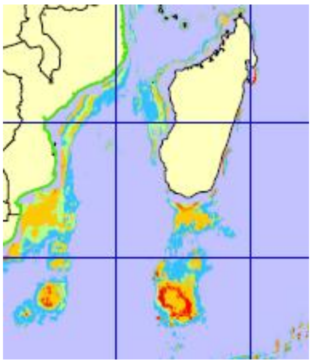

Figure 6. Predicted distribution of cold water corals (Solenosmillia variabilis) (Davies and Guinotte 2011)

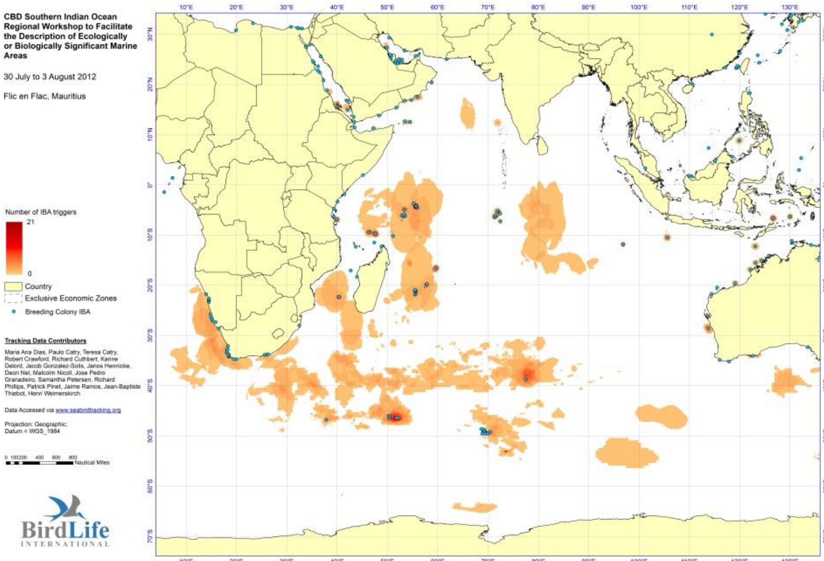

Figure 7. Important Bird Areas

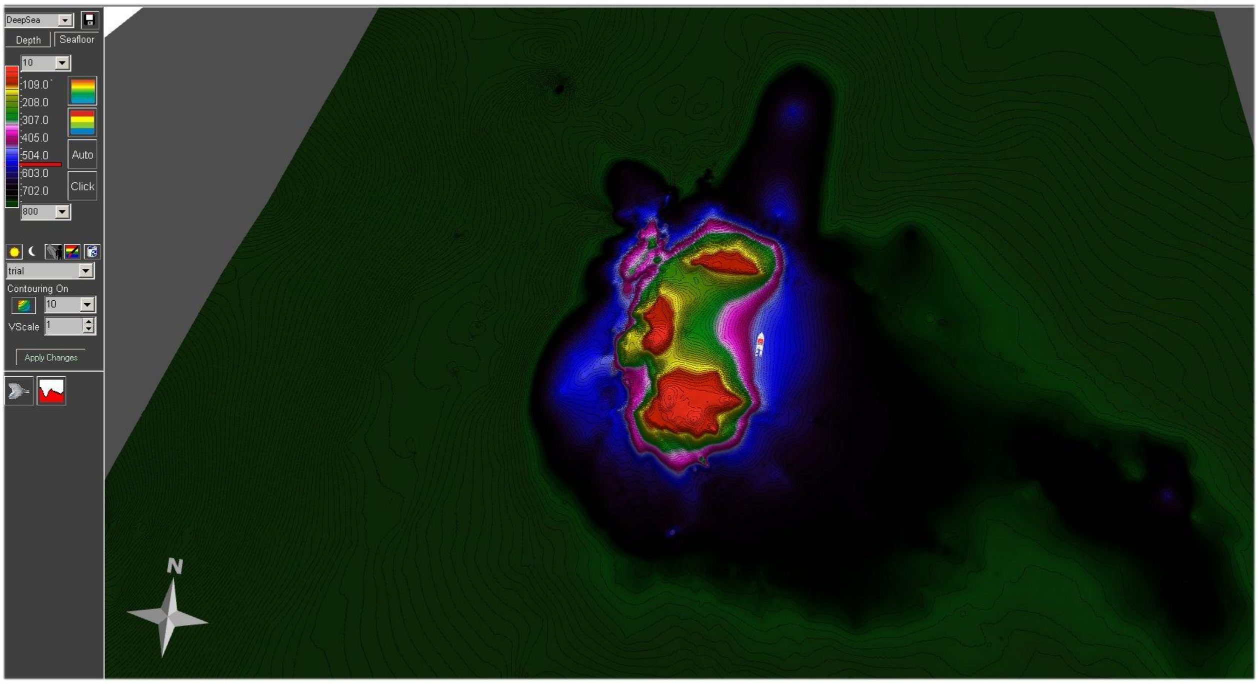

Figure 8. Topography of Walters Shoals

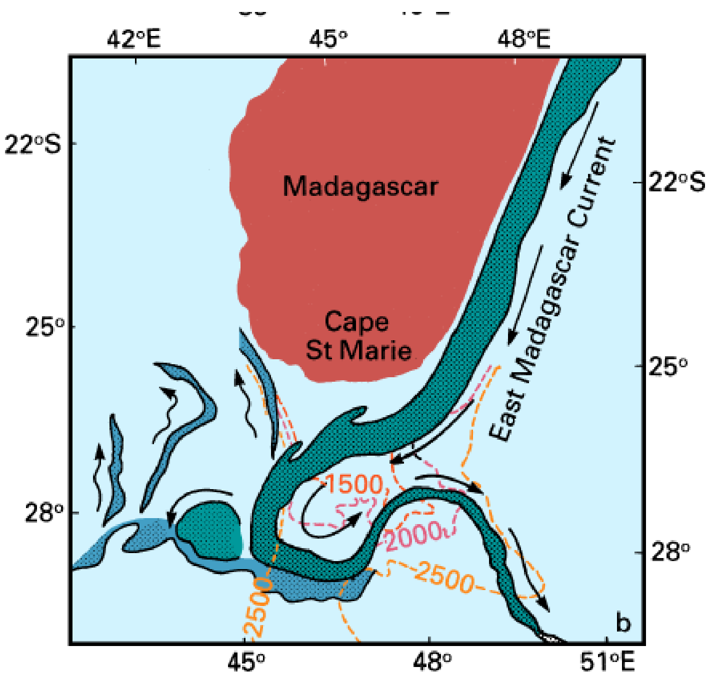

Figure 9. East Madagascar Current extension.

Area No. 23: Coral Seamount and Fracture Zone Feature

Abstract

The Coral Seamount and fracture zone feature (Coral Seamount) is unique in the south-west Indian Ocean. It includes large areas of steep topography extending from the seamount summit of the Coral Seamount at c. 300m to the bottom of an adjacent deep-sea trench/fracture zone feature at 5200m, lying just 10km to the westof the seamount. The whole region lies under productive sub-Antarctic waters. The EBSA case is made based on biological data obtained on the Coral Seamount and the unique geomorphology of the surrounding seabed. The Coral Seamount is notable for being the first known location of reef-forming cold-water corals in sub-Antarctic watersof the Indian Ocean.

Introduction

Recent direct observations of the seafloor in the southern Indian Ocean using the Remotely Operated Vehicle (ROV) Kiel6000, on RRS *James Cook* cruise JC66 (November and December 2011) have recorded cold-water corals in sub-Antarctic waters of the Indian Ocean (Figure 1). The observations were made from ~300m depth to 1,200m depth on the Coral Seamount. In addition, the waters in the vicinity of the seamount are unique because of the exceedingly steep topography extending from 300 to 5200m a linear distance of just 10km (Figure 2). On the upper flanks and summit of the Coral Seamount, there are coral gardens comprising Scleractinia and Octocorallia. Intact cold-water coral reefs occur at ~1,000m depth and comprise mainly dead coral frameworks. They have high densities of associated fauna, including sessile (corals, sponges) and mobile (squat lobsters, echinoderms) elements. The coral at 1,000m depth is mostly *Solenosmilia variabilis*. The identity of the Scleractinia on the seamount summit and on the upper flanks is uncertain, but is possibly *Lophelia pertusa*. In addition, the pelagic ecosystem associated with the seamount differs from seamounts studied north of the Subantarctic Front. In particular, the Coral Seamount has large concentrations of pelagic grenadiers.

Deep-sea species show continuous change with increasing depth because the cell membrane structures and enzyme activity of each species are adapted to particular temperature and pressure conditions. In addition, there will be an exponential decrease in food with increasing depth, leading to changes in the dominant taxa. The deep-ocean trough would be expected to be an area for particular holothurian fauna, some of which may have opportunistic lifestyles owing to sediment instability characteristics near steep slopes.

Location

The area is beyond national jurisdiction on the high seas and is not subject to a claim to the Commission on the Limits of the Continental Shelf.

The area lies between 41°00’S - 41°40'S and 42°10 – 43 °10'E (Figure 1).

Feature description of the proposed area

This is the only known example of a seamount with cold-water coral reef habitat lying in sub-Antarctic waters of the southern Indian Ocean. The water mass overlying the seamount is Sub-Antarctic water and hosts pelagic communities completely different from those north of the SubAntarctic and SubTropical fronts). Pelagic species include Antarctic myctophids (*Electrona* spp) and also pelagic grenadiers. The benthic fauna varies with increasing depth on the seamount and also depends on the substratum slope and seabed composition. Cold-water coral reef is located on the eastern flanks of the seamount at 1,000m depth. The main framework building species appears to be *Solenosmilia variabilis*. The framework is largely composed of dead coral but is largely intact with fissures and holes probably created through seismic activity. Live colonies of the framework-building species are also present. The coral reef hosts high densities of a range of other coral species, particularly zoanthids and octocorals. Glass sponges also occur at high density. Mobile fauna include a variety of crustaceans, particularly squat lobsters, but also crinoids, sea stars and fish. Shark or ray eggs are also visible in areas attached to coral. Below the coral reef habitat lie dense sub-fossil beds of barnacle scutes. Other coral habitat is located on the upper slopes and summit of the seamount and comprises gardens and copses of coral including both octocorals and Scleractinia (possibly *Lophelia pertusa*). The western side of the seamount is much more rugged than the eastern side and in areas comprises vertical cliffs. These are colonised by dense communities of sponges, octocorals and brachiopods, with mobile fauna including benthopelagic fish, sharks and also octopus.

The seamount was declared a voluntary Benthic Protected Area (BPA) by the Southern Indian Ocean Deep-Sea Fishers Association (SIODFA) in 2006 on the basis of a high by-catch of corals from exploratory trawling.

Feature condition and future outlook of the proposed area

While the Coral Seamount is notable for its coral reef communities, there is evidence of some fishing impact in the form of lost fishing gear, including long lengths of rope and gill nets. There is a possibility of further degradation from non-SIODFA parties / States fishing in the region.

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** (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**
Explanation for ranking The Coral Seamount is the only cold-water coral reef habitat lying in Sub-Antarctic waters recorded, sampled and verified by direct observations in the southern Indian Ocean. It also includes large areas of geomorphology that is unusual in the Indian Ocean, i.e., very steep topography, extending from the seamount summit of the Coral Seamount at c. 300m to the bottom of an adjacent deep-sea trench/fracture zone feature at 5200m lying just 10km to the west (Fig. 1). On the upper flanks and summit of the Coral Seamount are coral gardens comprising of Scleractinia and Octocorallia. Intact cold-water coral reefs occur at ~1,000m depth and comprise mainly of dead coral frameworks. They have high densities of associated fauna, including sessile (corals, sponges) and mobile (squat lobsters, echinoderms) elements. Coral framework at 1,000m largely comprises *Solenosmilia variabilis*. The identity of Scleractinia on the seamount summit and on the upper flanks is uncertain, but is possibly *Lophelia pertusa*. In addition, the pelagic ecosystem associated with the seamount differs from seamounts studied north of the Subantarctic Front. In particular the Coral Seamount has large concentrations of pelagic grenadiers.					
Special importance for life-history stages of species	Areas that are required for a population to survive and thrive.			**X**	
Explanation for ranking The cold-water coral reefs host a high diversity of associated species (Freiwald *et al.* 2007). There is also some evidence of importance to the life history of sharks or rays (Rogers *et al.*, 2009, 2012).					
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**			
Explanation for ranking					
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				**X**

	human activity or by natural events) or with slow recovery.				
Explanation for ranking Scleractinian coral framework is known to be highly vulnerable to physical impacts. The abundance of deep-water coral reefs on the Coral Seamount indicates a sensitive biotope with slow recovery.					
Biological productivity	Area containing species, populations or communities with comparatively higher natural biological productivity.	**X**			
Explanation for ranking					
Biological diversity	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.				**X**
Explanation for ranking The benthic habitats documented on the seamounts include a very high diversity of species, especially corals and coral associates (Freiwald *et al.* 2007). The detailed taxonomy of the coral and coral associates is currently being analysed as part of a large international project (Rogers *et al.* 2012). Preliminary results for ophiuroids (brittle stars) indicate that more than 50% of the species are new to science (Rogers *et al.* 2012). Cold-water coral reefs have been shown to have many species only present in the coral and coral rubble, increasing regional diversity very significantly (Freiwald *et al.*, 2007)					
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**	
Explanation for ranking While there is evidence of damage in a few locations from fishing on seabed communities in the past, the complex topography of the seamount has preserved many natural communities. There are large areas of natural coral habitat with excellent examples of cold-water coral reef, coral gardens and cliff habitats. The pelagic ecosystem also contrasts strongly with seamounts north of the Subantarctic Front.					

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Maps and Figures

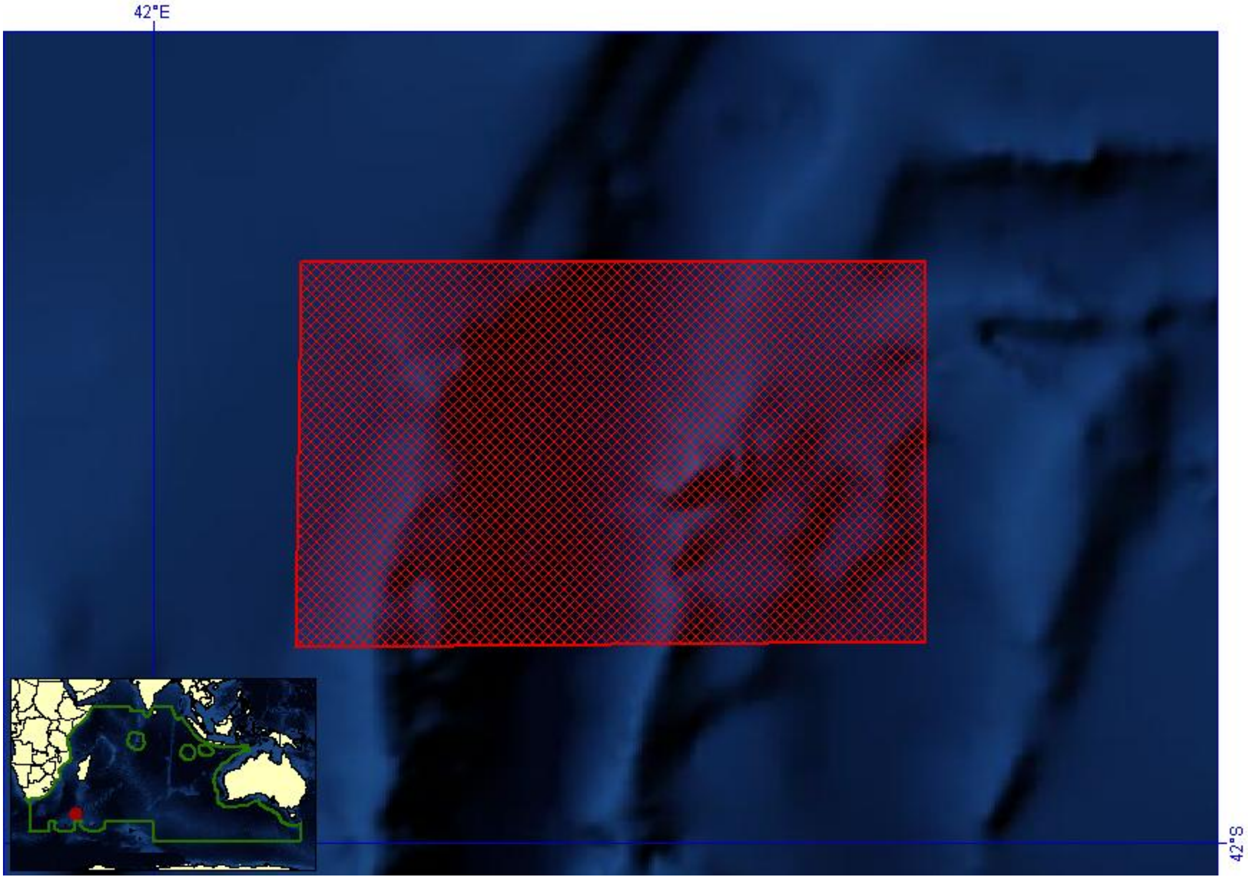

Figure 1. Map of the area meeting EBSA criteria

Area No. 24: Northern Mozambique Channel

Introduction

The Northern Mozambique Channel can be presented as a homogeneous ecological biogeographic sub-unit characterized by a strong dynamic of gyres and eddies contributing to the high connectivity between islands. The current pattern linked to these eddies and gyres dynamics has led to the highest concentration of biodiversity in this area of the WIO, also considered as the Coral Triangle of the WIO.

Location

The Northern Mozambique Channel includes the southern part of Tanzania, from Mtwara southwards; the northern Mozambique, the northwest and northeast part of Madagascar, Comoros archipelago, the southern Seychelles, including the Aldabra group, Providence plateau and Farquhar, and the French overseas territories Mayotte and Glorieuse.

Feature description of the proposed area

The oceanography of the Mozambique Channel was unknown until ten years ago, when the existence of highly variable eddies several 100 km across, often in dipoles (an anticyclonic and cyclonic eddy pair) that formed in the region around the Comoros, was discovered. As a result of vorticity imparted into the flow of the SEC as it flows around the tip of northern Madagascar, both cyclonic (clockwise) and anticyclonic (anticlockwise) eddies are generated. At times, a larger gyre is also formed that circulates around the Comoros islands. The Comoros archipelago and banks located in the northern-most section of the Mozambique Channel are likely a causal feature in the formation of eddies and of the Comoros gyre. The Glorioso Front was named for its proximity to Glorieuses Island and may mark the transition from the SEC to the waters of the channel. High levels of connectivity due to the eddies around the Comoros mean the islands may play a key role in maintaining the genetic stock of the channel, and be stepping stones/refuges between the Madagascar and Mozambique coasts.

Because water flows in all directions as a result of the eddies, genetic connectivity throughout the Mozambique Channel is likely very high, particularly in the north, resulting in high retention and recruitment of larvae in pelagic and shallow marine ecosystems, and thereby high resilience of communities and populations.

Over an evolutionary timescale, the geology and oceanography of the Mozambique Channel may have played a key role in driving the evolutionary dynamics of the Western Indian Ocean, maintaining and accumulating species in the northern Mozambique Channel in a biodiversity centre second in absolute numbers to the Coral Triangle region, but with a unique evolutionary history and genetic diversity. Genetic connectivity in the Mozambique Channel shows several overlapping patterns – one of high mixing from north to south and distinct from points farther north (coelacanth), and one showing a barrier at the narrow constriction of the channel, showing southern and northern populations (green turtle). Corals show highest diversity, and indications of high connectivity in the northern Mozambique Channel.

Mayotte and the banks may play a role in inducing and stabilizing the dominant anticyclonic flow of the NE corner of the Mozambique Channel, causing higher temperatures in this zone and a particular marine climate with implications on climate vulnerability of marine systems.

Coral reefs and reef fishes: The Northern Mozambique Channel shelters coral reefs with various geomorphology types varying from a fringing reef formation, patch reefs and submerged banks to a proto (Moheli) and double barrier (Mayotte) and atoll (Aldabra) (Quod *et al.*, 2004) and represents the reef biodiversity centre of the WIO from 161 hard coral species (Aldabra) to 287 species in Norwest Madagascar (Pichon, 2008). Reef fish species also vary from 300 to more than 700 species in Seychelles.

Sharks and rays: Seychelles represent the richest diversity, with 62 species of sharks and 22 species of rays (Kiszka *et al.*, 2009b). Important aggregation of scalloped hammerhead sharks is observed in Mayotte from July to September (Mayshark, 2009).

Whale shark: whale shark appears seasonally in the area during April/May (Nosy be).

Marine turtles: Moheli, Mayotte, Glorieuses and Aldabra are important nesting sites for green turtle, with up to 5,000 females a year and also up to 500 nesting females of hawksbill a year in Aldabra. Available data tracking for the green shows an important migration between islands and also with East African coasts (Bourjea *et al.*, 2007).

Seagrass: The Northern Mozambique Channel shelters the highest number of species in the WIO, from 7 to 12 species (UNEP, WCMC, 2005).

Coelacanth: The Comorian islands are best known for the largest populations of coelacanth in the world, with largest concentrations on the south-west coast of Ngazidja, and notable numbers at Bimbini, Anjouan. In total, a population size of 500 has been estimated for the Comoros. A few individuals are also accidentally caught in the coast of Tanzania.

Dugong: Only a few individuals are observed in Aldabra, but they are also reported in the Moheli Marine Park and the lagoon of Mayotte (Kiszka *et al.*, 2007). The most important dugong population is in Quirimbas Archipelago in Mozambique.

Seabirds: Up to eight species are recorded in Aldabra, with breeding populations of up to 500,000 individuals in Glorieuses and Farquhar. Important Birds Areas are recorded in north-west Madagascar, Moheli, Seychelles, Glorieuses and Tanzania.

Mangroves: the Northern Mozambique Channel presents several large blocks of mangrove forest, including Mahajamba and Bombetoka bays in Madagascar (> 20,000 ha each).

Marine mammals: High diversity of cetaceans from 10 to 12 species (Seychelles) and important breeding areas for humpback whales during austral winter.

Feature condition and future outlook of the proposed area

Conservation

- Development of large seascapes (Tanzania, and Tanzania-Mozambique cross-border site).
- Development of MPA and fisheries reserves.
- Development of Local Marine Management Areas.
- World Heritage Site (Aldabra) and current identification of new one.

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** (please mark one column with an X)			
		Don't Know	**Low**	**Medium**	**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
Unique oceanographic features in the WIO: dynamic of eddies and gyres; WIO biodiversity centre;					
Special importance for life-history stages of species	Areas that are required for a population to survive and thrive.				X
Nesting sites for marine turtles; breeding areas for whales; shark aggregations; migration corridor for whale shark; breeding populations of birds;					
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
Declining shark and dugong populations; threatened and endangered species: marine turtles, marine mammals, seabirds, coelacanth.					
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
Sensitive habitats: coral reefs, mangroves, sea grasses; submarine caves for coelacanth;					
Biological productivity	Area containing species, populations or communities with comparatively higher natural biological productivity.				X
Area influenced by the eddies/gyres dynamics.					
Biological diversity	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.				X
Diversity of coral reefs geomorphology; high diversity of hard corals, reef fishes, sharks, seagrasses, seabirds;					
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		
Impacts from human activities differ in various locations but there are some areas still in good natural state;					

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Maps and Figures

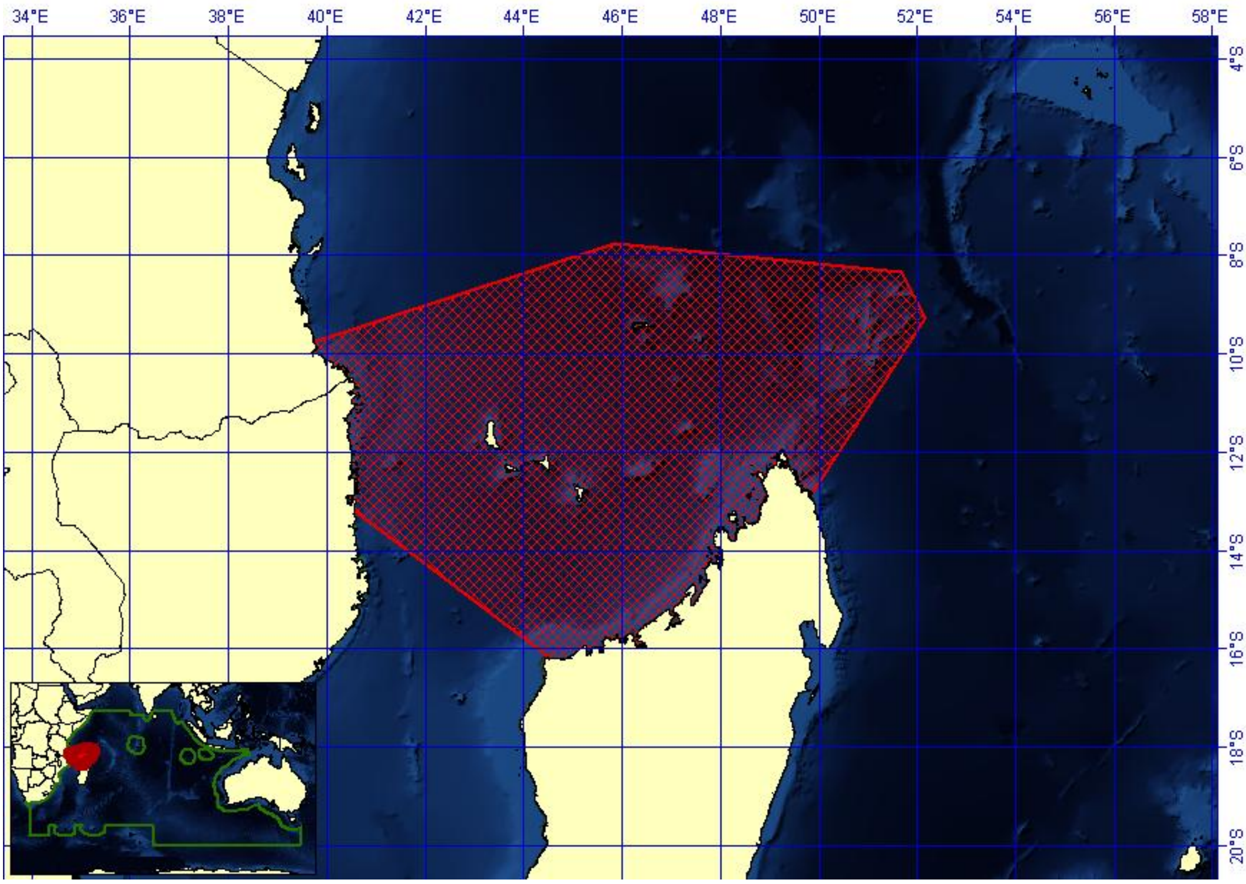

Figure 1. Map of area meeting EBSA criteria

Area No. 25: Moheli Marine Park

Abstract

In the Comoros island of Moheli, a national marine park was established in April 2001, by presidential decree. This is a sanctuary for many species and ecosystems representative at regional and international scales. This is the first nesting site in the archipelago for the green turtle, an important breeding area for humpback whales and a refuge for the conservation of dugongs. This is an IUCN category VI park that uses a participatory approach to resource conservation, to integrate communities in the process of sustainable development.

Introduction

The first recommendations on the establishment of a protected area in Moheli are from 1988 but it is only April 19, 2001, that Presidential Decree No. 01-053/CE on the establishment of the Marine Park of Moheli was signed. The latter provides a classification of the area south of Moheli into a national park, in accordance with Article 46 of the Framework Law on Environment, under the name "Marine Park of Moheli," and parts of administrative territory of the island of Moheli. Moheli Marine Park is the only protected area in the Comoros archipelago.

Location

The Comoros archipelago is located in the Indian Ocean at the northern entrance to the Mozambique Channel between 11 ° 20 'and 13 ° 04' S and 43 ° 11 and 45 ° 19 ' E, equidistant (approximately 300 km) from Madagascar and the east coast of Africa. It comprises four islands, separated from each other by about 80 km and by depths from 2000 to 3000 metres: Grande Comore (1,150 km^2), Moheli (290 km ^{2}), Anjouan (425 km ^{2}) and Mayotte (375 km ^{2}). Moheli is the smallest of the four islands of the archipelago. It is in this island that the marine park was established. The MMP is located in the area south of the island, between 12 ° 23'S and 43 ° 47'E. It covers an area of 404 km^2, ranging from coastal villages to Miringoni Itsamia, including the islands and islets of Nioumachoi, and a large area of open sea, to the 100m isobath. The coastline is approximately 55 km and the reef flat surface of about 4000 ha. However, there are conservation areas to ensure the viability of conservation targets, such as representative habitats and species. Other areas are dedicated to conservation of renewable natural resources, such as reserves closed to fishing or other activities such as ecotourism or scientific research. Thus, the MMP is located entirely within national jurisdiction (see figures 1 and 2).

The marine park extends to the 100m isobath. The reef flats are in shallow water, while the plateau extends to depths varying between 10m and 50m. It is mainly influenced by the South Equatorial Current (SEC) and the Mozambique current, at its origin in the vicinity of 11° S latitude. Its speed is variable and ranges from 10 to 80 miles per day with an average of 20 miles per day. Apart from this general scheme, in the area of the Comoros, the current runs to the west with an average speed of 1.5 knots, and up to 3 knots. Upwelling areas would lie to the west along the walls of the tray and close-Dzaha Magnougni islets. Semidiurnal tides have an amplitude of 1 to 3 m (4 m for spring tides).

The physical characteristics of seawater change with the seasons. From May to October, the temperature of surface waters varies between 26° and 30° C and (23° and 27° C from October to May. The salinity is about 34-35°/00, with a thermocline above 100 m depth.
The climate is tropical and humid under oceanic influence, characterized by two seasons: a hot, wet season (austral summer), from December to March and a dry, cool season (southern winter) March-April to November. The average rainfall is between 1500 and 5000 mm, depending on altitude, with strong annual variations.

<u>Description of the characteristics of the proposed area</u>

Moheli Marine Park is known for its importance in the conservation and sustainable management of marine and coastal natural resources both at the national and regional levels. Effective management of the park requires an identification of conservation targets Conservation targets are mainly characterized by ecosystems, habitats, ecological communities and distinct species. Elements of biodiversity targets are usually identified and prioritized according to two criteria: habitat, community or species representative of a biogeographic region, country or sub-national area distinct, and a habitat, community or species threatened or at risk of significant loss or degradation due to human pressures.

Thus, there are two types of conservation target, a target which often includes a habitat, ecosystem as a whol,e or one or more species that are grouped directly threatened by human activities, and an integrated conservation target, when a habitat or ecosystem is the focal conservation target. Using a standardized evaluation system called ecological Miradi, the following direct focal conservation targets were identified for the MMP, including several integrated conservation targets of great interest:

Coral reefs:

With the target integrated: molluscs, sea cucumbers, corals, reef fish, but there is also a connection with the feeding areas of the hawksbill turtle (*Eretmochelys imbricata*). The coral reef in the MMP is the most developed of the Comoros, also enjoying good health and prospects for ecotourism. A fringing reef runs along the entire coastal area. Younger reef platforms surround the various islets and rocks of the area. Sketches of barrier reefs occur on shoals. The island was affected by El Niño events, particularly in 1997-1998, which resulted in various hydro climatic changes, particularly the warming of surface waters. The phenomenon of coral bleaching in 1998, the last registered, has been particularly severe, with water temperatures reaching 31° C in April and early May 1998 and a mortality rate reaching over 80%. Studies conducted in 2010 show coralliferous coverage of about 60% of live coral (UNDP). 220 species have been identified (EUCARE, 2002), representative of the ecoregion (Figure II.A.2). Mention is made especially for families represented (Acroporidae, Poritidae, and Agariciidae Favidae). Improving the current state of coral reefs of the MMP is a priority because their ecological functions, their productivity in marine resources and their importance for ecotourism development are of paramount importance for biodiversity conservation and sustainable development in the area.

Seagrasses:

The seagrasses in this area meeting EBSA criteria are important for molluscs and sea cucumbers, as well as forgreen turtle (*Chelonia mydas*) and dugong (*Dugong dugon*). Theseecosystems, real pastures, provide high biomass and primary production and aconsiderable wealth of wildlife. Their survival depends on maintaining the conditions of salinity, light, hydrodynamics and their relationships with the associated fauna, particularly herbivores. In Moheli Marine Park, the marine seagrass beds underwent a complete restructuring in the late 1990s. Heavy sediment inputs in the lagoon from deforestation, coupled with the effects of global change (ENSO 1994 and 1998) resulted in the disappearance of communities of *Thalassodendron ciliatum*. This species previously covered all depressions in the back reef of the MMP, leaving a succession of species with different ecological preferences. Two studies conducted by Beudard in 2003 and 2005 showed the recolonization of these areas by pioneer multispecies seagrass, *Halodule*-dominated *uninervis*. Depending on environmental conditions and substrate, one can also observe patches of *Halophila ovalis* and *Cymodocea* mixed extents (C. rotundata, C. serrulata), *isoetifolium Syringodium* and *Thalassia hemprichii*.

These seagrass beds are subject to significant seasonal variations. They are strongly influenced by sedimentation due to erosion of the watershed during the rainy season (turbidity, recovery). They show an extension during the southern winter, thanks to the ecological conditions, which are more conducive to swipe and sediment imported through the southeast trade winds. With their high concentration of marine fauna (e.g., molluscs, young fish, sea cucumbers), the seagrasses of the MMP are true prairies for dugongs and green turtles, both of which are iconic, threatened species that depend on them for survival. In fact, the dominance of *Halodule uninerv* makes the park a haven for the survival of the dugong.

The islands:

The islands are home to seabird colonies of regional importance. The island, covered with guano off of Itsamia, is the only site in the Comoros harbouring a nest box for a population of about 200 masked booby (*Sula dactylatra*) and a colony of more than a thousand brown noddies (*Anous stolidus*). A colony of frigate birds (*Fregata ariel* and *Fregata minor*) of up to 200 individuals and white-tailed tropicbird (*Phaeton lepturus*) visitMagnouni island. Several species of terns intersect in the region of the islands of Moheli Marine Park. Uninhabited and protected from human exploitation (harvesting of timber and sand are forbidden), they form spaces for conservation of species and habitats.

The coral formations have unique natural features with a strong concentration of wildlife. Besides their importance in traditional fisheries, they are a proven feeding habitat for the hawksbill turtle. Zone of passage for many species of marine mammals (dolphins and whales), manta rays, they are among the most beautiful dive sites in the archipelago. Table corals, large gorgonians and falling property colonized together a rich underwater fauna. The islands where seasonally sandy areas are colonized by seagrass *Halophila ovalis* are still considered as a transit area for the dugong.

Dolphins and Whales:

The waters of the marine park are rich in cetaceans. More than a dozen species have been observed, some regularly, others rarely. The dolphins are the most common dolphin (*Stenella longirostris*), the bottlenose dolphin (*Tursiops truncatus*), common dolphin (*Delphinus delphis*) and the Pacific humpback dolphin (*Sousa chinensis*). Are also sited three species of whales: the humpback whale (*Megaptera novaeangliae*), the right whale (*Eubalaena australis*) and Bryde's whale (*Balaenoptera edena*). Four pairs of sperm whale (*Physeter macrocephalus*) were observed in March 2009, off Itsamia. The humpback whale, the most common and most spectacular marine mammal, is present in large numbers from July to November, mating and calving season, following a long migration from polar waters of Antarctica. The waters of the park, warm and shallow, are the most conducive for the migration of humpback whales.

Mangroves:

On Moheli, only the Moheli Marine Park is home to mangroves. In the bay south of the island, they cover about 91 hectares (Gabrié, 2003). Three mangroves are well developed, the most important being that of Nioumachoi (east), followed byNioumachoi in the west and finally the Ouallah-Miremani. Other more modest stands of mangroves extend over the edge and side Miremani Hachéli. In the marine park, mangrove is representative of the inter-tropical region of the Indian Ocean and comprisesseven species: *Rhizophora maculata, gymnorhiza Bruguiera, Sonneratia alba, Avicennia marina*, *Lumnitzera racemosa*, *Ceriops taga* and *Heritiera littoralis*. They are always associated with many species of coastal mangrove (*Phoenix reclinata, Hernandia nymphaefolia, Hibiscus tiliaceus, Caesalpinia bouduc*). It harbours a rich and varied birdlife, such as the dimorphic egret *Egretta dimorpha,* the gray heron *Ardea cinerea*, great egret *Casmerodius albus*, the cattle egret *Bubulcus ibis*, heron or green *Butoides striatus* (Louette et al., 2008). They are subject to a levy of wood, including traditional construction and firewood. Mangrove crabs are occasionally collected for local restaurants.

Marine turtles:

Green turtles nest on the beaches of the park, as well as the occasional hawksbill turtle that lays and feeds on coral reefs. Migratory species of emblematic marine turtles frequent the park, nest on its beaches and forage in seagrass beds and coral reefs. The population of green turtles (*Chelonia mydas*) is among the largest of the western Indian Ocean. Hawksbill turtle (*Eretmochelys imbricata*) or frequent the area, feeding mainly coral. *Dermochelys coriacea*, *Lepidochelys olivacea* and *Caretta caretta* probably cross the waters of the archipelago. Recent studies in the area of Itsamia, representing five beaches over1.5 km identified over 5000 females nesting on this site alone. They lay eggs throughout the year, with peak spawning during the dry season between May and August. Each female carries an average of 3.5 clutches per season. The preferential migration interval is three years. At Itsamia seven years of monitoring (2000-2010) were used to validate an annual growth rate of the population by nearly 25% rate previously never observed worldwide. Herbivorous green turtles graze in large numbers on the seagrasses Moheli Marine Park.Hawksbill turtles lay occasionally on the beaches of Moheli Marine Park but are most frequently found feeding on the fringing reef.The green turtle is globally categorized as endangered by the IUCN (A2bd) while the hawksbill turtle is critically endangered (A1bd). Recognized as the largest green turtle population of the islands of the South West Indian Ocean, its viability remains average, linked to various disruptive threats.

The dugong:

Once approaching a population of several hundred individuals in the waters of the park, the dugong (*Dugong dugon*), or "*ngouva*" in shicomori, is still regularly observed, but in low numbers. This marine mammal, the only representative of the family dugongidés of the order Sirenia feeds on seagrasses such as *Halophila ovalis* or *Halodule uninervis*, widespread in coastal waters of the marine park (Beudard, 2003). This herbivore was subjected to intensive hunting during the 30 years preceding the creation of the protected area The main sites were localized to the dugong Nioumachoi and islets of the entire marine area of Itsamia. Becoming rare, it is periodically observed by fishers in the area of the marine park. Three surveys conducted in 2004, 2009 and 2010 among fishers in the area of the marine park) yielded a count of 9, 13 and 13 cases respectively in 2004, 2009 and 2010. Observations from aerial surveys in March and September 2007 identified two distinct individuals in the area of Itsamia (Beudard et al., 2008).

<u>Feature condition and future outlook of the proposed area</u>

Overall, the MMP appears to be in more or less good condition. A decade after its official opening, it responds more effectively to the objectives set by government authorities. In terms of local sustainable development, the park offers considerable conservation, protection and employment.

<u>Assessment of the area against CBD EBSA criteria</u>

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**	
Explanation for ranking:					

The MMP shelters unique, rare and endemic species,					
Special importance for life-history stages of species	Areas that are required for a population to survive and thrive.				**X**
Explanation for ranking: The species sheltered in the MMP are found in conditions conducive to their physiological normal, encouraging their development and their rapid growth.					
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**
Explanation for ranking: The MMP is a periodic mating zone of certain mammals					
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**
Explanation for ranking: In the MMP, some vulnerable species are threatened with disappearance by anthropogenic and natural phenomena.					
Biological productivity	Area containing species, populations or communities with comparatively higher natural biological productivity.				**X**
Explanation for ranking: The area is favourable to ecosystem functioning, encouraging the growth of organisms and their capacity tof reproduce.					
Biological diversity	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.				**X**
Explanation for ranking: The area presents some ecosystems rich in biological and physionomic diversity					
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**
Explanation for ranking:					

<u>Sharing experiences and information applying other criteria (Optional)</u>

Other Criteria	**Description**	**Ranking of criterion relevance** (please mark one column with an X)			
		Don't Know	**Low**	**Some**	**High**
Cultural dimension	Some strong sociocultural impacts that could be factor of preservation on some				**X**

	activities of the park.				
Explanation for ranking: Impacts on the communities. The park presents sociocultural aspects that have major impacts in relation with communities men and ecosystems, as well as the exploitation of its resources.					

References:

Plan of management and planning of the marine park of Mohéli 2012 - 2015, 70P.
Management of the Aires Marines Protected, 2007: Manual for the region of the ocean Indian Western, UICN,(A1 to k5p)
1988 (DeRham, FAO): Federal Natural park (terrestrial and marine);
1989(Bruton and al, J.L.B. Smith Inst. Ichtiology): National Park of Moheli and peripheral zones (terrestrial and marine);
1994 (Tilot, PNUD/UNESCO): Reserve of Biosphere (marine);
1996 (Ali and Youssouf, UNESCO): National park of Moheli (terrestrial and marine).

http://www.moheli-marinepark.org

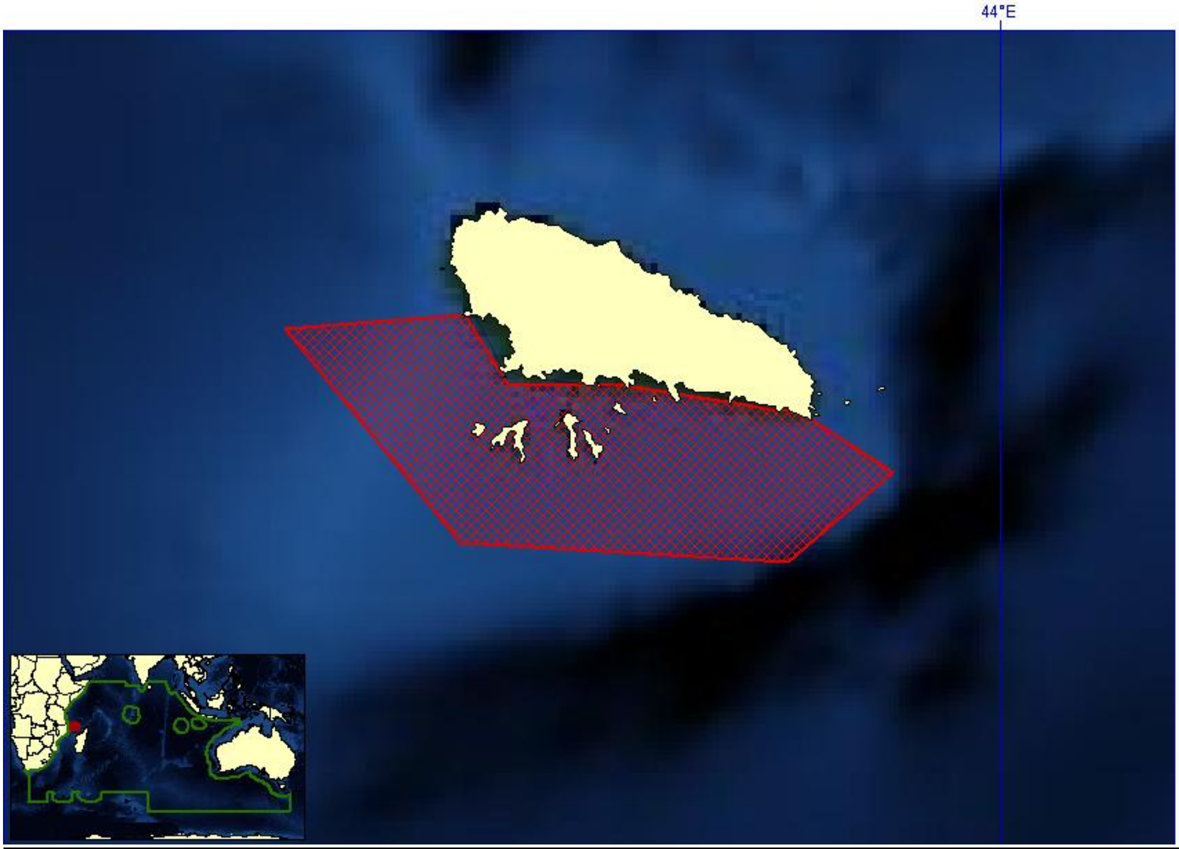

Figure 1. Map of area meeting EBSA criteria

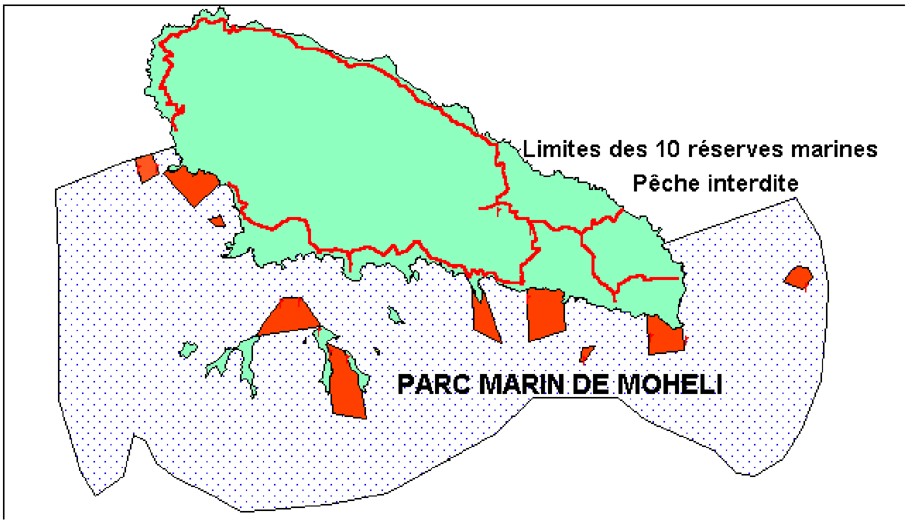

Figure 2: Moheli Marine Park delimitation and marine reserves (PA2001)

	Grande Comore	**Mohéli**	**Anjouan**
Number of nesting species	**47**	**45***	**39**
Endemic species in Comoros by island	**11**	**7**	**5**
Comorian endemic species unique to the island	**6**	**2**	**2**
Under endemic species by island (including those shared by the neighboring insular countries)	**10**	**9**	**7**

Table 1. Nesting avifauna and the presence of endemic Comorian birds by island.
Source: Louette and al., 2008.

Area No. 26: Prince Edward Islands, Del Cano Rise and Crozet Islands

Abstract:
The area covers a northern section of the South African and French EEZs, around the Prince Edward and Crozet islands, respectively, and includes components of the Del Cano Rise, which lies between the two EEZs. In the west, the area includes the southern flank of the NE-SW trending Southwest Indian Ridge. The Prince Edward and Crozet Islands are considered to be relatively pristine and have a high level of endemism. The region constitutes the foraging and breeding areas for many threatened bird species and is important in terms of terrestrial and oceanic connectivity and connectivity between bathymetric features. The area lies between the Subtropical Front to the north and the Antarctic Polar Front (APF) to the south with the Subantarctic Front in between. The Agulhas Return Current has a strong influence on the northern part of the region. The Antarctic circumpolar current flows in most of the area. There is considerable pelagic and benthic habitat heterogeneity with potentially sensitive habitats and vulnerable species including reef-forming cold-water corals. Island mass effects are observed with iron enrichment and retention that favours planktonic production to the north of the Crozet Islands but not Prince Edward Island (Pollard *et al.* 2007). While waters around the two islands have similar geomorphological features, they have different surface water productivity regimes to the north of the islands owing to natural iron fertilisation only to the north of the Crozet archipelago (Pollard *et al.*, 2007, 2009). Habitats include seamounts, transform faults and fracture zones, deep trenches, hydrothermal vents, abyssal plains and several pelagic habitat types.

Introduction:
The area encompasses a benthic ecoregion, the southern boundary of which ends with the northern plateau region, i.e., Del Cano Rise, Crozet and Prince Edward islands (Douglass *et al.*, 2011). Distinct benthic assemblages separate it from surrounding ecoregions, primarily due to ecological barriers to dispersal, including different frontal zones. The shallow oceanic areas associated with the plateaus and subantarctic islands correspond with the warmest seabed temperatures in the Southern Ocean and also zones of high frontal activity (Koubbi *et al.*, 2012).

This area includes the western end of the relatively low-relief, east-west trending Del Cano Rise, where it merges with the southern flank of the northeast-southwest trending Southwest Indian Ridge (SWIR), including the Prince Edward Islands. The SWIR exhibits some of the most rugged underwater terrain in the world. Here, the generally north-south trending ridges and valleys of the Prince Edward and Marion transform fault and fracture zones reach elevations of <500 m and depths >5000 m and provide a conduit for the northern movement of cold Antarctic bottom currents across the Del Cano Rise (Pollard 2007b).

This pristine area includes four islands within the Crozet Archipelago (îlot des Apôtres, Cochons, Pingouins and l'Est islands) and two within the Prince Edward Islands (Marion and Prince Edward islands). They have a high level of endemism, breeding and foraging habitat, and critical linkages for life history phases for albatrosses, penguins, other seabirds and marine mammals, some of which are globally threatened. The Del Cano Rise is linked to the features within the EEZ of South Africa surrounding the Prince Edward Islands, i.e the Africana Rise. Another important factor relating to migration of marine life is that the Southwest Indian Ridge forms a nearly continuous connection with the Central Indian Ocean Ridge, which extends northwards up to the Red Sea, and southwards to ~60 degrees south, where it joins with the mid-Atlantic Ridge, which extends northward past the equator up to the Arctic Ocean. The junction of the Del Cano Rise with the SWIR is also linked northward via the Discovery II Fracture Ridge to the South Madagascar Plateau, which extends north up to the southern coast of Madagascar.

Koubbi *et al.* (2012) delineated oceanographic and biogeochemical regions. The area lies in the sub-Antarctic zone, between the Subtropical Front (STF) and the Sub-Antarctic Front (SAF) and in the Polar Frontal Zone (PFZ) between the SAF and the Antarctic Polar Front (APF). North of it, the subtropical regions are separated by their water mass characteristics and intense flow related to the Agulhas Return Current. There is high frontal interaction with shallow oceanic features (Lombard *et al.*, 2007, Koubbi *et al.*, 2012). The highly productive pelagic waters are a consequence of the unique bathymetry, iron enrichment from insular sources, frontal meanders and island-mass effects. This contrasts strongly with high nutrient-low chlorophyll (HNLC) areas farther south.

There is considerable habitat heterogeneity with potentially sensitive habitats and vulnerable species, including reef-forming cold-water corals. Habitats include many seamounts, transform fault ridges and deep trenches, hydrothermal vents, shallow abyssal plain and several pelagic habitat types.

Abyssal plain communities to the east of the Crozet archipelago (c. 4200m depth) under productive surface waters show very significant differences to seabed communities at the same depth in HNLC waters to the south of the islands. Differences in seabed biomass reflect differences in the Particulate Organic Carbon flux between the two areas (Wolff *et al.* 2011). Highly significant differences also occur in species, principally in megafaunal holothurians (Wolff *et al.* 2011).

Location:
This area is bounded by 43°to 48° south and 32.73° to 55° east. It covers a northern section of the South African EEZ around Prince Edward Islands, a northern section of the French EEZ around Crozet Islands and includes the Del Cano Rise. It extends westward to the southern flank of the NE-SW trending Southwest Indian Ridge. The area is within the EEZs of South Africa and France and the intervening area (Del Cano Rise), and it lies adjacent to the CCAMLR area. Some of this area is located within extended continental shelf claims.

Feature description of the proposed area:

This area includes rugged underwater terrain, volcanic islands and important pelagic foraging habitat around these features (as a component of the SWIR). Here, the generally north-south trending ridges and valleys of the Prince Edward and Marion transform fault and fracture zones, reach elevations of less than 500 m and depths in excess of 5000 m respectively and provide a conduit for the northern movement of cold Antarctic bottom currents across the barrier of the SWIR. This pristine area includes islands with a high level of endemism and constitutes breeding and foraging habitat and critical linkages for life history phases for albatrosses, penguins, other seabirds and marine mammals, some of which are globally threatened. Another important factor relating to migration of marine life is that the Southwest Indian Ridge forms a nearly continuous connection with the Central Indian Ocean Ridge, which extends northwards up to the Red Sea, and southwards to ~60° south, where it joins with the Mid-Atlantic Ridge, which extends northward past the equator up to the Arctic Ocean. The junction of the Del Cano Rise with the SWIR is also linked northward via the Discovery II Fracture Ridge to the South Madagascar Plateau, which extends north up to the southern coast of Madagascar.

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The islands included within this area meeting EBSA criteria are globally significant for a large diversity of seabirds, including the endemic Crozet shag (*Phalacrocorax)*, about 70% of the world population of wandering albatross (*Diomedea exulans)*, 54% of king penguin (*Aptenodytes patagonicus)*, 33% of Indian yellow-nosed albatross (*Thalassarche carteri)*, 33% of subantarctic fur seal (*Arctocephalus tropicalis)*, 27% of sooty albatross (*Phoebetria fusca)* and 21% of the world's southern rockhopper penguin *(Eudyptes chrysocome)*. The waters surrounding these islands are significant for all these species during their respective breeding seasons and have been identified as marine IBAs by BirdLife International.

The Prince Edward Islands together support c.2.5 million pairs of 28 species of breeding seabirds, and may support up to 8 million pairs in total. Twenty-four species occur in globally significant numbers and meet one or more Important Bird Area criteria. Only one other island group in the world, the Crozets, holds more species of breeding seabird. Six species of albatross breed here, as do extremely large numbers of Salvin's prions (*Pachyptila salvini)* and *Pterodroma* petrels.

In the Crozets, Île de l'Est holds the most diverse community of seabirds in the world: 32 species, of which 19 are hole-nesting petrels. Many are believed to number tens of thousands of pairs. Three taxa are particularly abundant, namely the South Georgian *Pelecanoides georgicus* and common *P. urinatrix* diving petrels and Salvin's prion. Estimates of the population sizes of each are of several million pairs, which, in the case of Salvin's prion, represents 80% of its global population.

The Île aux Cochons IBA is extremely important for its large penguin populations: it holds the world's largest rookery of king penguins and the largest colony of wandering albatross in the Indian Ocean. Despite the presence of cats, large populations of small petrels still nest on the island, notably four million pairs of Salvin's prion and one million pairs of South Georgian diving petrel.

Île de la Possession holds at least 28 breeding seabird species, 14 in globally significant numbers. Île des Pingouins holds at least 29 species, 12 in globally significant numbers. This site has an exceptionally high density of seabirds, notably including six species of albatross. Îles des Apôtres holds at least 25 breeding species, notably including six species of albatross, and 10 species occur in globally significant numbers.

Several species are included within the IUCN Red List:

- Sooty, black-browed (*Thalassarche melanophris)* and Indian yellow-nosed albatrosses are listed as Endangered

- Southern rockhopper and macaroni penguins, wandering and grey-headed albatrosses (*Thalassarche chrysostoma)*, and white-chinned petrel (*Procellaria aequinoctialis)* are all listed as Vulnerable.

- Light-mantled albatross (*Phoebetria palpebrata)*, grey petrel (*Procellaria cinerea)*, and Kerguelen tern (*Sterna virgate)* are listed as Near Threatened.

In terms of abyssal plain ecosystems, new species known only from the region have been described (Cross *et al*. 2009; Rogacheva *et al.* 2009a, b). The most abundant megafaunal species, the holothurian (*Peniagone crozeti),* occurred only in abundance at the eastern productive site (in all samples), indicating that the productive waters around Crozet are home to unique species. Biogeochemical barriers, rather than geomorphological barriers, may lead to speciation in the deep ocean (Wolff *et al.* 2011). Another abyssal holothurian species, *Peniagone horrifer*, known previously from a few specimens collected by the *Challenger Expedition* ((Théel 1882; Hansen 1975), was rediscovered in abundance around the Crozet Islands. Some abyssal species to the south of the Crozet Islands have opportunistic life history characteristics indicating that they may be adapted to episodic POC fluxes (Wolff *et al.* 2011).

Species Name	**Taxon**	**Density (+Fe) (ind. ha^{-1}) n=4**	**Biomass (+Fe) (g ha^{-1}) n=4**	**Rank (+Fe) Abundance / Biomass**	**Density (HNLC) (ind. ha^{-1}) n=2**	**Biomass (HNLC) (g ha^{-1}) n=2**	**Rank (HNLC) Abundance/ Biomass**
Peniagone crozeti	Holothuroidea	259.6	910.5	**1 (3)**	11.1	23.47	
Ophiura lienosa	Ophiuroidea	194.7	53.43	**2**	162.3	64.25	**1**
Amphioplus daleus	Ophiuroidea	128	35.69	**3**	37.9	6.615	**5**
Peniagone challengeri	Holothuroidea	69.2	137.1	**4**	5.6	9.894	
Ophiura irrorata loveni	Ophiuroidea	41.3	38.53	**5**	18.7	17.61	
Kolga nana	Holothuroidea	0	0		17.4	3.276	
Peniagone affinis	Holothuroidea	3.7	29.57		94.6	497.4	**3 (1)**
Peniagone willemoesi	Holothuroidea	1.8	4.544		95.6	134.2	**2 (3)**
Ophiotrema tertium	Ophiuroidea	0.04	$7x10^{-4}$		61.1	7.633	**4**
Psychropotes longicauda	Holothuroidea	12.6	1195	**(1)**	2.5	105	**(5)**
Molpadiodemas aff atlanticus	Holothuroidea	28.3	962.9	**(2)**	0	0	
Molpadiodemas morbillus	Holothuroidea	8.7	460.3	**(4)**	0	0	
Benthodytes sordida	Holothuroidea	5.1	308.7	**(5)**	3.5	131	**(4)**
Styracaster robustus	Asteroidea	6.8	52.11		13.1	230.1	**(2)**

Table 1. The abundance and biomass (wet weight) of the dominant megafaunal invertebrates at abyssal sites around the Crozet Plateau. Shaded boxes indicate significantly different populations in terms of abundance or biomass ($p<0.05$; ANOVA). Rankings (1-5) for the most abundant species and those having the highest biomass (parentheses) are also shown.

Feature condition and future outlook of the proposed area:
South Africa annexed the sub-Antarctic Prince Edward Islands (Marion and Prince Edward) in 1948, and from that time this island has had limited anthropogenic impacts on its ecosystems. Marion Island is home to a meteorological base, and activities are limited to environmental and meteorological research, whilst Prince Edward Island is rarely visited and has no permanent structures. France and South Africa established EEZs around the Crozet and Prince Edward Archipelagos at the end of the 1970s.

There are four islands within the Crozet Archipelago (îlot des Apôtres, Cochons island, Pingouins island and l'Est island), which are integrally protected as natural reserves; their territorial seas (12 nm) are "no take areas" for fisheries, and access to these islands is strictly controlled. A fifth island, Possession Island, is also within the terrestrial reserve, and human activity is authorized for scientific purposes. The territorial sea of Possession Island is not included within the marine reserve but TAAF regulations forbid fisheries activities in adjacent waters.

Key pressures in the area include climate change, as these islands are at the northern limit of the Southern Ocean. The exact mechanisms are not well understood but these changes are thought to be related to increasing temperatures affecting oceanographic conditions (upwelling, areas of high productivity) and prey availability of top predators (Koubbi *et al.*2012).

Assessment of the area against CBD EBSA Criteria

<table>
<tr><td rowspan="2">CBD EBSA Criteria
(Annex I to decision IX/20)</td><td rowspan="2">Description
(Annex I to decision IX/20)</td><td colspan="4">Ranking of criterion relevance
(please mark one column with an X)</td></tr>
<tr><td>Don’t Know</td><td>Low</td><td>Some</td><td>High</td></tr>
<tr><td>Uniqueness or rarity</td><td>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.</td><td></td><td></td><td></td><td>X</td></tr>
<tr><td colspan="6">The Prince Edward and Crozet islands together host the entire population of Crozet shag, about 70% of the world population of wandering albatross, 54% of king penguin, 33% of Indian yellow-nosed albatross, 33% of subantarctic fur seal, 27% of sooty albatross and 21% of the world’s southern rockhopper penguin. They are two of only three localities (the other being the Kerguelen archipelago) where both species of Phoebetria albatrosses breed. The islands are at the northern limit of the breeding distribution of gentoo penguin. Seamounts and hydrothermal vents occur within the areas but are poorly researched. This area includes the only location of the pelagic region 19 in the CCAMLR region. The area has high endemism for benthos with new species, i.e. Lithodid crab (Macpherson, 2004) and fish (Nototheniid Gobionotothen marionensis, Bothid Pseudomancopsetta andriashevi, Rajid Raja taaf) (Lombard et al. 2007, Koubbi et al. 2012). In terms of abyssal plain ecosystems the Crozet region has unique species (Cross et al. 2009; Rogacheva et al. 2009a,b). The most abundant megafaunal species, the holothurian Peniagone crozeti, occurred only at the eastern productive site (in all samples), where it was super abundant for abyssal ecosystems (Billett, 1991; Billett et al., 2010), indicating that the productive waters around Crozet are home to unique species. This may indicate that biogeochemical barriers, rather than geomorphological barriers, may lead to speciation in the deep ocean (Wolff et al. 2011). Another abyssal holothurian species (Peniagone horrifer), known previously from a few specimens collected by the Challenger Expedition (Théel 1882; Hansen 1975) was rediscovered in abundance around the Crozet Islands. Some abyssal species to the south of the Crozet Islands have opportunistic life history characteristics indicating that they may be adapted to episodic POC fluxes (Wolff et al. 2011).</td></tr>
<tr><td>Special importance for life-history stages of species</td><td>Areas that are required for a population to survive and thrive.</td><td></td><td></td><td></td><td>X</td></tr>
<tr><td colspan="6">This area constitutes breeding and foraging grounds for albatrosses, penguins, other seabirds and marine mammals. The area includes critical linkages between breeding and feeding areas for both inshore and offshore foragers including terrestrial and marine links and links between different marine habitats that represent important connectivity between life history stages for these species. Satellite tracking data and habitat predictions show the importance of the area to top predators. Island mass effects and iron enrichment from lands are known to be in favor of concentration of plankton and retention of early life stages of fish. Another important factor relating to migration of marine life is that the Southwest Indian</td></tr>
</table>

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**
Ridge forms a nearly continuous connection with the Central Indian Ocean Ridge, which extends northwards up to the Red Sea, and southwards to ~60° south, where it joins with the Mid-Atlantic Ridge, which extends northward past the equator up to the Arctic Ocean. The junction of the Del Cano Rise with the SWIR is also linked northward via the Discovery II Fracture Ridge to the South Madagascar Plateau, which extends north up to the southern coast of Madagascar. (Lombard *et al.* 2007, Koubbi *et al.* 2012).Abyssal ecosystems to the north and east of the Crozet Islands have species that are proposed to be dependent on productive waters and occur only in abundance in a restricted area to the north and east of the islands.					
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**
This area is important for globally threatened and near-threatened seabirds and seals (near-threatened species are not listed here): sooty albatross (*Phoebetria fusca*, Endangered), Indian yellow-nosed albatross (*Thalassarche carteri*, Endangered), wandering albatross (*Diomedea exulans*,Vulnerable), grey-headed albatross (*Thalassarche chrysostoma*, Vulnerable), white-chinned petrel (*Procellaria aequinoctialia*, Vulnerable) and southern rockhopper penguin (*Eudyptes chrysocome*, Vulnerable) (BirdLife International 2008, Lombard *et al.* 2007, Ryan *et al.* 2009).					
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**
This area includes a relatively high proportion of potentially sensitive habitats with steep shelves, seamounts, ridges and gullies, and hydrothermal vents. Reef-building cold-water corals have been collected (Iziko South African Museum), and observers in the Patagonian toothfish fishery report habitat-forming sponges, black corals and cold-water corals (Lombard *et al.* 2007 and references therein). Habitats and species are vulnerable to climate change impacts, particularly those that are impacted by changes in the position of the SAF. Populations of long-lived seabirds, including albatrosses and petrels, many of which have a late age at maturity, breed biennially and have a small clutch, may be rapidly depleted. Outbreaks of disease at these and other Subantarctic islands have caused high mortality of seabirds and seals. Introduced predators (cats, rats and mice) and rabbits have also had devastating impacts at Marion and the Crozet islands; Prince Edward Island is free of any alien mammals (Angel et. al. 2009).					
Biological productivity	Area containing species, populations or communities with comparatively higher natural biological productivity.				**X**
This area includes two major frontal systems: the Subantarctic Front (SAF) and the Antarctic Polar Front (APF) and the southern SAF, which lies between them. As such there are three major water masses: Subantarctic surface waters (north of the SAF), Northern Polar Frontal waters (between the SAF and the SSAF), and Southern Polar Frontal waters (between the SSAF and the APF). Elevated plankton and fish biomass are associated with these major frontal systems, and the front areas constitute important foraging habitat for seabirds and marine mammals because planktonic and micronektonic prey are more accessible for predators in this area. There is high frontal interaction with shallow oceanic features in the area.					

<table>
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(please mark one column with an X)</th></tr>
<tr><th>Don’t Know</th><th>Low</th><th>Some</th><th>High</th></tr>
<tr><td colspan="6">Mesoscale eddies north of the islands also constitute important feeding grounds for top predators (Lombard et al. 2007 and Koubbi et al., 2012). The shelves around the Prince Edward Islands and Crozet receive considerable nutrient and iron input from the islands, ensuring relatively high primary and secondary production (Lombard et al. 2007, Koubbi et al. 2012).</td></tr>
<tr><td>Biological diversity</td><td>Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.</td><td></td><td></td><td></td><td>X</td></tr>
<tr><td colspan="6">This area has high habitat heterogeneity, with islands, steep shelves, seamounts, transform ridges (extending up to 500 m in places) and trenches (as deep as 5000 m in places), hydrothermal vents, shallow abyssal plains and some of the warmest seabed habitat in the Southern Ocean. Higher fish species richness has been reported on the Del Cano Rise and around the PE Islands. The area includes several pelagic habitats according to the transition from the polar frontal zone to the subtropical zone in a relative small latitudinal gradient (pelagic regions17, 19, 20 of CCAMLR). (Lombard et al. 2007, Koubbi et al. 2012).

Diverse abyssal communities and differences around the Crozet archipelago have been detailed by Wolff et al. 2011).</td></tr>
<tr><td>Naturalness</td><td>Area with a comparatively higher degree of naturalness as a result of the lack of or low level of human-induced disturbance or degradation.</td><td></td><td></td><td></td><td>X</td></tr>
<tr><td colspan="6">There is limited anthropogenic influence. Much of the area is still pristine (Lombard et al. 2007, Chown and Froneman 2008).</td></tr>
</table>

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Maps and Figures

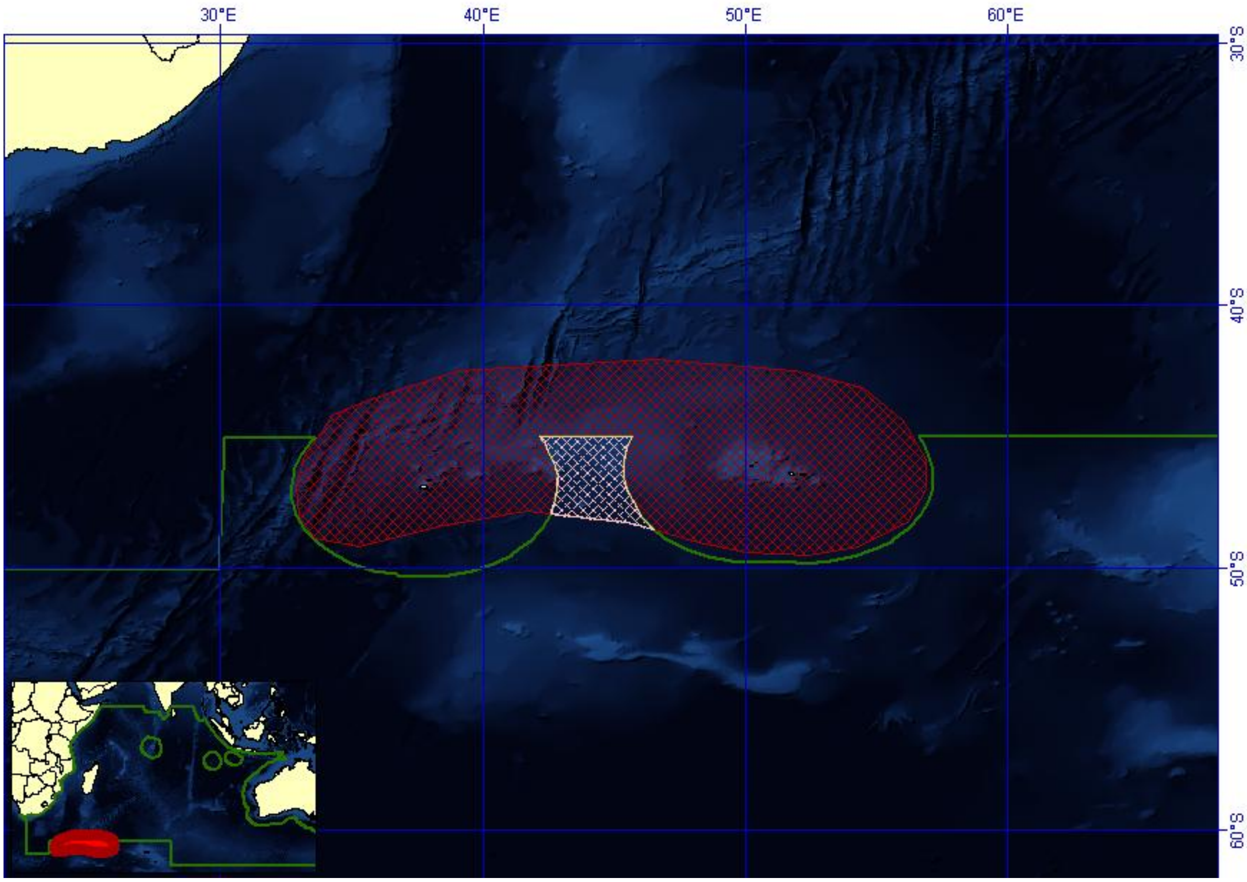

Figure 1. Map of area meeting EBSA criteria

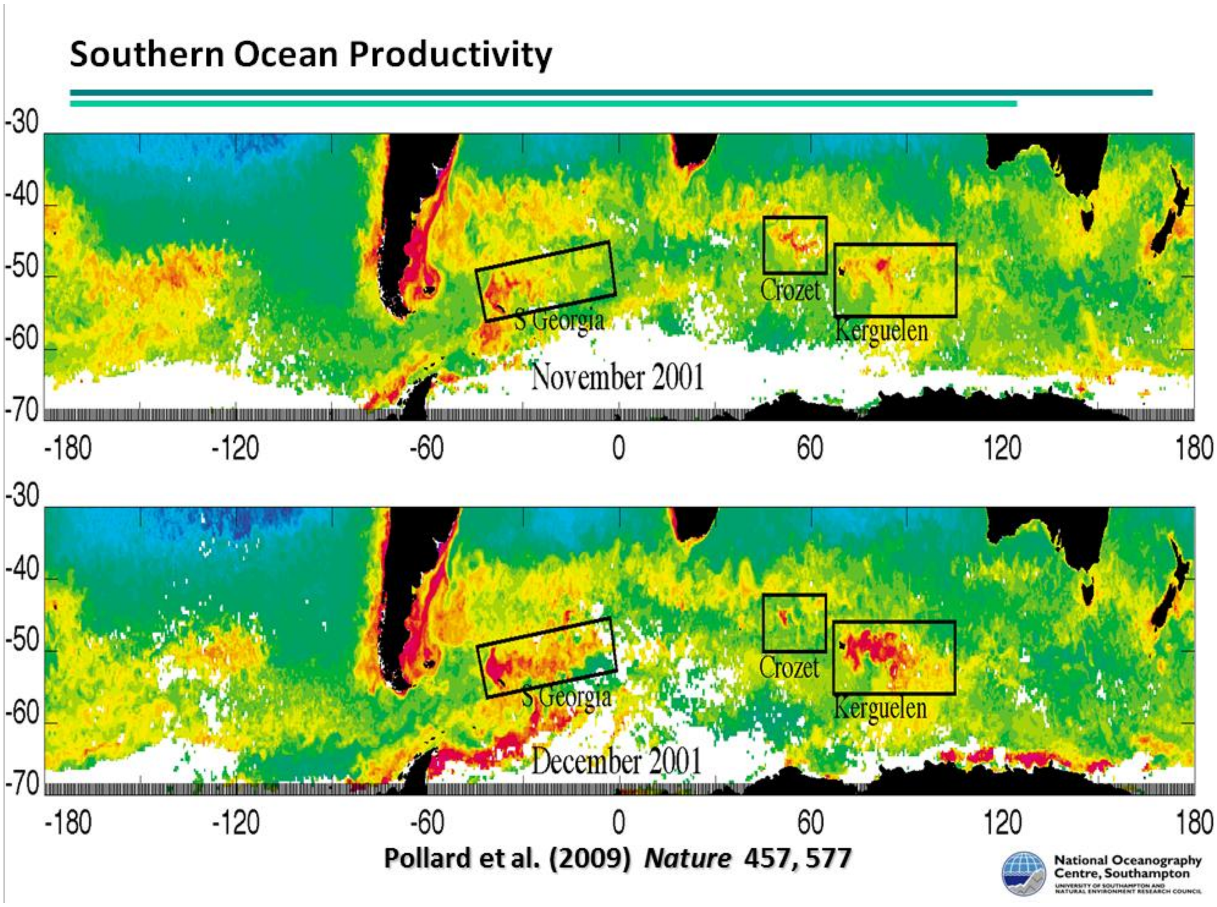

Figure 2. Southern Ocean Productivity

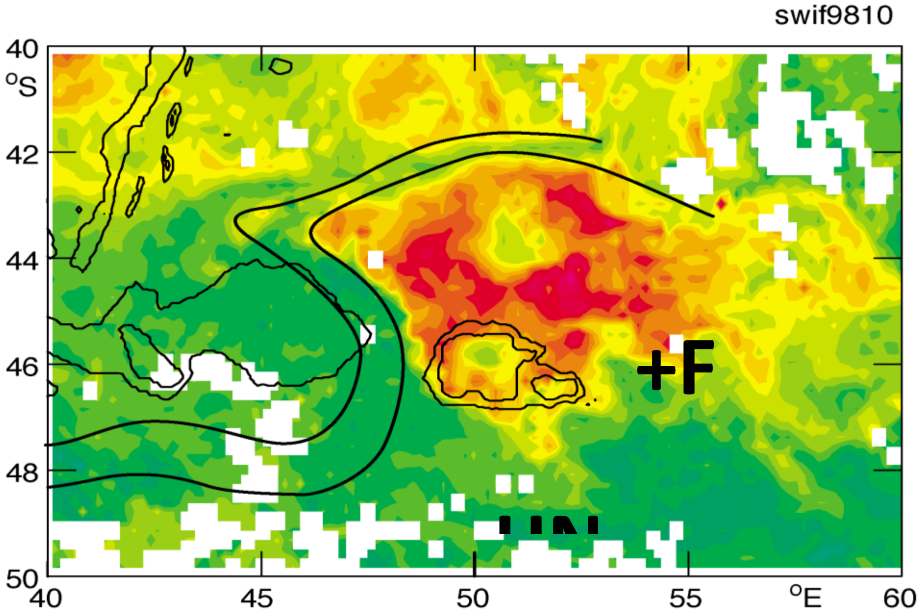

Figure 3. Crozet Island Productivity

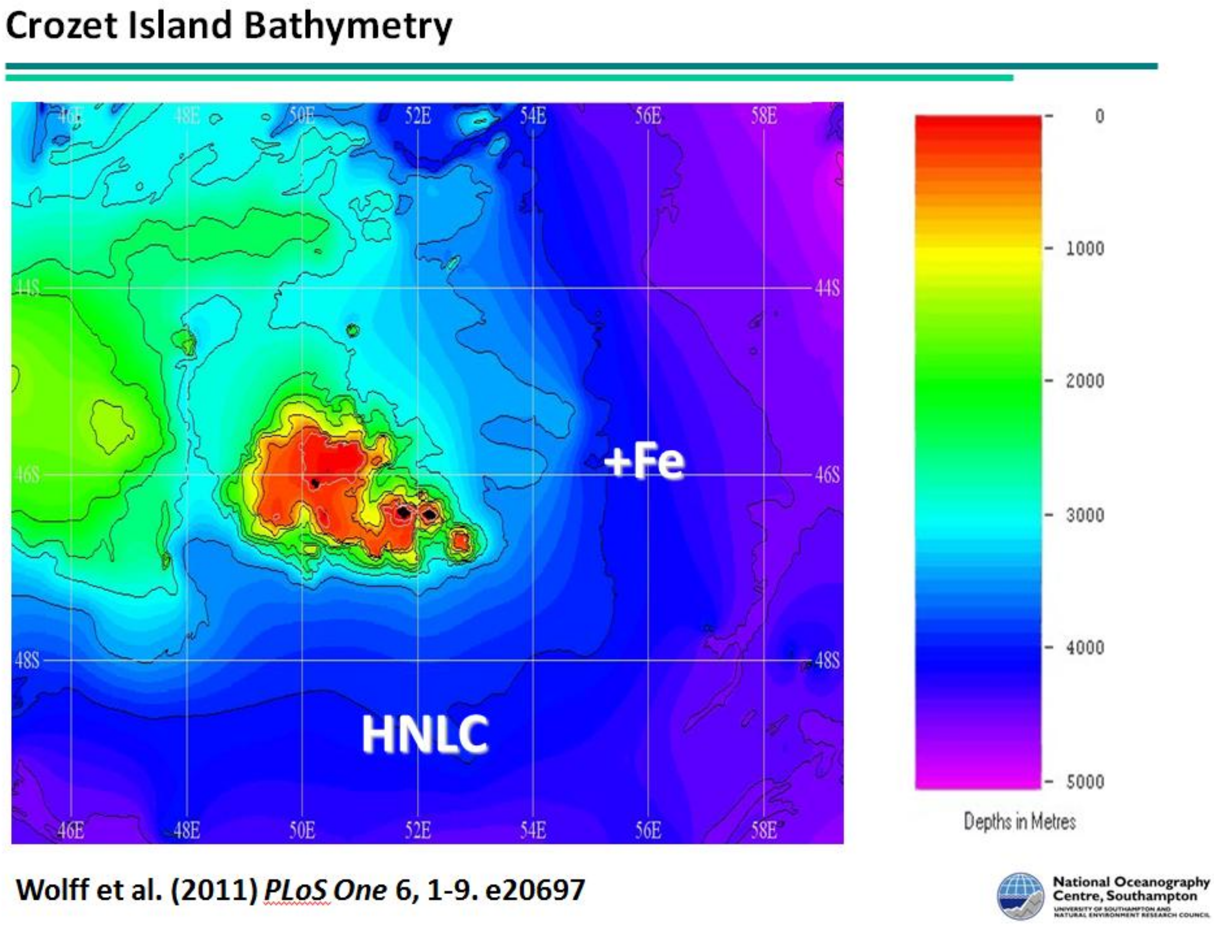

Figure 4: Crozet Island Bathymetry

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Only processed and analysed information is included here, and the results from these analyses are publicly available.

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Area No. 27: Southern Madagascar (part of the Mozambique Channel)

Abstract

The highly productive waters of Madagascar's "Deep South" are critical feeding grounds for the highly migratory species of the region, including seabirds and cetaceans. It is characterized by large coastal dunes, lagoons and coastal ponds, forming unique coastal habitats and wetlands; shallow benthic communities are dominated by hard substrate communities, with small isolated coral reefs at the extremities.

Introduction

Because of its southerly location, this is a transition zone (ecotone) in the Indian Ocean between tropical and temperate waters, at the crossroads of the fauna of South Africa and that of the Indo-Pacific, with an African affinity as one approaches the Mozambique Channel. There are very specific communities adapted to local conditions—high energy, upwellings, cooler waters. High levels of endemism have been found, i.e., 25% for molluscs, with many new species likely to be described in coming years.

Location

Extending south from Madagascar, an extensive underwater plateau or ridge varies from about 1000 to 2500 m deep, for a distance of nearly 1000 km. At its southern end it forms a shallow platform that extends 100 m below the surface. The platform was formed by basaltic extrusion from the Marion hotspot during the Cretaceous, as Antarctica and Madagascar moved apart. The region experiences complex oceanography caused by the strong boundary current of the East Madagascar Current impinging on the undersea Plateau, resulting in strong coastal and offshore upwelling, eddies and turbulence. These cause a large phytoplankton bloom in the austral summer that fertilizes waters downstream and into the southern Mozambique Channel. Eddies generated over the plateau may progress into the Mozambique Channel, interacting with those of the channel and potentially move north up the west coast of Madagascar.

The shallow marine habitats of the coast are mainly rocky and experience very rough conditions dure to their southerly exposure. There is minor coral reef development at the east (Lokaro, Ste Luce) and the west (Androka, banc de l'Etoile) extremities. Coastal habitats are varied, with distinctive coastal dune formations, such as at the Mangoky delta.

The plateau extends southwards into temperature waters and ecoregions, resulting in mixed tropical and subtropical species and habitats. Even on land and in shallow waters, this region is poorly documented.

The Madagascar plateau extends southwards for 1,000 km into the high seas.

Feature description of the proposed area

Leatherback, loggerhead and green turtles are found in the region, one of the few locations important for leatherbacks in the WIO.

A recent expedition, "Atimo Vatae", focused on the algae and invertebrates of the shallow and upper-slope marine fauna, has already shown preliminary results reporting kelp beds and over 500 species of algae, richer than the tropical algal flora of Mozambique. By contrast, the diversity of animal species is lower than in tropical areas, but with extremely high levels of endemism and species shared with subtropical South Africa. Ascidians are among the first groups analysed, revealing 20% new species, 26% shared with South Africa, and 31% shared with tropical areas. Other groups with preliminary numbers include molluscs (1200-1500 species); interesting new discoveries have been made in the field of malacology, Decapod crustaceans (766 species) and fish (253 species).

Offshore, because of its upwelling and productivity, the undersea Plateau provides critical feeding grounds for multiple marine species, including seabirds, large fish and marine mammals. The red-tailed tropicbird and Barau's petrel (endemic to and nesting on Reunion Island) feed on the plateau, indicative of a high number of species that also do this. Blue, Bryde's, Right, Sperm and Humpack whales aggregate in these waters due to its raised productivity, with estimated population sizes of about 450 individuals for pygmy blue whales. Humpback whales also use the SW and SE coasts (near Toliara and Lokaro, respectively) as breeding grounds, and for nursing by mothers and calves.

Feature condition and future outlook of the proposed area

The area is highly remote, with little development on land. Thus offshore fisheries by commercial fleets, targeting fish that feed on the high productivity off the plateau, will likely develop as other fishing grounds become depleted.

There is currently no management structure for the overall area, though one coastal site, Faux Cap, is a Ramsar site.

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** (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**
Unique mix of subtropical currents, a deep plateau and upwelling/turbulence. Unique in the region.					
Special importance for life-history stages of species	Areas that are required for a population to survive and thrive.				**X**
Many species are restricted to this site, or shared only with temperate South Africa.					
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**
Many threatened and endangered species (turtles, mammals, birds); high productivity makes it one of the most important feeding grounds.					
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**	
The area is important as a migration corridor for the blue, right, Bryde's, humpback and sperm whales. Being highly remote, if is difficult to quantify illegal catches from commercial fleets as well as collision with ships.					
Biological productivity	Area containing species, populations or communities with comparatively higher natural biological productivity.				**X**
Part of the eddy / upwelling systems of the Mozambique Channel. Very high in this southern region.					
Biological diversity	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.				**X**
Very high, especially with endemics and mixed ranges (ecotone)					

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
Relatively undisturbed due to remoteness and roughness					

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Maps and Figures

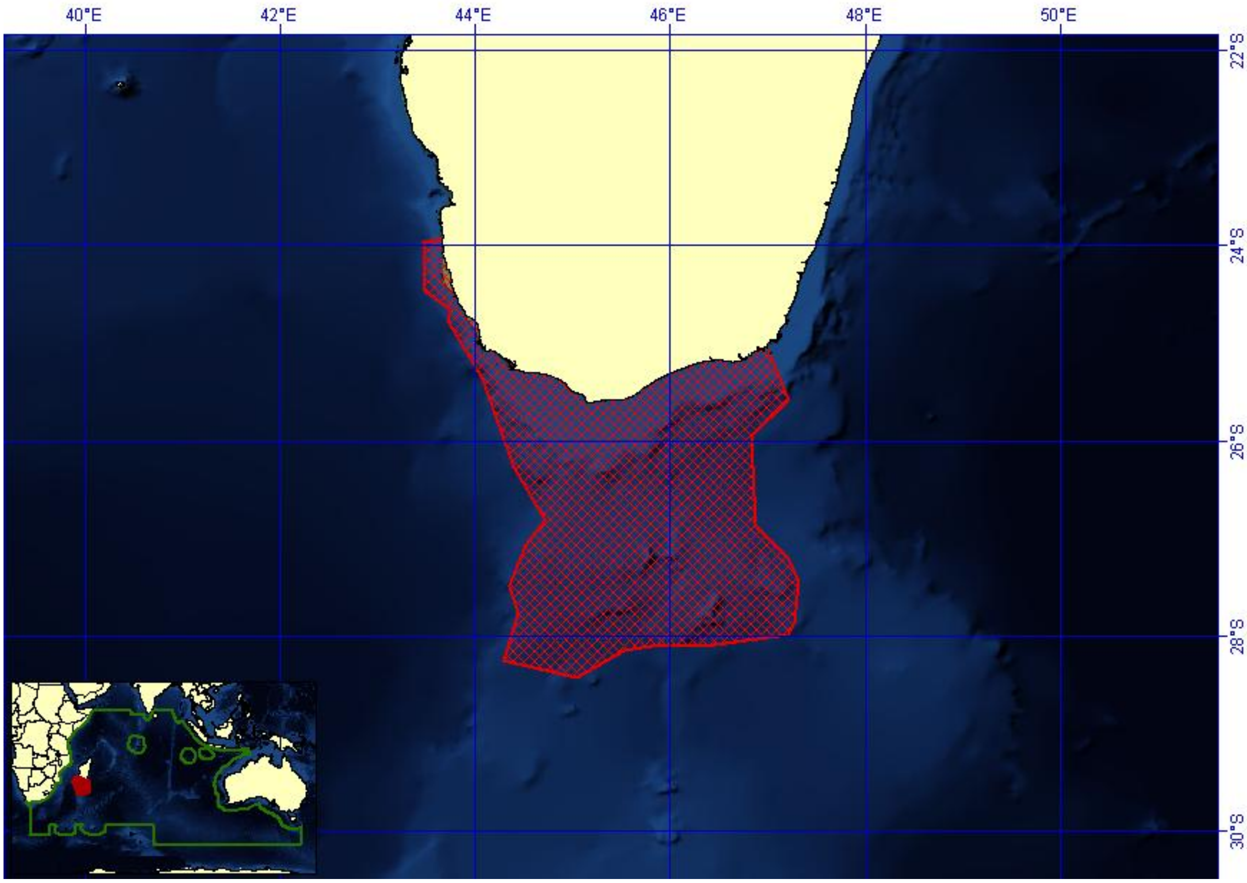

Figure 1. Map of area meeting EBSA criteria

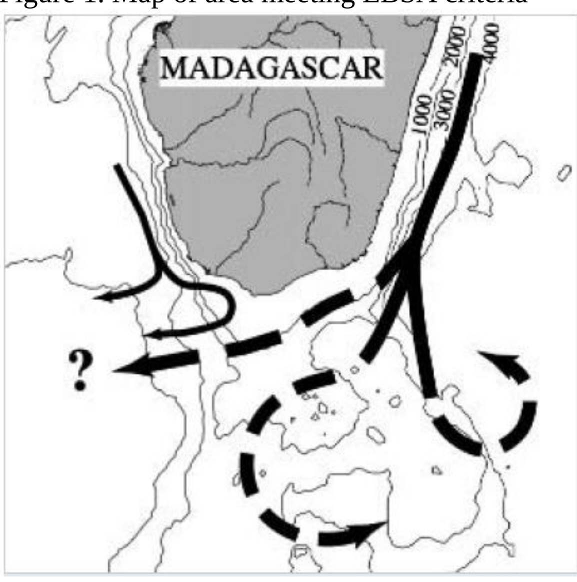

Figure 2. Complex currents affected by the submarine plateau result in eddies and upwelling. To the west, the shallow currents feed into the Mozambique Channel and to the Agulhas Current in South Africa. ©diMarco et al 2000

Area No. 28: Tromelin Island[3]

Abstract

Tromelin is an isolated small sand caye located to the east of Madagascar. Due to limited accessibility, scientific knowledge is low and targeted to very few taxa. Marine turtles have been monitored since the 1980s, and long-term analysis has demonstrated that Tromelin is one of the most important nesting sites for the green turtle in the Western Indian Ocean (Lauret *et al.* 2007). Coral and bird diversity are very low (20 Scleractinia genera, two bird species). Interestingly, genetic isolation has been found in species belonging to both taxa, also making this island very valuable for conservation. Moreover, a flat paving composed of two species of Faviid corals is one of the few examples in the western Indian Ocean region.

Introduction

Tromelin Island is a small sand caye (~1 km^2) located approximately 440 km east of Madagascar and 580 km north of la Réunion (Indian Ocean, Fig. 1). It is very exposed to trade winds and located on the cyclone paths.

Tromelin is one of the five French Îles Éparses and the only one located east of Madagascar. The presence of a permanent Météo France weather station on Tromelin since the 1950s, and the rough surrounding seas have made it an effective marine protected area.

Location

Located about 580km northwest of la Réunion (54°319 E, 15°539 S, Fig. 1), Tromelin is a small coral island about 1750 m long by 700 m wide and bordered by a reef system exposed at low tide.

Tromelin belongs to the French Îles Éparses and, together with the islands of Glorieuses, Juan de Nova, Bassas da India, and Europa, located in the Mozambique Channel, has constituted the fifth district of the Terres Australes et Antarctiques Françaises (TAAF) since February 2007. A co-management agreement for Tromelin between France and Mauritius was signed on 7 June 2010. This agreement concerns sustainable management of fisheries, environmental protection and archeological research.

Tromelin, which rises steeply from the ocean floor in the middle of the Mascarene Basin, is a coral cay whose maximum elevation does not exceed 8 m (Figure 2). In its present configuration, the island might have formed when the eustatic sea level stabilized during the mid-Holocene, leading to the accretion of a sandbank atop shallow Quaternary reefs. The reef system that flanks the island is the main sediment source.

Before Marriner *et al.*'s recent surveys, however, no radiometric dating was available from Tromelin. From about 6000 BP, when global sea level achieved broad stability, bioclastic reef material eroded on the reef complex, probably helping to extend the island's surface.

Feature description of the proposed area

Tromelin Island is at present surrounded by coral reefs whose geomorphology attests to high-energy environments. Altogether, the reef size has been estimated by Andréfouët *et al.* (2008) at 5.42 km^2 for the bank barrier, 0.85 km^2 for the bank barrier land, and 0.63 km^2 for the drowned bank. An almost horizontal

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[3] The Mauritian experts indicated that they supported the description of Tromelin Island as an area meeting EBSA criteria purely for scientific—rather than for management—purposes.

or gently sloping shallow reef platform, 20 to 30 m wide, is exposed at low tide and terminates seaward by a 1- to 2-m drop, the reef front where waves break. The upper part of the outer reef slope is gradual but interrupted by pits at a 5- to 6-m depth, aligned parallel to the front; they are attributed to the interaction between waves and lateral currents. The deeper reef slope is reported to be steeper.

Narrow and shallow grooves, perpendicular to the shore, indent the reef flat and the upper reef slope, giving rise to the ragged appearance of the reef flat on the north-eastern part of the island (Bouchon & Faure 1979). A series of spurs and grooves are noted on aerial photographs; these comb structures run perpendicular to the reef flat (Battistini *et al.* 1975) and where mechanical erosion yields the bulk of biogenic blocks. Grooves are U-shaped, 1 to 2 m deep, and extend to the outer slope. They are spaced 15 to 20m apart on the south-east coast but are closer together on the north-east coast. The upper part of the outer slope is 50 to 100 m wide down to a depth of about 5 m, where it is interrupted, on the south-west coast, by a depression 10 to 20 m wide and 3 to 5 m deep. On both sides of this depression, the outer slope is similar. Below a depth of 15m, the outer slope increases gradually, reaching 20° to 30°. Coral colonies exhibit growth forms adapted to the island's high-energy context. Hard coral communities are poorly diversified, containing 16 genera in 1977 (Bouchon and Faure, 1979) and 21 in 2011 (Guillaume *et al.* 2009, completed by Guillaume & Bruggemann 2011). Indeed, the southern reef flat is subject to strong mechanical erosion (breaking waves and rip currents) and biological attack by perforating algae.

Recent genetic studies on three coral species of *Pocillopora* genus (*P. meandrina-verrucosa*, *P. eydouxi*) have shown that their populations at Tromelin are different from those at Reunion and Europa islands, suggesting geographical isolation at Tromelin (Magalon *et al.* 2011, Gelin 2012).

The island is mainly covered by *Tournefortia argentea* in which red-footed booby *Sula sula* nest, the only population in the region to be polymorphic (2/3 of the population has white feathers and 1/3 has brown feathers with a white tale), which shows it is unique and biogeographically isolated (Le Corre 1996, 1999, Le Corre & Safford 2001). The masked booby *Sula dactylatra* nest on the ground, on a short vegetation mostly composed of *Boerhavia diffusa*.

Tromelin is also an important nesting site for the green turtle (*Chelonia mydas)*, with 7178 ± 3053 tracks per season (Lauret-Stepler *et al.* 2007). A population genetic study on the green turtle showed that the population nesting in Tromelin belongs to the North Mozambique Channel stock, along with the Glorieuses and Comoros populations (Bourjea *et al.* 2007).

Feature condition and future outlook of the proposed area

Corals are vulnerable to climate change.

Seabird populations in the Indian Ocean have decreased since the 18th century as a result of human activity **(**Feare, 1984**).** Two species of frigatebird formerly bred at Tromelin but have been extinct as a consequence of human disturbance in the nesting sites (Le Corre 1996). Among the two remaining species of Sulidae, *Sula sula* needs undisturbed trees for reproduction **(**Le Corre 1996**)**.

At Tromelin the red-footed booby population will decrease but the masked booby population will increase. Conservation of these two species in the Indian Ocean (Aldabra atoll, Amirantes, Europa) depends on the protection of medium-size colonies such as in Tromelin (Le Corre 1996). The present population size is 340 pairs of red-footed boobies and 220 pairs of masked boobies (Le Corre unpublished data).

The marine turtle nesting population on Tromelin remained constant over the study period 1987-2005 (Lauret-Stepler *et al.* 2007). However, additional time series over 1987-2007 processed with new statistical analysis might indicate a significant annual decrease of -1.6 [-1.8; -1.3] (Bourjea unpublished data).

Assessment of the area against CBD EBSA Criteria

<table>
<tr><th rowspan="2">CBD EBSA Criteria
(Annex I to decision IX/20)</th><th rowspan="2">Description
(Annex I to decision IX/20)</th><th colspan="4">Ranking of criterion relevance
(please mark one column with an X)</th></tr>
<tr><th>Don’t Know</th><th>Low</th><th>Some</th><th>High</th></tr>
<tr><td>Uniqueness or rarity</td><td>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.</td><td></td><td></td><td></td><td>X</td></tr>
<tr><td colspan="6">Explanation for ranking
Isolated coral populations when comparing to other coral populations of the same species of the Pocillopora genus in the SWIO region (Magalon et al. 2011, Gelin 2012), isolated polymorphic population of red-footed boobies (Le Corre 1996, 1999).</td></tr>
<tr><td>Special importance for life-history stages of species</td><td>Areas that are required for a population to survive and thrive.</td><td></td><td></td><td></td><td>X</td></tr>
<tr><td colspan="6">Explanation for ranking
Rare Faviid corals flat paving (Guillaume et al. 2009, Guillaume & Bruggemann 2011).</td></tr>
<tr><td>Importance for threatened, endangered or declining species and/or habitats</td><td>Area containing habitat for the survival and recovery of endangered, threatened, declining species or area with significant assemblages of such species.</td><td></td><td></td><td></td><td>X</td></tr>
<tr><td colspan="6">Explanation for ranking
Important nesting site of the endangered green turtle Chelonia mydas (Bourjea et al. 2007, Lauret-Stepler et al. 2007) – IUCN: Endangered; CITES: Appendix I</td></tr>
<tr><td>Vulnerability, fragility, sensitivity, or slow recovery</td><td>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.</td><td></td><td></td><td></td><td>X</td></tr>
<tr><td colspan="6">Explanation for ranking
Red-footed booby population decreasing (Le Corre 1996).</td></tr>
<tr><td>Biological productivity</td><td>Area containing species, populations or communities with comparatively higher natural biological productivity.</td><td>X</td><td></td><td></td><td></td></tr>
<tr><td colspan="6">Explanation for ranking</td></tr>
</table>

Biological diversity	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.				X
Explanation for ranking					
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
Explanation for ranking Small and isolated island in a very exposed setting, MPA for some 40 years under French governance (Marriner *et al.* in press).					

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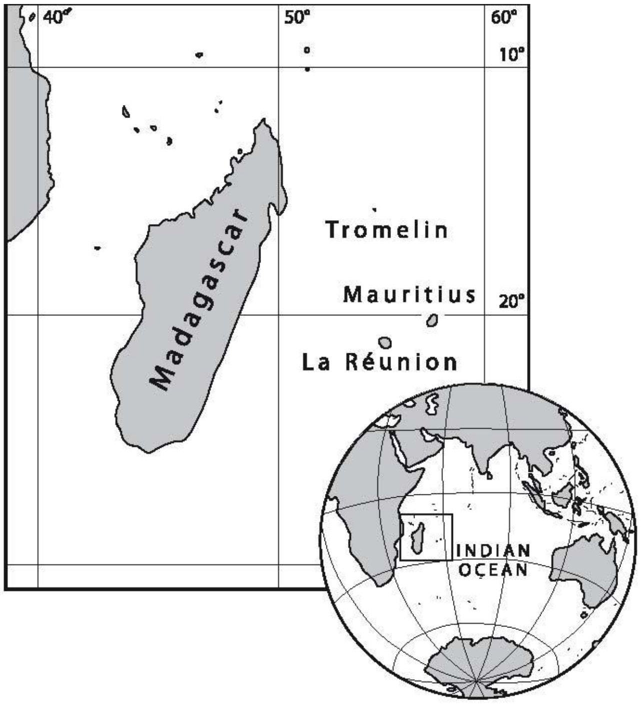

Figure 1. Location map of Tromelin, Indian Ocean.

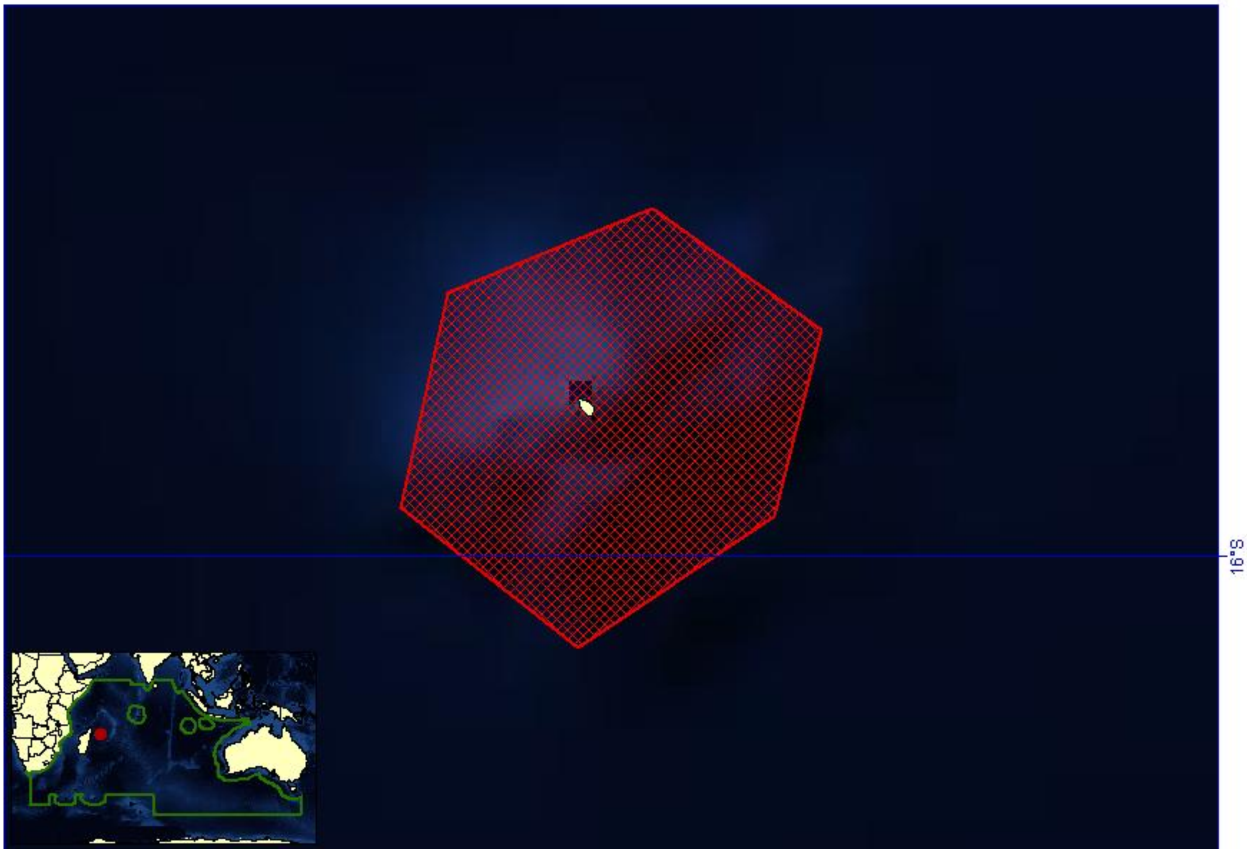

Figure 2. Map of area meeting EBSA criteria

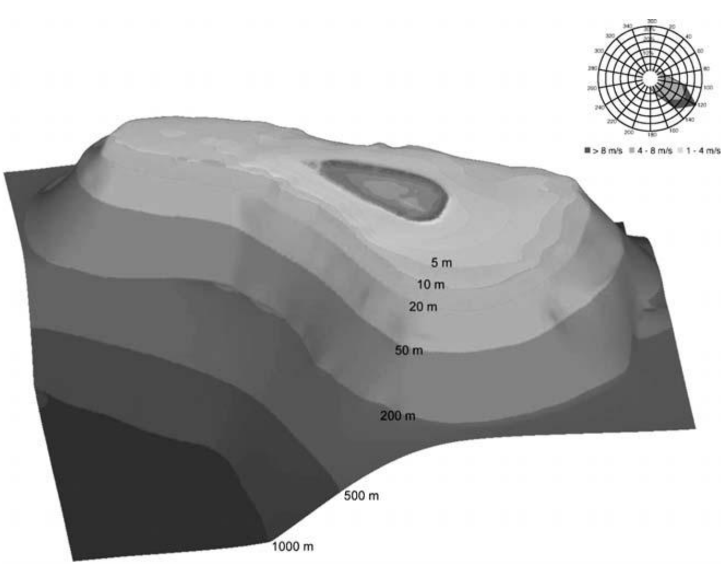

Figure 3. Digital elevation model of Tromelin's bathymetry and wind rose (Météo France, Tromelin, in Marriner *et al.* in press).

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Marriner N., Pirazzoli P.A., Fontugne M., Guérout M., Guillaume M.M.M. & Reyss J.-L. (in press). A geomorphological reconnaissance of Tromelin Island, Indian Ocean. *Journal of Coastal Research.*

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Nick Marriner, Centre Européen de Recherche et d'Enseignement des Géosciences de l'Environnement CNRS UMR6635, Europôle de l'Arbois, BP 80, 13545 Aix-en-Provence cedex 04, France.

Area No. 29: Mahe, Alphonse and Amirantes Plateau

Abstract

The Mahe, Alphonse and Amirantes Plateau is an area of high diversity. It is a breeding, feeding and nursery area for cetaceans and provides migratory paths for these species, with important feeding sites for pelagic fish, especially tuna and shark species. Coral reefs and mangroves are characteristic of this area, providing important sites for fish spawning and nurseries, while mangroves help in reducing sedimentation and runoff to coral reefs. The plateau assists in the conservation of seabirds through provision of breeding and feeding sites. Important nesting sites for green and hawksbill turtles are found here. This area has been described as one of the most important areas of primary productivity in the Western Indian Ocean.

Introduction

The Mahe, Alphonse and Amirantes Plateau consist of two areas within the Republic of Seychelles. These include the inner island groups, which make up the Mahe Plateau, and the Amirantes group of islands to the south of the Mahe Plateau. The plateau is important for numerous biological processes, including spawning, breeding, recruitment, connectivity and provision of nursery and foraging areas (Kiszka et al., 2009) (Seychelles Fishing Authority, 2010). This area is a centre of abundance of numerous species, including threatened and endangered turtle species (*Eretmochelys imbricata* and *Chelonia mydas*) (Mortimer, 2004), numerous cetaceans, including killer whales (Kiszka et al, 2009), a number of seabirds (Catry et al, 2009) and numerous pelagic and demersal fish, amongst which are sharks and tunas (Seychelles Fishing Authority, 2010).

Location

Features oceanic basin, and plateau found in the south of the Republic of Seychelles, within national jurisdiction. It located is between 50º00'E and 58º00'E and between 0º00'S and 10º00' S.

Feature description of the proposed area

This area is high in habitat diversity and is important for cetaceans, comprising cetacean breeding sites, feeding sites, nurseries and migratory paths. It is a very important feeding site for killer whales (Kiszka *et al.,* 2009). Here can be found feeding sites for pelagic fish, including tunas and sharks, which are found in abundance in this area. It is an important source of larvae and fish-spawning sites. It is also an important nursery site for sea cucumber and fish, especially due to the mangroves, which are important as nurseries for juvenile fish species (Seychelles Fishing Authority, 2010). These mangroves also help protect the coral reefs from sedimentation and runoffs. These are very important feeding, nesting and reproduction sites for seabirds and are therefore important for their conservation (Catry et al., 2009). Islands within this group are also important turtle-nesting sites for both hawksbill and green turtles, and the Mahe plateau is the third-most-important site in the world for hawksbill turtle nesting, while the Amirantes Plateau is the fourth-most important site for green turtle nesting (Mortimer, 2004).

This area includes shallow coral reefs, which are mostly fringing reefs, patch reefs, coral banks, canyons and caves, as well as seagrass beds. The Amirantes and Alphonse belong to the group of Seychelles southern-most islands, with the highest percentage of coral coverage in Seychelles (Stoddart, 1984). The Mahe Plateau is a unique example of granitic island coral reef formation and hosts spawning aggregations of coral fish *(*Baker, 1963). It has the highest primary biological productivity in the Western Indian

Ocean. This plateau is also important as an abundant site for demersal and pelagic fish, especially mackerel, small tunas and jacks (Seychelles Fishing Authority, 2010).

Feature condition and future outlook of the proposed area

This is an area under pressure. Tuna fisheries remove about 300,000 tonnes of tuna per year, and this in turn has an impact on seabirds and their feeding habits. At the same time, sea cucumber fisheries are concentrated in this area (Seychelles Fishing Authority, 2010). There is also anthropogenic pollution, as well as lost fishing gears that carry out ghost fishing in areas of the Amirantes basin. Dangers also exist for marine turtles and cetaceans through the presence of debris and shipwrecks (Kiszka et al., 2009). Other vulnerabilities include seismic oil exploration, threats from alien invasive species, overfishing of sea cucumber and demersal fish species, habitat degradation, and illegal fishing (Seychelles Fishing Authority, 2010). These zones have also been affected by coral bleaching, with slow recovery of corals (Ateweberhan et al,. 2011).

At the same time, there is no effective management system in place for part of this area, and there is a lack of information on the ecosystems, especially those found around the Amirantes oceanic basin. While the African Banks within this area is a marine protected area, management is lacking. The other six marine protected areas within this group are managed efficiently, although there are some threats. At the same time, the Mahe plateau is prone to sedimentation from urbanization, which poses a threat to the coral reefs **(**Bijoux et al. 2008)**.**

Assessment of the area against CBD EBSA Criteria

<table>
<tr><th rowspan="2">CBD EBSA Criteria
(Annex I to decision IX/20)</th><th rowspan="2">Description
(Annex I to decision IX/20)</th><th colspan="4">Ranking of criterion relevance
(please mark one column with an X)</th></tr>
<tr><th>Don’t Know</th><th>Low</th><th>Mediu m</th><th>High</th></tr>
<tr><td>Uniqueness or rarity</td><td>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.</td><td></td><td></td><td></td><td>X</td></tr>
<tr><td colspan="6">Explanation for ranking

Has high world ranking for turtle species, both green and hawksbill (Mahe ranks 3rd in the world for hawksbill, Amirantes 4th for green) (Mortimer, 2004). At the same time some islands are important bird nesting sites, supporting g large populations of seabirds. The area also supports threatened species, especially cetaceans (Kiszka, 2009).</td></tr>
<tr><td>Special importance for life-history stages of species</td><td>Areas that are required for a population to survive and thrive.</td><td></td><td></td><td></td><td>X</td></tr>
<tr><td colspan="6">Explanation for ranking

The area includes very important coral reefs, which provide habitat for a large number of species and provide sites for spawning aggregations of reef fish (Ateweberhan, 2011). At the same time, it provides habitats for turtles and seabird species, important for their reproduction and conservation (Mortimer, 2004) (Catry et al., 2009).</td></tr>
<tr><td>Importance for threatened, endangered or declining species and/or habitats</td><td>Area containing habitat for the survival and recovery of endangered, threatened, declining species or area with significant assemblages of such species.</td><td></td><td></td><td></td><td>X</td></tr>
<tr><td colspan="6">Explanation for ranking

The area includes very important coral reefs, which provide habitat for a large number of coral reef species, and provide sites for spawning aggregations of reef fish (Ateweberhan, 2011) (Graham et al., 2006). At the same time, it provides habitats for turtles and seabird species, important for their reproduction and conservation (Mortimer, 2004) (Catry et al., 2009).</td></tr>
<tr><td>Vulnerability, fragility, sensitivity, or slow recovery</td><td>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.</td><td></td><td></td><td>X</td><td></td></tr>
<tr><td colspan="6">Explanation for ranking

These areas are important for the nesting and feeding of both green and hawksbill turtles, (Mortimer, 2004).</td></tr>
<tr><td>Biological productivity</td><td>Area containing species, populations or communities with comparatively higher natural</td><td></td><td></td><td></td><td>X</td></tr>
</table>

	biological productivity.				
Explanation for ranking Area of high biological diversity (Mahe plateau one of highest in Western Indian Ocean), habitat diversity and species diversity. Area is highly important for reef fish, pelagic fish and demersal fish (Graham et al. 2006) (Seychelles Fishing Authority). Seabird nesting and reproduction as well as the nesting of turtle are very important in this area (Mortimer, 2004) (Catry *et al*, 2009).					
Biological diversity	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.				X
Explanation for ranking Area of high biological diversity, habitat diversity and species diversity. Area is highly important for coral fish, pelagic fish and demersal fish (Graham et al. 2006) (Seychelles Fishing Authority). Seabird nesting and reproduction as well as the nesting of turtle are very important in this area (Mortimer, 2004) (Catry et al. 2009).					
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		
Explanation for ranking The area includes very important coral reefs, which support a large number of coral reef species and provide sites for spawning aggregations of reef fish (Seychelles Fishing Authority). However, some species, especially coral reefs are protected through the setting up of some marine protected areas (Bijoux *et al.*, 2008).					

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Maps and Figures

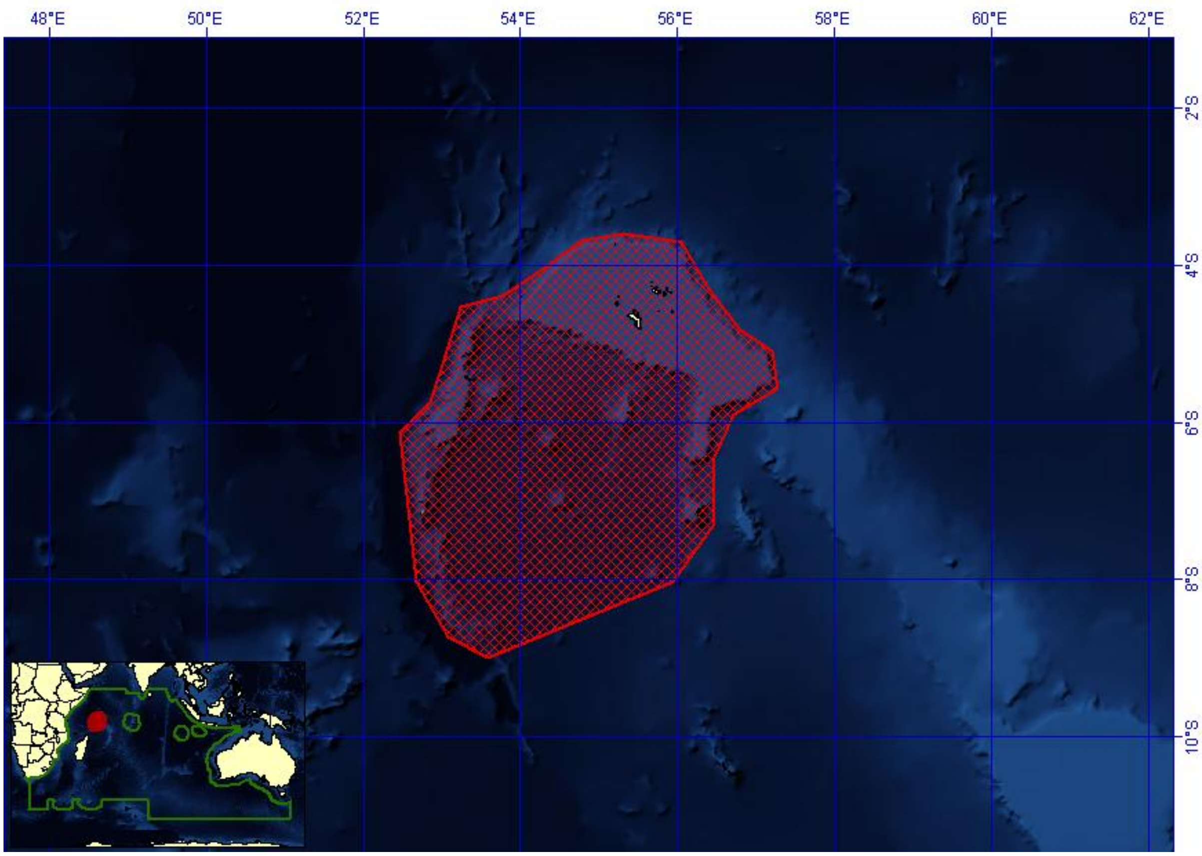

Figure 1. Map of area meeting EBSA criteria

Figure 2. Arial photo of Alphonse (Courtesy of GIS Office, Seychelles)

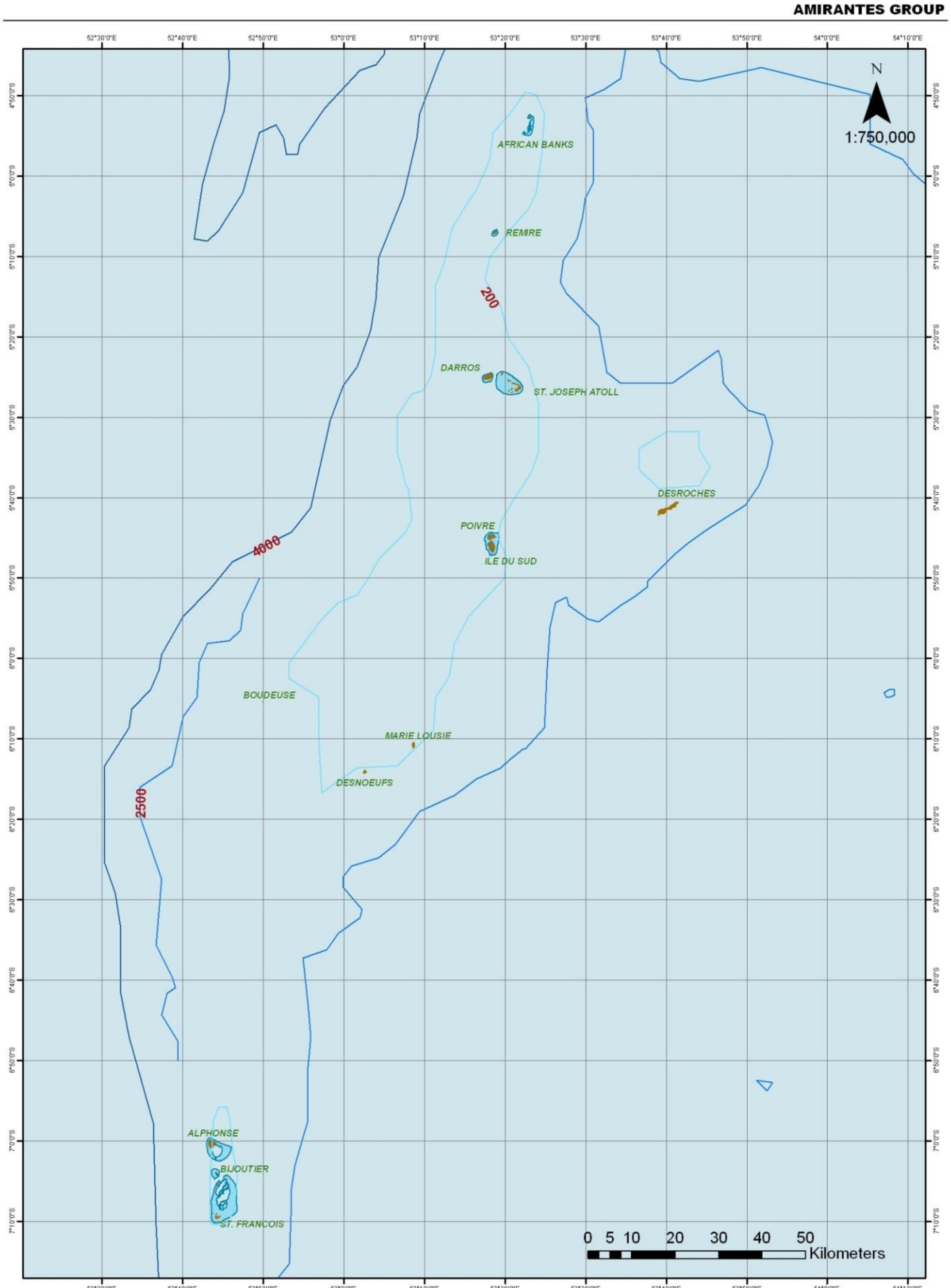

Figure 3. Map showing the Amirantes islands (Courtesy of GIS Office, Seychelles)

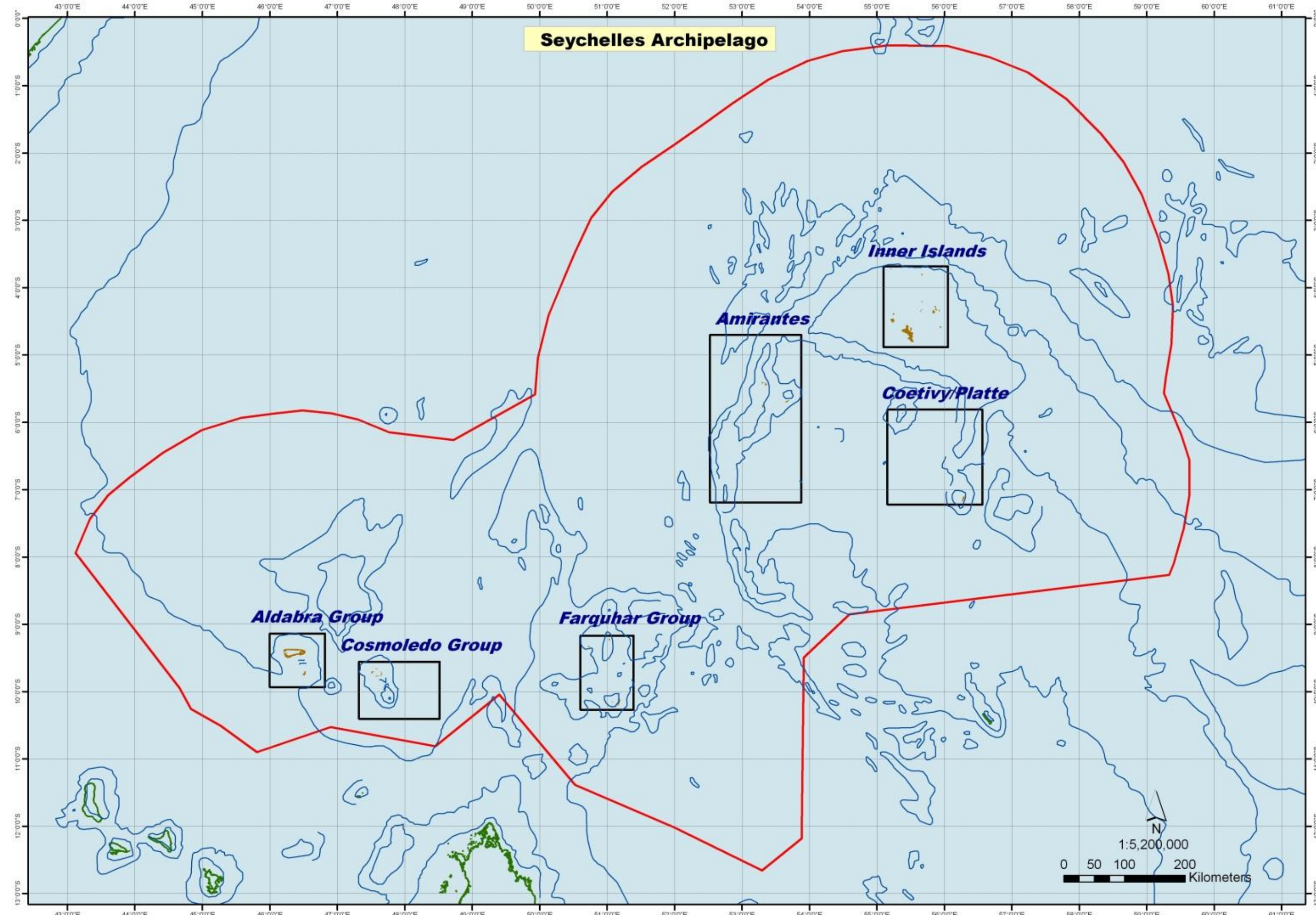

Figure 4. Map of the Seychelles Archipelago, showing the island groups, including the Mahe Plateau (inner islands) and the Amirantes Group, including Alphonse (Photo Courtesy of GIS Office, Republic of Seychelles)

Area No. 30: Atlantis Seamount

Abstract

The Atlantis Bank/Seamount is a remarkable, actively tectonic, seamount/guyot/sunken island (FAO, 2006; Rogers *et al.* 2012). It was pivotal in identification of ultraslow spreading ridges. Its complex geomorphology of old headlands, precipitous cliffs, stacks, beaches, lagoons (FAO, 2006; Rogers *et al.* 2012) harbours a very diverse deep-sea fauna at depths from 700 to 4000m (Rogers *et al.* 2012). The top of the seamount measures at least 25 km^2. The seamount hosts diverse coral gardens and complex sea-cliff deep-sea communities characterized by large anemones, armchair-sized sponges, and octocorals. The seamount hosts populations of pelagic armourhead (*Pseudopentaceros wheeleri*) and alfonsino.

Introduction

Atlantis Seamount is located within sub-tropical waters. It is a seamount of special scientific significance because it was pivotal to understanding the geology of ultraslow spreading ridges. The Atlantis Bank is a tectonic seamount, fossil island/guyot, the summit being largely flat, flanking the Atlantis II fracture zone on the Southwest Indian Ridge. It has two fossil beaches, lagoons and a submerged headland. About two-thirds of the bank is covered by limestone, with ripple marks identical to those in the sand at exposed beaches. However, these were “frozen” or lithified as rock millions of years ago, as this island sank. There are little pot holes ground into gabbro rock. Atlantis Bank was the first **tectonic** guyot ever studied. It rises from 4000 to 700 m. It has a unique paleontological record and has been the drilling site within the Ocean Drilling Programme (ODP) and is a major focus of research activity. Baines *et al.* (2003) report on the mechanisms that have given rise to the 120-km long ridge of which Atlantis Bank is part.

The Atlantis Seamount was declared a Benthic Protection Area (BPA) by the Southern Indian Ocean Deep-Sea Fisheries Association (SIODFA) (FAO, 2006). The seamount includes cliff habitats characterised by large anemones, large sponges, and octocorals. Large *Paragorgia* colonies are particularly notable. On a recent research cruise visiting several different seamounts on the Southwest Indian Ridge, it was the only seamount on which large concentrations of pelagic armourhead (*Pseudopentaceros wheeleri*) were observed.

Location

Area is outside of national jurisdiction on the high seas and is not subject to a claim to the Commission on the Limits of the Continental Shelf.

Area roughly 32^{o}38'S - 32^{o}48'S and 57^{o}12'E - 57^{o}20'E (see map below)

Feature description of the proposed area

Atlantis Seamount is a guyot with a summit depth of approximately 700m (FAO, 2006; Rogers *et al.* 2012). The summit comprises sand, carbonate pavement and rock outcrops. The rock outcrops, particularly along the edges of the summit, host large stylasterid colonies with *Dermechinus horridus*. Spines of these urchins form substratum for infauna around these outcroppings. Small sharks are also frequent on the seamount summit, all of which are one, as yet unidentified, species. Solitary corals, also unidentified also live unattached on the seamount summit. The eastern side of the seamount comprises rocky / boulder slopes with glass sponges and octocorals scattered across the slope. The western side of the seamount includes slide features, some of which have been heavily fished and damaged. However, rocky cliff habitats located on rock buttresses flanking these slide features host rich benthic communities of large, armchair-sized sponges, glass sponges, anemones and their sea spider predators. The seamount hosts populations of pelagic armourhead (*Pseudopentaceros wheeleri*) that do not occur elsewhere on the Southwest Indian Ridge as far as is known. There are also populations of oreo and alfonsino, which occur elsewhere on the ridge. The seamount has important scientific value as the main study site, leading to the proposal of a new category of ridge (ultraslow spreading ridge). The seamount is also a tectonic seamount.

Feature condition and future outlook of the proposed area

The feature has been declared a Benthic Protection Area (BPA) by the Southern Indian Ocean Deepwater Fishers' Association (SIODFA). However, there was evidence of fishing on the seamount in the form of trawling scars located on landslide areas on the north-western side of the seamount. It is proposed as an EBSAbecause it lies under sub-tropical waters and hosts high densities of pelagic armourhead and vulnerable marine ecosystems (coral garden and cliff communities)

Assessment of the area against CBD EBSA Criteria

<table>
<tr><td rowspan="2">CBD EBSA Criteria
(Annex I to decision IX/20)</td><td rowspan="2">Description
(Annex I to decision IX/20)</td><td colspan="4">Ranking of criterion relevance
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<tr><td>Don’t Know</td><td>Low</td><td>Some</td><td>High</td></tr>
<tr><td>Uniqueness or rarity</td><td>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.</td><td></td><td></td><td></td><td>X</td></tr>
<tr><td colspan="6">Explanation for ranking
The Atlantis Bank/Seamount is a remarkable, actively tectonic, seamount/guyot/sunken island (FAO, 2006; Rogers et al. 2012). It was pivotal in identification of ultraslow spreading ridges. Its complex geomorphology of old headlands, precipitous cliffs, stacks, beaches, lagoons (FAO, 2006; Rogers et al. 2012) harbours a very diverse deep-sea fauna at depths from 700 to 4000m (Rogers et al. 2012). The top of the seamount has an area of at least 25 km^2. The seamount hosts diverse coral gardens and complex sea-cliff deep-sea communities characterized by large anemones, large sponges and octocorals. Large Paragorgia colonies are particularly notable. Rock outcrops, particularly along the edges of the summit host large stylasterid colonies, including the echinoid Dermechinus horridus. Spines of these urchins form substratum for infauna around the outcroppings. Small sharks occur on the seamount summit, including one, as yet, unidentified species. Solitary corals, also unidentified, occur on the summit. The eastern side of the seamount comprises rocky / boulder slopes with glass sponges and octocorals. The western side has rock buttresses flanking rock-slide features hosting rich benthic communities of large, armchair-sized sponges, glass sponges, anemones and sea spider predators. JAMSTEC (2000) made observations on near-bottom and/or mesopelagic communities at depths from 750 to 5365 m. Among other results, JAMSTEC reported on the vertical stratification of Crow Shark (Etmopterus pusillus), Gilchrist’s Orange Roughy (Hoplostethus gilchristi) and the Big-eye Dory (Allocytus verrucosus).</td></tr>
<tr><td>Special importance for life-history stages of species</td><td>Areas that are required for a population to survive and thrive.</td><td></td><td></td><td>X</td><td></td></tr>
<tr><td colspan="6">Explanation for ranking
The Atlantis Seamount is of importance for the preservation of pelagic armourhead on the Southwest Indian Ridge.</td></tr>
<tr><td>Importance for threatened, endangered or declining species and/or habitats</td><td>Area containing habitat for the survival and recovery of endangered, threatened, declining species or area with significant assemblages of such species.</td><td></td><td></td><td></td><td>X</td></tr>
<tr><td colspan="6">Explanation for ranking
The area appears to be important for pelagic armourhead and hosts vulnerable marine ecosystems, such as coral garden communities. The Atlantis Seamount has excellent coral communities (Rogers, 2012) which</td></tr>
</table>

are known to have been impacted significantly by bottom trawling on other Southwest Indian Ridge seamounts (Rogers 2012).					
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**
Explanation for ranking Coral gardens and other sensitive habitats are highly vulnerable to damage from fishing, particularly bottom trawling. The complex topography of the Atlantis Seamount has protected these important deep-sea communities from past bottom-trawling activities, making this seamount particularly important in preserving diverse seabed communities on the Southwest Indian Ridge in sub-tropical waters. Growth rates of structural stony coral species are known to be slow in the deep sea. Areas impacted by human activities are likely to take hundreds of years to recover.					
Biological productivity	Area containing species, populations or communities with comparatively higher natural biological productivity.			**X**	
Explanation for ranking Acoustic studies of zooplankton and micronekton over seamounts indicate that seamounts focus trophic resources owing to the interaction of pelagic communities with the topography and local physical oceanography. Rogers *et al.* (2012) found evidence of trophic focusing on the Atlantis Seamount, leading to higher biological productivity than in the surrounding pelagic waters.					
Biological diversity	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.				**X**
Explanation for ranking The benthic habitats documented on the seamounts include a very high diversity of species, especially corals and coral associates (Rogers *et al.*, 2012). Detailed taxonomic analyses are the focus of a large international effort. Preliminary resultsindicate, for instance, that 50% of the ophiuroid (brittle star) species collected are new to science. Atlantis Seamount is particularly notable for large stylasterid and *Paragorgia* colonies and *Euplectella* spp (c.f.) colonised by a new species of *Spongiacaris* (JAMSTEC, 2000; Rogers *et al.* 2012).					
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**	
Explanation for ranking While there is evidence of damage in some locations from fishing and scientific drilling on seabed communities in the past, the complex topography of the seamount has preserved many natural communities.					

Sharing experiences and information applying other criteria (Optional)

Other Criteria	**Description**	**Ranking of criterion relevance** (please mark one column with an X)			
		Don't	**Low**	**Some**	**High**

		Know			
Add relevant criteria					X
Explanation for ranking					

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Maps and Figures

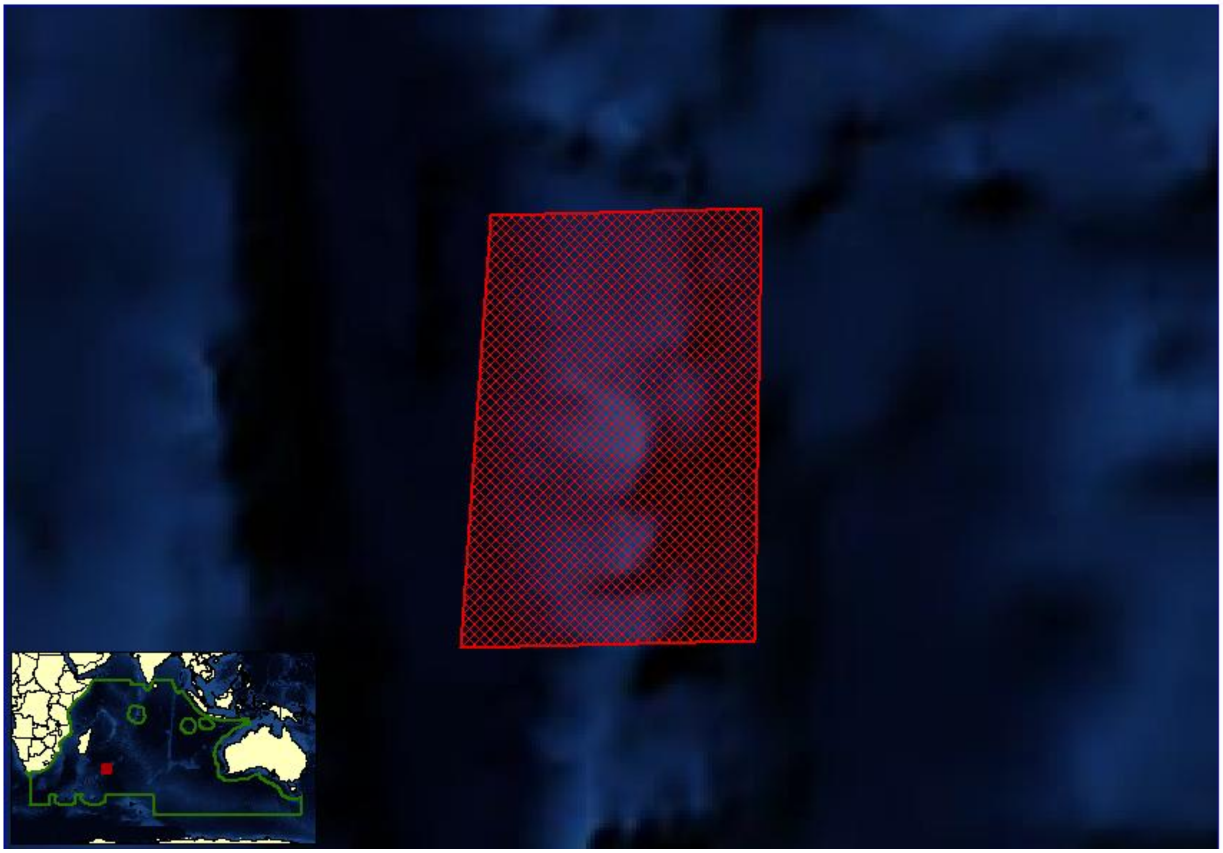

Figure 1. Map of the area meeting EBSA criteria

Area No. 31: Blue Bay Marine Park, Mauritius

Abstract

Blue Bay Marine Park was proclaimed a national park in October 1997, and then declared a marine protected area and designated as a marine park in 2000 under the Fisheries and Marine Resources Act 1998. The second Wetland of International Importance (Ramsar site) for Mauritius, it is located in the south-east of Mauritius and extends over an area of 353 hectares (3.5 km^2). Blue Bay Marine Park is known for its diverse and rich fauna and flora. Its coral, including brain coral measuring 6 to 7 metres in diameter is particularly notable. In 2012, 108 species (33 genuses) of coral, 233 fish species, and 201 species of molluscs were inventoried. The Fisheries and Marine Resources (Marine Protected Areas) Regulations 2001 provide for the control, surveillance and sustainable management of the various permissible activities within the park through a zoning plan, enforcement of the law, permit system, education campaigns, and research and monitoring.

Introduction

Blue Bay Marine Park, located in the south-eastern Mauritius, was proclaimed a national park under the Wildlife and National Parks Act 1993 in October 1997. It was declared a marine protected area and designated a marine park in June 2000 under the Fisheries and Marine Resources Act 1998. In January 2008, it was officially nominated as the second Wetland of International Importance (Ramsar site) in Mauritius. The total area of the marine park is 353 hectares; it includes the lagoon starting from Pointe Corps de Garde as its northernmost point up to Pointe Vacoas, its southernmost point and extends about one kilometre seaward from the reef crest. The depth of the water varies from 1 to 150 metres.

Blue Bay Marine Park is known for its diverse and rich fauna and flora. Its coral, including brain coral measuring 6 to 7 metres in diameter, is particularly notable. In 2012, 108 species (33 genuses) of coral, 233 fish species, and 201 species of molluscs were inventoried.

A popular tourist spot and the most popular beach in southern Mauritius, Blue Bay is extensively used for recreational purposes. It is estimated that more than one hundred thousand visitors, including Mauritian and foreign nationals, visit the park every year. The various recreational activities that are carried out in the park are: (i) scuba diving and snorkelling, (ii) non-motorized surface water sports, such as wind surfing, sailing, water skiing, paddle boating and kayaking, (iii) swimming, (iv) boating activities such as glass bottom boats, boats transporting divers and snorkellers, boat transporting visitors into and outside the boundaries of the park, (v) recreational fishing with pole and line along part of the coast, and (vi) fishing using pole and line and basket trap beyond the fringing reef.

Under the project "Partnership for Marine Protected Areas in Mauritius and Rodrigues", funded by UNDP, GEF and the Government of Mauritius (which ended in March 2012), the following documents were produced for Blue Bay Marine Park: a draft management plan, a study of carrying capacity study, and an inventory.

Location

Blue Bay Marine Park is located in south-eastern Mauritius, stretching from Pointe Corps de Garde in the north to Pointe Vacoas in the south. It is bounded as follows:
Towards the east: starting from point 1019589mE 972579mN on the seashore. The boundary runs along an imaginary line bearing angle 153° 26' up to the coral reef and thence in the same direction to a point 1km from the coral reef.

Towards the south: from the last mentioned point the boundary runs along another imaginary line parallel to and at a distance of 1km from the coral reef to a point on a third imaginary line bearing an angle of 135° from a point at 1017971mE on the seashore.

Towards the west: From the last mentioned point, the boundary runs along the said imaginary line parallel to the seashore.

Towards the north: From the last mentioned point, the boundary follows generally northeast along the seashore up to the starting point.

Feature description of the proposed area

Two types of reefs are found in the park: fringing reefs and patch reefs. The fringing reef extends from Pointe Corps de Garde to Pointe Vacoas and is opened midway by a pass. The overall length of the reef is about 3 km. The reef flat is narrow (10m) and composed of dead corals and coral rubble. The fore reef slope is characterised by several grooves consisting of basaltic rocks and boulders. The patch reef of the park is spectacular, ranking among the best in the world because of its luxuriant coral growth. Dense growths of table corals, cactus corals, stag-horn corals, brain corals and fire corals alternate and compete for space. The patch reef is the only location in Mauritius where convoluted *Montipora aequituberculata* has been recorded. The coral species diversity is high, with at least 38 different species recorded, representing 28 genera and 15 families. Surveys carried out so far have revealed the presence of 72 fish species representing 41 genera and 31 families. Commercial species and many reef fish, including those that have schooling behaviour, are present in the park. Other marine fauna present in the park include seven species of echinoderms, eight species of molluscs, four species of crustaceans, four species of sponges, two species of nudibranchs, four species of holothurians and one species of turtle. Marine flora include four species of seagrass, namely *Halodule uninervis, Halophila ovalis, H. stipulacea* and *Syringodium isoetifolium*. Thirty-one species of algae representing 26 genera and three families have been recorded. Among these, there is a predominance *Halimeda sp., Ulva sp., Gracillaria sp.* and *Avrainvillea sp*. Two species of mangroves, namely *Rhizophora mucronata* and *Brugeira Gymnorhiza*, are found scattered along the inter-tidal region of the south-western part of the park.

The Ministry of Fisheries has a long-term monitoring programme for both the marine ecosystem and water quality at permanent sites around the island, of which BBMP is one. Monitoring of the coral reef, algae, seagrass ecosystems, visual fish census and other marine invertebrates is carried out on an annual basis. Five permanent stations have been established; the first is located in the back reef, the second and the third in the Strict Conservation Zone A, the fourth in the seagrass beds of the Strict Conservation Zone B and the last in the algal communities of the Conservation Zone. A combination of Line Intercept Transect and quadratic methods are used to collect data during monitoring exercises. Monitoring of water quality is also carried out on a bi-annual basis. Water samples are collected at different stations, and parameters such as nitrate, phosphate, biological oxygen demand, and chemical oxygen demand, dissolved oxygen, total and faecal coli forms and pH among others are determined.

Processed data are available in annual reports of the Ministry. The most recent document availabale on the biodiversity of the BBMP is the inventory report carried out under the project “Partnership for marine protected areas in Mauritius and Rodrigues”, funded by UNDP/GEF/GoM, which ended in March 2012.

Feature condition and future outlook of the proposed area

BBMP is bordered to the north and south by the much larger *Grand Port Fishing Reserve* (1,828 ha). Blue Bay Marine Park will need to be managed together with the ecologically important Grand Port Fishing Reserve. When managing BBMP over the years it is important to take a broader landscape or watershed approach as what happens in the watershed can greatly affect the marine ecosystem. BBMP harbours a marine ecosystem that is rich in marine fauna and flora, especially in terms of its coral assemblage. However, this rich biodiversity is under tremendous pressures from watershed pollution in particular. The coral communities in the park have suffered enormously through coral bleaching events over the past 10 years. The report on the carrying capacity of the park, carried out under the "Partnership for marine protected areas in Mauritius and Rodrigues" project indicates that Blue Bay drains a large surrounding area consisting of large tracts of human development on the east side of the marine park, and sugarcane fields on the west side may serve as potential sources of nutrient and sediment input at multiple locations along the marine park's shoreline.

The Ministry of Fisheries already has an on-going monitoring programme for ecosystem research and water quality. The reports submitted under the project "Partnership for marine protected areas in Mauritius and Rodrigues" await government approval before they can be used as tools for management, conservation, and protection of the park's rich biodiversity.

Assessment of the area against CBD EBSA Criteria

<table>
<tr><td rowspan="2">CBD EBSA Criteria
(Annex I to decision IX/20)</td><td rowspan="2">Description
(Annex I to decision IX/20)</td><td colspan="4">Ranking of criterion relevance
(please mark one column with an X)</td></tr>
<tr><td>Don't Know</td><td>Low</td><td>Some</td><td>High</td></tr>
<tr><td>Uniqueness or rarity</td><td>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.</td><td></td><td></td><td></td><td>X</td></tr>
<tr><td colspan="6">Explanation for ranking
Blue Bay Marine Park is known for its diverse and rich fauna and flora. Its coral, including brain coral measuring 6 to 7 metres in diameter, is particularly notable. In 2012, 108 species (33 genuses) of coral, 233 fish species, and 201 species of molluscs were inventoried.</td></tr>
<tr><td>Special importance for life-history stages of species</td><td>Areas that are required for a population to survive and thrive.</td><td></td><td></td><td></td><td>X</td></tr>
<tr><td colspan="6">Since the proclamation of Blue Bay as an MPA, all fishing activities have been reduced to pole and line fishing for leisure from the shoreline only. No commercial fishing activities are presently being carried out in the park. Since the last inventory of the park carried out in 2012, a marked improvement of fish population (biodiversity and denisty) has been noted.</td></tr>
<tr><td>Importance for threatened, endangered or declining species and/or habitats</td><td>Area containing habitat for the survival and recovery of endangered, threatened, declining species or area with significant assemblages of such species.</td><td></td><td></td><td>X</td><td></td></tr>
<tr><td colspan="6">Explanation for ranking</td></tr>
</table>

The marine park has 34 habitats of which nine (33% of the area) are habitats of strong environmental interest because of (i) a high diversity, (ii) habitat function, (iii) their scarcity in the Mascarene or even South-west Indian Ocean and / or (iv) additional interest (geomorphology, educational, landscape, etc.). The deep pass, the outer reef slope of barrier reef and protected fringing reef, the barrier reef flat, shallow terrace with construction, bay with construction and mangrove habitats are habitats with a strong environmental interest and cover 33% of Blue Bay Marine Park.					
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**
Explanation for ranking The marine park has 34 habitats of which nine (33% of the area) are habitats of strong environmental interest because of (i) a high diversity, (ii) habitat function, (iii) their scarcity in the Mascarene or even South-west Indian Ocean and / or (iv) additional interest (geomorphology, educational, landscape, etc.). The deep pass, the outer reef slope of barrier reef and protected fringing reef, the barrier reef flat, shallow terrace with construction, bay with construction and mangrove habitats are habitats with a strong environmental interest and cover 33% of Blue Bay Marine Park.					
Biological productivity	Area containing species, populations or communities with comparatively higher natural biological productivity.	**X**			
Explanation for ranking Species richness of different taxa sampled is generally high considering the small size of the site and the lack of sampling in outer reef slopes exposed to the ocean. Coral diversity (108 species in total) is particularly high in outer slopes exposed to the ocean, barrier reef flats, shallow hard-bottom terraces and deep terraces with construction. For fish (233 species in total), the diversity is the highest in the barrier reef flat and outer slope and in hard-bottom terrace. Mollusc diversity (201 species in total) is the highest in the barrier reef flat, outer slope of the fringing reef exposed to ocean, shallow terrace with construction and bay without construction (soft bottom). Despite its small size (2.7 km^2 including 2,3 km^2 of reef area), Blue Bay Marine Park has a high diversity of habitats (including habitats of strong environmental interest) that lead to a high diversity of marine fauna and flora.					
Biological diversity	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.				**X**
Explanation for ranking Species richness of the different taxa sampled is generally high considering the small size of the site and the lack of sampling in outer reef slopes exposed to the ocean. Coral diversity (108 species in total) is particularly high in outer slopes exposed to the ocean, barrier reef flats, shallow terraces with hard bottom and deep terraces with construction. For fish (233 species in total), the diversity is the highest in the barrier reef flats and outer slopes and in the hard-bottom terrace. Mollusc diversity (201 species in total) is the highest in the barrier reef flat, outer slope of the exposed to ocean fringing reef, shallow terrace with construction and bay without construction (soft bottom). Indeed, despite its small size (2.7 km^2 including 2,3 km^2 of reef area), Blue Bay Marine Park has a high diversity of habitats (including habitats with strong environmental interest) amd consequent high diversity of marine fauna and flora, justifying the designation of an MPA in Blue Bay.					
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**
Explanation for ranking					

Though fishing activities with pole and line and basket traps are allowed in the multiple use zone (off lagoon) the level of human-induced disturbance or degradation is low, and the area harbours a high degree of coral biodiversity.

Maps and Figures

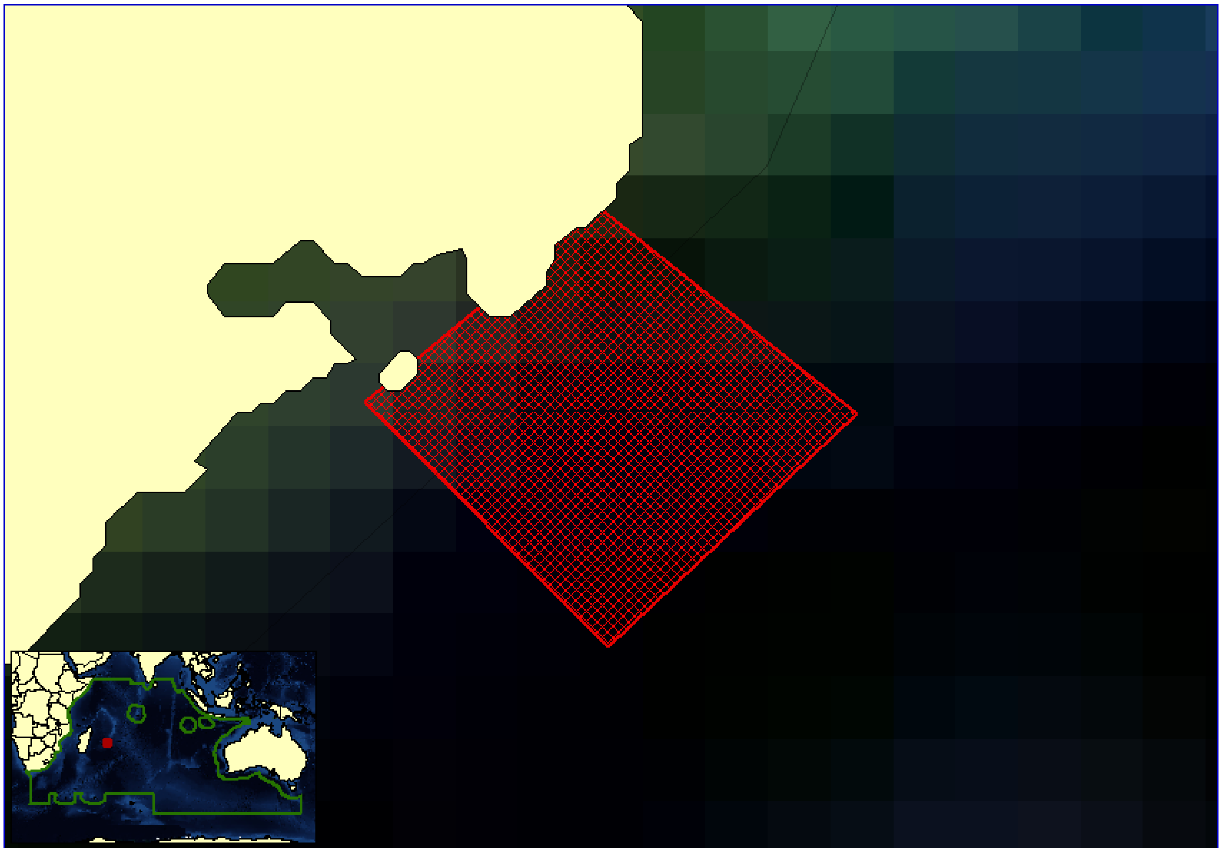

Figure 1. Map of the area meeting EBSA criteria

Figure 2. Satellite image of Blue Bay.

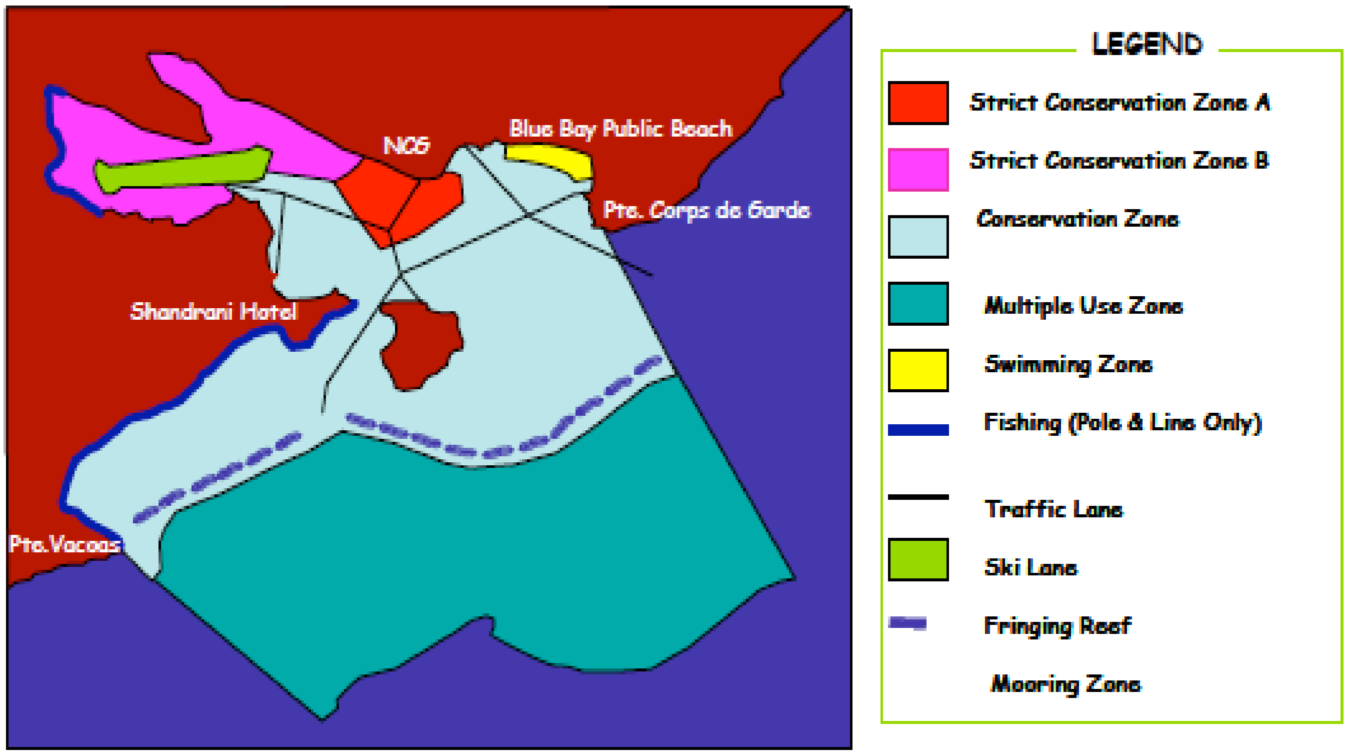

Figure 3. Zoning plan of Blue Bay Marine Park.

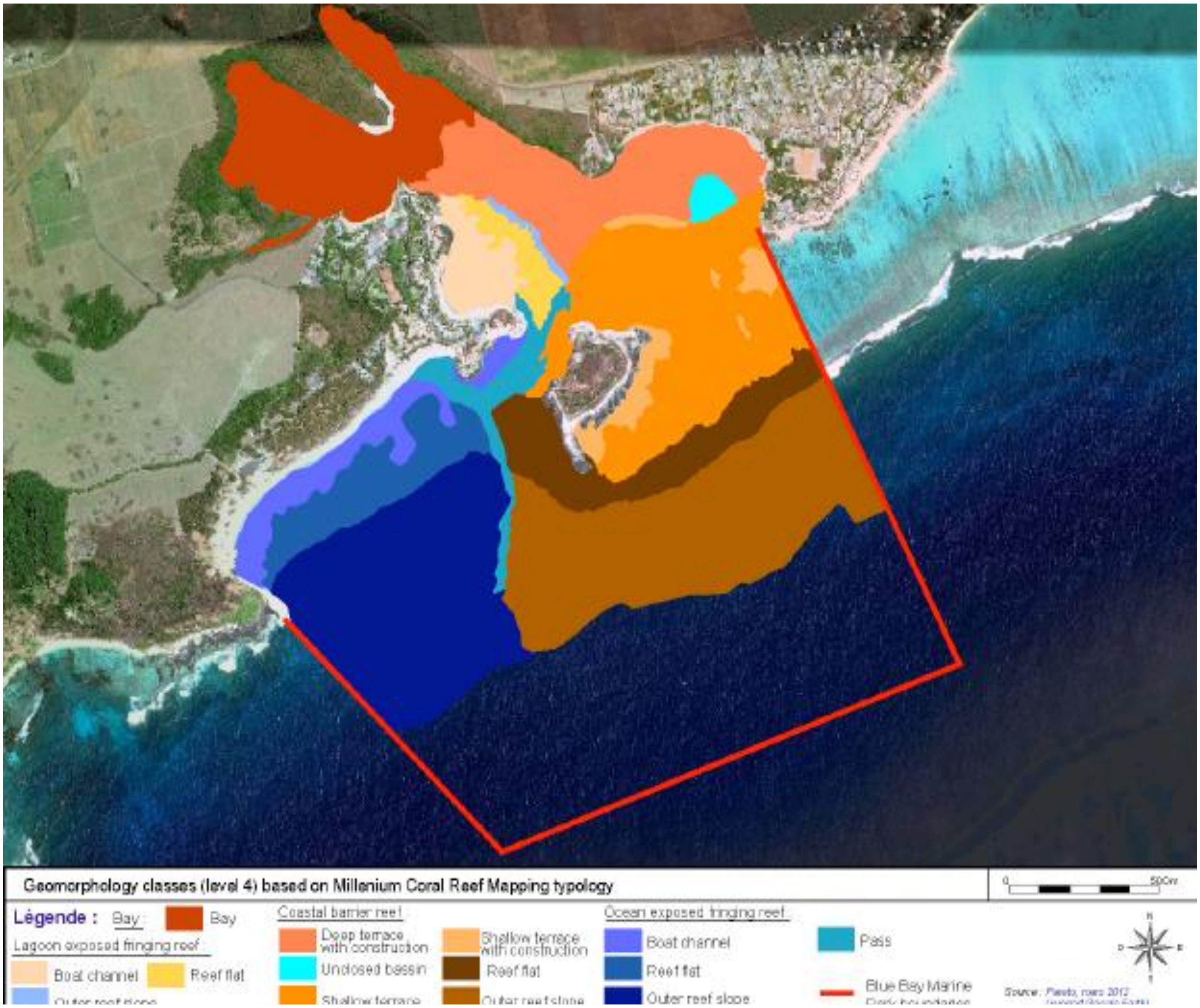

Figure 4. Geomorphology classes found within Blue Bay Marine Park

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Area No. 32: Saya de Malha Bank[4]

Abstract

The Saya de Malha Bank is the largest of three shallow banks forming the Mascarene Plateau,, located in the Western Indian Ocean along the underwater Mascarene Ridge that spans the distance between the Seychelles and Mauritius. 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 and shallow-water biotope 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 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 Nazareth bank, concentrates the 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 SEC is likely important for ocean food webs, including for seabirds such as wedge-tailed shearwaters and white-tailed tropicbirds (Seychelles Basin) and pygmy blue whales (*Balaenoptera musculus brevicauda*), which use it 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 India 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

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4 The Mauritian experts indicated that they supported the description of Saya de Malha Bank as an area meeting EBSA criteria purely for scientific—rather than for management—purposes.

The Saya de Malha Bank is the largest single bank in the Indian Ocean, larger than the Great Chagos Bank. The bank is considered 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 and with extensive areas shallower than 20 m, additional shallow patches west of this and at the north-west side, and depressions down to 300-400 m depth in the centre 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 rock 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 Bsimilar construction, 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 to 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 to 90% of the bottom, with corals covering between 10 and 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 would 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 coherent management under the Joint Commission of Mauritius and the Seychelles could ensure high enough integrity for sustainability of a site.

Management: future management of the Saya de Malha bank will depend on the Joint Commission established 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

CBD EBSA Criteria (Annex I to	**Description** (Annex I to decision IX/20)	**Ranking of criterion relevance** (please mark one column with an X)			
		Don't	**Low**	**Some**	**High**

decision IX/20)		**Know**			
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 neighbouring banks form a large contiguous 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 sea turtles (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).					

<table>
<tr><td>Biological diversity</td><td>Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.</td><td>X</td><td></td><td></td><td></td></tr>
<tr><td colspan="6">No surveyed well enough to say.</td></tr>
<tr><td>Naturalness</td><td>Area with a comparatively higher degree of naturalness as a result of the lack of or low level of human-induced disturbance or degradation.</td><td></td><td></td><td></td><td>X</td></tr>
<tr><td colspan="6">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 are 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). Greater protection of the Chagos archipelago is reportedly displacing fishing activity from South Asian countries to the Saya de Malha Banks.</td></tr>
</table>

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Maps and Figures

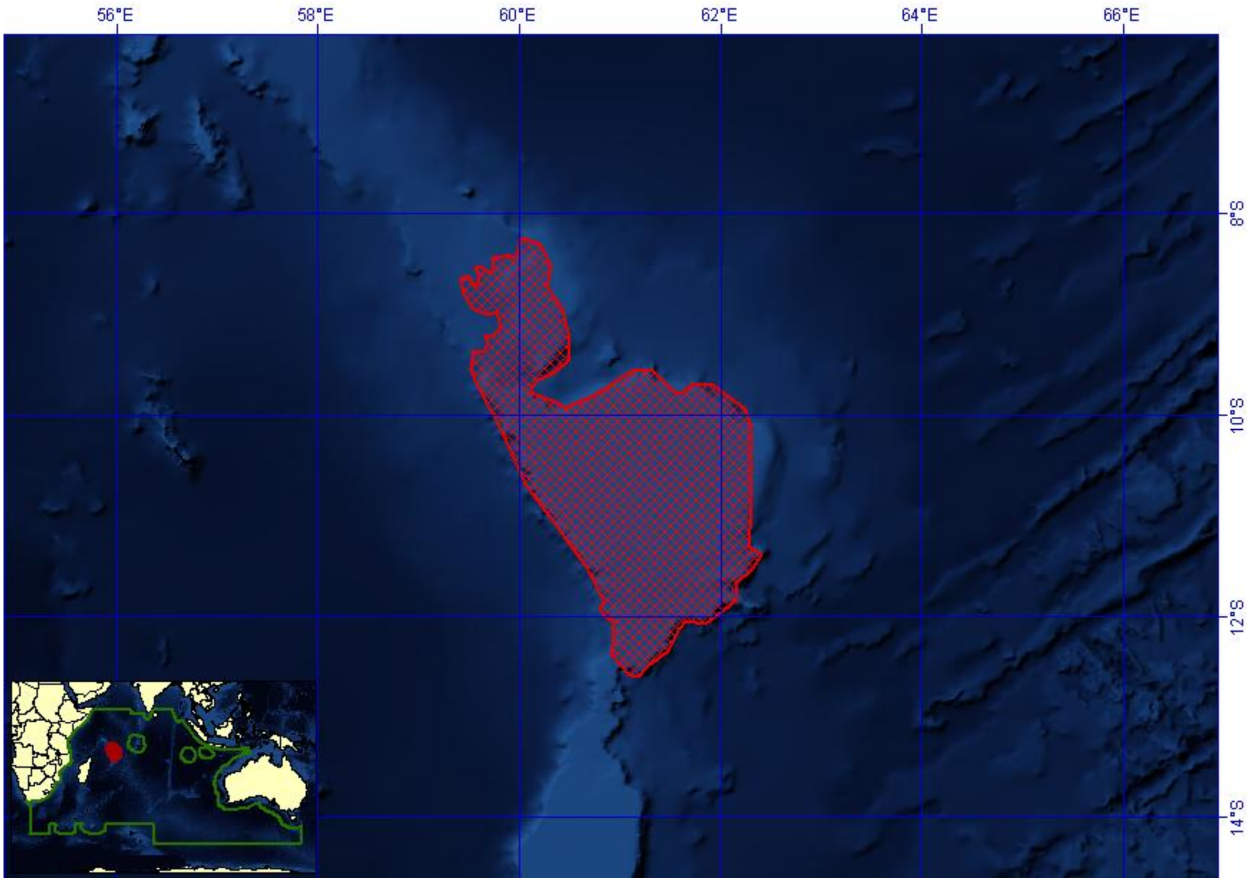

Figure 1. Map of area meeting EBSA criteria

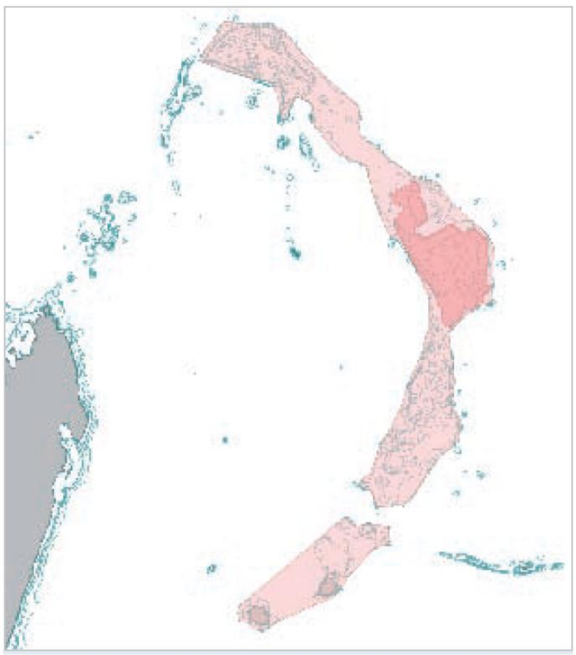

Figure 2. The Mascarane Plateau, stretching from the N. Seychelles Bank in the north to St. Brandons Island in the south (with the isolated Mascarene Islands shown to the south). The Saya de Malha Bank is the eastern point of the arc and the largest bank. © David Obura

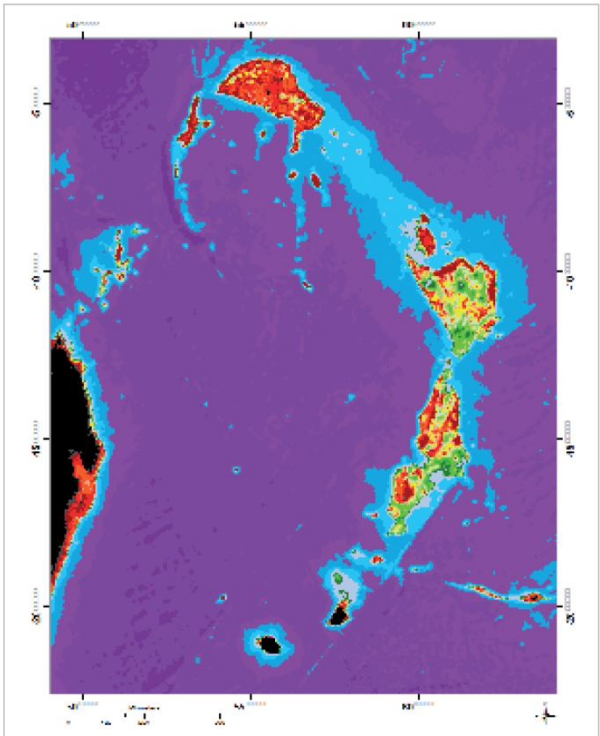

Figure 3. The Mascarene plateau, colour-coded by depth: red and yellow show areas shallower than 125 m, green to 500 m, and blue to 4000 m. © etopo

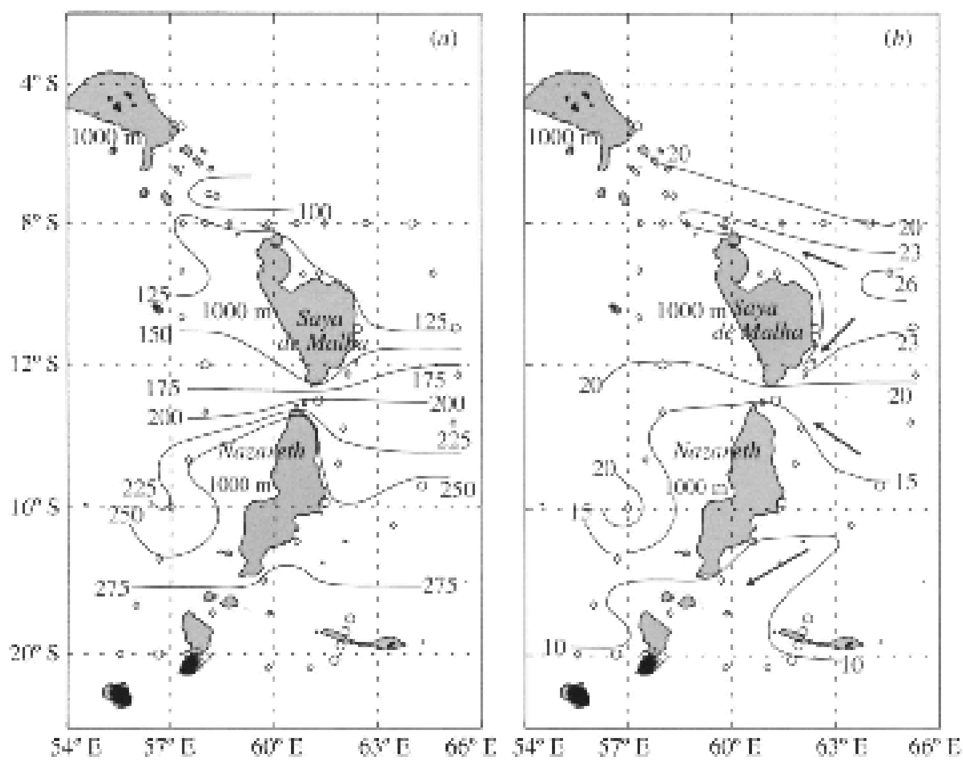

Figure 4a and b. Depth (m) of density surface 26.0 kg m-3 and (b) nitrate (micro-mol 1^{-1}) on the 26.0 kg m^{-3} density surface. Arrows indicate inferred flow directions. From: New *et al*. 2005.

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Area No. 33: Sri Lankan side of Gulf of Mannar

Abstract

The Sri Lankan side of the Gulf of Mannar is proposed as an area meeting EBSA criteria due to its high biological and ecological diversity. This area is also a site for some endangered species of turtles and dugongs. Additionally the area holds very fragile sensitive coastal ecosystems – coral reefs, seagrass beds, mangrove-bordered lagoons and estuaries, mud flats, sand dunes and a few river mouth openings. Globally endangered marine mammals such as *Balaenoptera musculas* and *Dagong dugong* are recorded in this area. This area provides substantial diversity of fin fish, sharks, rays, shrimp, spiny lobsters, slipper lobsters, conch shells, sea cucumbers and reef fishes. Traditionally important natural pearl beds are also located in this area.

Introduction

Sri Lanka is a continental island, and many parts of the continental shelf are rich and high in biological diversity. The northern and north-western parts, particularly the Sri Lankan side of the Gulf of Mannar, are predominantly muddy or muddy-sandy bottom with very high biological diversity (IUCN, 2011). The continental shelf is broader in this area than in any other part of the country. The seabed of the Gulf of Mannar has biologically rich sea-bottom habitats contributing to a very high biological diversity. The rains are determined by the monsoons – the south-west and north-east. During monsoonal months, humid winds blocked by the central mountains produce heavy rain in the coastal areas. Three rivers discharge water to the 70–km-long coastline of the proposed area, making the continental shelf rich in nutrients. Lagoons and estuaries situated along the coastline provide required habitats for a large number of aquatic animals who migrate between lagoon and sea. The sea around the Gulf of Mannar is micro-tidal and is predominantly semidiurnal. The large-scale oceanic currents related to regional oceanic circulation which dominate waters beyond the continental shelf are controlled by wind and temperature differences, and their general pattern changes seasonally (De Bruin *et al.*, 1994). Due to the close proximity to the Indian mainland, Gulf of Mannar coastal ecosystems harbour a large number of migratory bird species (Bambaradeniya *et al.* 2007).

Location

The Sri Lankan side of Gulf of Mannar. This area is situated within the EEZ of Sri Lanka and within the continentel shelf. The area meeting EBSA criteria is in coastal waters boadering the north-western and northern coastlines. Towards the landside it borders the coastline and extends towards the sea 5 km from the coastline (Figure 1).

Feature description of the proposed area

At present, the resourses on the continental shelf are heavily harvested by Sri Lankan fishers. The resources are also increasingly being investigated by the scientific community. The shelf around the northern and north-western part of the island is broad and is contiguous with the the continental shelf of southern India (Madduma Bandara, 1989). Sri Lankan pearl beds are located only in this area. Some important coral reefs, mangrove ecosystems, shrimp beds and seagrass beds (Pernetta, 1993) are also situated in this area. This area supports a variety of fishes, dolphins, three turtle species, sea cucumbers and a large diversity of invertebrates. This area is recorded as an important foraging and migratory route of the *Erymochelis imbricata* population inhabiting the south Asian marine region (Kapurusinghe and Cooray, 2002). Muddy bottom areas in the proposed area have shrimp beds that provide protective habitats for a large number of different benthic and demersal aquatic animals.

Dolphins, dugongs, whale sharks and some species of turtles are reported to occur inthe proposed area. Adams Bridge and the Gulf of Mannar are important gateways for some migratory birds entering the country from the Indian mainland. A total of 205 bird species have been recorded from this area (IUCN, 2011).

Assessment of the area against CBD EBSA Criteria

<table>
<tr><th rowspan="2">CBD EBSA Criteria
(Annex I to decision IX/20)</th><th rowspan="2">Description
(Annex I to decision IX/20)</th><th colspan="4">Ranking of criterion relevance
(please mark one column with an X)</th></tr>
<tr><th>Don’t Know</th><th>Low</th><th>Medium</th><th>High</th></tr>
<tr><td>Uniqueness or rarity</td><td>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.</td><td></td><td></td><td></td><td>X</td></tr>
<tr><td colspan="6">This area comprises some unique and sensitive ecosystems—coral reefs, seagrass beds, mangrove vegetation, pearl beds, sand dunes and mud flats—and supports very high biodiversity. The Sri Lankan part of the Gulf of Mannar is rich in demersal species having diverse environmental conditions. Some globally threatened fish types such as the whale shark Rhincodon typus and dugongs are recorded in this area. Sixty six (66) species of migratory birds using the area as a resting and feeding ground have been identified (IUCN, 2011). The area is considered a migratory path for certain turtle species (Kapurusinghe et al., 2002).</td></tr>
<tr><td>Special importance for life-history stages of species</td><td>Areas that are required for a population to survive and thrive.</td><td></td><td></td><td></td><td>X</td></tr>
<tr><td colspan="6">Harbouring coral reefs, seagrass beds, lagoons and estuaries bordered by mangroves, the Gulf of Mannar area is an important nursery and reproduction area for multiple marine species, such as Penaeid shrimps, spiny lobsters, slipper lobsters, crabs, conch and sea cucumbers. It also provides protective habitats for nesting sea turtles (Kapurusinghe et al., 2002). Dolphins are frequently recorded in this area. The Gulf of Mannar (Sri Lankan side) provides the biological connectivity between Sri Lanka and India, which may influence the abundance and diversity of marine organisms. This area acts as a migratory route for the Erymochelis imbricata population living in South Asia (Kapurusinghe and Cooray, 2002).</td></tr>
<tr><td>Importance for threatened, endangered or declining species and/or habitats</td><td>Area containing habitat for the survival and recovery of endangered, threatened, declining species or area with significant assemblages of such species.</td><td></td><td></td><td></td><td>X</td></tr>
<tr><td colspan="6">Coral reef habitats and species in Sri Lankan coastal waters are under increasing threat due to land-based pollution, sedimentation and destructive fishing.

The proposed area is a nesting site for some species of marine turtles. Some of these sandy beaches are in danger due to increasing pollution and encroachment. Turtle egg collection adversely affects their sustainability. Coastal waters up to 30 m depth provide a breeding area for spiny and slipper lobsters. Limestone, sandstone and coral reef areas act as the base for lobster juvenile settlement and are steadily declining due to various threats.</td></tr>
</table>

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
Fishing is the backbone of the people living in this area. The area contains a relatively high proportion of sensitive habitats, biotopes and species that are functionally fragile. Coral reefs, seagrass beds and mangrove ecosystems are more resilient in terms of environmental parameters, but they too are slow to recover. Coral bleaching has occurred in the past due to the increasing temperature of sea water. Vulnerability of these ecosystems happens mainly as an impact of high population density of coastal areas and also due to the use of harmful types of fishing gear. Land-based pollution is the main source of pressure on the resources of this area. Spiny and slipper lobster populations are considered extremely vulnerable because they are generally long-lived, slow-growing and slow to mature.					
Biological productivity	Area containing species, populations or communities with comparatively higher natural biological productivity.				X
Although the Sri Lankan continental shelf is narrow, averaging up to 22 km, the proposed Gulf of Mannar has the broadest shelf, which is contiguous with the Indian continental shelf. Three rivers discharge nutrients to the proposed sea area and the continental shelf is highly productive due to its shallowness. Although primary productivity in the surrounding open ocean area is moderately high, specific coastal ecosystems such as coral reefs, river months, estuary mouths and seagrass beds help to maintain high biological productivity in the proposed area.					
Biological diversity	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.				X
The area proposed is characterized by productive ecosystems that support high species diversity. Faunal types such as coral fishes; mangrove-associated animals; seagrass-associated animals; and animals using the lagoon and sea to complete their lifecycle stages account for the high ranking in biological diversity.					
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 proposed area is subjected to heavy resource exploitation due to its species richness and shallowness. Land-based pollution is significantly high in this area.					

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Maps and Figures

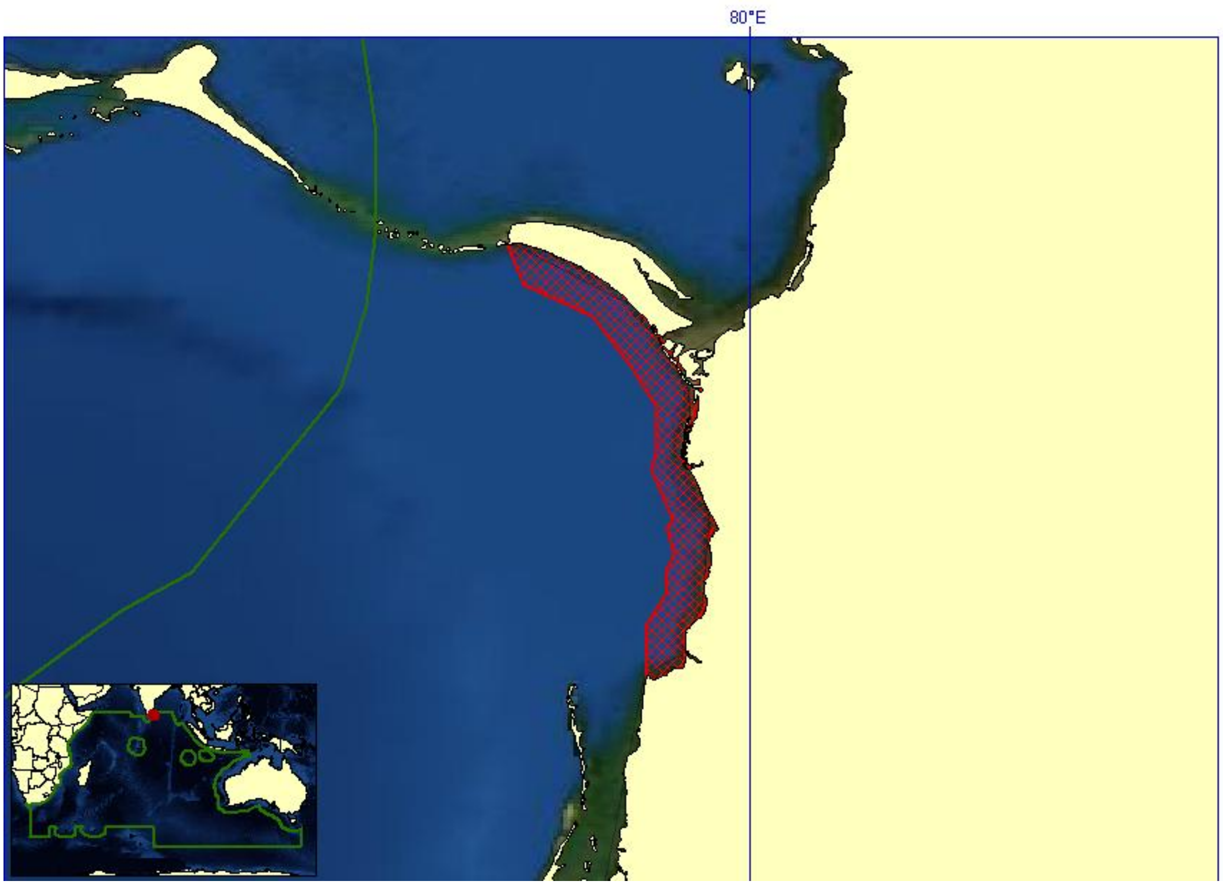

Figure 1. Map of area meeting EBSA criteria

Area no. 34: Central Indian Ocean Basin

Abstract

This area is known to be a key feeding site for at least four species of seabird that nest on islands in the Western Indian Ocean, with birds migrating over 3000km to feed here during a pronounced seasonal phytoplankton bloom during the austral winter.

Introduction

This wide region of the central Indian Ocean is the major foraging area for at least four migratory seabirds during their non-breeding season. The site is used by the endangered Barau's petrel from Reunion Island, two populations of red-tailed tropicbird (from Nosy Ve in Madagascar and from Europa Island), four populations of wedge-tailed shearwater (from D'Arros, Cousin and Aride in Seychelles and from Reunion Island, and white-tailed tropicbird from Cousin Island in Seychelles. It is also used to a lesser degree as a migration stop off point for lesser frigatebird travelling between breeding sites in the Western Indian Ocean and non-breeding areas in South-East Asia.

Location

The site is located beyond national jurisdiction in the central Indian Ocean. It lies south and east of Sri Lanka and the Maldives, over the mid-Indian Ocean basin and parts of the Ninety East Ridge.

Feature description of the proposed area

This is the major foraging area for at least four migratory seabirds: the endangered Barau's Petrel (*Pterodroma baraui*), the red-tailed tropicbird (*Phaethon rubricauda*), the wedge-tailed shearwater (*Puffinus pacificus*) and the white-tailed tropicbird (*Phaethon lepturus*). This area can be further sub-divided into two different areas. The first one is a relatively restricted zone located 1200 km to the south of Sri Lanka. This place is important for wedge-tailed shearwaters (from the four studied populations) and for the white-tailed tropicbirds of the Seychelles. The second one is a much larger area lying from 12°S to 18°S and from 78°E to 95°E. This area is used by Barau's petrel (Pinet *et al.* 2011) and eed-tailed tropicbird and to a lesser extent by wedge-tailed shearwater and white-tailed tropicbird. These four species use these areas during their non-breeding season only. Presently, we lack additional tracking data and at-sea survey data to evaluate the importance of this region for other seabirds or other top-predators, but the fact that different species from various colonies use these areas clearly shows that there are some oceanic processes there that enhance the foraging success of seabirds during their non-breeding season (Le Corre *et al.* 2012).

These areas are both located at or near bathymetric anomalies. The northern area is just at the surface of a seamount located in the Ceylon abyssal plain (the Afanasy Nikitin seamount) whereas the southern area is on both side of the Ninety East Ridge (Le Corre *et al.* 2012). Local enrichments due to upwellings induced by these seamounts may explain the high densities of seabirds there. Lévy *et al.* (2007) showed that a pronounced seasonal phytoplankton bloom appears in the central Indian Ocean during austral winter. Interestingly, the wintering areas of red-tailed tropicbirds and Barau's petrels co-occur with these winter blooms (Fig. 3e in Lévy *et al.*, 2007), indicating that during winter migratory seabirds likely target prey that are more abundant as a result of local enrichments and associated food webs.

Species	**Location**	**Device**	**No. birds tracked**	**Start date**	**End date**
Barau's petrel	Reunion Island	GLS	23	08/02/2008	16/09/2009
Red-tailed tropicbird	Madagascar	GLS	19	08/07/2010	12/07/2011
White-tailed tropicbird	Cousin Island	GLS	14	20/09/2009	14/01/2011
Wedge-tailed shearwater	Cousin Island	GLS	10	20/09/2009	14/01/2011

Table 1: Summary of some of the seabird species and populations that have been tracked and shown to be occuring in this area. Adapted from Le Corre *et al.* (2012).

Feature condition and future outlook of the proposed area

Not known.

Assessment of the area against CBD EBSA Criteria

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<tr><td colspan="6">Explanation for ranking

One of the few known feeding areas for the endangered Barau’s Petrel, which is an endemic breeder to Reunion Island.</td></tr>
<tr><td>Special importance for life-history stages of species</td><td>Areas that are required for a population to survive and thrive.</td><td></td><td></td><td></td><td>X</td></tr>
<tr><td colspan="6">Explanation for ranking

This area is the key non-breeding site for at least two populations of red-tailed tropicbird (from Nosy Ve in Madagascar and from Europa Island), four populations of wedge-tailed shearwater (from D’Arros, Cousin and Aride islands in Seychelles and from Reunion Island, France, white-tailed tropicbird from Cousin Island in Seychelles, and Barau’s petrel from Reunion Island. It is also used to a lesser degree as a migration stop off point for lesser frigatebird travelling from breeding sites in the western Indian Ocean and non-breeding areas in South-East Asia.

Between 30 and 40,000 individuals from these colonies are thought to use this area during the non-breeding season.

The three major seabird breeding concentrations in the western Indian Ocean are Seychelles (3.4 million pairs), the Mozambique Channel (3.0 million pairs) and the Mascarene Archipelago (0.7 million pairs). Given that tracking studies show at least some of colonies in these regions use this area in the central Indian Ocean it seems likely that birds from a range of other non-tracked colonies also occur here during the non-breeding season (Le Corre et al. 2012)</td></tr>
<tr><td>Importance for threatened, endangered or declining species and/or habitats</td><td>Area containing habitat for the survival and recovery of endangered, threatened, declining species or area with significant assemblages of such species.</td><td></td><td></td><td>X</td><td></td></tr>
<tr><td colspan="6">Explanation for ranking

Barau’s petrel is listed as Endangered on the IUCN Red List, it is an endemic breeder to the island of Reunion (BirdLife International, 2012)</td></tr>
</table>

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		
Explanation for ranking All seabird species are long-lived and slow at reproducing, leaving them prone to slow recovery after population declines. Shearwater species are susceptible to by-catch in fisheries, though known incidents of this are thought to be low within the tropical Indian Ocean and the described area. However, there is currently a lack of observer programmes to record by-catch events (Anderson *et al.*, 2009).					
Biological productivity	Area containing species, populations or communities with comparatively higher natural biological productivity.		X		
Explanation for ranking Lévy *et al.* (2007) showed that a pronounced seasonal phytoplankton bloom appears in the central Indian Ocean during austral winter.					
Biological diversity	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.			X	
Explanation for ranking Tropical seabirds rely on surface seizing and plunge diving to acquire prey, and very few are able to dive deeper than a few metres. Because epipelagic prey are distributed within the upper 50 metres of the water column, they are only accessible to seabirds when surface dwelling predators like tunas and dolphins pursue epipelagic prey and force them to flee toward the surface. Tropical seabirds take advantage of this phenomenon by frequently foraging over schools of tunas or dolphins to catch the evading prey. This interaction is so important for tropical seabirds that it has been termed a “near-obligate commensalism” between seabirds and marine top predators (Au and Pitman, 1986). At-sea surveys made in the western Indian Ocean show that most seabird of this region are associated with surface-dwelling predators (Jaquemet *et al.* 2004, 2005). Therefore it seems highly probable that this area is of importance for other top predators.					
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			
Explanation for ranking Not known					

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**	**Medium**	**High**
Add relevant criteria	BirdLife Important Bird Areas Criteria (BirdLife 2009, 2010) A1 Regular presence of threatened species A4ii >1% of the global population of a seabird A4iii >20,000 individuals (As per Ramsar)				X
Explanation for ranking The areas included here meet one or more of the BirdLife criteria for defining Important Bird Areas.					

(BirdLife International, 2010)

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www.seabirdtracking.org – tracking contributors who provided data presented at this workshop are: Maria Ana Dias, Paulo Catry, Teresa Catry, Robert Crawford, Richard Cuthbert, Karine Delord, Jacob Gonzalez-Solis, Jano Hennicke, Matthieu Le Corre, Deon Nel, Malcolm Nicoll, Jose Pedro Granadeiro, Samantha Petersen, Richard Phillips, Patrick Pinet, Jaime Ramos, Jean-Baptiste Thiebot, Ross Wanless, Henri Weimerskirch, Vikash Tatayah.

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The data used to define this area are part of a regional tracking program leaded by M. Le Corre and funded by the Pew Environmental Group aiming at identifying important marine areas in the tropical Indian Ocean.

Maps and Figures

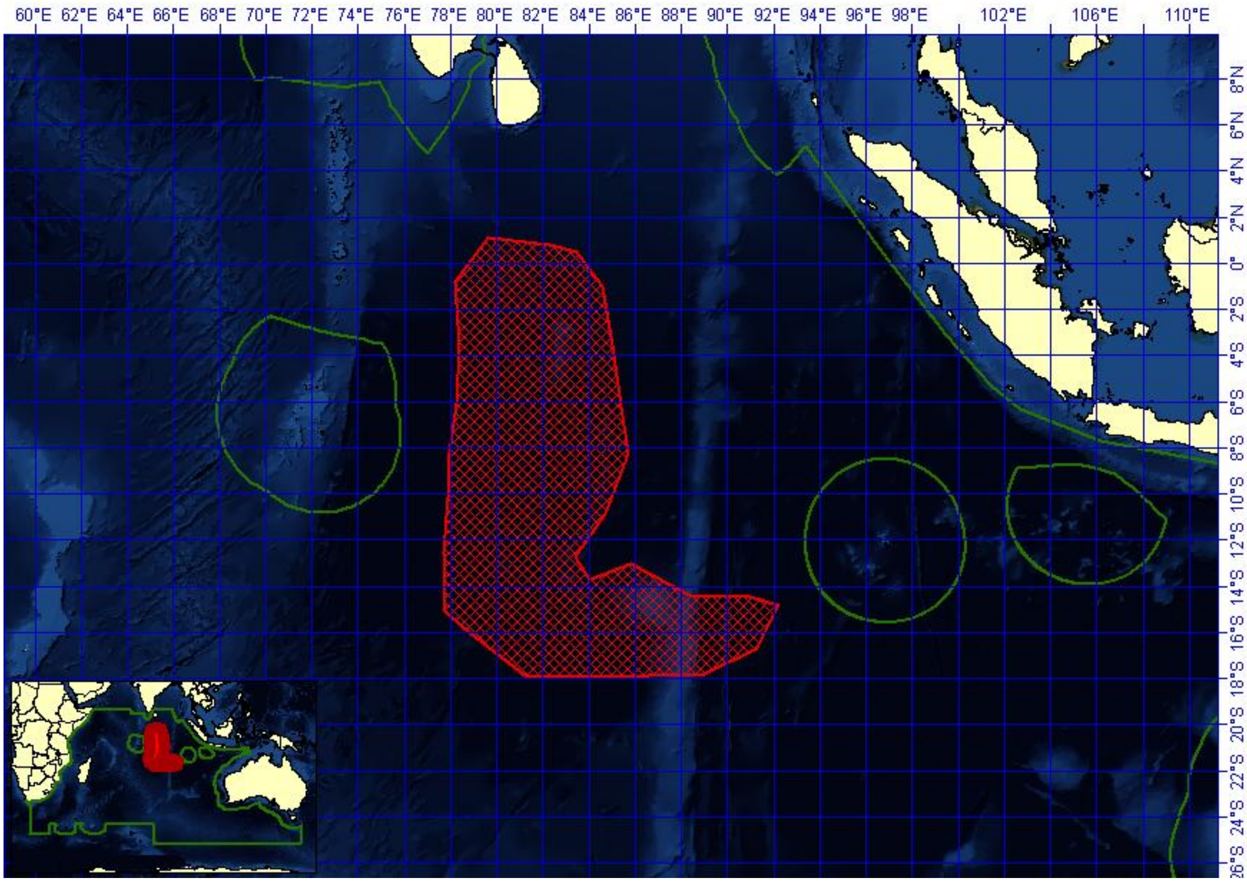


Figure 1. Map of the area meeting EBSA criteria

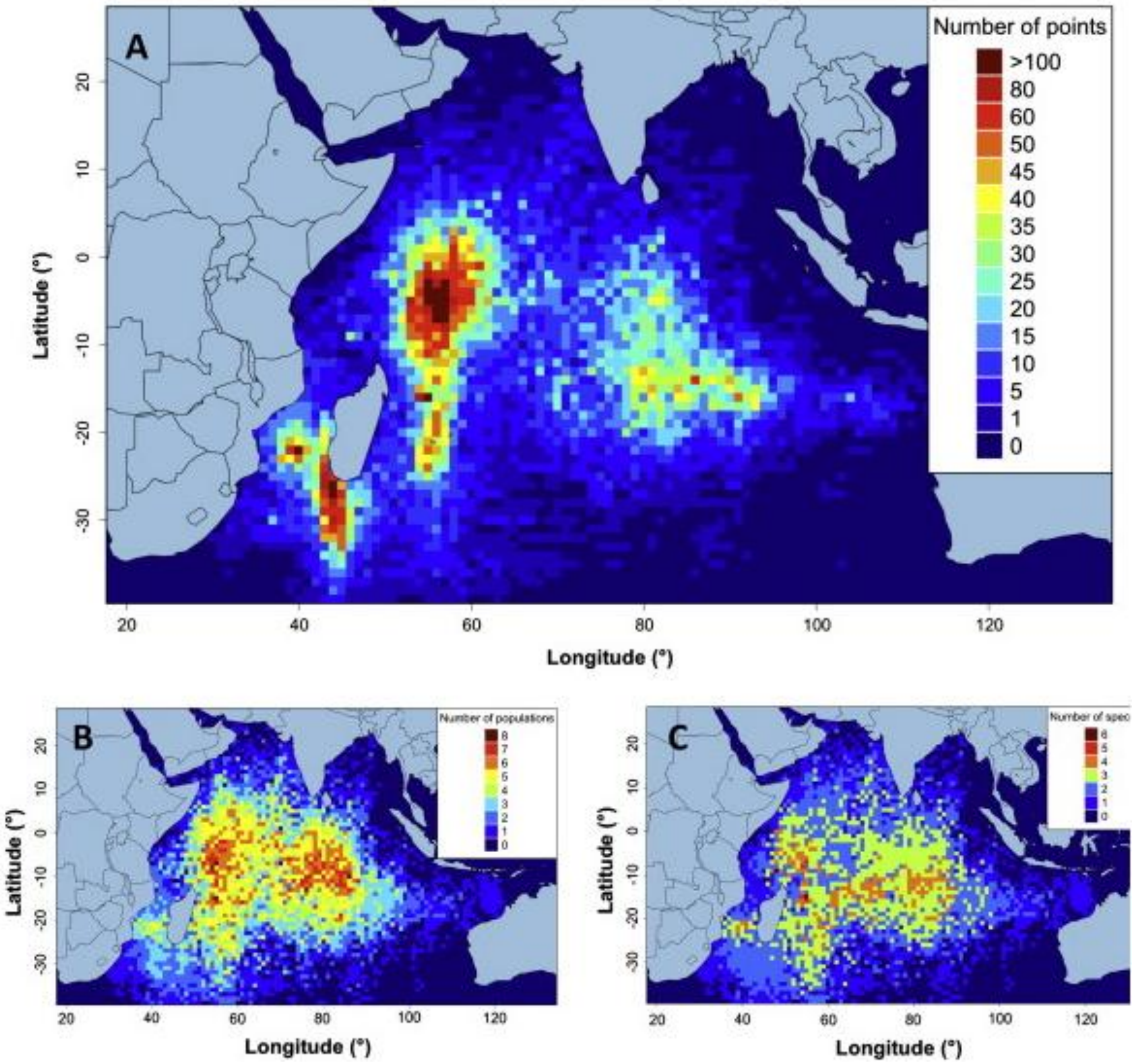


Figure 2. Seabird hotspots of the western Indian Ocean based on tracking data (A) seabird density, (B) population density and (C) species richness. From Le Corre *et al.* (2012).

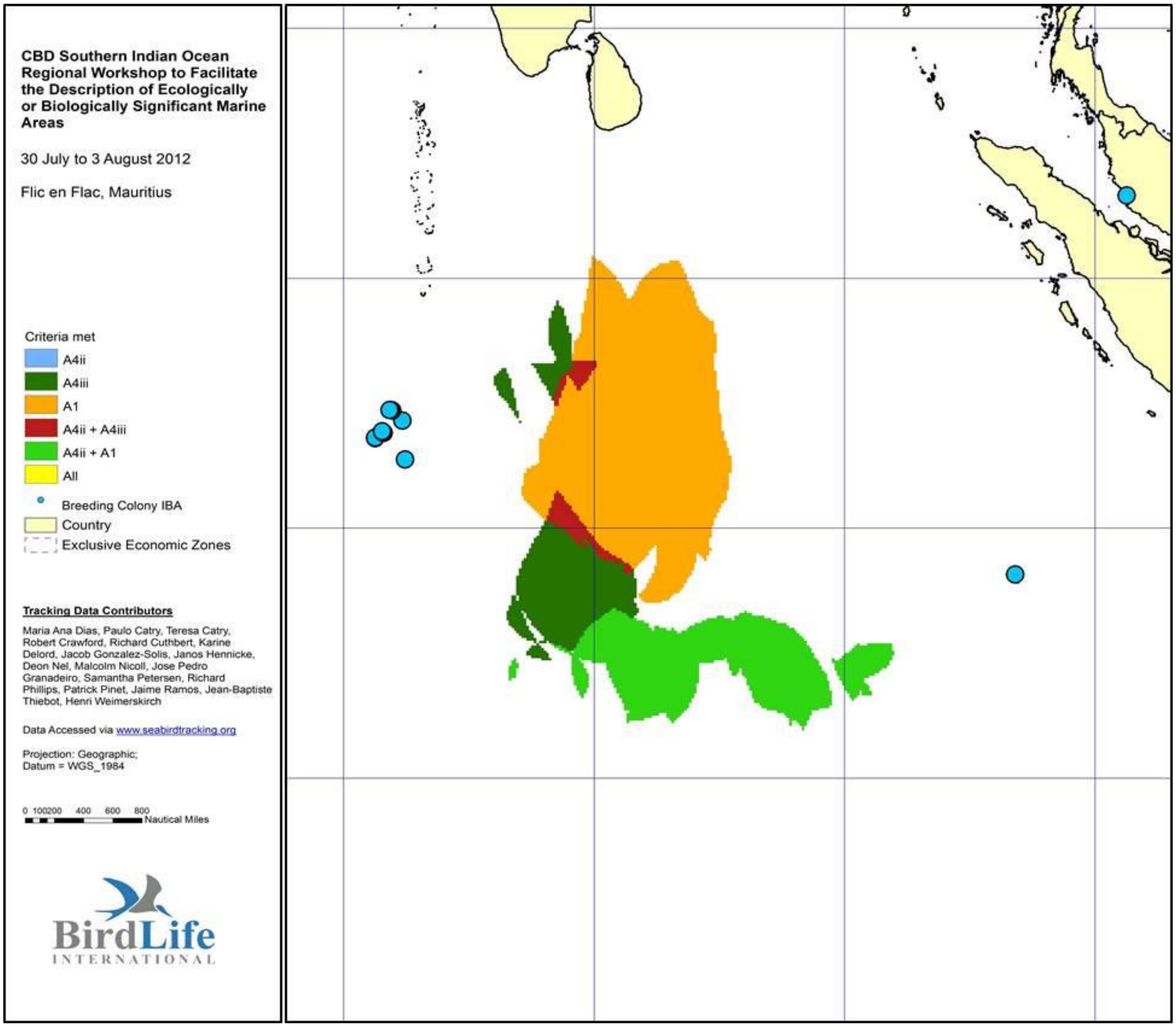


Figure 3: Map of areas meeting Important Bird Area criteria within the central Indian Ocean. Orange areas are for threatened species, dark green areas represent areas used by >20,000 individuals, light green areas are used by >1% of the global population of a species.

Area No. 35: Rusky

Abstract

"Rusky" is the name given to a knoll rising in the middle part of Broken Ridge at 95° E, rising from the base seafloor of the ridge at 1200 m, to a depth of 580m. This is the only knoll that occurs on the central ridge. Small alfonsino (*Beryx splendens*) and amourhead (*Pseudopentaceros spp*) are found on the knoll. Some bottom-trawling has occurred on the knoll, and black coral (Cnidaria) has been identified from catches made. This is the only known area containing black coral on Broken Ridge and has been declared a Benthic Protected Area by SIODFA.

Introduction

The entire Broken Ridge Plateau was habitat mapped by the University of Hawaii Mapping Group under contract to Sealord Group New Zealand, using MR1 sidescan sonar in 1997. Most of the ridge is continuous and overlain with sand and sediments, but local areas of rocky, coral garden and knoll/bank habitat exist. Several knolls were identified, with Rusky as the most prominent. It is close to the area surveyed by Russian research vessels in the 1970s (Kotlyar 1980), where orange roughy (*Hoplostethus atlanticus*) were identified. Orange roughy in small numbers have also been caught on Rusky.

A number of areas in this region were declared Benthic Protected Areas (BPAs) by the Southern Indian Ocean Deepsea Fishers Association (SIODFA) and IUCN in 2006 (FAO 2006), following evaluation of the sidescan survey data. This included the Rusky BPA.

The region occurs within the Subtropical Convergence.

Location

Area is outside of national jurisdiction on the high seas and is not subject to a claim to the Commission on the Limits of the Continental Shelf.

31° 20'S,94° 55'E- 31° 20'S,95° 00'E- 31 30'S,95° 00'E-31° 30'S,94° 55'E

Feature description of the proposed area

Rusky is a knoll rising in the middle part of Broken Ridge, rising from the base seafloor of the ridge at 1200 m, to a depth of 580m.Covering an area of 6.5 square miles, the knoll is situated 15 miles from the southern edge of Broken Ridge. The knoll is unique, being the only such structure that does not arise on the edge of the ridge, as do several other knolls that exist on the ridge. Small alfonsino (*Beryx splendens*) and Amourhead (*Pseudopentaceros spp*) are found on the knoll. A ledge surrounds the knoll at 700 m depth. Some bottom trawling has occurred on the knoll, and black coral (Antipatharia) identified from catches made. This is the only known area containing black coral on Broken Ridge, as other knolls on the ridge did not produce catches of black coral (FAO 2006).

Feature condition and future outlook of the proposed area

Some exploratory fishing has been undertaken on this knoll, and as a result of catches of black coral, the feature was declared a Benthic Protected Area by SIODFA (FAO 2006), and closed to fishing by SIODFA members.

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** (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**
Rusky is a knoll rising in the middle part of Broken Ridge, rising from the base seafloor of the ridge at 1200 m, to a depth of 580m.Covering an area of 6.5 square miles, the knoll is situated 15 miles from the southern edge of Broken Ridge. The knoll is unique, being the only such structure that does not arise on the edge of the ridge, as do several other knolls that exist on the ridge. Black coral (Cnidaria) occurs on the knoll and this is the only known area containing black coral on Broken Ridge. (FAO 2006)					
Special importance for life-history stages of species	Areas that are required for a population to survive and thrive.	**X**			
No information available.					
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**			
No information available.					
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**
Small alfonsino (*Beryx splendens*) and Amourhead (*Pseudopentaceros spp*) are found on the knoll. These species are considered vulnerable to depletion by seamount fishing. This area also supports black corals (FAO 2006) which are slow growing and vulnerable to fishing impact (Rogers et al 2008, FAO 2009).					
Biological productivity	Area containing species, populations or communities with comparatively higher natural biological productivity.	**X**			
No information available.					
Biological diversity	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.	**X**			
There is insufficient data to assess the relative diversity of the area in comparison with equivalent ecosystems or in comparison to the surrounding area.					

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		
Only a small proportion of the feature has been fished (FAO 2006).					

References

FAO 2006 *Management of Demersal Fisheries Resources of the Southern Indian Ocean*. FAO Fisheries Circular No. 1020 FAO Rome 2006.

FAO (2009). Annex F of the Report of the Technical Consultation on International Guidelines for the Management of Deepsea Fisheries in the High Seas. Rome, 4–8 February and 25-29 August 2008.

Kotlyar, 1980: Classification & distribution of trachichthyid fish from the Indian Ocean. *Trudy Instituta Okeanologii* 110.

Rogers A.D., Clark M.R, Hall-Spencer K.M and Gjerde K.M. 2008. *The Science behind the Guidelines: A Scientific Guide to the FAO Draft International Guidelines (December 2007) For the Management of Deep-Sea Fisheries in the High Seas and Examples of How the Guidelines May Be Practically Implemented*. IUCN, Switzerland, 2008.

Maps and Figures

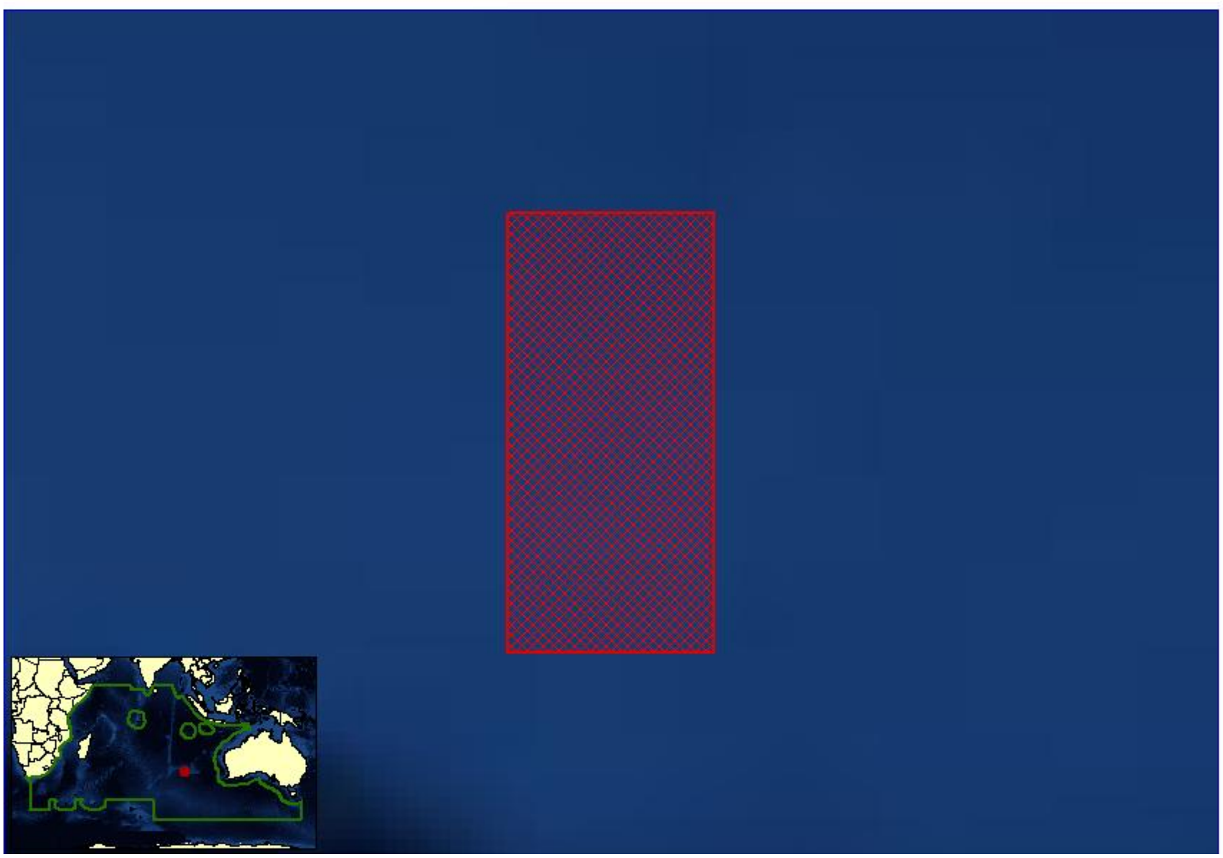


Figure 1. Map of area meeting EBSA criteria

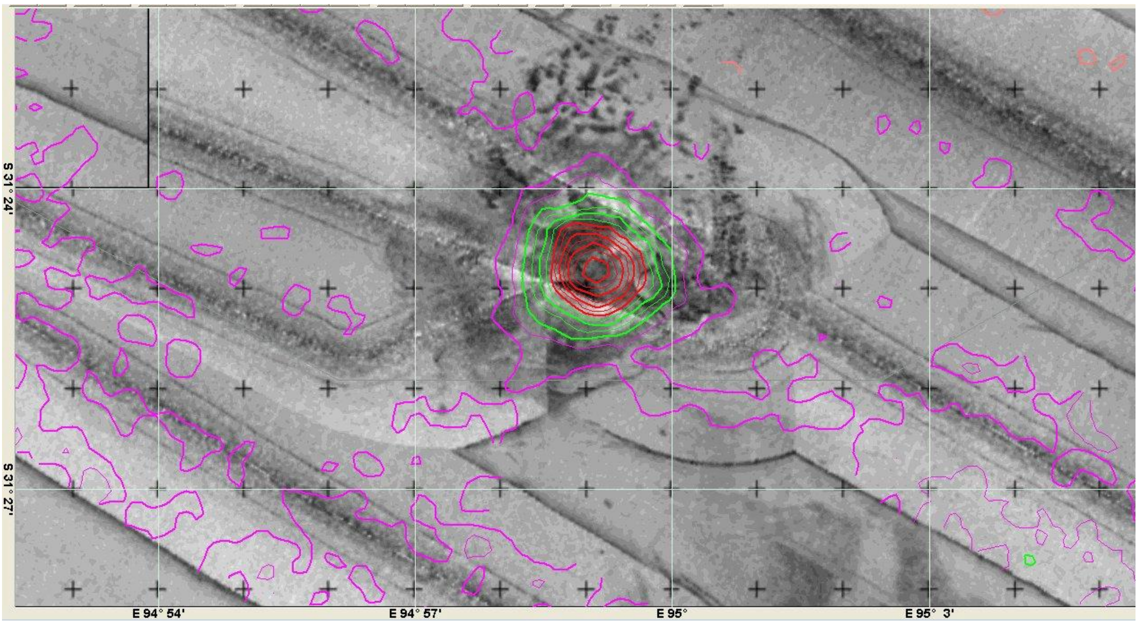


Figure 2. Sidescan Sonar Image of Rusky knoll

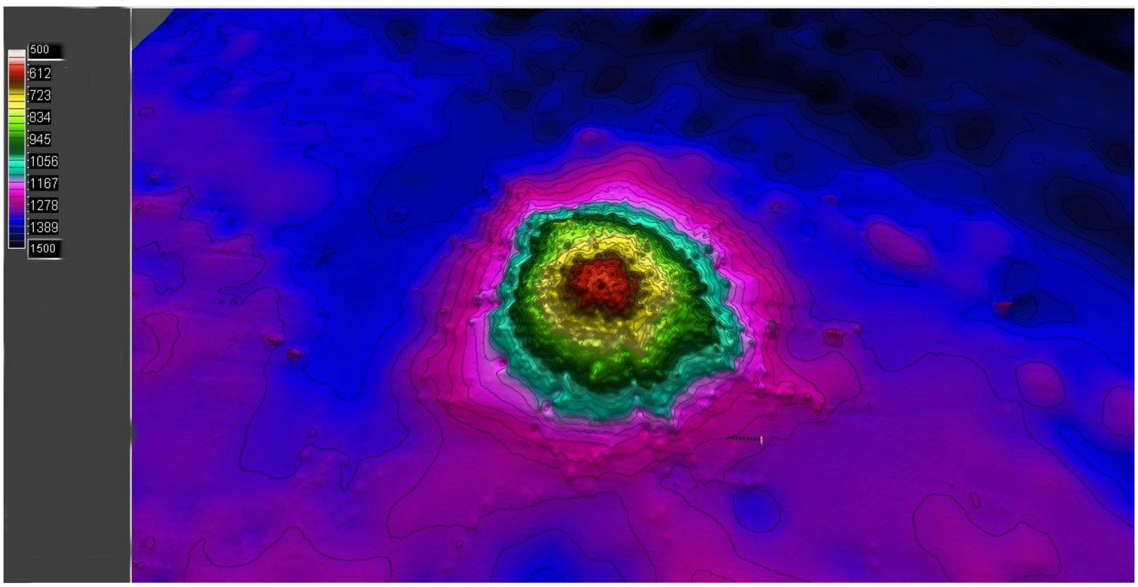


Figure 3. Bathymetric projection of Rusky knoll

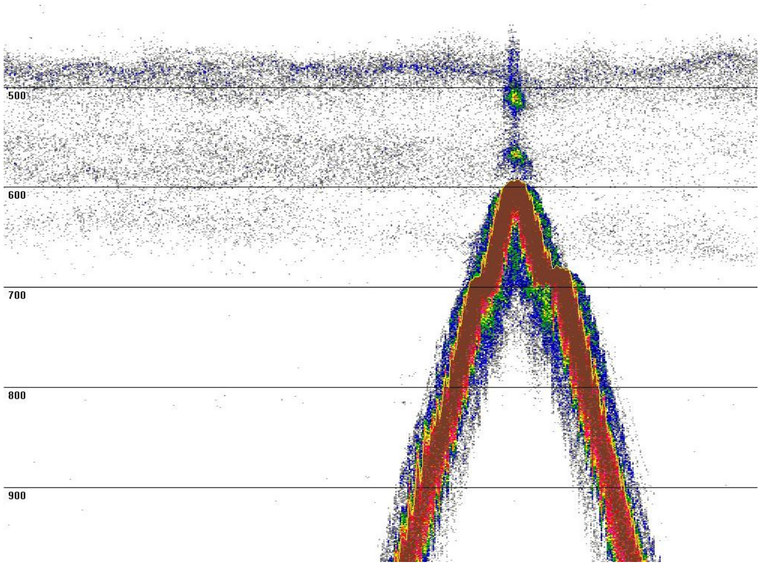


Figure 4. Echogram showing small alfonsino (*Berys splendens*) and amourhead (*Pseudopentaceros spp*.) schools on the top and the ledges around Rusky knoll.

Area No. 36: Fool's Flat

Abstract

This region occurs on the southern side of Broken Ridge Plateau. The central area of the ridge shoals to around 990 m, and its southern side drops down steeply to over 4000 m. On the southern rim of the ridge are significant stands of cold-water corals that have elevations of 20 to 30 m and have been surveyed by sidescan sonar. When surveyed by commercial vessel echo sounders, these corals look like aggregations of fish, but they do not move – hence the term "Fool's Flat". There appears to be strong upwelling over the south-west boundary, and this no doubt has resulted in favourable conditions for the growth of deepwater corals. The main framework building species appears to be *Solenosmilia variabilis*. The framework largely comprises dead coral.

Introduction

The entire Broken Ridge Plateau was mapped by the University of Hawaii Mapping Group under contract to Sealord Group New Zealand, using MR1 sidescan sonar in 1997. Most of the ridge is overlain with sand and sediments, but a number of substantial cold-water coral reefs were located on the southern flank of the central part of Broken Ridge. One part of this region was declared a Benthic Protected Area (BPA) by the Southern Indian Ocean Deepsea Fishers Association (SIODFA) and IUCN in 2006 (FAO 2006) (Fool's Flat BPA), following evaluation of the sidescan survey data. The extended area included in this area meeting EBSA criteria was not included, as the presence of deepwater stocks has been noted on the sandy-bottom areas in this region (Kotlyar 1980).

The region occurs within the Subtropical Convergence.

A single bottom trawl shot was carried out on July 8 1997, which landed at 31^o 43.54' S, 95^o 13.7'E at 795 m and immediately came fast. A catch of 3.5 tonnes of dead brain coral was taken, which destroyed the net. This identified the type of habitat as coral reef rather than rocky knoll, and no further fishing activity was undertaken on this type of feature.

Location

The area is located beyond national jurisdiction on the high seas and is not subject to a claim to the Commission on the Limits of the Continental Shelf.

31^0 32'S , 94^0 40'E - 32^0 S-95^0 32'E- 31^0 50^0 ,$95^0$38'E S-31^0 24'E-94^0 51'E

Feature description of the proposed area

The seamount appears to have suitable environmental conditions for the deepwater species of fish that typically occur in the area. Previously undescribed, it is believed to be biologically pristine, and its benthos and topography are highly fractured. In the view of many skippers, demersal trawling would be impossible here. There are some indications that this feature may have been above sea level at some time in the past.

Feature condition and future outlook of the proposed area

There has only been one trawl shot that encountered the cold-water coral reefs in this area.

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** (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**
This central region is the only part of the entire Broken Ridge that shows substantial coral reefs (FAO 2006). The extent of this coral habitat is much greater than identified on Coral Seamount in the southwest Indian Ocean, with individual reefs of over 2.5 km^2 in area, and possibly the largest area of cold-water coral habitat yet identified in any ocean. The unique nature of this region comes from the presence of framework-building scleractinian coral reefs on the shallow southern side of the largest single feature in the Indian Ocean, a 1300km-long ridge.					
Special importance for life-history stages of species	Areas that are required for a population to survive and thrive.	**X**			
Limited information on species diversity in the region, aside from limited catches of commercial species of orange roughy, alfonsino, and armourhead in the region surrounding the area meeting EBSA criteria.					
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**			
Explanation for ranking					
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**
The main framework-building species appears to be *Solenosmilia variabilis*. The framework largely comprises dead coral, and these three-dimensional habitats are sensitive to impacts, with slow recovery (Koslow *et al.* 2000, Rogers *et al.* 2008, Althaus *et al.* 2009, FAO 2009, Williams *et al.* 2010)					
Biological productivity	Area containing species, populations or communities with comparatively higher natural biological productivity.	**X**			
Explanation for ranking					

Biological diversity	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.	**X**			
Explanation for ranking					
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**
This area has had little fishing activity (FAO 2006). Trawl surveys in the region were carried out on the sandy bottom. Only one of the more than 50 apparent reefs is known to have been impacted.					

References

Althaus F, Williams A, Schlacher TA, Kloser RJ, Green MA (2009) Impacts of bottom trawling on deep-coral ecosystems of seamounts are long-lasting. *Marine Ecology Progress Series* 397: 279–294.

Kotlyar, 1980: Classification & distribution of trachichthyid fish from the Indian Ocean. *Trudy Instituta Okeanologii* 110.

FAO 2006 *Management of Demersal Fisheries Resources of the Southern Indian Ocean*. FAO Fisheries Circular No. 1020 FAO Rome 2006.

FAO 2009. *International guidelines for the management of deep- sea fisheries in the high seas*. FAO Rome 2009.

Koslow, J.A., Hoehlert GW, Gordon JD, Haedrich RL, Lorance P and N Parin. 2000. Continental slope and deep-sea fisheries: implications for a fragile ecosystem. *ICES Journal of Marine Science* 57: 548-557.

Rogers A.D., Clark M.R, Hall-Spencer K.M and Gjerde K.M. (2008). *The Science behind the Guidelines: A Scientific Guide to the FAO Draft International Guidelines* (December 2007) For the Management of Deep-Sea Fisheries in the High Seas and Examples of How the Guidelines May Be Practically Implemented. IUCN, Switzerland, 2008.

Williams A, Schlacher TA, Rowden AA, Althaus F, Clark MR, *et al.* (2010) Seamount megabenthic assemblages fail to recover from trawling impacts. *Marine Ecology* 31(S1): 183–199.

Maps and Figures

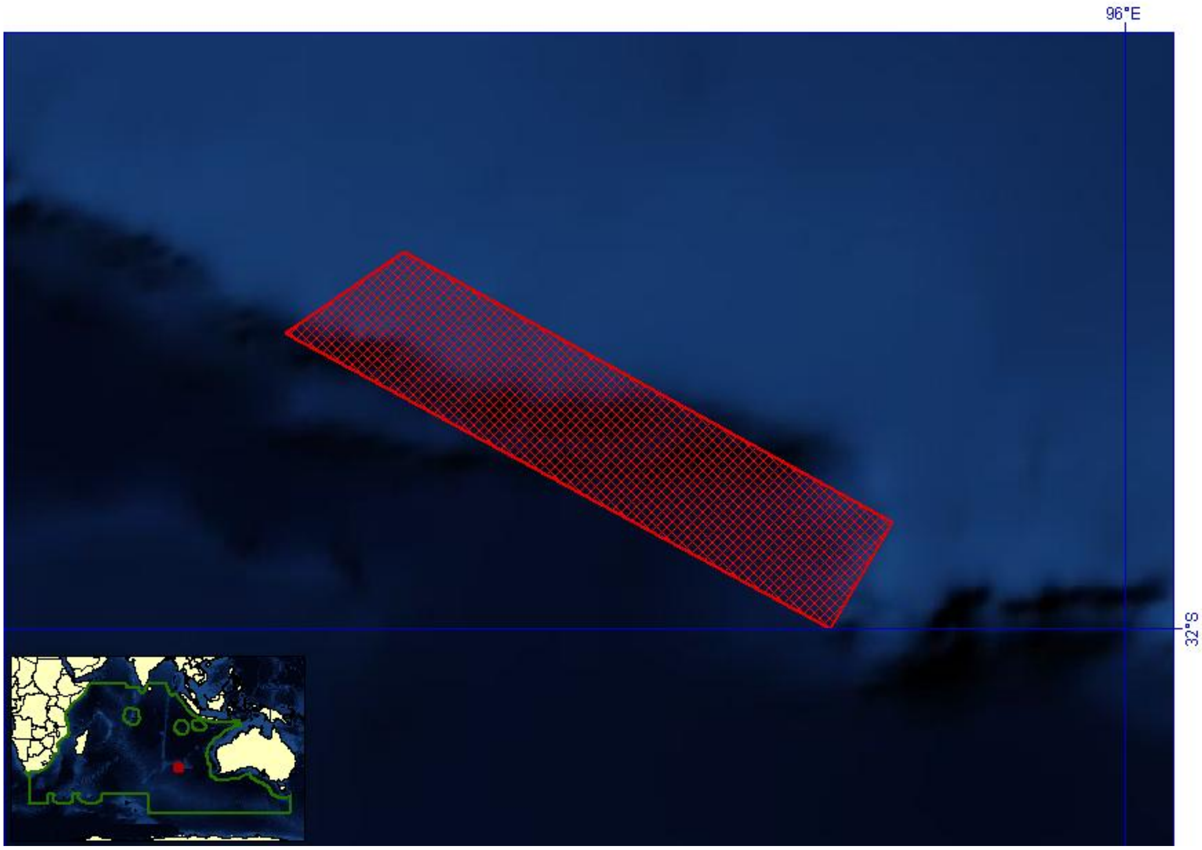


Figure 1: Map of area meeting EBSA criteria

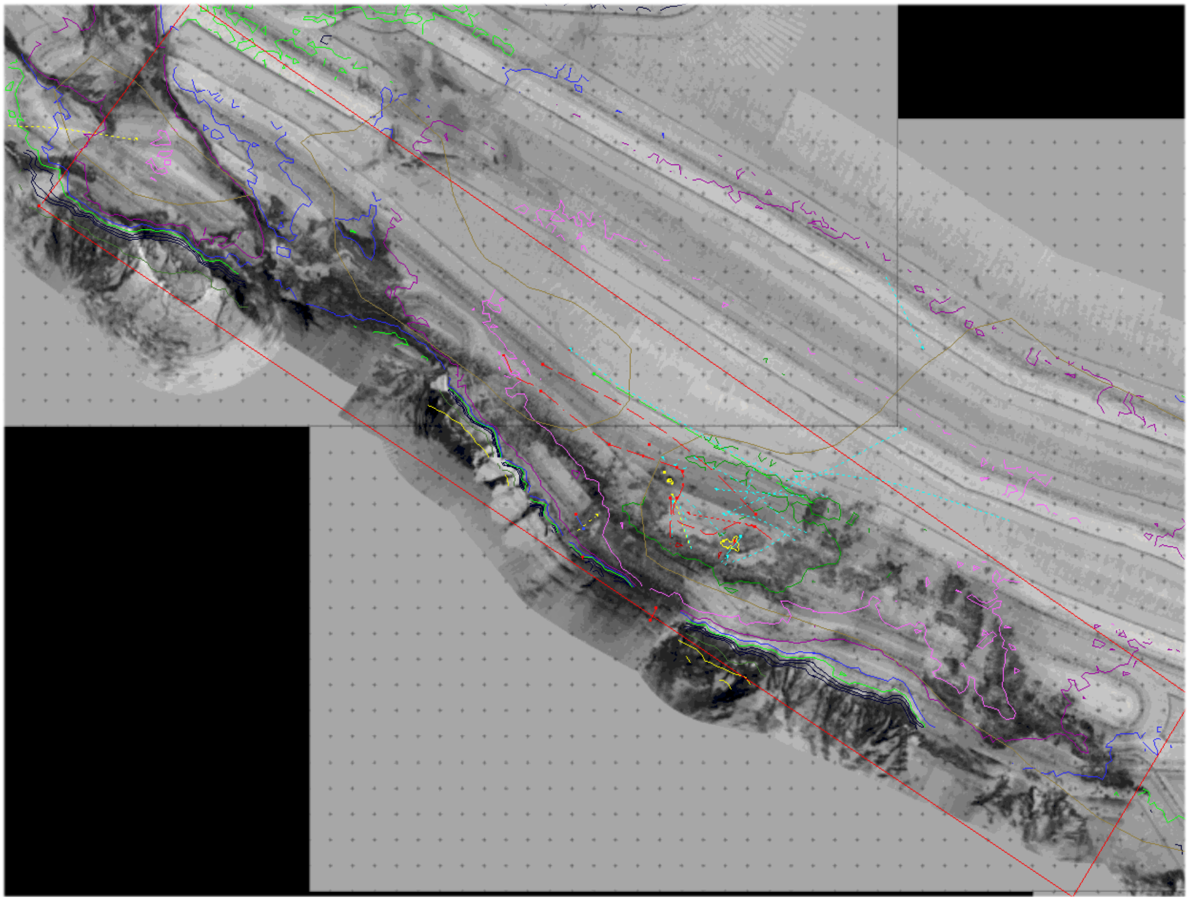


Figure 2. Sidescan sonar imagery of area meeting EBSA criteria

Red line outlines area. Light grey background of sidescan image is sand/gravel, darker grey areas are coral reefs, and black areas are hard reflective rocky strata.

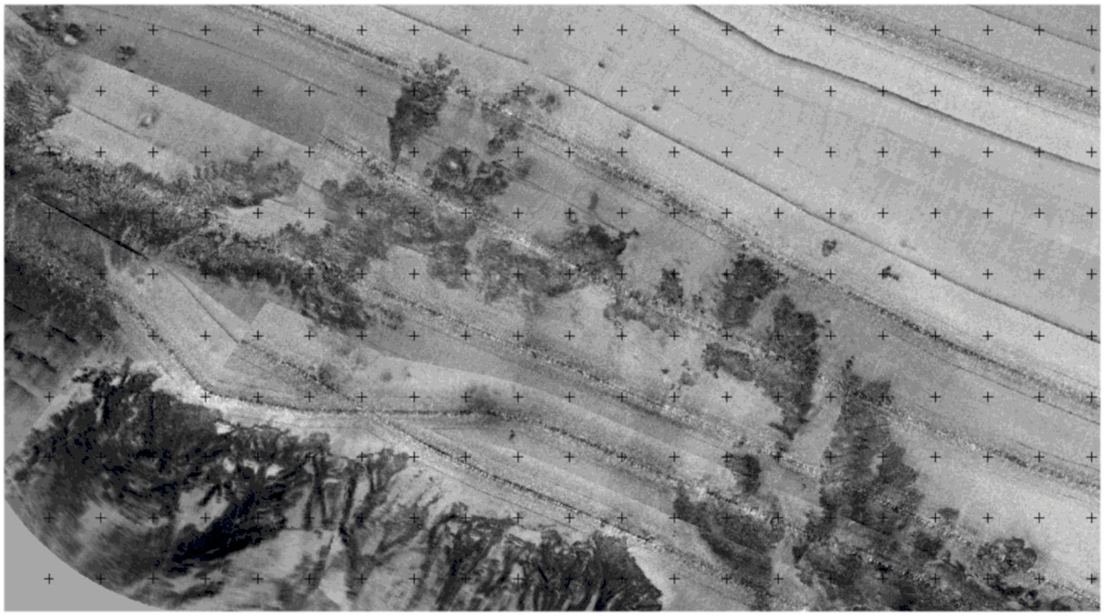


Figure 3. 350km^2 area containing coral reefs elevated up to 50 m. These reefs may be formed on rocky habitat. One trawl shot at 31^o 54'S 95^o 13.7'E on 7 July 1997 landed on top of one reef and caught 3.5 tonnes of brain coral. Shallow depth of reef was 795 m, and base depth 863 m.

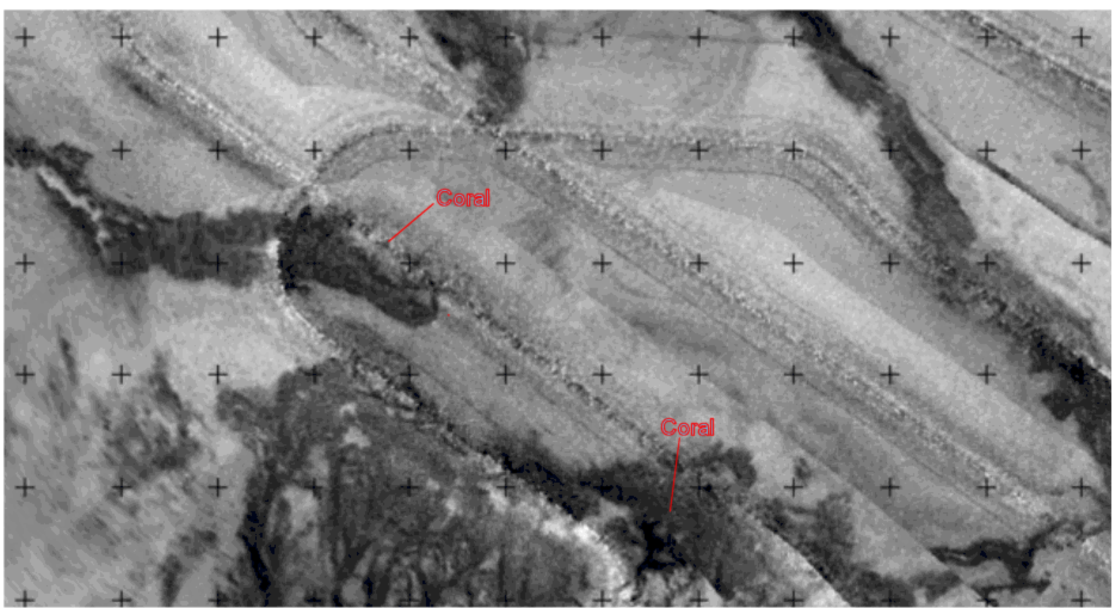


Figure 4. Sidescan sonar image of cold-water coral reefs in Fools Flat BPA (1.5 nm northwest reef extent)

Area No. 37: East Broken Ridge Guyot

Abstract

This guyot is a bathymetric high coupled with an area of localized high gravity, and is located to the eastern end of Broken Ridge. It rises from 3000 to 1060 metres deep. It is separated from Broken Ridge by deep water, and is the southernmost and one of the shallowest of a series of gravimetric highs that runs north around 100 ^{o} E to north of 28 ^{o} S. The gravimetric highs are over guyots that rise 1500-200 m off the seafloor, but are in very deep water (4000-5000m). It is characterised by numerous slips and canyons extending down the sides, and appears heavily eroded. As far as is known it has not been previously described and has not been trawled on. It is believed to be biologically pristine, and its benthos and highly fractured topography have not yet been described. There are some indications that this feature may have been above sea level at some time in the past.

This guyot is significantly different in structure to the remainder of Broken Ridge. It is long and narrow, with complex geomorphology on the western side and surrounded by deep water.

Introduction

Broken Ridge is an essentially continuous west-northwest trending oceanic plateau, more than 1000 km in length and approximately 100 km wide where it is shallower than 2000 m. The development of a major angular unconformity on Broken Ridge attests to its uplift and subsequent erosion (Driscoll et al. 1989)

The entire Broken Ridge Plateau was habitat mapped by the University of Hawaii Mapping Group under contract to Sealord Group New Zealand, using MR1 sidescan sonar in 1997. Most of the ridge is continuous and overlain with sand and sediments, but on the eastern end of Broken Ridge a number of guyots occur, separated by deep water, and not directly connected to the main ridge.

A number of areas in this region were declared Benthic Protected Areas (BPAs) by the Southern Indian Ocean Deepsea Fishers Association (SIODFA) and IUCN in 2006 (FAO 2006), following evaluation of the sidescan survey data. This feature was declared a BPA to ensure the maintenance and protection of its biodiversity. The light backscatter observed on the summit of the guyot is similar to that identified as Octocoral reefs further to the west on Broken Ridge.

The region occurs within the Subtropical Convergence.

Location

The area is beyond national jurisdiction on the high seas and is not subject to a claim to the Commission on the Limits of the Continental Shelf.

32^{o} 50’S, 100 ^{o} 50’E-32 ^{o} 50’S,101 ^{o} 40’E, 33 ^{o} 25’S,101 ^{o} 40’E-33 ^{o} 25’S,100 ^{o} 50’E

Feature description of the proposed area

This guyot is a bathymetric and gravimetric high, and is located at the eastern end of Broken Ridge. It rises from 3000 to 1060 metres deep. It is separated from Broken Ridge by deep water and is the southernmost and one of the shallowest of a series of gravimetric highs that runs north around 100 ^{o} E to north of 28 ^{o} S. The gravimetric highs are over guyots that rise 1500-200 m off the seafloor, but are in very deep water (4000-5000m).

As far as is known it has not been previously described and has not been trawled on. Searches have been conducted for fish aggregations, but no fishing activity. It is believed to be biologically pristine and its benthos and topography are highly fractured which, in the view of many skippers, makes demersal trawling impossible. There is evidence that this feature may have been above sea level at some time in the Eocene (Driscoll et al, 1989)

Feature condition and future outlook of the proposed area

The guyot is not known to have been impacted by human activity.

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** (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**
Explanation for ranking This guyot is a bathymetric and gravimetric high, and is located on the eastern end of Broken Ridge. It is characterised by numerous slips and canyons extending down the sides. It rises from 3000 to 1060 metres deep. As far as is known it has not been previously described and has not been trawled on. It is separated from Broken Ridge by deepwater, and is the southernmost and one of the shallowest of a series of gravimetric highs that runs north around 100^{o} E. The gravimetric highs are over guyots that rise 1500-200 m off the seafloor, but are in very deep water 4000-5000m. There are some indications that this feature may have been above sea level at some time in the past (FAO 2006)					
Special importance for life-history stages of species	Areas that are required for a population to survive and thrive.	**X**			
Explanation for ranking					
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**			

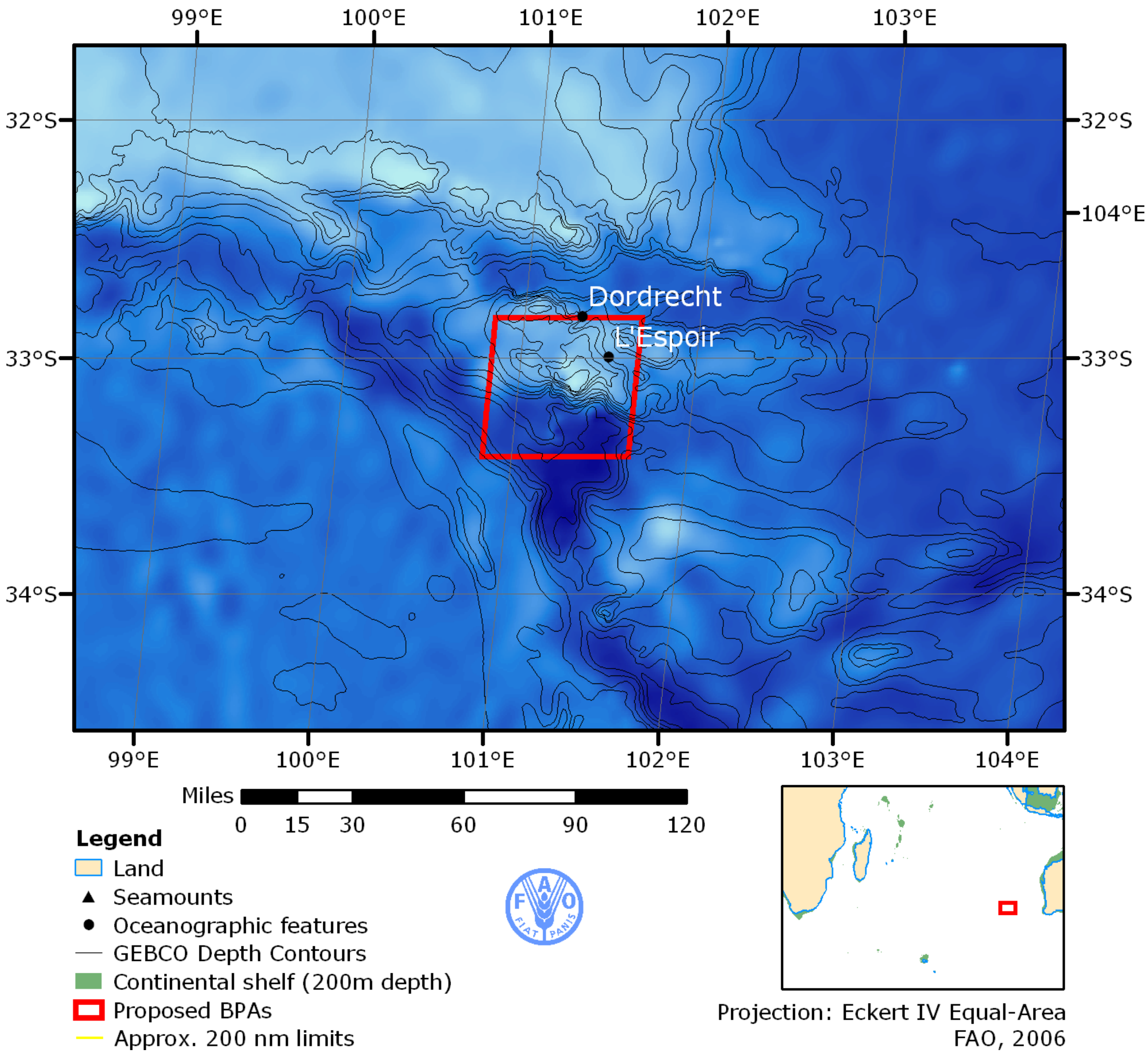
Explanation for ranking					
Vulnerability, fragility, sensitivity, or slow recovery	Areas that contain a relatively high proportion of sensitive habitats, biotopes or species that are functionally fragile (highly susceptible to degradation or depletion by human activity or by natural events) or with slow recovery.			**X**	
Explanation for ranking The light backscatter observed on the summit of the guyot is similar to that identified as Octocoral reefs further to the west. It is highly likely that this habitat is present on the guyot (FAO 2006).					
Biological productivity	Area containing species, populations or communities with comparatively higher natural biological productivity.	**X**			
Explanation for ranking					
Biological diversity	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.	**X**			
Explanation for ranking					
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**
No fishing or other human activities have been conducted.					

References

FAO 2006 Management of Demersal Fisheries Resources of the Southern Indian Ocean. FAO Fisheries Circular No. 1020 FAO Rome 2006.

Driscoll, N. W., Karner, G. D., Weissel, J. K., and Shipboard Scientific party, 1989. Stratigraphic and tectonic evolution of Broken Ridge from seismic stratigraphy and Leg 121 drilling. *In* Peirce, J., Weissel, J., et al., *Proc. ODP, Init. Repts.*, 121: College Station, TX (Ocean Drilling Program), 71-91.

Maps and Figures



Areas at Depth

Depth (m)	Area (km^2)
≤ 100	0
101- 300	0
301 – 700	0
701 – 1000	0
1001 – 1500	97.50
>1500	4 936.6
Total	5 034.1

Figure 1. Position of and area/depth analysis of BPA

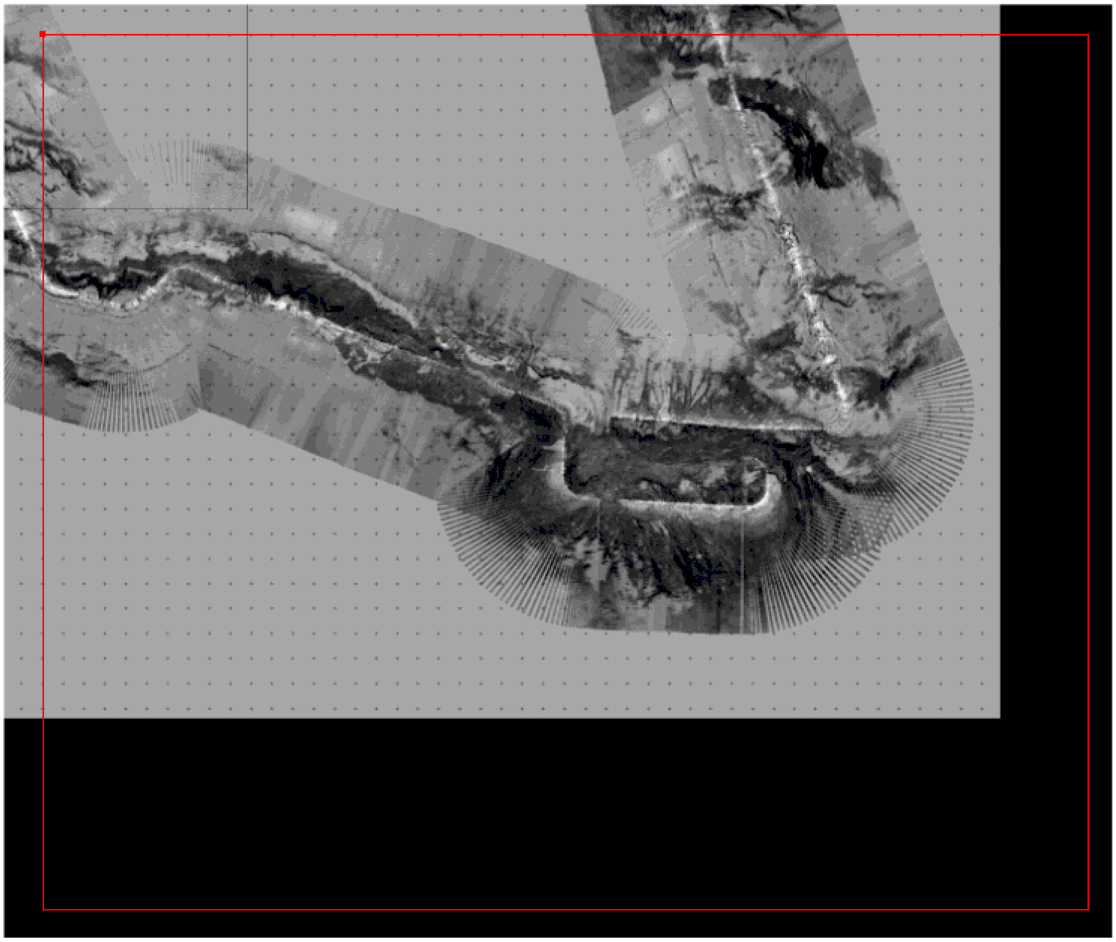


Figure 2. Sidescan Sonar Image of the Guyot East of Broken Ridge

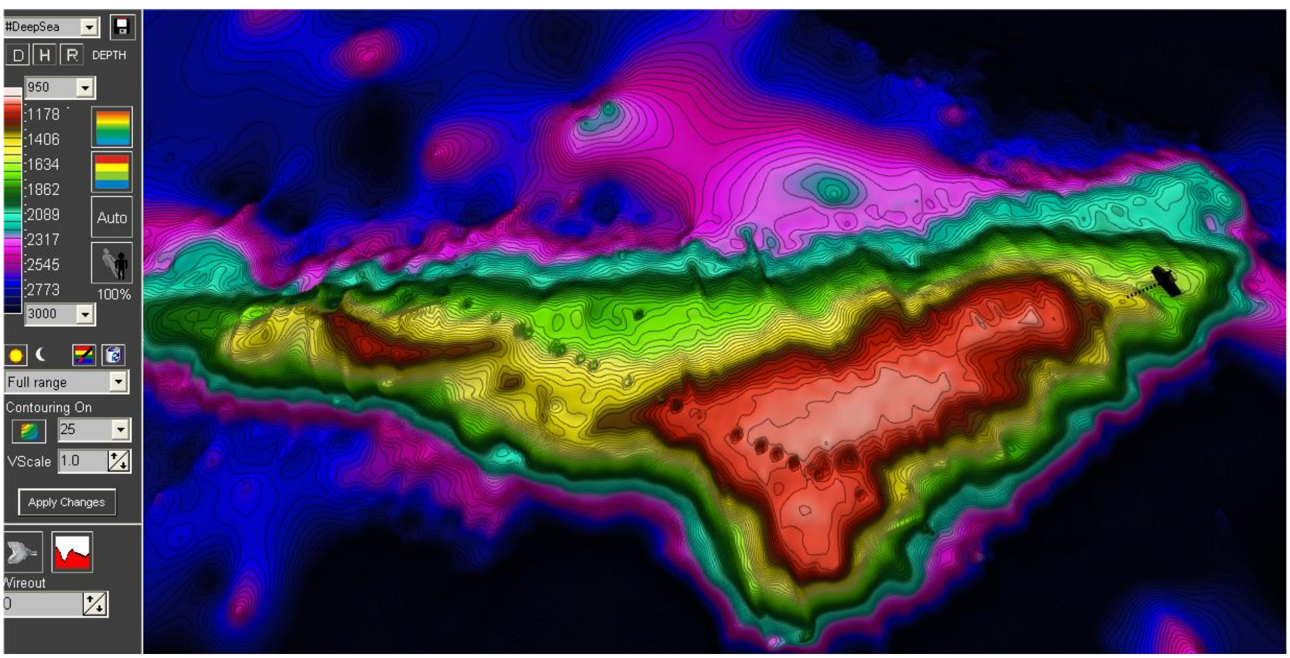


Figure 3. Bathymetry of Guyot to the East of Broken Ridge (60 mile view)

Area No. 38: South of Java Island

Abstract

The area of the Indian Ocean south of Java (between 12°S – 17°S and 107° – 117° E) is the only known spawning area of Southern Bluefin Tuna (SBT). SBT are long-lived tuna that live up to 42 years and mature between eight and 15-years of age (Farley and Davis 1998, CCSBT 2011). The population of SBT comprises a single stock that mingrates widely in the southern hemisphere (Cole 1991, BRS 2007). The species returns to spawn in the area south of Java. Spawning takes place from September to April, and juvenile SBT migrate down the west coast of Australia and disperse throughout the Indian, Pacific and Atlantic oceans.

Introduction

The region south of Java (latitude 12° to 17° S and longitude 107° to 117° E) is influenced by the inflow of Indonesian Throughflow (ITF) waters that create a deeper mixed layer, as well as the convergence of currents from the west and south. The waters have high seasonal biological productivity due to the presence of strong mid-oceanic currents that create upwelling of deeper, nutrient-rich waters that enter the region from the south Java coast (Susanto *et al.*, 2001).

The bathymetry of the region south of Java is dominated by a chain of seamounts trending broadly east-west along longitude 117° E (Figure 1). The pelagic region is known as an important area for continuation of life-stages of Southern Bluefin Tuna (SBT). Besides SBT, other species known to be found in this area include swordfish (*Xiphias gladius*), big eye tuna (*Thunus obesus*), yellowfin tuna (*T. Albacares*), and albacore (*T. alalunga*).

SBT has been fished extensively since the 1950s. Recent estimates suggest that the spawning stock biomass of SBT is 3 to 7% of the original spawning biomass (CCSBT 2011). The outlook for the stock appears to be positive, showing increases in a number of key indicators (CCSBT 2011). The species has only one known spawning ground.

Location

The proposed area extends south of Java island outside the Indonesian EEZ toward Cocos Island and Christmas Island at an area of latitude 12° to 17° S and longitude 107° to 117° E (Figure 2). The area proposed for the EBSA comprises the core spawning area for SBT and is outside the national boundaries of both Australia and Indonesia.

Feature description of the proposed area

The area has been defined by the capture of gravid female SBT (Farley and Davis, 1998, Nishikawa *et al.* 1985). The temperature of the surface water in the eastern Indian Ocean is about 24 °C. Female SBT spawn year-round, with the main spawning season from September to April (Farley and Davis, 1998, CCSBT 2011).

Feature condition and future outlook of the proposed area

SBT has been extensively fished since the 1950s. The spawning standing biomass is low (3-7% of original biomass), but current indicators suggest that it is increasing (CCSBT 2011). Reproductively mature fish are caught as by-catch within the area meeting EBSA criteria.

Assessment of the area against CBD EBSA Criteria

<table>
<tr><td rowspan="2">CBD EBSA Criteria
(Annex I to decision IX/20)</td><td rowspan="2">Description
(Annex I to decision IX/20)</td><td colspan="4">Ranking of criterion relevance
(please mark one column with an X)</td></tr>
<tr><td>Don’t Know</td><td>Low</td><td>Medium</td><td>High</td></tr>
<tr><td>Uniqueness or rarity</td><td>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.</td><td></td><td></td><td>X</td><td></td></tr>
<tr><td colspan="6">Explanation for ranking

The area is possibly unique but definitely rare from a regional and global perspective. It is the only known spawning area for Southern Bluefin Tuna (SBT). Sea surface temperture in this area relaively warmer than in the rest of the south-eastern Indian Ocean (Farley and Davis, 1998), and area is potentially affected by currents from the coastal Java sea.</td></tr>
<tr><td>Special importance for life-history stages of species</td><td>Areas that are required for a population to survive and thrive.</td><td></td><td></td><td></td><td>X</td></tr>
<tr><td colspan="6">Explanation for ranking
This is the spawning area of SBT (Caton et al., 1991; Deriso and Baylif, 1991) and includes the migratory route of cetacean and many other pelagic species. It may also be the potential spawning area for freshwater eel as the benthic zone of this area comprises a chain of seamonts aproximatlly 1,000,000 km^2 .</td></tr>
<tr><td>Importance for threatened, endangered or declining species and/or habitats</td><td>Area containing habitat for the survival and recovery of endangered, threatened, declining species or area with significant assemblages of such species.</td><td></td><td></td><td></td><td>X</td></tr>
<tr><td colspan="6">Explanation for ranking

The SBT population is listed by IUCN as Critically Endangered and recognized as such in national legislation (e.g. conservation dependent). It has been declinining over the past 40 years (Farley and Davis, 1998, Brewer et al. 2009), although the stock has shown signs of recent recovery (CCSBT 2011). Given the importance of the area for spawning of this important species, it is rated high.</td></tr>
<tr><td>Vulnerability, fragility, sensitivity, or slow recovery</td><td>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.</td><td>X</td><td></td><td></td><td></td></tr>
</table>

Explanation for ranking Unknown from the perspective of the population of SBT, but the area may be important to the continuity of the SBT species in Indian Ocean.					
Biological productivity	Area containing species, populations or communities with comparatively higher natural biological productivity.				X
Explanation for ranking Based on the aqua satellite provided on the Giovanni site (http://reason.gsfc.nasa.gov/Giovanni/) high levels of Chl a occur through the region from July to August with frequent outbursts of elogated Chl a plume reaching well offshore from Java. Moderate chl a concentration occurr in September to October and drop to low values by November and December (Brewer *et al.*, 2009).					
Biological diversity	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.	X			
Explanation for ranking We do not know the current condition of biological diversity in the area meeting EBSA criteria. The need for further study of the pelagic zone is noted.					
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			
Explanation for ranking Unknown.					

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Maps and Figures

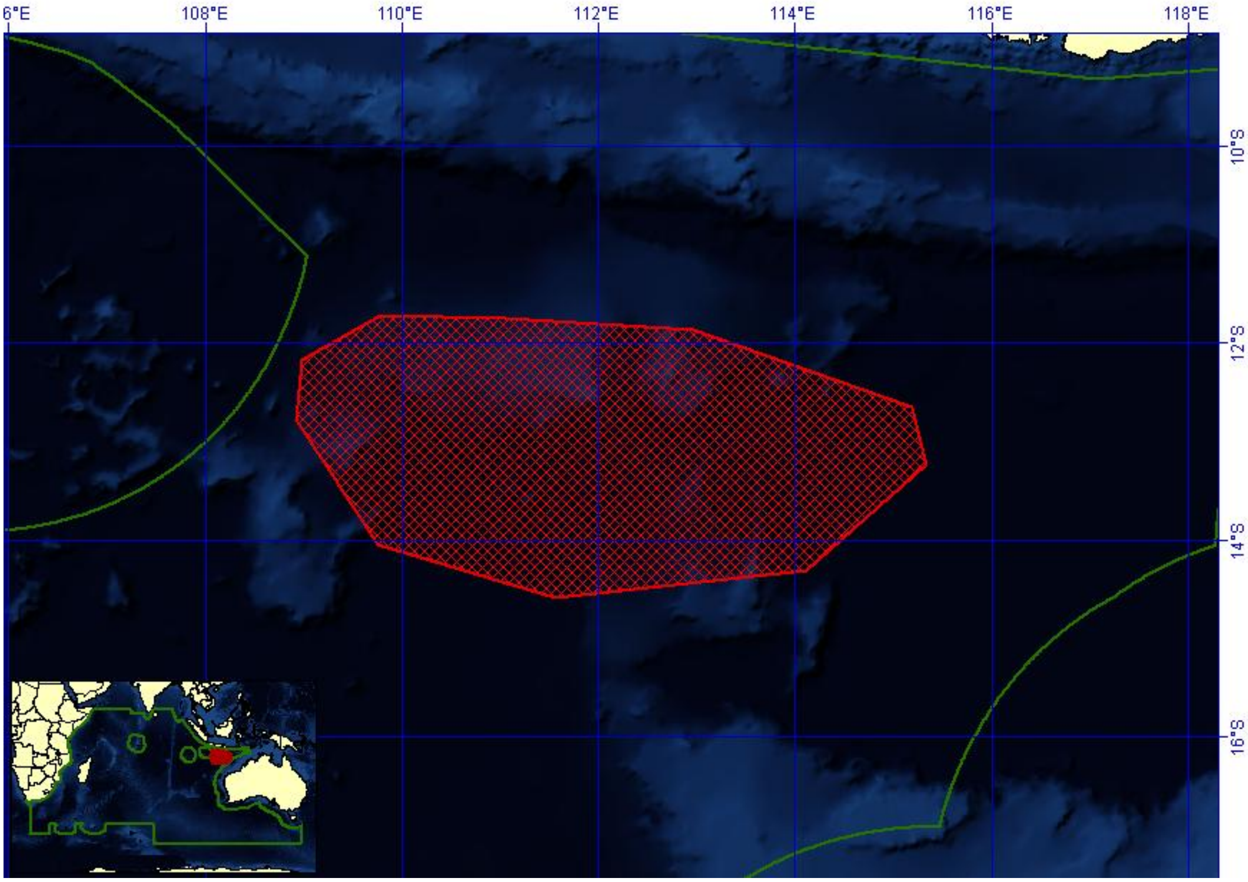

Figure 1. Map of area meeting EBSA criteria

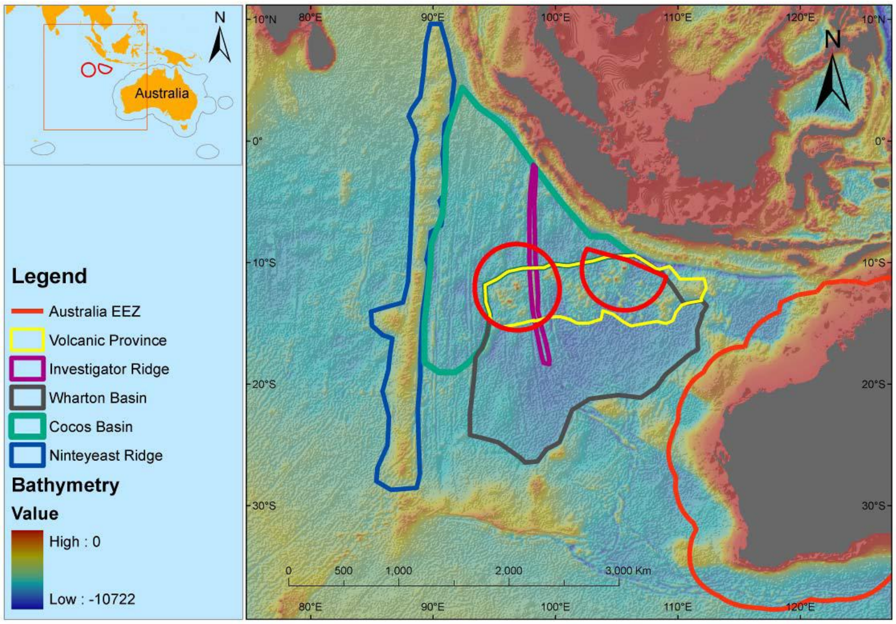

Figure 2. Bathymetric features of the north-east Indian Ocean (Brewer, 2007)

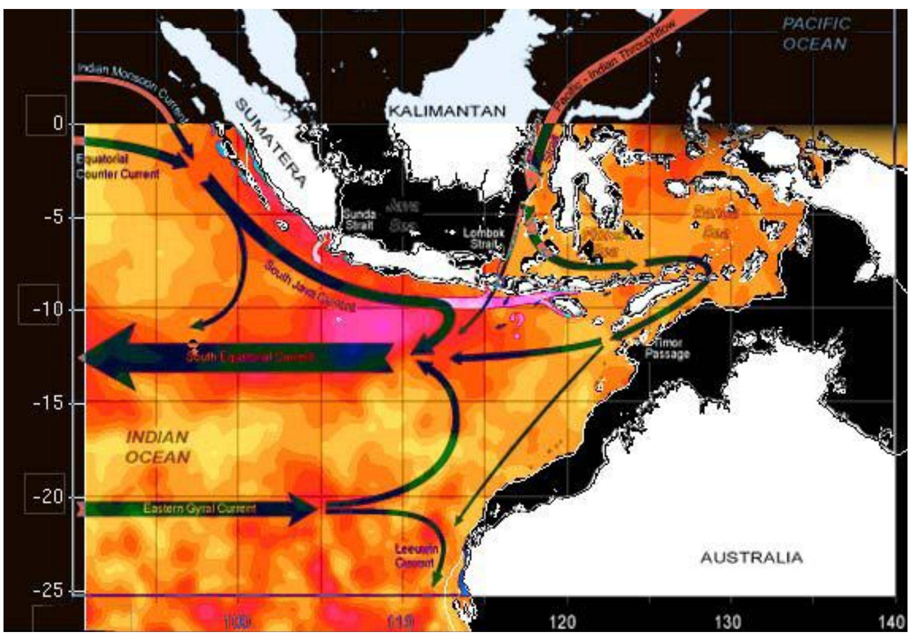

Figure 3. An overlay to depict the corespondence between the current in the eastern Indian Ocean with the altimeter sea-surface height for the month of September (Hayes *et al.*, 2005)

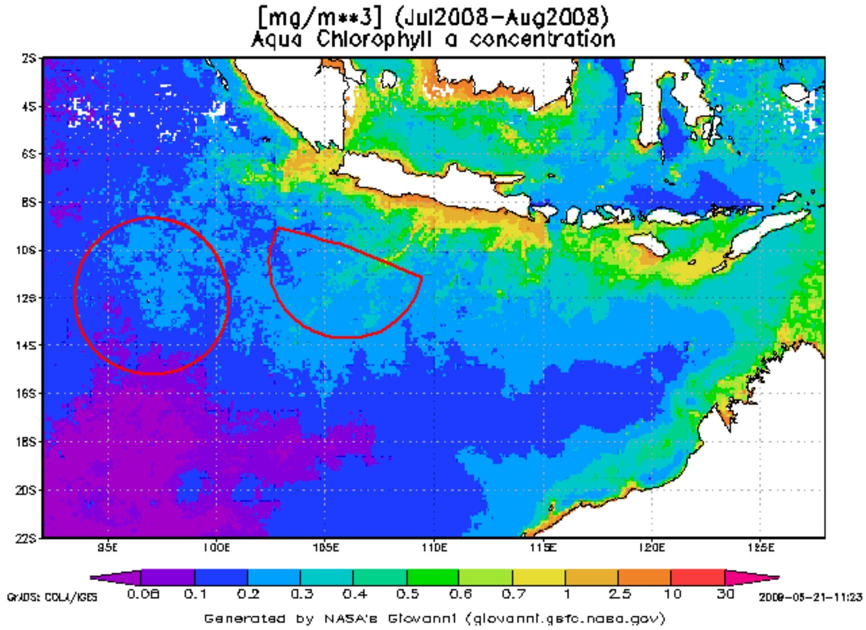

Figure 4. Chl a concentration July – August 2008 (Brewer *et al.*, 2009)

Area No. 39: Due South of Great Australian Bight

Abstract
This is a globally significant feeding area for several threatened species of seabird and fish. Specific life-history stages covered include the Sooty Albatross (*Phoebetria fusca*) from Amsterdam Island during non-breeding season and Wandering Albatross (*Diomedea exulans*) from Crozet Island during its juvenile stage. It is also used by migrating Critically Endangered Southern Bluefin Tuna.

Introduction
The Great Australian Bight is a large bight off the central and western portions of the southern coastline of mainland Australia. It extends south until it meets the South Australia Basin. These deep pelagic waters are crucial feeding areas for several species of threatened seabird.

Location
The Great Australian Bight is located off the central coast of South Australia. The area described here is further south and located completely in areas beyond national jurisdiction over the South Australian Basin. See figure for boundaries.

Feature description of the proposed area

The Sooty Albatross (**Phoebetria fusca)** ***is a highly mobile, pelagically distributed, all dark albatross of the Southern Oceans. It*** breeds on islands in the South Atlantic and Indian Oceans where the total annual breeding population is estimated at 13,200 - 14,500 pairs (Ryan **et al.** 2003). Consisting of **c**.5,000 pairs on Gough Island (Cuthbert and Sommer 2004a), 3,157 pairs in the Tristan da Cunha group (to UK) (ACAP 2012), c. 1,450 pairs on Prince Edward and c. 1,700 pairs on Marion Island (South Africa) (ACAP 2012), 2,080-2,200 pairs on the Crozet Islands (Delord **et al.** 2008), and 470 pairs on Amsterdam Island (French Southern Territories) (Delord **et al.**2008).

The pelagic distribution is mainly between 30°S and 60°S in the southern Indian and Atlantic Oceans, with a southern limit of c. 65°S near Antarctica and a northern limit of c. 20°S. Adults move north in winter from sub-Antarctic to subtropical seas, whereas immature birds tend to remain in subtropical seas year round. Satellite tracking of this species from Amsterdam Island, using PTT devices between 2009 and 2011 (H. Weimerskirch), shows that the Area South of the Australian Bight is a key feeding area for Sooty Albatross during these periods (BirdLife International, 2010).

The Wandering Albatross (*Diomedea exulans*) is a highly mobile, pelagically distributed seabird of the Southern Oceans. The largest of the albatross it breeds biannually, and spends at least 5 years at sea before returning to land to breed. ***It*** breeds on South Georgia (Georgias del Sur) (25% of global population), Prince Edward Islands (40% of global population), Crozet Islands and Kerguelen Islands (10% of global population) and Macquarie Island, with a total global population of c. 6,100 pairs breeding in any given year (ACAP 2009).

Non-breeding and juvenile birds remain north of 50°S between subantarctic and subtropical waters with a significant proportion crossing the Indian Ocean to wintering grounds around the southern and eastern coast of Australia (ACAP 2009). Satellite tracking of this species from Crozet Island, using PTT devices between 1989 and 2003 (H. Weimerskirch), shows that the Area South of the Australian Bight is a key feeding area for Wandering Albatross during their juvenile stage (BirdLife International, 2010).

Southern Bluefin Tuna migrate across the Great Australian Bight, mostly within the Australian EEZ, though some parts are in ABNJ, and these are included within this area meeting EBSA criteria. (UNEP/CBD/RW/EBSA/SIO/1/2).

Feature condition and future outlook of the proposed area

Albatross species are particularly susceptible to by-catch in fisheries, which have been identified as the main cause of significant declines for several of the species found in this area (Anderson *et al.*, 2009).

Assessment of the area against CBD EBSA Criteria

<table>
<tr><th rowspan="2">CBD EBSA Criteria
(Annex I to decision IX/20)</th><th rowspan="2">Description
(Annex I to decision IX/20)</th><th colspan="4">Ranking of criterion relevance
(please mark one column with an X)</th></tr>
<tr><th>Don’t Know</th><th>Low</th><th>Medium</th><th>High</th></tr>
<tr><td>Uniqueness or rarity</td><td>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.</td><td>X</td><td></td><td></td><td></td></tr>
<tr><td colspan="6">Explanation for ranking

Not known</td></tr>
<tr><td>Special importance for life-history stages of species</td><td>Areas that are required for a population to survive and thrive.</td><td></td><td></td><td></td><td>X</td></tr>
<tr><td colspan="6">Explanation for ranking

Tracking data shows that this is a key feeding area for Sooty Albatross from Amsterdam Island during its non-breeding season, and Wandering Albatross from Crozet island during the juvenile stage, with both species occurring in globally significant numbers (www.seabirdtracking.org).
Southern Bluefin Tuna migrate across the Great Australian Bight, mostly within the Australian EEZ, though some parts are in ABNJ, and these are included within this area meeting EBSA criteria. (UNEP/CBD/RW/EBSA/SIO/1/2).</td></tr>
<tr><td>Importance for threatened, endangered or declining species and/or habitats</td><td>Area containing habitat for the survival and recovery of endangered, threatened, declining species or area with significant assemblages of such species.</td><td></td><td></td><td></td><td>X</td></tr>
<tr><td colspan="6">Explanation for ranking

Highly mobile pelagic taxa found here in globally significant congregations include threatened species of seabird and fish. These include the wandering albatross and sooty albatross, which are both listed on the Agreement for Conservation of Albatross and Petrels (ACAP Annex 1) and Convention on Migratory Species (CMS, Appendix II).
Sooty Albatross is classified as endangered on the IUCN Red List due to 4% a year declines, and is included within national conservation listings and plans for Australia, Chile, France, South Africa and Tristan da Cuhna (ACAP 2012).
Wandering Albatross is classified as vulnerable on the IUCN Red List due to a 1.8% a year decline, and is included within national conservation listings and plans for Australia, France, South Africa, Falkland Islands (Islas Malvinas) and Tasmania (ACAP 2012).
The area is also used also by critically endangered Southern Bluefin Tuna (UNEP/CBD/RW/EBSA/SIO/1/2).</td></tr>
<tr><td>Vulnerability,</td><td>Areas that contain a relatively high proportion of</td><td></td><td></td><td>X</td><td></td></tr>
</table>

fragility, sensitivity, or slow recovery	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.				
Explanation for ranking All seabird species are long-lived and slow at reproducing, leaving them prone to slow recovery after population declines, which often occur as a result of fisheries by-catch (Anderson *et al.* 2011).					
Biological productivity	Area containing species, populations or communities with comparatively higher natural biological productivity.		X		
Explanation for ranking Areas of high productivity occur in a band across this site and beyond. (UNEP/CBD/RW/EBSA/SIO/1/2)					
Biological diversity	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.	X			
Explanation for ranking Albatrosses feed mainly by surface-seizing. Squid, fish, crustaceans and carrion all feature prominently in the diet, although proportions of each vary between years and locations. Given the density of birds present in the area it is likely to support a high diversity of prey items, though this has not been assessed critically.					
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			
Explanation for ranking Not known					

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**	**Medium**	**High**
Add relevant criteria	BirdLife Important Bird Area Criteria (BirdLife 2009, 2010) A1 Regular presence of threatened species A4ii >1% of the global population of a seabird				X
Explanation for ranking The areas included here meet one or more of the BirdLife criteria for defining Important Bird Areas. (BirdLife International, 2010)					

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www.seabirdtracking.org – tracking contributors who provided data presented at this workshop are: Maria Ana Dias, Paulo Catry, Teresa Catry, Robert Crawford, Richard Cuthbert, Karine Delord, Jacob Gonzalez-Solis, Jano Hennicke, Matthieu Le Corre, Deon Nel, Malcolm Nicoll, Jose Pedro Granadeiro, Samantha Petersen, Richard Phillips, Patrick Pinet, Jaime Ramos, Jean-Baptiste Thiebot, Ross Wanless, Henri Weimerskirch, Vikash Tatayah

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Maps and Figures

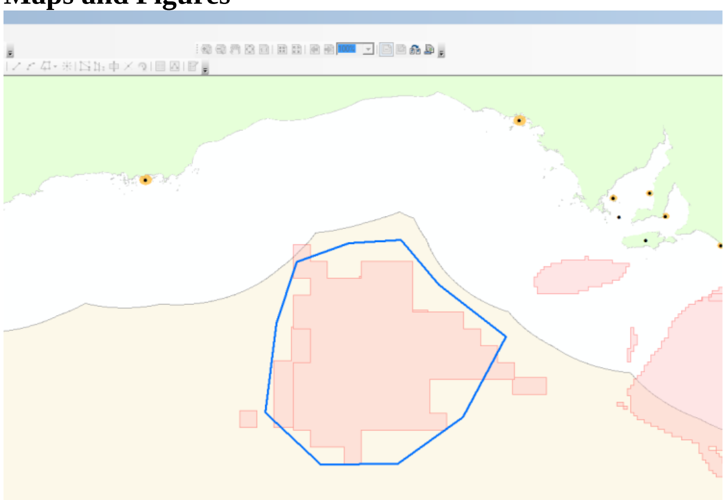

Figure 1: Showing tracking data layers and location of the site.
Source: BirdLife International

Rights and permissions

Tracking data used in this analysis is property of the dataowners; images provided here can be used with appropriate credits. Any request to publish these images elsewhere or to use the original tracking data will require permission; requests should be made to BirdLife International (science@birdlife.org)

Maps and Figures

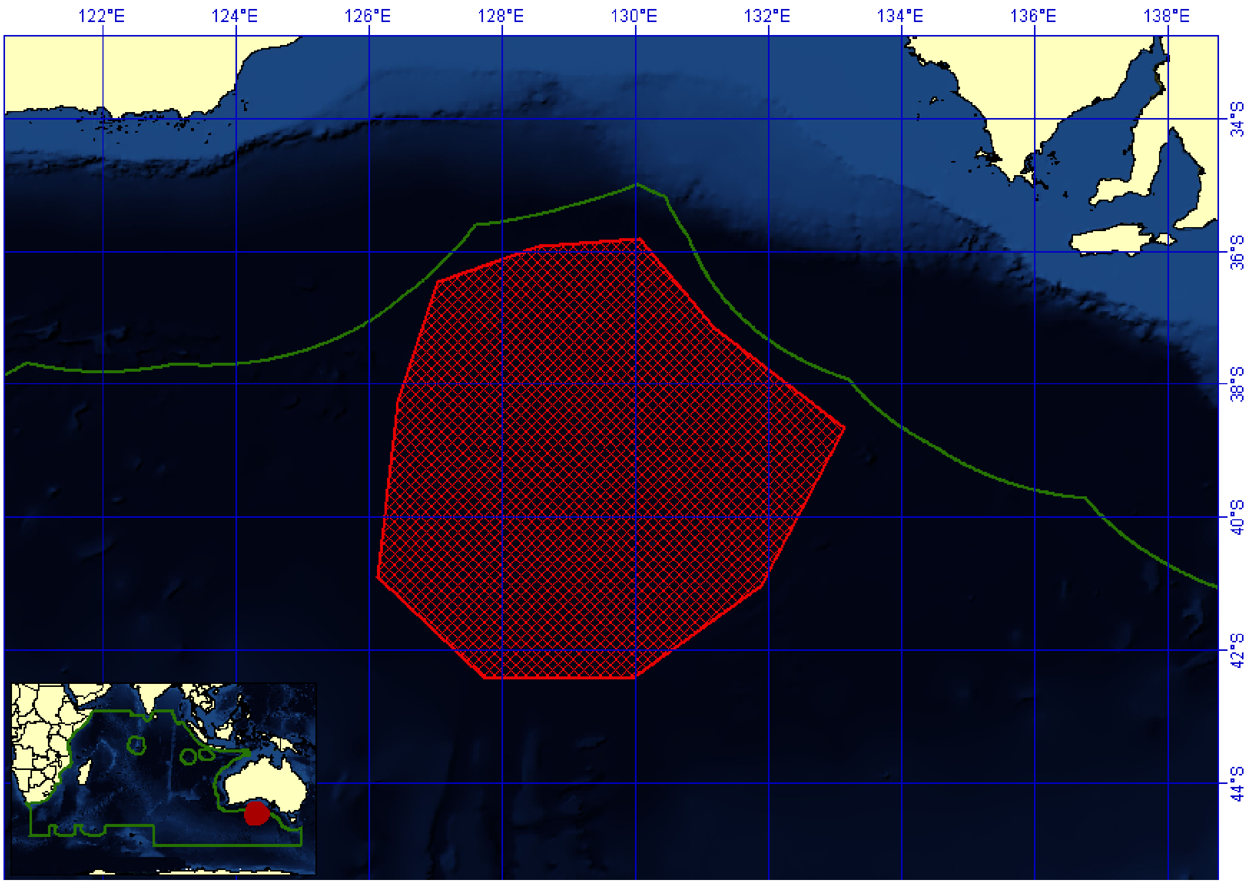

Figure 1. Map of area meeting EBSA criteria

AREAS CONSIDERED DURING THE WORKSHOP BUT NOT DESCRIBED FOR EBSA CRITERIA DUE TO DATA PAUCITY AND LACK OF ANALYSIS

Area for Future Consideration No. 1: Coco de Mer

Abstract

Introduction

Location

Found to the north of the Republic of Seychelles, extending from within the EEZ of Seychelles into international waters, between 55º00’E and 60º00’E, and between 05º00’N and 05º00’S.

Feature description of the proposed area

The coco de mer area is important for the feeding of pelagic fish species, especially tunas and sharks, which are abundant in this area. It has high biodiversity of seamounts although they are not well known as not many studies and research have been carried out in the area. Numerous feeding sites for seabirds are found here. This is a biodiversity hotspot with large fish shoals including sharks and blue marlins, and it has important biodiversity (that still needs to be explored) associated with its seamounts. The area has high productivity as a result of the upwelling that occurs here.

Feature condition and future outlook of the proposed area

This is an area undergoing a significant amount of pressure. Pressure is observed, especially, through the tuna fisheries, which removes about 300,000 tons of tuna per year, which in turn impact on seabird feeding habits. Dangers also exist for marine turtles and cetaceans through the presence of debris and shipwrecks. Furthermore, there is no effective management system in place for this area, and there is a lack of information on the ecosystems.

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** (please mark one column with an X)			
		Don't Know	**Low**	**Medium**	**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	
Explanation for ranking					
Special importance for life-history stages of species	Areas that are required for a population to survive and thrive.	x			
Explanation for ranking					
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			
Explanation for ranking					
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			
Explanation for ranking While these areas have seamounts which are not very prominent in other parts of the Seychelles, and they are known sites for biodiversity and fish shoals, there has been little research carried out in the area. So there is little or no information in terms of genetic diversity of the area, biological productivity, functionality, biotopes, etc.					
Biological productivity	Area containing species, populations or communities with comparatively higher natural biological productivity.	x			
Explanation for ranking While these areas have seamounts which are not very prominent in other parts of the Seychelles, and they are known sites for biodiversity and fish shoals, there has been little research carried out in the area. So there is little or no information in terms of genetic diversity of the area, biological productivity, functionality, biotopes, etc.					
Biological diversity	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.	x			
Explanation for ranking					

While these areas have seamounts which are not very prominent in other parts of the Seychelles, and they are known sites for biodiversity and fish shoals, there has been little research carried out in the area. So there is little or no information in terms of genetic diversity of the area, biological productivity, functionality, biotopes, etc.					
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			
Explanation for ranking While shipping activity is not a major threat to the site, there is some human disturbance, especially in terms of fisheries. However, further studies and research needs to be carried out in this area to understand changes.					

References

A regional strategy and Action Plan for Conserving Marine Ecosystems and Fisheries, Western Indian Ocean Islands Marine Ecoregion

Document de Synthese de l’Analyse Ecoregionale de L’Ecoregion Marines des Iles de L’ocean Indien, Reseau des Aires Marine Protegees de pays de la COI

Area for Future Consideration No. 2: North Seychelles Oceanic Basin

Abstract

Introduction

Location

Features oceanic basin found to the North of the Republic of Seychelles, within its national jurisdiction. It is between 55º00'E and 60º00'E and between 0º00'S and 05º00'S.

Feature description of the proposed area

This is a very important area for cetaceans and includes cetacean breeding sites, feeding sites, nurseries, and migratory paths. It is also especially important as a habitat for blue and toothed whales. These two species use the area for feeding and migration. Among other feeding sites, it is also used for feeding by fish, especially by tunas and sharks. These species are pelagic and are found in abundance in this area. Here, there is a significant larval zone, where larvae come from the East, with the Equatorial current. It is also an important seabird feeding site.

Feature condition and future outlook of the proposed area

This is an area undergoing a significant amount of pressure. This is especially through the tuna fishery, which removes about 300,000 tons of tuna per year, which in turn impacts on seabird feeding habits. There is also anthropogenic pollution, and lost fishing gears carry out ghost fishing in areas of this basin. Dangers also exist for marine turtles and cetaceans through the presence of debris and shipwrecks. However, there is no effective management system in place for this area, and there is a lack of information on the ecosystems.

The area is also at risk of oil spills and other pollution from shipping activities, especially as there is a lack of management.

Assessment of the area against CBD EBSA Criteria

<table>
<tr><th rowspan="2">CBD EBSA Criteria
(Annex I to decision IX/20)</th><th rowspan="2">Description
(Annex I to decision IX/20)</th><th colspan="4">Ranking of criterion relevance
(please mark one column with an X)</th></tr>
<tr><th>Don’t Know</th><th>Low</th><th>Medium</th><th>High</th></tr>
<tr><td>Uniqueness or rarity</td><td>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.</td><td></td><td>X</td><td></td><td></td></tr>
<tr><td colspan="6">Explanation for ranking</td></tr>
<tr><td>Special importance for life-history stages of species</td><td>Areas that are required for a population to survive and thrive.</td><td></td><td></td><td>X</td><td></td></tr>
<tr><td colspan="6">Explanation for ranking

Area is important for cetaceans reproduction, survival and feeding. It is also a very important habitat for pelagic fish, seabirds and larvae.</td></tr>
<tr><td>Importance for threatened, endangered or declining species and/or habitats</td><td>Area containing habitat for the survival and recovery of endangered, threatened, declining species or area with significant assemblages of such species.</td><td></td><td></td><td>X</td><td></td></tr>
<tr><td colspan="6">Explanation for ranking

Area is important for cetaceans reproduction, survival and feeding. It is also a very important habitat for pelagic fish, seabirds and larvae.</td></tr>
<tr><td>Vulnerability, fragility, sensitivity, or slow recovery</td><td>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.</td><td>X</td><td></td><td></td><td></td></tr>
<tr><td colspan="6">Explanation for ranking

Important habitat for the survival, reproduction and feeding of cetaceans. Very important habitats for some species of cetaceans. These are also very important areas for larval growth and pelagic fish species.

However, there is a lack of information on all species found in the area and important marine habitats.</td></tr>
<tr><td>Biological productivity</td><td>Area containing species, populations or communities with comparatively higher natural biological productivity.</td><td>X</td><td></td><td></td><td></td></tr>
<tr><td colspan="6">Explanation for ranking

A lack of studies and research within this basin means that there is a lack of data on diversity, habitats and ecosystems.</td></tr>
<tr><td>Biological</td><td>Area contains comparatively higher diversity of</td><td>X</td><td></td><td></td><td></td></tr>
</table>

diversity	ecosystems, habitats, communities, or species, or has higher genetic diversity.				
Explanation for ranking A lack of studies and research within this basin means that there is a lack of data on diversity, habitats and ecosystems.					
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.				
Explanation for ranking The remoteness of the area from the rest of the Seychelles islands has prevented it from being fully exploited and from being threatened by humans. However, there are still a number of threats to this area, especially in view of its lack of effective management. Human pressure can be observed, especially in terms of tuna and shark fishing, but the lack of management and research means that as yet there is little understanding of the impact of these activities.					

References

A regional strategy and Action Plan for Conserving Marine Ecosystems and Fisheries, Western Indian Ocean Islands Marine Ecoregion

Document de Synthese de l’Analyse Ecoregionale de L’Ecoregion Marines des Iles de L’ocean Indien, Reseau des Aires Marine Protegees de pays de la COI

Area for Future Consideration No. 3: Saint André to Androka

Abstract

Introduction

Location

This area includes part of south-western of Madagascar from the St André Cape to Androka in south of Toliara.

Feature description of the proposed area

Along the Middle Western coast of Madagascar, the area includes the Barren Island and Belo sur Mer archipelagos, a large stand of mangroves (Manambolo and Tsiribihina) and a coral reef system including fringing and barriers reefs, banks and coralline islands. Mangroves are important nurseries for fishes and shrimps and represent also a migration corridor for birds between March and October. Small islands are breeding sites for 5 species of sterns (up to 10,000 couples). The fish eagle (*Haliaetus vociferoides*) breeds also in this area. Three species of marine turtle are nesting in the area, the green, hawksbill and the olive ridley. This latter occurs only in this part of Madagascar and does not appear in the other sister islands of the WIO. The deep canyon south to Toliara represents shelter for the famous coelacanth (*Latimeria calumnae*).

Feature condition and future outlook of the proposed area

Human impacts observed in few locations near major towns, but major habitats almost intact in isolated areas.

Threats
- Artisanal and industrial fisheries.
- Mangrove clearing.
- Land-based activities from the watershed.

Management

- Mangroves subject to blue carbon initiative.
- Ongoing assessment of mangroves vulnerability to climate change.
- Development of fisheries reserves (local marine management areas) and MPA.

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** (please mark one column with an X)			
		Don't Know	**Low**	**Medium**	**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.				
Explanation for ranking					
Special importance for life-history stages of species	Areas that are required for a population to survive and thrive.				X
Explanation for ranking IBA; breeding site for the fish eagle endemic to Madagascar; Nesting site for marine turtles; Migration corridors for migratory birds; submarine caves for coelacanth.					
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
Explanation for ranking Foraging and breeding sites for migratory birds; breeding area for stern populations and fish eagle; nesting for marine turtle; habitat for coelacanth.					
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
Explanation for ranking Coral reefs; mangroves; submarine caves					
Biological productivity	Area containing species, populations or communities with comparatively higher natural biological productivity.				
Explanation for ranking					
Biological diversity	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.			X	
Coral reefs, sea birds, endemic fish eagle					
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.				
Explanation for ranking					

Area for Future Consideration No. 4: Saint Brandon (Cargados carajos shoals)

Abstract
The Cargados Carajos Archipelago, also known as Saint Brandon comprises 28 islets under the jurisdiction of Mauritius; The archipelago harbours a rich diversity of corals, fish and birds and is breeding ground and habitat for 2 species of marine turtles. Saint Brandon has been managed by Raphael Fishing Company Ltd (RFC) since 1928, and RFC has started fish freezing activity since 1960**.**

Introduction
The Cargados Carajos Archipelago, also known as Saint Brandon comprises 28 islets under the jurisdiction of Mauritius; The archipelago harbours a rich diversity of corals, fish and birds and is breeding ground and habitat for 2 species of marine turtles. Difficult access in winter and cyclonic conditions in summer make Saint Brandon a difficult and sensitive environment for any sustainable development. Saint Brandon is considered among the most productive marine area in our region, since its marine ecosystem is still largely preserved;

Location
The archipelago is situated 250 nautical miles (or 450 kms) north east of Port-Louis, with 12 nautical miles territorial waters spreading over approximately 1,000 km^2, about 60^0 East and 17^0 South.

Feature description of the proposed area
Great diversity of corals, fish species of commercial and non commercial value, a range of habitats; Presence of sharks, nesting site for one species of turtle, feeding and grazing ground for another species of turtle; large diversity of invertebrates ; Zone in near pristine state.

Feature condition and future outlook of the proposed area
Located within the cyclonic belt; proposal for nomination as an MPA in pipeline.

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** (please mark one column with an X)			
		Don't Know	**Low**	**Medium**	**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			
Explanation for ranking No data available.					
Special importance for life-history stages of species	Areas that are required for a population to survive and thrive.				X
Explanation for ranking: Nesting ground for one species of marine turtle; Feeding and grazing grounds					

for one species of marine turtle.					
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
Explanation for ranking Nesting ground for one species of marine turtle; Feeding and grazing grounds for one species of marine turtle.					
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
Explanation for ranking Area has a range of marine habitats still in near pristine condition					
Biological productivity	Area containing species, populations or communities with comparatively higher natural biological productivity.				X
Explanation for ranking Among the most productive fishing grounds; A number of fish species of high commercial value as well as those of non commercial value; Great diversity of corals.					
Biological diversity	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.				X
Explanation for ranking A range of habitats used as shelter; feeding grounds, nesting grounds					
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
Explanation for ranking Almost no impact from human activites/human induced disturbance					

References

Document de Synthèse de l'Analyse Ecorégionale de l'Ecorégion Marine des Iles de l'Océan Indien occidental(Commission de l'Océan Indien); Workshop presentation for the WIOMER project.

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Maps and Figures

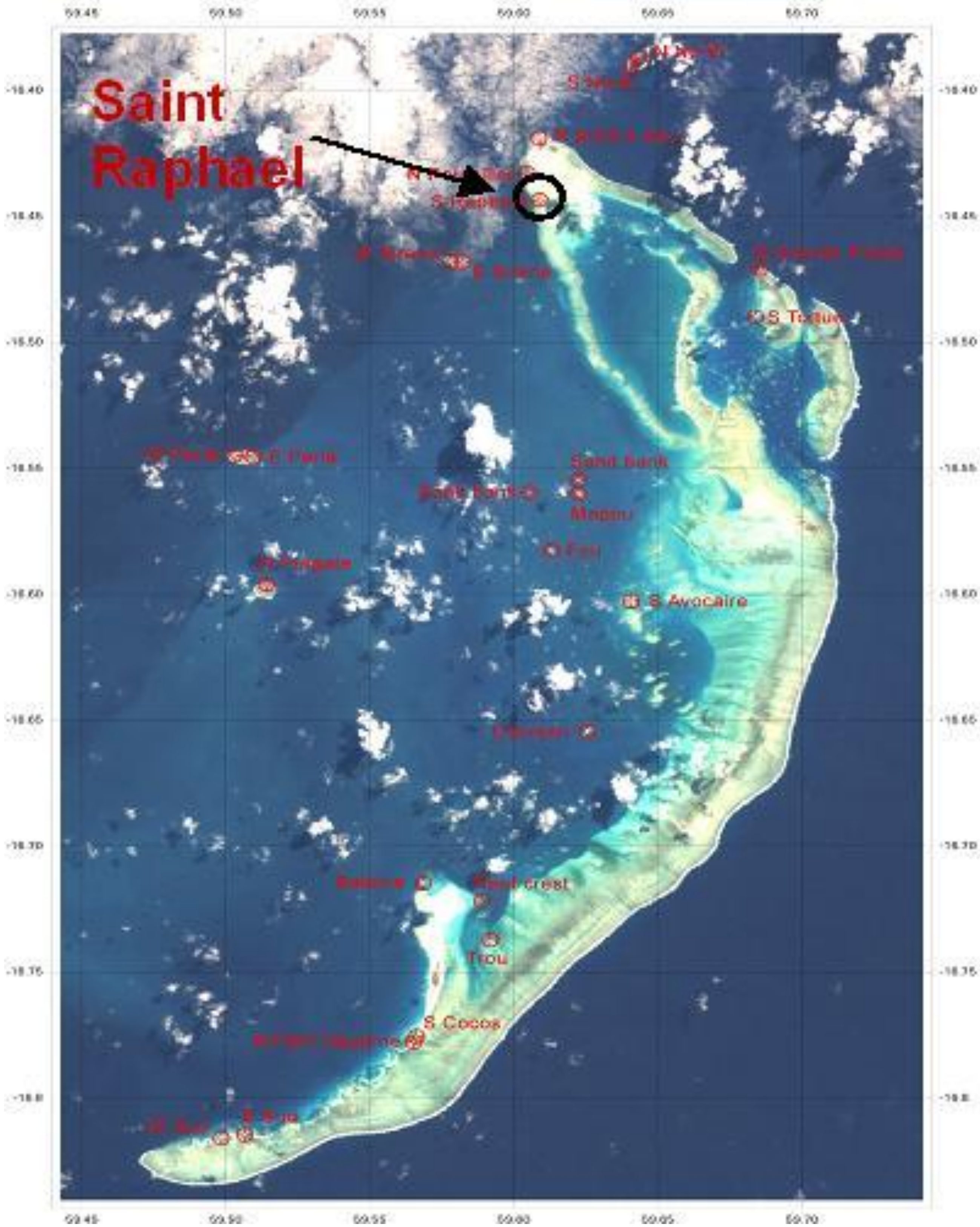

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Figure 1. The Cargados Carajos Archipelago

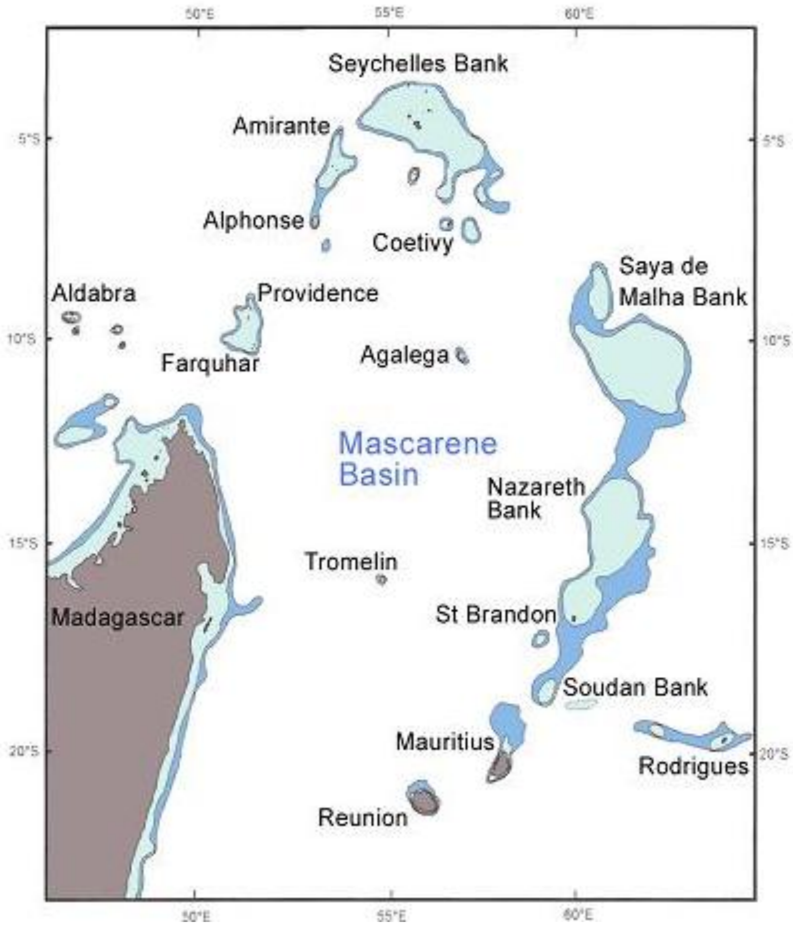

Figure 2. Location of Saint Brandon

Area for Future Consideration No. 5: South-West Coast – Mauritius

Abstract

The proposed site located on the South-West Coast of Mauritius, starts from Flic en Flac and extends to the South to Pointe Le Morne. The area includes the Black River Fishing Reserve. It is an area of rich faunal biodiversity and marine habitats.

Introduction

The area, located on the South-West Coast of Mauritius, starts from Flic en Flac and extends south to Pointe Le Morne. The area includes the Black River Fishing Reserve. The area harbours various fish species, many of commercial value and important and complex habitats. The coral reef extends over 25 km. Marine mammals and turtles can also be found in the area. This includes dolphins, sea turtles and an important number of humped backed whales as the area is within their migratory route.

Boat traffic is relatively high due to various tourism- related activities, such as dolphin-watching, recreational fishing, big game fishing, diving and snorkelling.

7 fish aggregating devices are located in the region.

Location

The area located on the South-West coast of Mauritus extends from Flic en Flac to Pointe Le Morne.

Feature description of the proposed area

Feature condition and future outlook of the proposed area

The area is threatened due to land-based activities due to high urban and tourism development. Moreover, the relatively high-level of boat traffic in the area would also represent a threat to the marine environment.

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** (please mark one column with an X)			
		Don't Know	**Low**	**Medium**	**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.				
Explanation for ranking					
Special importance for life-history stages of species	Areas that are required for a population to survive and thrive.				
Explanation for ranking					
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
Explanation for ranking 25 km of reef, representing complex and important habitat; Dolphin come in the area for socialising; Migratory route for whales.					
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
Explanation for ranking Coral reef are threatened by coral bleaching and from land based activites whch have an impact on the marine environment.					
Biological productivity	Area containing species, populations or communities with comparatively higher natural biological productivity.				
Explanation for ranking					
Biological diversity	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.				
Explanation for ranking					
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.				
Explanation for ranking					

References

Document de Synthèse de l'Analyse Ecorégionale de l'Ecorégion Marine des Iles de l'Océan Indien occidental(Commission de l'Océan Indien);

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Area for Future Consideration No. 6: "49° 39' vent field" (Dragon Vent Field), SW Indian Ridge

Abstract

The "49° 39' vent field" is one of the first deep-sea hydrothermal vent fields to be surveyed and sampled so far on the ultraslow-spreading SW Indian Ocean. Water column signals indicative of seafloor hydrothermal activity in the area were detected by hydrographic survey in the 1997 (German et al., 1998, Nature, 395: 460-463), and the seafloor source of those signals was visually confirmed by an AUV survey in 2007 (Tao et al., 2012). The first survey and sampling of the vent field by a human-directed vehicle was undertaken in November 2011, during dives by the Kiel6000 ROV (remotely-operated vehicle). These ROV dives reveal a biological community that is to date unique in vent ecology, containing new animal species and new combinations of known species, in an area where seafloor mineral exploration is expected.

Introduction

Active hydrothermal vent field, located on the western flank of a north-south trending topographic adjacent to the non-transform offset between Segments 28 and 29 of the Southwest Indian Ridge. The site consists of a "field" of sulfide edifices ("chimneys" and similar features, exceeding 25 m in height in some cases), concentrated in an area covering approximately 800 m by 500 m (although exact extent may not be fully known) at depths between 2700-2800 m. A map of the distribution of known sulfide edifices within the vent field is currently being compiled from ROV dive data and will be available shortly.

Location

The "49° 39' vent field" extends approximately between 49° 38.7' E to 49° 39.0' E and 37° 46.7' S to 37° 47.1' S. Its location lies exclusively with The Area and is not subject to any national jurisdiction or any extended continental shelf submission.

Feature description of the proposed area

Benthic feature: "field" of sulfide edifices, some >25 m high, concentrated in an area currently estimated to be 800 x 500 m. Several sulfide edifices are active "black smoker" high-temperature hydrothermal vents; area also contains relict sulfide structures, and areas of lower-temperature, diffuse hydrothermal flow. The vent field hosts a biological community comprising a mixture of new animal species, species known from vent fields of the Central Indian Ridge, and species known from newly discovered vent fields on the East Scotia Ridge in the Southern Ocean. Species known from other vent fields occur here in contrasting abundance to their occurrence in other regions. Overall, the biological community of the Dragon Vent Field is therefore unique to date in vent ecology.

Feature condition and future outlook of the proposed area

The dynamics of this to-date unique hydrothermal vent community are at present unknown. The size of sulfide edifices in the vent field suggests a prolonged history of hydrothermal activity at the site. Longevity of activity is also predicted at this site on an ultraslow-spreading ridge from the relationship seen between longevity of activity and ridge spreading rate. The first remotely operated vehicle dives at the site, in November 2011, undertook videographic surveys of the distribution of fauna on sulfide edifices to establish a baseline for future studies of temporal change, to elucidate the ecological dynamics of a vent community on an ultraslow-spreading ridge for the first time. The vent field, however, occurs within an area licensed to COMRA by the ISA (in July 2011, prior to the first ROV dives at the site) for seafloor mineral exploration.

Assessment of the area against CBD EBSA Criteria

<table>
<tr><td rowspan="2">CBD EBSA Criteria
(Annex I to decision IX/20)</td><td rowspan="2">Description
(Annex I to decision IX/20)</td><td colspan="4">Ranking of criterion relevance
(please mark one column with an X)</td></tr>
<tr><td>Don’t Know</td><td>Low</td><td>Some</td><td>High</td></tr>
<tr><td>Uniqueness or rarity</td><td>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.</td><td></td><td></td><td></td><td>X</td></tr>
<tr><td colspan="6">Explanation for ranking
Initial analysis of the biological community indicates a new cryptic species of Kiwa crab (3% COI gene sequence divergence from a morphologically similar species from the Southern Ocean). At present, the 49° 39' vent field is the only recorded occurrence for this possible new species. Further analyses of faunal samples collected in November 2011 (currently underway) may also reveal additional new species. In addition, the community at the vent field is unique in its overall composition, with the first co-occurrence of some species known from the Central Indian Ridge and some species known from the East Scotia Ridge, at abundances that contrast with their occurrence in those locations. The large size of the sulfide edifices at the vent field is also unusual (and may be a consequence of longevity of activity at this site on an ultraslow-spreading ridge).</td></tr>
<tr><td>Special importance for life-history stages of species</td><td>Areas that are required for a population to survive and thrive.</td><td>X</td><td></td><td></td><td></td></tr>
<tr><td colspan="6">Explanation for ranking
Water column signals indicate the presence of other active vent fields along the SW Indian Ridge (German CR et al., 1998, Nature, 395: 490-493), and other active vent sites have now been visually confirmed on the SW Indian Ridge (Tao et al., 2009, AGU Fall Meeting Abstract #OS21A-1150). But levels of gene flow and population connectivity among any species shared between sites in this region have yet to be established, and therefore the necessity of this particular site for persistence of regional metapopulations of its species is not known.</td></tr>
<tr><td>Importance for threatened, endangered or declining species and/or habitats</td><td>Area containing habitat for the survival and recovery of endangered, threatened, declining species or area with significant assemblages of such species.</td><td>X</td><td></td><td></td><td></td></tr>
<tr><td colspan="6">Explanation for ranking
The dynamics of this unique community on an ultra-slow-spreading ridge are not yet known; nor is the susceptibility known for these vent species to anthropogenic impacts and disturbances posed by seafloor mineral exploration activities.</td></tr>
<tr><td>Vulnerability, fragility,</td><td>Areas that contain a relatively high proportion of sensitive habitats, biotopes or species that</td><td>X</td><td></td><td></td><td></td></tr>
</table>

sensitivity, or slow recovery	are functionally fragile (highly susceptible to degradation or depletion by human activity or by natural events) or with slow recovery.				
Explanation for ranking Although the rate of natural disturbance at the level of an individual sulfide edifice within a vent field may be high at hydrothermal vents, at vent-field scale there is long-term stability in ecological structure at vent fields on slow-spreading ridges (e.g. Copley et al., 2007, J Mar Biol Assoc UK, 84: 859-867), and their susceptibility to degradation or depletion is therefore unknown.					
Biological productivity	Area containing species, populations or communities with comparatively higher natural biological productivity.				**X**
Explanation for ranking As a result of local chemosynthetic primary production at the vent field, the abundance and biomass of biota at the site are orders of magnitude greater than the surrounding areas of seafloor.					
Biological diversity	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.	**X**			
Explanation for ranking As this is the first vent field to be surveyed and sampled by ROV dives on the SW Indian Ridge, the regional context of its diversity of habitats and the genetic diversity of its populations are as-yet unknown.					
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**
Explanation for ranking Until the surveys in 2007 and 2011, this benthic site had never been visited by human technology. At present it can therefore be consider "pristine".					

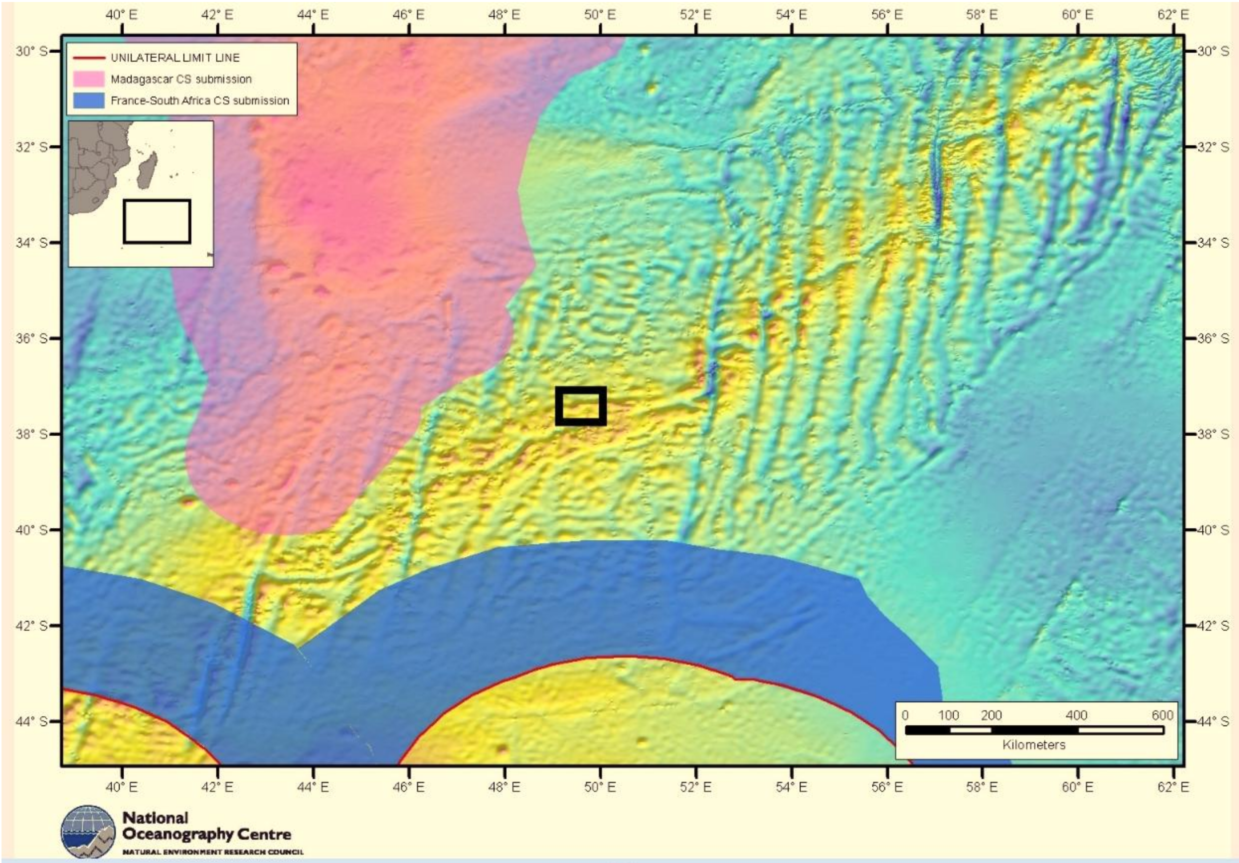
References

Tao C *et al.* (2012). First active hydrothermal vents on an ultraslow-spreading center: Southwest Indian Ridge. *Geology*, 40: 47-50.

Copley JT *et al.* (in prep), *RRS James Cook Research Cruise 67 Report* (shortly to be available via the British Oceanographic Data Centre, along with all research cruise data from November 2011, once data are fully processed for archiving).

Maps and Figures

Please see Fig 3B in Tao et al. (2012); the location and extent of the active vent area spans the "S zone" and "M zone" marked on that map.



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All results reported here from November 2011 ROV dives (e.g. initial COI divergence data for *Kiwa* crabs; taxonomic composition of the vent community; extent and nature of active sulfide edifices at the site) have yet to be submitted to a peer-reviewed publication and should therefore not be made public until published in that manner. Submission and publication are anticipated by the end of 2012.
