



## Convention on Biological Diversity

Distr.  
GENERAL

UNEP/CBD/SBSTTA/16/INF/6  
11 April 2012

ORIGINAL: ENGLISH

SUBSIDIARY BODY ON SCIENTIFIC,  
TECHNICAL AND TECHNOLOGICAL ADVICE

Sixteenth meeting

Montreal, 30 April-5 May 2012

Item 6.1 of the provisional agenda\*

### **REPORT OF THE WESTERN SOUTH PACIFIC REGIONAL WORKSHOP TO FACILITATE THE DESCRIPTION OF ECOLOGICALLY OR BIOLOGICALLY SIGNIFICANT MARINE AREAS**

#### **INTRODUCTION**

1. At its tenth meeting, 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 through the application of scientific criteria in annex I to decision IX/20 as well as 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 (paragraph 36, decision X/29).

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.

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\* UNEP/CBD/SBSTTA/16/1.

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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 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, 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 Pacific Regional Environment Programme (SPREP), the Western South Pacific Regional Workshop to Facilitate the Description of Ecologically or Biologically Significant Marine Areas, in Nadi, Fiji, from 22 to 25 November 2011. The Government of Australia provided support, through the Commonwealth Scientific and Industrial Research Organisation (CSIRO), to the Secretariat of the Convention on Biological Diversity and SPREP in their scientific and technical preparation for the workshop.

6. The meeting was attended by experts from Australia, Cook Islands, Fiji, France/New Caledonia, Kiribati, Federated States of Micronesia, New Zealand, Palau, Samoa, Solomon Islands, Tuvalu, Vanuatu, American Samoa, International Seabed Authority (ISA), Ocean Biogeographic Information System (OBIS)/IOC–UNESCO, IUCN Regional Office for Oceania, SPREP, University of the South Pacific (USP), Secretariat of the Pacific Community, Permanent Commission for the South Pacific, Global Ocean Biodiversity Initiative (GOBI), Commonwealth Scientific and Industrial Research Organization (CSIRO), BirdLife International, Conservation International Pacific Islands Program, and Wildlife Conservation Society. The full list of participants is attached as annex I.

## **ITEM 1. OPENING OF THE MEETING**

7. On behalf of Mr. Neroni Slade, Secretary General of the Pacific Island Forum Secretariat, and Ocean Commissioner for the Pacific Islands Ocean Region, Mr. Tim Carruthers delivered his opening statement at 9 a.m. on Tuesday, 22 November 2011. He highlighted the great size, the high number of nations and the thousands of islands in the region, as well as its ecological and biological significance. He noted that these circumstances presented challenges that were recognized in the Pacific Plan and were further detailed in the Pacific Oceanscape Framework, an initiative endorsed by Pacific Islands Forum Leaders in 2010 that aimed at fostering an integrated approach to ocean management and the threats the ocean faced today. Mr. Slade thanked participants for their efforts and emphasized the importance of their work for this region. He expressed his interest in seeing the results of their work and his confidence that it would start a new chapter for the Pacific region. Citing the words of President Aote Tong of Kiribati and of Prime Minister Henry Puna of the Cook Islands, he invited all partners to work together to increase understanding of the ocean, to proactively manage and care for its resources and diverse ecosystems, and to fulfill their role as ocean stewards. He concluded by urging participants, when focusing on the

important details of the EBSAs they were to propose, to bear in mind the Pacific Ocean as a whole and the need to manage this ocean and its special places, and to conserve the services upon which Pacific island people and indeed the world rely.

8. On behalf of the Executive Secretary of the Convention, Mr. Ahmed Djoghlaif, Ms. Jihyun Lee (Environmental Affairs Officer at the CBD Secretariat) delivered the opening statement. In his statement, Mr. Ahmed Djoghlaif, welcomed participants and expressed his thanks to them for participating in this important workshop, the first regional workshop on ecologically or biologically significant marine areas to be convened by the Secretariat of the Convention on Biological Diversity. He thanked SPREP for hosting this workshop in collaboration with the Secretariat. He thanked the Japan Biodiversity Fund for providing financial support for this workshop and for the participation of experts from developing countries. He also thanked the Government of Australia and CSIRO for providing excellent scientific and technical support. Mr. Djoghlaif highlighted that the Conference of the Parties at its tenth meeting adopted a Strategic Plan for Biodiversity 2011-2020, which included a target to conserve 10% of coastal and marine areas in protected areas, noting the concerns raised by the Conference of the Parties at its tenth meeting on the slow progress toward this target. He also mentioned COP-10 guidance 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 the next meeting of the scientific body of the Convention (SBSTTA 16) and the next meeting of the Conference of the Parties (COP 11), the Convention's decision-making body (in April and October 2012, respectively). The EBSA reports endorsed 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 would bring opportunities to highlight the complex challenges it faces. He expressed his wish for active participation by all in this workshop to ensure it benefits the region.

9. On behalf of SPREP, Mr. Stuart Chape (Director, Biodiversity and Ecosystem Management, SPREP) delivered opening remarks. He expressed his pleasure to be working with the Secretariat of the Convention and other partners to convene this workshop, noting that a coordinated approach was needed to sustainably manage the wealth of natural resources in the southwest Pacific. He emphasized that there was a particular urgency in open-ocean areas, which provided connectivity and habitat for key fishery species and were migration corridors and habitats for threatened species, such as turtles, marine mammals, sharks and birds, while remaining among the least-known regions on the planet. Mr. Chape noted that synthesizing available data and defining specific ecologically or biologically significant areas within this vast ocean realm could provide an important basis to assist in sustainable management of the Pacific at both national and regional scales. He expressed his optimism that this workshop would provide impetus to improve the effectiveness of ocean management and indicated that it was an important part of the process in implementing the Pacific Oceanscape Framework adopted by Pacific Islands Forum Leaders and a positive example of utilizing available scientific data as a basis for informing policy and management decision-making. He indicated that identification of EBSAs was one of the targets in SPREP's 2011-2015 Strategic Plan and that achieving it would require working closely with its members and partners. Mr. Chape expressed his hope that this workshop be the start of a process that enhances the understanding, monitoring and managing of ocean resources and ecosystems. As regional host for the workshop, he expressed on behalf of SPREP his thanks to the Secretariat of the Convention, the Government of Japan for financial support, and the Government of Australia and all other partners who provided technical support.

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

10. After a brief self-introduction, Mr. Joeli Veitayaki (Head of the School of Marine Studies at University of the South Pacific) and Mr. Ian Cresswell (Science Director, CSIRO) were elected as

meeting co-chairs based on proposals from Cook Islands and New Zealand, which were seconded by SPREP.

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

12. The meeting was organized in plenary session and break-out group sessions. The meeting Co-Chairs nominated Mr. Tim Carruthers (SPREP), Mr. Nicholas Bax (GOBI/CSIRO) and Mr. Piers Dunstan (CSIRO) as rapporteurs for the plenary sessions, taking into consideration the expertise and experience of the meeting participants and in consultation with the Secretariat of the Convention on Biological Diversity and SPREP.

### **ITEM 3. WORKSHOP BACKGROUND, SCOPE AND OUTPUT**

13. On behalf of the Secretariat of the Convention, Ms. Jihyun Lee, gave an overview of the objectives and expected outcomes of the workshop.

14. The workshop participants also viewed the video presentation provided by Mr. Jake Rice (CBD Secretariat Resource Person) on the workshop background, including other relevant global processes.

15. Mr. Nicholas Bax (CSIRO/GOBI) provided a presentation on “Scientific criteria for identifying ecologically or biologically significant marine areas (EBSAs), as contained in annex I to decision IX/20”.

16. Mr. Malcolm Clark (New Zealand) delivered a presentation on “Regional overview of biogeographic information on open ocean water and deep-sea habitats and geographic scope of the workshop”.

17. Mr. Tim Carruthers (SPREP) provided an overview of relevant programmes at regional scale.

18. The summary of the above presentations is provided in annex II.

19. The workshop participants then exchanged and discussed possible issues, concerns and/or opportunities in relation to the global process on describing areas meeting EBSAs criteria within the regional context of marine biodiversity conservation and sustainable use. Specific elements of the discussion included:

(a) Australia’s current efforts for identifying Key Ecological Features (similar to EBSAs) within national jurisdiction, in particular to provide guidance on marine monitoring and enhanced management;

(b) Identification of Key Biodiversity Areas (KBAs) in Samoa and Kiribati, under the CBD programme of work on protected areas (PoWPA);

(c) Lessons learned from the “OSPAR/NEAFC/CBD Secretariat Joint Scientific Workshop on the Identification of Ecologically or Biologically Significant Areas (EBSAs) in the North-East Atlantic” (held in Hyeres, France, from 8 to 9 September 2011) as well as the relative constraints in the Western South Pacific region in terms of available data sets;

(d) Lessons learned from the “IUCN/NRDC workshop to Identify Areas of Ecological and Biological Significance or Vulnerability in the Arctic Marine Environment” (held in La Jolla, California, 2-4 November 2010), the “IUCN/GOBI Workshop on Ecologically or Biologically Significant Areas in the Pelagic Realm” (held in Sidney, Canada, 12-14 May 2011) and the “IUCN/GOBI Workshop on Identifying Ecologically and Biologically Significant Areas on Seamounts” (held in New Orleans, 5 - 6 December 2010).

20. The workshop participants agreed on the workshop geographic scope, as contained in annex VI in consideration of the following:

(a) GOODS biogeographic classification system;

(b) Areas greater than 100 m water-depth contiguous to land as guidance for open-ocean waters and deep-sea habitats;

(c) Marine waters within and beyond national jurisdiction of SPREP member countries (except for Australia and New Zealand, where separate national processes are underway) at the time the CBD notifications for requesting nomination of experts were issued (Ref No. 2011-136 dated 22 July 2011 and 2011-160 dated 29 August 2011).

21. The participants noted that United Kingdom, not being a SPREP member country at the time of issuing the above CBD notifications, was not invited to represent Pitcairn Islands. The participants also noted that some countries invited were not represented at the workshop, and the Secretariat clarified that this was due to lack of nominations or cancellation of travel after their respective experts were selected.

**ITEM 4. REVIEW OF RELEVANT SCIENTIFIC DATA/INFORMATION/MAPS COMPILED THROUGH THE CONVENTION'S ECOLOGICALLY OR BIOLOGICALLY SIGNIFICANT MARINE AREA (EBSA) REPOSITORY SYSTEM AND OTHER CREDIBLE, QUALITY-CONTROLLED SOURCES**

22. For the consideration of this item, the workshop had before it an information note by the Executive Secretary (UNEP/CBD/RW/EBSA/WSPAC/1/2) containing a compilation of the submissions by Parties, other Governments and relevant organizations in response to the Convention on Biological Diversity notification dated 11 October 2011 (ref. No. SCBD/STTM/JM/JLe/JG/77026). The documents/references submitted prior to the workshop were made available as information to the workshop participants on the Convention on Biological Diversity meeting website, <http://www.cbd.int/doc/?meeting=RWEBSA-WSPAC-01>.

23. Mr. Piers Dunstan (CSIRO) provided a presentation on “Data to inform the CBD Western South Pacific Regional Workshop to Facilitate the Description of Ecologically or Biologically Significant Marine Areas”.

24. Mr. Michael Donoghue (CI) provided a presentation on “EBSAs for Humpback Whales in the Western South Pacific”.

25. Mr. Lui Bell (SPREP) presented on “Post-nesting Sea turtle migration in the Pacific Islands region”.

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

27. The workshop participants were invited to review, through open plenary discussion, relevant scientific data/information/maps in relation to their potential contribution to describing areas meeting EBSAs criteria. The results of plenary discussion are contained in annex III.

**ITEM 5. DESCRIPTION OF ECOLOGICALLY OR BIOLOGICALLY SIGNIFICANT MARINE AREAS THROUGH APPLICATION OF THE SCIENTIFIC CRITERIA FOR EBSAs (DECISION IX/20, ANNEX I) AND OTHER RELEVANT COMPATIBLE AND COMPLEMENTARY NATIONALLY AND INTERGOVERNMENTALLY AGREED SCIENTIFIC CRITERIA, AS WELL AS THE SCIENTIFIC GUIDANCE ON THE IDENTIFICATION OF EBSAs**

28. For the consideration of this item, based on the compilation mentioned above and building on the above presentations and deliberations of the workshop in plenary session, the workshop participants were requested to mark the potential areas that meet EBSA criteria on the map of the region covering the workshop's geographic scope.

29. The workshop participants were then split into subregional break-out groups to consider the description of EBSAs through the application of the scientific criteria. Participants were assisted by GIS operators, who made hard/electronic copies of the maps available for the deliberation of the break-out group discussion.

30. During its break-out group discussion, participants drew approximate boundaries of areas meeting EBSAs criteria on a central map as they were completed to keep track of opportunities to extend or merge areas meeting EBSAs criteria 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.

31. Workshop participants decided the following in describing areas meeting EBSAs criteria:

(a) The boundaries of areas meeting EBSAs criteria extending beyond the workshop's geographic scope (e.g. areas extending into EEZs of Australia and New Zealand) would be identified with dotted lines so that the integrity of the areas meeting EBSAs criteria was not diminished;

(b) Areas where areas meeting EBSAs criteria were not being developed due to lack of sufficient local knowledge or time by workshop participants are included in annex IV;

(c) An area meeting EBSAs criteria near the Pitcairn Island (UK) would be identified as dotted lines on the map for future consideration, noting that UK was not invited for expert nomination as it was not a member of SPREP at the time of issuing CBD notifications;

(d) An area meeting EBSAs criteria near Marquesas islands deep-sea waters would be also identified as dotted lines on the map for future consideration, as representatives of French Polynesia were not present.

32. The results of the break-out groups were reported at the plenary for consideration. Workshop participants at the plenary session reviewed the potential areas for the description of EBSAs proposed by the break-out group sessions and considered them for inclusion in the final list of areas described for EBSAs criteria.

33. The workshop participants agreed on descriptions of 26 areas meeting EBSAs criteria. The details of the EBSA descriptions, as agreed by the plenary, are contained in annex V.

34. The workshop acknowledged the description of areas meeting EBSAs criteria was based on expert knowledge available at the meeting as well as data compilation prior to the workshop. It was recognized that this EBSA description was a first attempt at the process, and it is recommended that the Convention on Biological Diversity consider ways in future workshops to supplement the expert approach, as described in annex VI.

**ITEM 6. 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**

35. Building on the workshop deliberation on describing EBSAs, the workshop participants were invited to identify, through open plenary discussion, gaps and needs for further elaboration in describing EBSAs, including the need for the development of scientific capacity and a proposal for future scientific collaboration.

36. The results of plenary discussion are contained in annex VI.

**ITEM 7. OTHER MATTERS**

37. No other matters were discussed.

**ITEM 8. ADOPTION OF THE REPORT**

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

39. Participants agreed that any additional scientific references and scientific information could be provided to the Secretariat by workshop participants within a week of the closing of the workshop in order to further elaborate the EBSA descriptions contained in annex IV below.

#### **ITEM 9. CLOSURE OF THE MEETING**

40. In closing the workshop, the Co-Chairs thanked the workshop participants for their valuable contributions to the workshop deliberations, SPREP for their great hospitality and essential support for successfully convening the workshop, CSIRO for their excellent scientific and technical support prior to and during the workshop, and the CBD Secretariat for their hard work and efficient support in servicing the workshop. They also thanked the Government of Japan for their financial support, and Australia for their technical support through CSIRO. Workshop participants expressed their sincere appreciation to the Co-Chairs for their excellent leadership and guidance in steering the workshop deliberation in a very effective and efficient manner.

41. The workshop was closed at 5:45 p.m. on Friday, 25 November 2011.

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*Annex II***SUMMARY OF THEME PRESENTATIONS****Annex Item 3*****Jihyun Lee (CBD Secretariat)***

Ms Jihyun Lee introduced the Convention on Biological Diversity (CBD) as a whole and the programme of work on marine and coastal biodiversity in particular. She highlighted the collaboration between the CBD Secretariat and the Secretariat of the Pacific Regional Environment Programme (SPREP) covering various programmes of work and cross-cutting issues of the Convention. She then outlined the process for identifying ecologically or biologically significant marine areas (EBSAs), through which COP 10 called for regional EBSA workshops as well as the process through SBSTTA 16 and COP 11 to which the outcomes of the workshops will be submitted for their consideration and endorsement. She noted the challenges of the diverse, large-scale data, but reiterated the importance of the process in relation to the Aichi Biodiversity Targets, in particular Target 11. She then highlighted the potential benefits of the EBSA process in further strengthening the region's efforts toward marine biodiversity conservation goals, by facilitating scientific collaboration, increasing the awareness, and encouraging countries to apply necessary conservation measures related to EBSAs.

***Jake Rice (CBD Secretariat Resource Person)***

Mr. Jake Rice in a video presentation called "VMEs and EBSAs: Protection and Use of Special Marine Places", began by indicating that there were several parallel processes for the identification of "special places", and emphasized the CBD EBSA and the FAO vulnerable marine ecosystems (VME) processes as two with strong similarities, but initiated from different specific needs. He described each criterion for the definition of both EBSAs and VME regions and compared them, concluding that there was a lot of overlap (as the criteria for EBSAs were designed in consideration of VME criteria). This was followed by a description of the history of the description of marine "special places" starting in 2002 at the WSSD Plan of Implementation, taken up by both the UN Resolution on Oceans and the Law of the Sea as well as the UNGA Resolution on Sustainable Fisheries; these slowly were developed until the ninth meeting of the Conference of the Parties, which adopted the EBSA criteria in decision IX/20, and the tenth meeting of the Conference of the Parties, which called for the organization of regional workshops and the development of a repository for the accumulated data.

***Nicholas Bax (CSIRO/GOBI)***

Mr. Nicholas Bax delivered a presentation in which he outlined the seven EBSA criteria and then described them in greater depth with specific examples of each. He then described the process and results of the IUCN Natural Resources Defense Council report that identified 71 EBSA regions in the Arctic marine environment – then summarized these into 17 "super EBSA" regions that not only met many of the EBSA criteria, but also had global significance. He noted that criteria one through six were used in a similar number of cases, however criteria seven (naturalness) was used less often in describing areas meeting EBSAs criteria. The modal number of criteria associated with each EBSA was three, and different geographic regions prioritized different criteria. The second example described was the OSPAR workshop in the North Sea, where the physical areas meeting EBSAs criteria were very large, and he noted that with such large areas meeting EBSAs criteria, the management utility and implications would ultimately be very different. Together these examples indicate that the EBSA criteria are quite flexible and should be used to support the description of EBSAs without becoming too prescriptive. The last example was from Australia, not using EBSA criteria specifically, but defining key ecological features, with the purpose of looking at features to define national ecosystem monitoring metrics and protocols to assess ecosystem status and change over time. This indicates a potential value of EBSAs in focusing monitoring of the marine environment.

***Malcolm Clark (New Zealand)***

Mr. Malcolm Clark presented an overview of biogeographic information on open-ocean and deep-sea habitats. The presentation included a description of biogeography and its definition in the context of the workshop related to similar groupings of large-scale faunal communities. Four approaches to biogeography were discussed, with emphasis on taxonomic and physiognomic methods. Mr. Clark described the Global Open Ocean and Deep Sea (GOODS) classification in some detail as it is the most recent biogeographic work covering pelagic through hadal depth zones. It was stressed that finer scale regional analyses will enable smaller biogeographic groups to be identified, but examples were given of regional taxonomy that tended to fit the broader global boundaries reasonably well. Topographic features, oceanographic conditions, and geomorphology can all be used to help determine biogeographic boundaries in the absence of good biological data. Biological communities are strongly driven by factors such as depth, topographic feature (e.g., seamounts) and oceanographic conditions (e.g., temperature, oxygen), and so physical “proxies” can be a useful input to biogeographic classifications. The presentation also covered various problems with biogeographical analyses, including the large gaps in biological sampling, differences in the gear used, and the consistency of taxonomic identification. However, the key aspect to bear in mind is that biogeographical boundaries on maps are different for different types of animals, so small benthic invertebrates will have a different scale of distribution than large mobile migratory species. Mr. Clark noted that available biogeographic data indicated clearly that there are several biogeographic zones in the Western South Pacific, and that faunal communities, whether pelagic or benthic, differ from other parts of the Pacific and Southern Ocean. Boundaries vary depending on the depth band (pelagic/bathyal/abyssal) and the regional topography and geomorphology. An understanding of biogeography can provide a framework that may help structure the size and location of areas meeting EBSAs criteria, inform a “nested” approach to different types of areas meeting EBSAs criteria, and the potential identification of “representative” areas meeting EBSAs criteria.

***Tim Carruthers (SPREP)***

Mr Tim Carruthers introduced some examples and types of relevant programmes that will potentially use areas meeting EBSAs criteria. The CROP (Council of Regional Organizations) agencies, which represent 21 member Pacific Island Countries and Territories, and the CROP agency partners have many regional projects and programmes. SPREP’s strategic plan specifically includes the identification of EBSAs, and SPREP also has a marine species programme requiring such information at a regional scale. Mr. Carruthers mentioned the relevant environmental and fisheries treaties and conventions in the region as well as the Pacific Oceanscape Framework. In conclusion, he noted that there are many potential mechanisms to use areas meeting EBSAs criteria and challenged participants to identify how the description of areas meeting EBSAs criteria may assist their programmes and national efforts for marine conservation.

**Annex Item 4*****Piers Dunstan (CSIRO)***

Mr. Piers Dunstan delivered a presentation entitled “Data to inform the CBD Western South Pacific Regional 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 and SPREP) for data synthesis and sourcing, and has recognized the importance of using the best available data to justify described EBSAs. Data includes direct biological data and also physical data as proxies. Some layers are raw data, and some are combined or synthetic. Biological data includes: (1) catches on tuna, marlin and swordfish from the Secretariat of the Pacific Community (SPC); (2) data sourced from the Ocean Biogeographic Information System (OBIS); (3) historic whale catches; (4) seabird density; and (5) predictions of deep-sea corals. Mr. Dunstan noted that physical data, which can be used as surrogates, include seamounts, vents and seeps, geology, climatologies, remotely observed data and derived oceanographic products.

***Michael Donoghue (Conservation International)***

Mr. Michael Donoghue gave a presentation on “EBSAs for Humpback Whales in the Western South Pacific”. He indicated that, like most of the other large Southern Hemisphere baleen whales, humpback whales undertake lengthy annual migrations between summer feeding grounds in the Antarctic Ocean and tropical overwintering grounds. Analysis of catch histories indicates that between 1900 and 1965, the population abundance of humpback whales in Oceania was reduced by commercial whaling operations from around 60,000 to a few hundred. The South Pacific Whale Research Consortium has conducted non-lethal genetic and photo-identification research since 1991. They have discovered that Oceania contains two genetically distinct humpback populations and that most adults return to the same Pacific Island breeding grounds each year to overwinter. They have also determined that Tonga is at the centre of humpback distribution and has the largest overwintering sub-population. In 2008 the Oceania population of humpback whales was reclassified by IUCN from Vulnerable to Endangered. Satellite tagging of humpback whales overwintering in the Cook Islands and New Caledonia shows that seamounts, such as the Antigonion seamount in New Caledonia, may be important waypoints in the migration from tropical breeding grounds to Antarctic feeding grounds.

***Lui Bell (SPREP)***

Lui Bell presented a report entitled “Post-Nesting Turtle Movements in the Pacific Islands Region”. Data obtained from both flipper and satellite tagging conducted by SPREP and partners on green turtle nesting populations in several Pacific Island countries and territories (PICTS) illustrates important migratory corridors and post-nesting foraging areas. From post-nesting migration patterns, green turtles nesting in the western Pacific (e.g. Federated States of Micronesia and Palau) migrate to Asia, where they forage. In the central region (northeast coast of Australia, Marshall Islands, Vanuatu, New Caledonia and Solomon Islands), post-nesting foraging takes place within the central region. For green turtles nesting in PICTS east of Fiji (e.g. American Samoa, Cook Islands, French Polynesia), the main foraging area is Fiji. Data for green turtles that nested in Fiji indicated they forage within Fiji waters. Although turtles have a very wide migration area, migrating throughout the region, the foraging areas and those areas near nesting sites are the most important. Additional work is required to refine specific turtle migration corridors, e.g. in relation to ocean features, foraging areas and filling data gaps for PICTS where no or little information is available.

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

Workshop participants noted with appreciation the support of the Government of Australia through CSIRO, in providing technical advice and support to the Secretariat of the Convention and SPREP in convening this workshop, for the data collection, compilation, collation, synthesis and mapping, recognizing the importance of using the best available data to justify described EBSA areas. Data includes direct biological data as well as physical data as proxies. Some layers are raw data and some are combined or synthetic. Biological data includes; (1) catches on Tuna, Marlin and Swordfish from the Secretariat of the Pacific Community, (2) data sourced from OBIS/ICO-UNESCO; (3) historic whale catches; (4) seabird density; and (5) predictions of deep-sea corals. Physical data that can be used as surrogates include seamounts, vents and seeps, geology, climatologies, remotely observed data and derived oceanographic products. Further details are described in the workshop background document (UNEP/CBD/RW/EBSA/WSPAC/1/2)

Questions were raised about how data are contributed to OBIS. It was noted that Regional OBIS Nodes are the mechanism for OBIS to realize its global mandate. OBIS Nodes reach out to the regional scientific community to mobilize data from their geographic area of interest; the success of this process varies between regions. During the workshop it was noted that several relevant datasets were not available through OBIS, and several participants agreed to assist OBIS in capturing some of these missing dataset s.

Questions were also raised about data quality and the scale of mapping. There was a concern that few geo-referenced data on large marine mammals were available. Existing data on large pelagic predators were not made available to the workshop.

Participants noted that not all important data layers were available for consideration and sought access in the future to the data held by CROP agencies on behalf of their members. The participants requested relevant organizations in the region to explore the possibility of securing blanket approval for an EBSA process to exchange data freely, in order to avoid issues of limitations in accessing data due to data privilege.

A number of additional data sets were provided for use at the meeting (e.g., New Zealand biodiversity and fishery information). These were used in some cases, but not extensively because of their availability only at the start of the workshop. These could not be made publicly available due to national sensitivity and confidentiality issues.

Participants reported the results of break-out group discussion as follows:

**Group 1.**

The group noted data gap issues of endemic and restricted range species. The challenge is that information below 100 m is a big unknown for many countries and while the geographic scope agreed by participants is beyond 100 metres depth. The group noted there is a strong coupling between deepwater species (e.g., Nautilus, squid, deepwater snapper) and shallow habitats – the interaction between shallow, deep-water (>100m depth) and open-ocean species is critical as demonstrated by seabirds and their foraging areas. There are many other potential data sources including freshwater eels from New Zealand and selected islands in the Pacific, which migrate to open ocean areas in the tropical Pacific. Nautilus is also important, and some information may exist with research being undertaken by Japanese and French scientists. The group also indicated a gap in knowledge and data for sharks and rays. For closely clustered islands such as Guam and Chuuk there is some information on large reef food fish (humphead parrotfish), highlighting the link between the shallow habitats and the deeper ocean route. There is useful information on fisheries in New Caledonia (200-1500 m depth). Some potential areas for consideration of areas meeting EBSAs criteria were identified, including the Phoenix Island Protected Area, South-Equatorial Current, Tonga and the Kermadec Trench and the Manihiki Plateau.

**Group 2.**

The group questioned how vulnerabilities could be included in the description of EBSAs. The issue of climate change was raised and the group recommended a subsequent step to include additional information into the areas meeting EBSAs criteria for vulnerability to climate change. The Pacific Climate Change Science Program (from Australia) could provide an appropriate avenue for engagement to support such assessment. The group identified an area in a tongue of highly productive pelagic waters in the northeastern corner of the region, based on a tongue of cool water, as being significant for bird overwintering habitat, high abundance of whales (historically and currently) and tuna fishery. Catch data from the 19<sup>th</sup> century indicates that there were historically very high numbers of sperm whales in the region. There was concern about the lack of regional expertise on deep-ocean areas. The group questioned if the areas defined as Important Bird Areas (IBAs) can be described directly as EBSAs. It was felt that this could be possible in some cases, but “1% global population” threshold used to define some IBAs may not be sufficient to trigger EBSA criteria, consequently such sites would require further assessment. The question of size for each area meeting EBSAs criteria was also raised, e.g., should we increase the size of the area described for EBSAs criteria to increase the number of criteria that are met? The group decided to consider this on a case-by-case basis.

At the plenary, participants noted that identification of threats to EBSAs is beyond the mandate of the regional workshop as given by COP 10 in decision X/29. The group noted that the better scientific information we provide, the better the chances of these areas described for EBSAs criteria being considered for further elaboration. Other sources of information may be available (e.g. exploration and exploitation of marine minerals, fisheries), which could be used for describing EBSAs. There was discussion about the appropriate size of areas meeting EBSAs criteria and whether to use a large size for the area meeting EBSAs criteria to include a number of habitats or taxa ranges. It was agreed that the size should be such to retain a clear understanding of how the criteria link to different components within the boundaries of the area described for EBSAs criteria. Drawing on the results of the above group discussion, participants discussed the vulnerability of these EBSAs in view of climate change and an opportunity for the Pacific to take proposed areas for the description of EBSAs for consideration in climate prediction, as a means of identifying how these areas meeting EBSAs criteria will be affected. While this was seen as useful, the workshop was reminded that areas meeting EBSAs criteria need to be described based on current available information. The workshop also considered the use of environmental envelope modelling (EEM) to predict the range of species, validated with existing data, in particular by using physical data as proxies.



*Annex IV***AREAS CONSIDERED DURING THE WORKSHOP BUT NOT DESCRIBED AS AREAS MEETING EBSAs CRITERIA DUE TO DATA PAUCITY AND LACK OF ANALYSIS**

- Marianas Trench
- Pocklington Reef : connectivity to Solomon Island Reefs, transboundary
- Seamounts around Solomon Islands and Papua New Guinea
- Green Turtle migration between nesting and foraging areas: South Marshall Islands
- Cook Islands migratory corridors
- Green Turtle migration between nesting and foraging areas: French Polynesia, Cook Islands to Fiji
- Line Island natural area
- Nauru high productivity area
- Foundation Fracture Zone
- Warm Pool: north of Papua New Guinea and the Solomon Islands

*Annex V*

**DESCRIPTION OF AREAS MEETING EBSA CRITERIA IN THE WESTERN SOUTH PACIFIC REGION AS AGREED BY THE WORKSHOP PLENARY  
(Details of description are provided in the appendix to this annex)**

<b>Area Number</b>	<b>Name of areas meeting EBSA criteria</b>
1	Phoenix Islands
2	Ua Puakaoa Seamounts
3	Seamounts of West Norfolk Ridge
4	Remetau Group: South-west Caroline Islands and Northern New Guinea
5	Kadavu and the Southern Lau Region
6	Kermadec-Tonga-Louisville Junction
7	Monowai Seamount
8	New Britain Trench Region
9	New Hebrides Trench Region
10	Rarotonga Outer Reef Slopes
11	Samoan Archipelago
12	Suvarrow Seabird Foraging Area
13	South of Tuvalu/Wallis and Fortuna/North of Fiji Plateau
14	Vatu-i-Ra/Lomaiviti, Fiji
15	South Tasman Sea
16	Equatorial High Productivity Zone
17	Central Louisville Seamount Chain
18	Western South Pacific High Aragonite Saturation State Zone
19	Clipperton Fracture Zone Petrel Foraging Area
20	Northern Lord Howe Ridge Petrel Foraging Area
21	Northern New Zealand/South Fiji Basin
22	Taveuni and Ringgold Islands
23	Manihiki Plateau
24	Niue Island and Beveridge Reef
25	Palau Southwest
26	Tonga Archipelago
Future Consideration	Marquesas Archipelago Deep-sea Waters
Future Consideration	Pitcairn Islands

## Appendix

### Area No. 1: Phoenix Islands

#### Abstract

Phoenix Islands are the central archipelago of the country of Kiribati, to the west of the capital, Tarawa. The island of Kanton is the only island that is inhabited; the population is around 50 individuals. On the islands of Orona and Hull a marine survey was completed in 2000, and permits were granted for a harvest scheme in 2000 called the Kakai Scheme. The scheme allowed for fishing for shark fins, snappers, clams, tunas and seacucumbers. The rest of the islands are inhabited and in good condition in terms of naturalness, biological productivity and diversity.

#### Introduction:

The Phoenix Islands have a diverse bathymetry, a number of bioregions and several shallow seamounts. There are six seamounts within this area, strong eddy fields in the surface water, and up-welling occurs, which heightens the concentration of rich mineral nutrients for phytoplankton and zooplankton (UNEP/CBD/RW/EBSA/WSPAC/1/2). As a result, this area has high levels of biodiversity and species of economic importance, including sharks, billfish, tuna and other by-catch species. There are five Important Bird Areas, which makes the Phoenix Islands important for specific life stages for endangered species. There are numerous kinds of sea crabs and turtles, and other highly migratory species are common. There was a high catch of sperm whales in the Phoenix Islands during the early 1900s. There are several IUCN Red List Species documented in this area, and the OBIS dataset shows a high number of species.

#### Location:

This area includes all of the Kiribati islands of the Phoenix archipelago and the surrounding seamounts.

#### Feature description of the proposed area:

A feature of the marine environment of Phoenix Islands is an outstanding collection of large submerged volcanoes, presumed extinct, rising direct from the extensive deep seafloor with an average depth of more than 4,500 metres and a maximum depth of over 6,000 metres. Included in the collection of large volcanoes are no fewer than 14 recognized seamounts, submerged mountains that do not penetrate to the ocean surface. The collection of atolls represents coral reef cappings on eight other volcanic mountains that approach the surface.

The large bathymetric range of the submerged seamount landscape provides depth-defined habitat types fully representative of the mid-oceanic biota. The widely recognized local endemism and distinctive species assemblages associated with seamounts, clearly demonstrable in the Phoenix Islands, is evidence of on-going in situ evolution of marine ecosystems and communities of plants and animals.

The reef systems are so remote and exhibit such near pristine conditions that Phoenix Islands can serve as a benchmark for understanding and potentially restoring other degraded hard coral ecosystems. The islands are acknowledged as critical sites for the ongoing study of: global climate change and sea-level events in that they are located in a region less affected by other anthropogenic stresses; the growth and evolution of reef systems; biological behavioural studies; recruitment processes in isolation, size classes and population dynamics of all marine organism groups; and reef species diversity studies. As such, the oceanic Central Pacific islands are natural laboratories for understanding the natural history of the Pacific.

As a known breeding site for numerous nomadic, migratory and pelagic marine and terrestrial species, Phoenix Islands makes a significant contribution to on-going ecological and biological processes in the evolution and development of global marine ecosystems and communities of plants and animals.

Due to its great isolation, Phoenix Islands occupies a unique position in the biogeography of the Pacific as a critical stepping stone habitat for migratory and pelagic/planktonic species and for ocean currents in the region. Phoenix Islands embraces a range of associated marine environments that display high levels of marine abundance as well as the full spectrum of age and size cohorts, increasingly rare in the tropics, and especially in the case of apex predator fish, sea turtles, sea birds, corals, giant clams, and coconut crabs, most of which have been depleted elsewhere. The overall marine trophic dynamics for these communities across this archipelago are better functioning (relatively intact) compared with other island systems where human habitation and exploitation have significantly altered the environment.

Phoenix Islands provides important natural habitats for in-situ conservation of globally important oceanic biological diversity, both marine and terrestrial. It is the most important secure habitat of the local endemic and now endangered Phoenix petrel and serves as crucial breeding and resting area for a number of threatened migratory birds. Phoenix Islands collectively provides very important habitat for the continued existence of a number of globally endangered species (e.g., Napoleon wrasse, hawksbill turtle), vulnerable species (e.g., White-throated Storm-petrel, Bristle-thighed curlew, green turtle, giant clam, bumblehead parrotfish) and numerous other globally depleted species, both marine and terrestrial, including apex predators such as sharks.

The remoteness of the area and absence of permanent human settlement provides a unique opportunity for a high standard of habitat protection for species and ecosystems of global importance to science and conservation, from atoll to deep sea.

**Feature condition and future outlook of the proposed area**

Bird species have significant populations (nine species including 20% of world population of endangered White-throated storm-petrel) in the Phoenix Islands. There has been historical fishing pressure targeting sperm whales, tunas, sharks and swordfish.

**Assessment of the area against CBD EBSA Criteria**

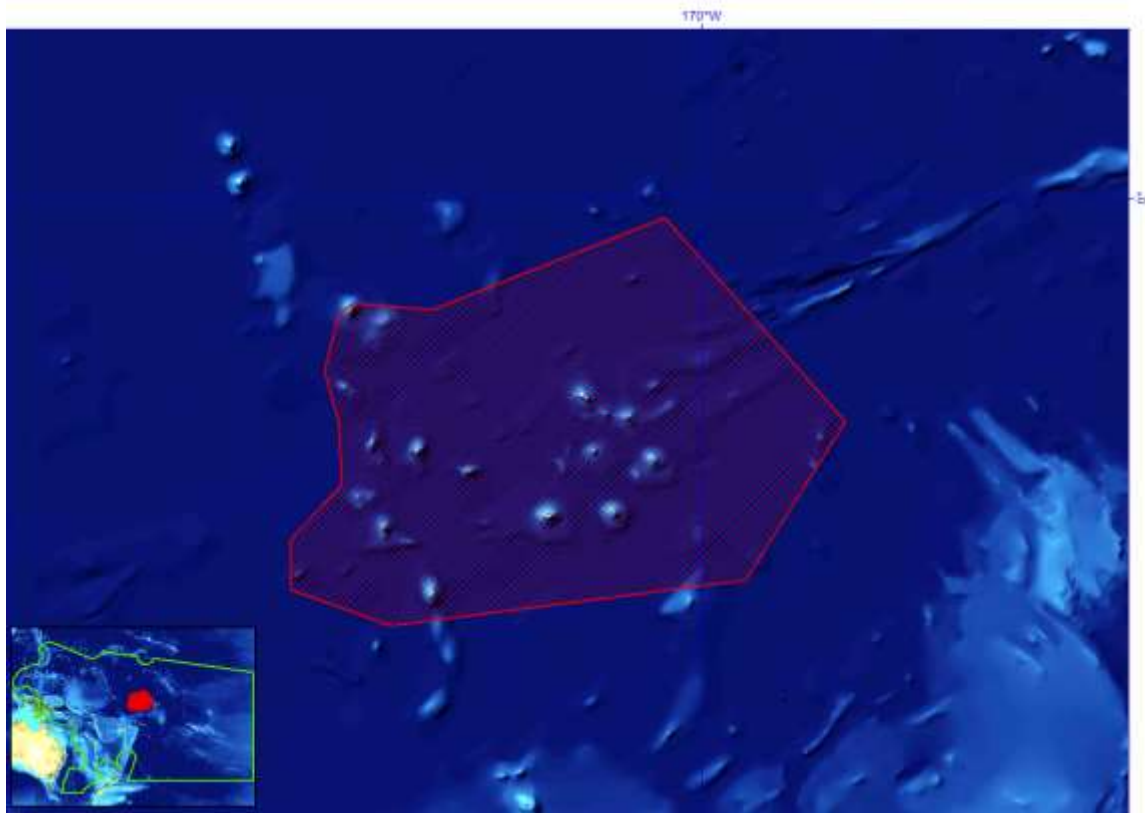
CBD EBSA Criteria (Annex I to decision IX/20)	Description (Annex I to decision IX/20)	Ranking of criterion relevance (please mark one column with an X)			
		Don't Know	Low	Some	High
Uniqueness or rarity	Area contains either (i) unique (“the only one of its kind”), rare (occurs only in few locations) 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	
<i>Explanation for ranking (references)</i>					
The islands are situated in a remote part of the mid-Pacific ocean and rarely visited; they are home to only 50 people. The number of fish and bird species, including the Phoenix petrel, is high. It is an isolated reef and island archipelago.					
Special importance for life-history stages of species	Areas that are required for a population to survive and thrive				X

<i>Explanation for ranking (references)</i>					
The Phoenix petrel is found here, and the islands serve as crucial breeding and resting area for a number of threatened migratory birds. Phoenix Islands collectively provides very important habitat for the continued existence of a number of globally endangered species (e.g., Napoleon wrasse, hawksbill 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
<i>Explanation for ranking (references)</i>					
The area has high historical sperm whale catch rates, is a turtle breeding area, and has reproductive populations of tunas and sharks. It is home to the Phoenix petrel, Napoleon wrasse, hawksbill turtle, and other vulnerable species, including the Whitethroated storm petrel, Bristle-thighed curlew, green turtle, giant clam, and bumblehead parrotfish.					
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
<i>Explanation for ranking (references)</i>					
Island areas are atolls, and corals are sensitive to climate change and to human disturbance. Turtles need recovery, as breeding areas are occupied, disturbed, small in size and can be endangered by fishing pressure.					
Biological productivity	Area containing species, populations or communities with comparatively higher natural biological productivity.				X
<i>Explanation for ranking (references)</i>					
Phoenix Islands embraces a range of associated marine environments that display high levels of marine abundance as well as the full spectrum of age and size cohorts, increasingly rare in the tropics, and especially in the case of apex predator fish, sea turtles, sea birds, corals, giant clams, most which have been depleted elsewhere.					
Biological diversity	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.				X
<i>Explanation for ranking (references)</i>					
The area has a high density of fish and birds. The overall marine trophic dynamics for these communities across this archipelago is better functioning (relatively intact) compared with other island systems, where human habitation and exploitation have significantly altered the environment.					
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
<i>Explanation for ranking (references)</i>					
The reef systems are s remote and exhibit near pristine conditions.					

**Reference**

UNEP/CBD/RW/EBSA/WSPAC/1/2. 2011. *Compilation of Submissions of Scientific Information to Describe EBSAs in the Western South Pacific Region.*

## Maps and Figures



**Figure 1:** Area meeting EBSA criteria

**Area No 2: Ua Puakaoa Seamounts**

**Abstract**

Maps presented at the EBSA workshop appeared to clearly show a shallow seamount system with a summit reaching within 2 metres of the sea surface (UNEP/CBD/RW/EBSA/WSPAC/1/2). Though the depth is questionable, it is likely that this seamount comes within 300m of the surface. The frontal densities satellite image showed an isolated area of sea surface turbulence around an area of seamounts shown on the seamount layer provided at this workshop (UNEP/CBD/RW/EBSA/WSPAC/1/2). This provided additional evidence in support of the existence of the seamounts. The Cook Islands has very few shallow reefs or seamounts in the open ocean, making this a likely habitat for a variety of seamount dwelling animals that would otherwise be quite rare in the Cook Islands.

**Location**

Approximately 164 ° west and 21 ° south

**Feature description of the proposed area.**

A seamount system characterized by a seamount located within 300m of the sea surface, another approximately 1000m below the surface, with strong current eddies at the surface, most likely caused by significant upwellings. It is likely to have high benthic biodiversity, and possibly a high degree of endemism, which can be associated with isolated seamount systems such as this (see Clark et al., 2010).

**Feature condition and future outlook of the proposed area.**

Presumably relatively unknown, and therefore pristine, though it is possible illegal fishing has been undertaken there in the past. Future outlook is unknown, but if the fishing fleets discover it (they may have already) it would soon be affected.

**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	
<i>Explanation for ranking</i> Shallow seamounts are a rarity in the Cook Islands. The evidence suggest that this seamount rises to within 300m of the surface, one of only a handful of shallow seamounts found in the several million sq. km. of Pacific Ocean surrounding the area. In addition, several studies have suggested a high level of endemism on seamounts (Clark et al., 2010).					
Special importance for life-history stages of species	Areas that are required for a population to survive and thrive.	X			

<i>Explanation for ranking</i> We have insufficient information to make any assumptions on this criterion.					
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			
<i>Explanation for ranking</i> We have insufficient information to make any assumptions on this criterion.					
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
<i>Explanation for ranking</i> Benthic biological communities on seamounts are highly vulnerable to human activities, especially fishing. Many benthic species are long-lived and slow-growing, and not resilient to human impacts (Clark et al., 2010).					
Biological productivity	Area containing species, populations or communities with comparatively higher natural biological productivity.		X		
<i>Explanation for ranking</i> Although on a global scale productivity in this part of the Pacific Ocean, away from land, would be low, in comparison to surrounding waters, productivity around a seamount would be relatively high.					
Biological diversity	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.			X	
<i>Explanation for ranking</i> It has been suggested that seamounts are diversity hotspots, possessing benthic assemblages with particularly high species richness (Samadi et al. 2006). There would also be expected to be a number of different habitats associated with different depth ranges, as the seamounts rise from depths of approximately 5000m deep to within 300m of the surface					
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
<i>Explanation for ranking</i> This seamount system appears to be unknown to the long-line fishing industry, though it is possible some unreported illegal fishing has occurred here. This anonymity, in addition to its isolated geographical position, is likely to mean that the seamount system remains in a natural state, undisturbed by direct and indirect human impacts.					



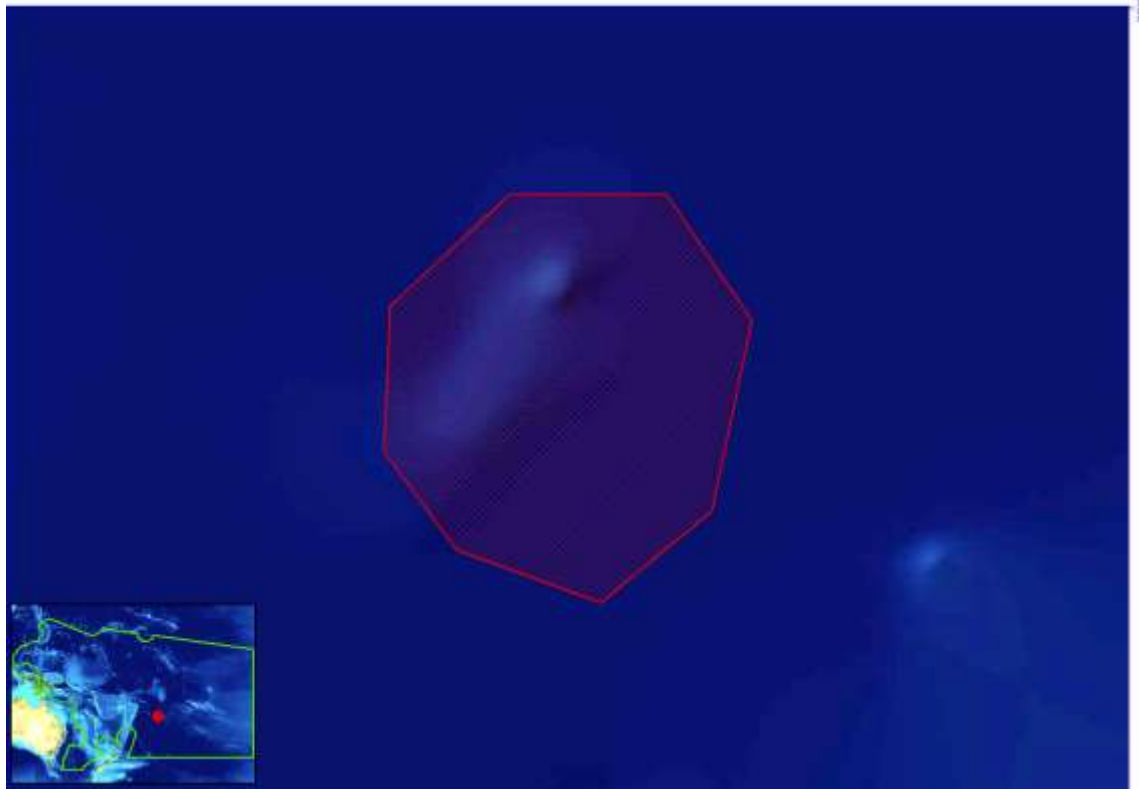
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## Maps and Figures



**Figure 1:** Area meeting EBSA criteria

### Area No 3: Seamounts of West Norfolk ridge

#### Abstract

An ecoregional analysis of New Caledonia conducted in 2005 indentified Seamounts of West Norfolk ridge within the New Caledonia EEZ as of international relevance based on eight national criteria (Gabri  et al. 2007).

#### Introduction

Based on data collected by Richer de Forges and collaborators ([www.mnhn.fr/musostorm/index.html](http://www.mnhn.fr/musostorm/index.html)). Analysis of this data has not been fully completed yet and is currently based mainly on taxonomic work. Further structural analysis is needed.

#### Location

- North boundary: South of New Caledonia.
- South boundary: species dependent, around 30°S (south of Norfolk island) if based on fish communities: Clive and Roberts 2008; Zintzen 2010.

#### Feature description of the proposed area

- Identified as a conservation priority area by the eco-regional analysis of New Caledonia EEZ (Gabri  et al. 2007).
- All eight national criteria used to identify special interest areas apply to Norfolk Ridge seamounts
  - High biological and habitat diversities
  - Rare and unique species of evolutionary interest
  - High endemism (although confounded by low sampling effort)
  - Original and remarkable species:
    - Fossil species: presence of deep sea fauna supposed to be extinct, some for more than 300 million years.
    - Very low growth rates: some sponges are supposed to live more than 600 years.
  - Commercial species : *Beryx splendens* (Lehodey, 1994, Grandperrin et al 1997, Clark and Roberts 2008)
  - Specific habitats for species life cycles: reproduction aggregations, etc.:
    - One of these seamounts, Antigonina, has been identified as of primary importance for humpback whales reproducing in the waters of New Caledeonia: 100 whales were observed for six days in September 2008 (Garrigue et al. 2010).
  - Pristine areas.
- Conclusions of ecoregional analysis: International relevance.

#### Feature condition and future outlook of the proposed area

Threats: limited to fishing. Pressure unknown, possibly very low.

#### Assessment of the area against CBD EBSA Criteria

Based on the data collected by Richer de Forges and collaborators ([b.richerdeforges@gmail.com](mailto:b.richerdeforges@gmail.com)). Otherwise reference is given.

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

IX/20)					
<b>Uniqueness or rarity</b>	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.				<b>X</b>
<i>Explanation for ranking</i> Rare and endemic (endemism is linked to sampling effort) species (notably data on mollusk, crustacean and deep corals)					
<b>Special importance for life-history stages of species</b>	Areas that are required for a population to survive and thrive.				<b>X</b>
<i>Explanation for ranking</i> <i>Beryx</i> nursery feeding ground Antigonia seamount is a “stopover” on humpack whale migration routes (Garrigue et al. 2010).					
<b>Importance for threatened, endangered or declining species and/or habitats</b>	Area containing habitat for the survival and recovery of endangered, threatened, declining species or area with significant assemblages of such species.			<b>X</b>	
<i>Explanation for ranking</i> Antigonia seamount for whales Oceanic white shark habitats (seamounts) during large-scale migration between NC and NZ.					
<b>Vulnerability, fragility, sensitivity, or slow recovery</b>	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.				<b>X</b>
<i>Explanation for ranking</i> For example, deep-sea sponges supposed to live more than 600 years					
<b>Biological productivity</b>	Area containing species, populations or communities with comparatively higher natural biological productivity.				<b>X</b>
<i>Explanation for ranking</i> High front density (EBSA workshop map) High fish density ( <i>Beryx splendens</i> ) High invertebrate density (notably sponges) High nekton density (EBSA workshop map from SPC data; UNEP/CBD/RW/EBSA/WSPAC/1/2) Pelagic species diversity (EBSA workshop map from Morato et al. 2010; UNEP/CBD/RW/EBSA/WSPAC/1/2)					
<b>Biological diversity</b>	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.				<b>X</b>
<i>Explanation for ranking</i> Richer de Forges and collaborators, and workshop map from OBIS data (UNEP/CBD/RW/EBSA/WSPAC/1/2)					

<b>Naturalness</b>	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
<p><i>Explanation for ranking</i>                  At present, yes: remote area, trawling and dredging forbidden                  Unknown before the 1970s</p>					

**References**

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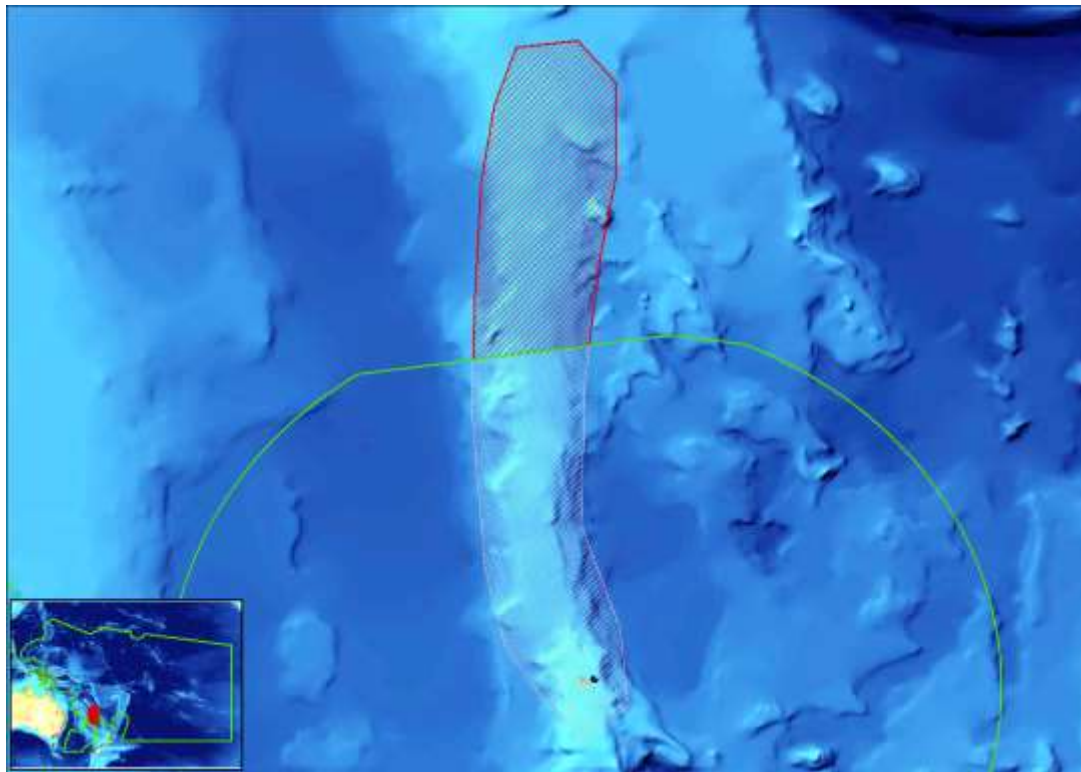
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**Maps and Figures**



**Figure 1:** Area meeting EBSA criteria

## Area No. 4: Remetau group: South-west Caroline Islands and Northern New Guinea

### Abstract

The oceanic islands of the Federated States of Micronesia (FSM), also known as the Caroline Islands, are home to some of the most biologically diverse coral reefs in the world. Many individuals, communities, agencies and organizations are acting to conserve the irreplaceable natural resources of the FSM. The area encompasses this priority area and the north-west extent of the Papua New Guinea EEZ. The area supports high seamount diversity, a marine Important Bird Area defined by a key non-breeding foraging concentration of the seabird streaked shearwater (*Calonectris leucomelas*), an area of high tuna catch rates and historically high sperm whale harvest.

### Introduction

The area north of New Guinea and south-west of the Caroline Islands has been shown by analysis of satellite tracking data to be important to streaked shearwater during their migration from their breeding grounds in Japan and also during their non-breeding season. The area identified lies in the south of the Micronesian EEZ and into the area beyond national jurisdiction. The area includes a number of seamounts and is known to be important for tuna and other billfish.

The proximity of Micronesia to the Indo-Malay region and the proximity of the islands themselves enable the high islands and reefs to act as passages for the migration of terrestrial and marine species. The abundance of rare and endemic species is matched by a corresponding lack of data and resources for their preservation. An ecoregional planning exercise was conducted by The Nature Conservancy (TNC), which provided practical and rational approaches for focusing and prioritizing conservation action, however, this planning was mostly focused on nearshore Areas of Biological Significance (ABS).

### Location

The northern portion of the site overlaps with the EEZ of FSM, while to the south, the majority of the site coincides with the Papua New Guinean EEZ, with partial overlap of the Indonesian EEZ. The central portion of the site spans across the high-seas pocket between the EEZs of FSM and Papua New Guinea. The EBSA proposed here covers an area of 813,331 km<sup>2</sup> centred on 2°N, 142°E. The proposed site is bounded by 6.9°N, 137.7°E and 2.8°S, 146.6°E at its north-west and south-eastern most limits. The site covers the Eauripik Rise and areas of both the west and east Caroline Basins, it intersects with the southern extent of the Caroline Seamounts and includes the Manus Trench. Consequently, the topography of the site is varied; maximum depths of 5385m rise as high as 62m below the surface on top of some seamounts, causing slope angles as steep as 25.5 degrees (UNEP/CBD/RW/EBSA/WSPAC/1/2). Sea surface temperature within the site between 2002 and 2010 averaged at 28.8°C and is spread homogeneously, suggesting little mixing. In addition, from 2002 to 2010 average chlorophyll concentration (0.1 mg m<sup>-3</sup>) and primary productivity (237 mgC/m<sup>2</sup>/day) were not found to be significantly high across the site (UNEP/CBD/RW/EBSA/WSPAC/1/2). Primary productivity does increase towards the south of the site, and chlorophyll blooms can occur off the Indonesian/Papua New Guinean coast.

### Feature description of the proposed area

The site qualifies as an Important Bird Area under BirdLife criteria (see BirdLife International 2009). Analyses of satellite tracking data estimate that up to 25% of the global population of Streaked Shearwater may use the site (close to 1 million individuals). These birds use the area during their non-breeding season for five months between October and March.

Satellite tracking data for Streaked Shearwater were split to represent trips made during both the breeding and non-breeding movements, each of which were analysed separately. Each trip was analysed to identify the area where the individual spent the most intense 50% of its time at-sea, and this was defined as an area of foraging. These areas were overlain and counted to calculate how regularly an area was used by the wider population. A threshold (1% of the global population of this species) was applied to these counts to isolate areas used by the most birds, and the resulting site defines this area.

While seabirds occur at the water's surface and in the upper water column, their distribution can often be explained by a range of oceanographic processes such as sea surface temperature, wind speed and direction, as well as ocean currents. It was not possible to conduct habitat modelling approaches for this submission, though these could be developed in future and may help to statistically quantify the underlying factors explaining seabird distribution and abundance within this site.

The area contains the waters surrounding the islands in Kosrae, Pohnpei, Chuuk, and the easternmost islets of Yap State. Endemism is high in this region, a result of a unique combination of distance and isolation. The region includes a cluster of seamounts within the south-west Caroline Islands, the waters surrounding the outer islands of Yap, known as the Rematau group, west through the outer islands of Chuuk. This proposed area also encompasses an area of high-seas beyond national jurisdiction and the north-west of the Papua New Guinea EEZ within the south-western Pacific region.

### **Feature condition and future outlook of the proposed area**

The existing FSM ecoregional plan provides a method to sustain the long-term viability of a region's biodiversity, however this is mostly focused on terrestrial and near-shore habitats. When addressing this task, one must ask: "What are the elements of biodiversity (or "conservation targets") that the plan should focus on?" Because it is impossible to develop a conservation plan based on each individual species occurring in a large region, a more strategic tactic is necessary. The local conservation planners currently use a two-tiered approach to this problem—a "coarse-filter/fine-filter" approach. The "coarse-filter/fine-filter" strategy stresses the importance of conserving sufficient viable examples of all major ecological systems or communities (the coarse filter), in addition to any rare or specialized species that have special requirements and may not be adequately addressed through the coarse filter (Poiani 2000). Data collection has been conducted on coastal or inshore species, which leaves a gap in offshore data. Primarily, FSM's National Oceanic Resource Management Agency (NORMA) is currently working with the Secretariat of the Pacific Community and the Western and Central Pacific Fisheries Commission in collecting other data related to FSM EEZ.

Streaked shearwater birds were shown to be using this area during both years for which satellite tracking data was available; therefore, the site is believed to be static. In the short-term the most likely disruption to the integrity of this site is population decline owing to incidental mortality in fisheries. All of the seabird species present are vulnerable to incidental by-catch in fisheries, particularly long-line. All seabird species are vulnerable to surface pollution events, particularly oil spills.

**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
<b>Uniqueness or rarity</b>	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
<p><i>Explanation for ranking</i> Seamounts = Clustered areas with high biological productivity (UNEP/CBD/RW/EBSA/WSPAC/1/2).</p> <p>Streaked shearwater foraging = Encompass the northern tip of the shearwater foraging IBA. This area is estimated to be used by around a quarter of the world population of Streaked Shearwater during their non-breeding season.</p>					
<b>Special importance for life-history stages of species</b>	Areas that are required for a population to survive and thrive.				X
<p><i>Explanation for ranking</i> This area is a key foraging area for streaked shearwater during the non-breeding season = Northern tip of shearwater IBA (see above). Green turtle foraging = Post-nesting migration route (Yap State tagging project).</p>					
<b>Importance for threatened, endangered or declining species and/or habitats</b>	Area containing habitat for the survival and recovery of endangered, threatened, declining species or area with significant assemblages of such species.			X	
<p><i>Explanation for ranking</i> Tuna – moderate catch (UNEP/CBD/RW/EBSA/WSPAC/1/2)</p>					
<b>Vulnerability, fragility, sensitivity, or slow recovery</b>	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			
<p><i>Explanation for ranking</i></p>					
<b>Biological productivity</b>	Area containing species, populations or communities with comparatively higher natural biological productivity.			X	
<p>Tuna – moderate per SPC’s catch/hook dataset, All Species – moderate in the area, according to OBIS (UNEP/CBD/RW/EBSA/WSPAC/1/2).</p>					
<b>Biological diversity</b>	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species,			X	

	or has higher genetic diversity.				
<i>Explanation for ranking</i>					
<b>Naturalness</b>	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	
<i>Explanation for ranking</i>					

**References**

UNEP/CBD/RW/EBSA/WSPAC/1/2. 2011. *Compilation of Submissions of Scientific Information to Describe EBSAs in the Western South Pacific Region.*

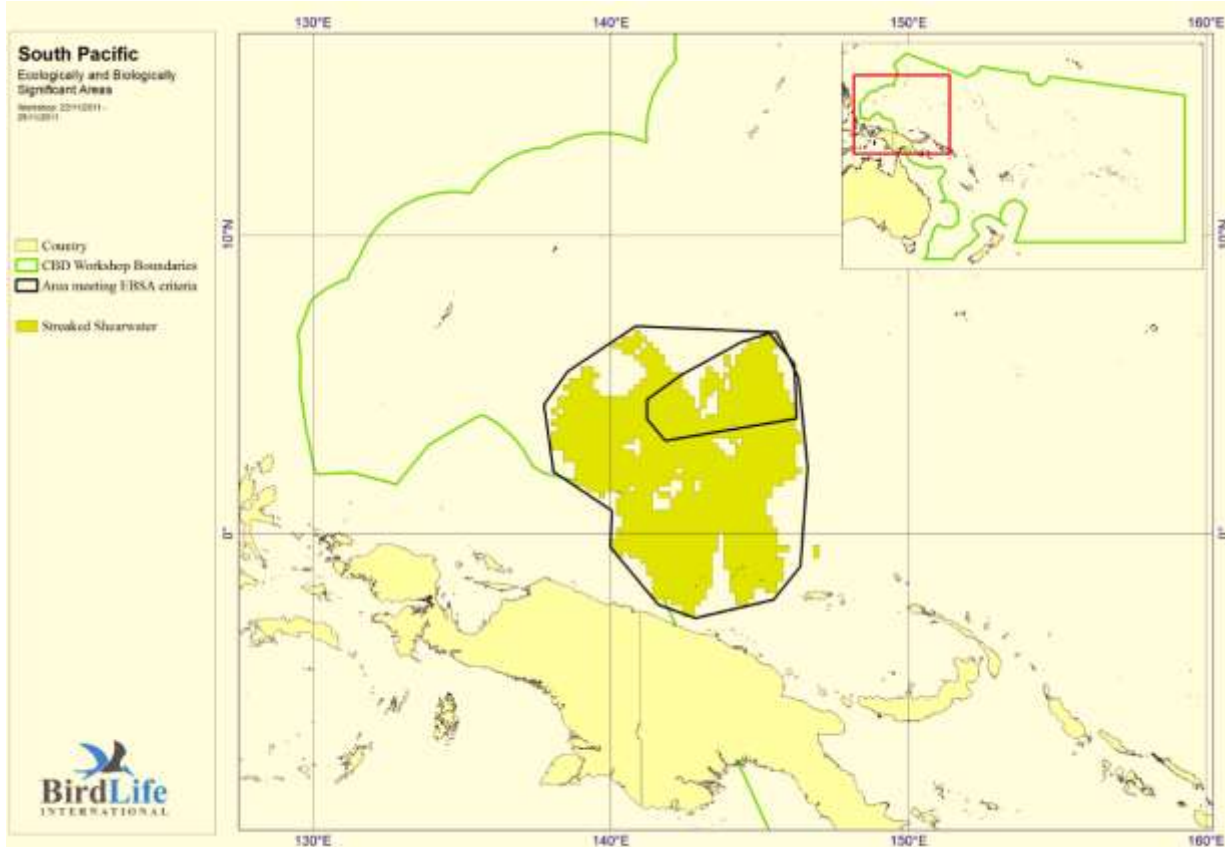
<http://doi.pangaea.de/10.1594/PANGAEA.757565>; *Post-nesting Turtle Movements in the Pacific Islands Region (SPREP Powerpoint presentation)*; <http://iobis.org/>;

[www.wcpfc.int/science\\_and\\_scientific\\_data/functions/public\\_domain\\_data](http://www.wcpfc.int/science_and_scientific_data/functions/public_domain_data); Poiani, K.A., Richter, B., Anderson, M., and Richter, H. (2000) *Biodiversity Conservation at Multiple Scales*

Global Procellariiform Tracking Database. BirdLife International. [www.seabirdtracking.org](http://www.seabirdtracking.org) Accessed 01/10/11. Any requests to use the tracking data used for this site in any publication need to be agreed with the data owners. An initial request should be sent to BirdLife International to coordinate this process. See <http://www.seabirdtracking.org/terms.php> for full terms of reference.

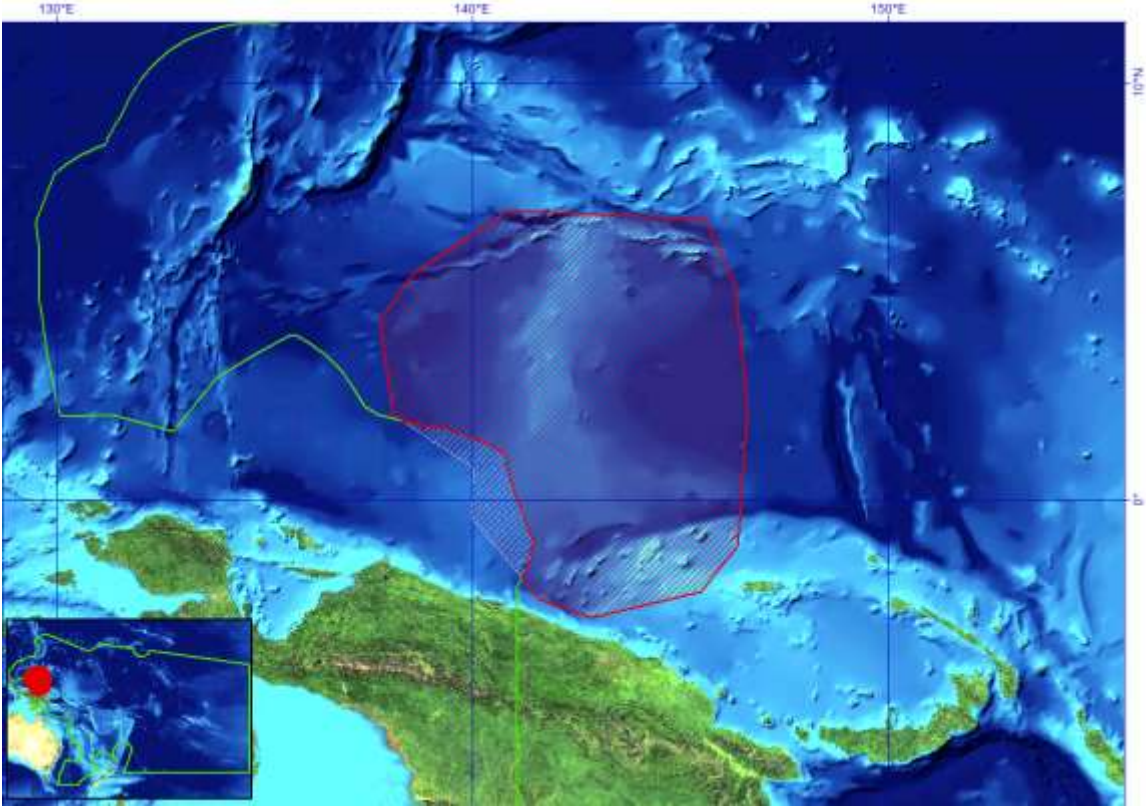
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**Maps and Figures**



**Figure 1:** BirdLife International seabird sites. Key areas for different seabird species are shown. Data accessed via [www.seabirdtracking.org](http://www.seabirdtracking.org)





**Figure 2:** Area meeting EBSA criteria

## Area No. 5: Kadavu and the Southern Lau Region

### Abstract

Kadavu is the fourth-largest island in the Fiji Group, of volcanic origin and is biogeographically connected to the Southern Lau group. Kadavu islands are surrounded by a very productive barrier reef system and have the second-largest barrier reef system in Fiji, the Great Astrolobe Reef. It supports two endemic bird species. The Southern Lau islands contain some volcanic islands and several isolated limestone oceanic atoll islands with a range of habitats, including seagrass beds, oceanic patch reefs, extensive barrier reef systems, seamounts, submarine canyons and the Lau Ridge. The isolated oceanic conditions provide a distinct range of habitats and species diversity, and provide important breeding and nesting areas for seabirds, green and hawksbill turtles. The marine area also supports an important migration corridor for a number of great whale species, including humpback, minke, sei and sperm whales, and a number of smaller whales and dolphin species. The area has been identified by OBIS as a very rich and productive fishing ground for all species within the inner reefs, offshore pelagic and deepwater benthic fisheries, and also has typical seamount-associated fisheries, corals and invertebrates (UNEP/CBD/RW/EBSA/WSPAC/1/2). A number of the most southerly outer islands has endemic, highly endangered (near extinct Devil Giant Clam, *Tridacna balavauana*) and other endemic fish species such as the USP rabbitfish (*Siganus uspi*). The region also supports high endemism for marine amphipods (smaller shrimps), with 41% of the 80 shallow-water species described as endemic (Meyers, 1985). Three species of sea snakes are found in this region: the banded sea snake (*Laticauda colubrina*), black-banded robust sea snake (*Hydrophis melanocephalus*) and the yellow-bellied sea snake (*Pelanis platurus*) (Guinea 1980). The sea snakes are all found within fringing and barrier reef systems, but easily migrate across the deeper waters between one island and the next.

### Introduction

The Fiji archipelago, comprising more than 840 islands, cays and islets, is dispersed between 177-178 °W longitude, and spans 15-23°S latitude. The total land area is 18,500 km<sup>2</sup>, and the archipelago lies at the midpoint of two convergent zones, the Tonga-Kermadec and the New Hebrides, which is separated by the Fiji Basin to the west and the Lau Ridge to the east. The larger islands of the Fiji Group are largely volcanic in origin, and also include a number of small atoll islands, which are largely found in the Lau Group (Vuki et al., 2000).

Fiji's marine environment contains some globally and regionally significant biodiversity areas with intrinsic ecological and biological values. It plays a central role in sustaining the livelihoods of the local communities across the Fiji maritime region.

Current knowledge of Fiji's marine ecosystems and biodiversity is still relatively poor. It is essential to consolidate and expand this knowledge if conservation and sustainable resource use are to be effective. Information gaps need to be addressed, and opportunities for collaboration with relevant stakeholders identified. Conservation efforts and further research, as well as data collection initiatives, are important for successful marine resource management initiatives in the future. It would be appropriate to move resource and ecosystem management from shallower marine habitats to deep-water benthic habitat systems, about which little is currently known.

The Kadavu and Southern Lau region supports a very biologically diverse area with high productivity, in terms of marine biodiversity and fisheries (nearshore barrier reef, offshore and deepwater fish species). This includes very important geobiographic features such as raised coralline atoll islands, seamounts, deep upwelling slopes, submarine canyons and the Lau Ridge, which connects into the New Hebrides Trench. The deep water region from Kadavu to the Lau Ridge ranges from 500m to 4000m (area of deep slopes immediately south of Kadavu). The depth of the Lau Ridge ranges from 1000m to 1600m. The seamounts south of Kadavu and the Southern Lau group are relatively intact and are currently not exploited.

Ten species of migratory and resident seabirds are found across the Fiji island groups, which include frigate birds (*Sula sula*) and the endemic and endangered Fiji petrel (*Pseudobulweria macgillivrayi*) (Clunie 1985). The Fiji petrels' marine foraging range includes the Kadavu and Southern Lau region.

### **Location**

The area is within Fiji's EEZ, straddling the borders of the Tongan EEZ. The position is between 18-23° S and 173-179° E, and encompasses the Kadavu and Yasayasa Moala (Matuku, Moala, Totoya and Vanuavatu), Kabara, Ogea, Fulaga, Namuka-i-lau, Yagasa and Vatoa islands, and south-westerly to include Ono-i-lau, Tuvana-i-colo and Tuvana-i-ra. South of Kadavu the area is relatively deep, reaching down from 800m to 4000m, and the Lau Ridge itself reaches depths of 1000m to 2000m.

### **Feature description of the proposed area**

This area has been identified as highly biologically productive, including features such as:

- important seabird nesting islands and foraging areas (Kadavu hosting two endemic bird species), and the Lau group hosting up to seven seabird species in some of the isolated islands such as Naevo (Bird) Island, which supports around 6,000-10,000 breeding pairs during nesting seasons.
- a very important migrational corridor for great whales (humpback, sei, minke and sperm), smaller whales and dolphin species.
- very important nesting and foraging sites for hawksbill and green turtles
- several seamounts, vents, canyons and deep-water slopes, which supports upwelling and downwelling activities, thus supporting primary productivity within these deepwater areas, deepwater corals and sponges, and groundfishes such as snappers, bluenose, orange roughy, groupers and trevallies.
- Important natural sites for highly targeted and endangered reef fish species, which include humphead wrasse, bumphead parrotfish, giant groupers, giant sweetlips, Spanish mackerels, wahoos and marlins; and important breeding areas for inshore shark species (which include the IUCN Red-listed species, such as common hammerheads, scalloped hammerheads, giant hammerheads) and the oceanic whitetip, blue and silky sharks.
- The last few individuals of the highly endangered giant clam species (devil giant clam, *Tridacna balavuana*) and overfished *Tridacna derasa*, *T.squamosa* and *T.crocea*.
- Southern Lau islands also have outstanding physical features, such as raised coralline islands that support endemic palm trees;
- Supports a rich inner reef, offshore, as well as deepwater fisheries species, and relatively intact barrier reef systems, which support a number of endemic fish species. The area supports high tuna (particularly for albacore and big-eye tuna) catch rates and associated pelagic species
- Over 80 species of shallow water amphipods (shrimps) have been described across the Fiji island groups, including the Kadavu and Southern Lau region, and 41% of those marine amphipods are endemic (Meyers 1985).

### **Feature condition and future outlook of the proposed area**

The area supports a relatively high naturally productive fisheries region, which includes inshore, offshore pelagic and deepwater fisheries species.

Because the region hosts some seamount and deep-water slope regions, it supports typical fisheries fauna, deepwater corals and invertebrates (sponges, tunicates, and mussels). The pressures being placed on the marine environment and its biodiversity today far exceed current conservation efforts. A number of

resource conservation programmes have been undertaken at the national, regional and international level, but the current challenge is to translate these conservation and resource management efforts into clear policy directions and implementation strategies. The area could be threatened with deep-sea mining projects for manganese nodules in the future.

**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
<b>Uniqueness or rarity</b>	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
<p><i>Explanation for ranking</i></p> <p>Submarine canyons, seamounts and ridges would have endemic and rare fauna and flora. Upwelling deep slopes support cephalopods (squids), a food source for sperm whale. Reef systems in a few most southerly islands have the near-extinct giant clam species <i>Tridacna balavuana</i> and the restricted-ranged giant clam species <i>Tridacna crocea</i>. Also home to a number of endemic fish, including the endemic USP Rabbitfish (<i>Siganus uspi</i>) but found only in a few reef systems in the Southern Lau (Southern Lau Biodiversity Survey report, 2011-in prep). Ref: Japanese Survey reports from 1980s/with SOPAC and PIMRIS/USP.</p>					
<b>Special importance for life-history stages of species</b>	Areas that are required for a population to survive and thrive.				X
<p><i>Explanation for ranking</i></p> <p>Great whales (humpback and sperm whale) migratory corridors range from Tonga into the Fiji group. Also supporting resident pods of dolphin species (spinner, Fraser’s and rough-tooth dolphins) and other smaller whale species, such as shortfin pilot whales, false killer whales, pigmy sperm whales and deepwater beaked whales. Very important seabird rookeries and foraging marine areas. Important nesting and foraging sites for greens, hawksbills, and transient leatherback turtles. Satellite tracking/telemetry for post-nesting female green and hawksbill turtles east of Fiji shows that the sea turtles come through the Central Lau and Southern Lau regions. The Fiji subpopulation of humpback and sperm whales was decimated/hunted to near extinction from 1945 to 1979, and has sadly been unable to recover.</p>					
<b>Importance for threatened, endangered or declining species and/or habitats</b>	Area containing habitat for the survival and recovery of endangered, threatened, declining species or area with significant assemblages of such species.				X

<i>Explanation for ranking:</i> Important healthy reef and offshore spawning aggregation areas for apex trophic level reef fish species, which include IUCN Red List species such as humphead Maori wrasse, bumphead parrotfish and giant groupers ( <i>E.lanceolatus</i> , <i>E.malabaricus</i> , <i>E.tukula</i> ) and coral trouts, which are all threatened by the international live reef fish trade . Important nursery and breeding grounds for inshore shark species, and migratory corridors for highly threatened oceanic white-tip and hammerhead sharks, and other important species, such as tiger, mako, blue, silver-tip and silky sharks.					
<b>Vulnerability, fragility, sensitivity, or slow recovery</b>	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
<i>Explanation for ranking:</i> Threatened, endemic and endangered species of seabirds and sea turtles; whales and dolphins, and inshore and pelagic sharks; seamount features and associated biodiversity (UNEP/CBD/RW/EBSA/WSPAC/1/2).					
<b>Biological productivity</b>	Area containing species, populations or communities with comparatively higher natural biological productivity.				X
<i>Explanation for ranking:</i> highly productive fisheries fauna and health, inclusive of nearshore fisheries, offshore pelagic and deepwater benthic fisheries fauna.					
<b>Biological diversity</b>	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.				X
<i>Explanation for ranking:</i> deep-sea and shallow-area species, all showing very high diversity in this region (UNEP/CBD/RW/EBSA/WSPAC/1/2).					
<b>Naturalness</b>	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
<i>Explanation for ranking:</i> naturalness is preserved by the restricted capacity of people to fish and venture out to distant locations					

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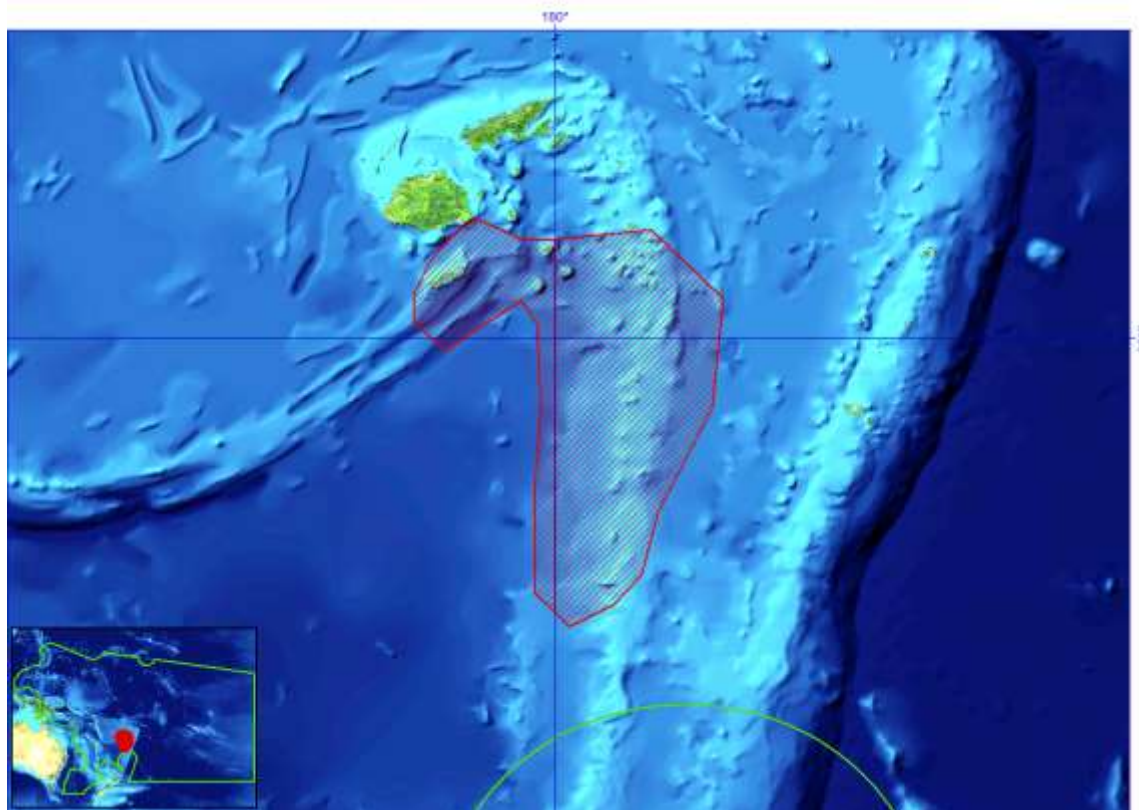
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## Maps and Figures



**Figure 1:** Area meeting EBSA criteria

## Area No. 6: Kermadec-Tonga-Louisville Junction

### Abstract

There is a triple junction area at about 25°S, 175°W where the Louisville Seamount Chain subducts into the Kermadec and Tonga Trench region. It features seamount and trench habitat, with specialized fauna in each environment. Both trenches exceed 10 km depth inside the EEZs, but at the junction are separated by a 5 km-deep sill, the Tonga Platform. The Kermadec and Tonga trenches have endemic species of fish, scavenging amphipod species are prominent in both trenches, and there is a bathyal deep-sea seamount fauna on the Louisville Seamounts.

### Introduction

The Kermadec-Tonga Trench system represents the western boundary of the Pacific Plate, where it subducts under the Australian Plate. The junction has two distinct seafloor habitat types, the trenches themselves, which are separated by the Tonga Platform, a relatively shallow sill (5100 m), and the seamounts of the Louisville Seamount Chain. The seamounts are about 2000 m summit depth as they move into the downwards slopes of the Trench. The depths of the Trenches vary along their length (exceeding 10000 m in both New Zealand and Tongan EEZs) but reach depths of 7000-8000 m at the junction.

The oceanography is dominated by oligotrophic waters, slightly more productive in the Kermadec area than in Tonga, but generally low-average primary productivity at 100–150 mgC/m<sup>2</sup>/day (Herring 2002). The abyssal depth waters are cold, about 1° C on the platform and 1.5°C in the trenches.

The biology of major trench systems differs throughout the world's oceans, with unique hadal fauna in most oceans (Jamieson 2010). Seamount fauna can be diverse and abundant (e.g., Clark et al. 2010) so the area is likely to host a wide range of biological communities.

### Location

The site is centred on about 25°S, 175°W (figure 1). The northern boundary inside the Tongan EEZ is about 24° S, but no southern boundary has been drawn extending into the New Zealand EEZ.

The site is outside New Zealand's EEZ, but in the area of the extended continental shelf. The proposed northern boundary covers the southern part of the Tonga Trench.

### Feature description of the proposed area

The site has diverse physical characteristics. Features include seamounts of the Louisville Seamount Chain and the two major trenches: the Kermadec Trench, which has the Tonga Platform at its northern end (at about 5100 m), providing some separation from the Tonga Trench. The geological interaction is unique in the region. The site is of interest for benthic fauna and features; upper surface water production is low, providing little interest for pelagic species.

The trenches have been sampled with some towed gear from previous expeditions (the *Galathea* and *Vitjaz* expeditions), as well as more recently with baited landers (e.g., Blankenship et al. 2006, Jamieson et al. 2011). There has been no sampling on the Louisville seamounts in the area, but the likely benthic community composition can be inferred from a good knowledge of seamount biodiversity in the northern New Zealand region (NIWA unpublished data). Biological communities differ between the seamount and trench systems. The former are dominated by cold-water corals, in particular stony coral species such as *Solenosmilia variabilis*, with octocorals increasing with depth. Sponges and echinoderms are common components of the fauna. Trench fauna includes an endemic eelpout *Notoliparis kermadecensis*, very poorly known aphyonid fish, very rare stephanoberycids, and the deepest living fish *Abyssobrotula galathea*, which was sampled back in the 1950s at 8370m. Scavenging amphipod species are common in

the trenches, with 16 species having been reported from the Kermadec Trench (Jamieson et al. 2011). Species composition of amphipods appears to be similar in both trenches, but they vary in depth range and abundance. They reach very high densities, especially *Hirondella dubia*, where often thousands of individuals are caught per baited trap deployment (Blankenship et al. 2006).

**Feature condition and future outlook of the proposed area**

The area is largely unaffected by human activities. There is no known bottom trawling (New Zealand fisheries data), and there are no mining licenses before the International Seabed Authority. Nor is there any known mining interest in the cobalt-rich crust on the seamounts. There has been geophysical research in the region investigating the nature of the subduction zone (most recently in 2011), and proposed biological research in 2013 (Japan-New Zealand).

**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
<b>Uniqueness or rarity</b>	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
<i>Explanation for ranking</i> The site is a unique regional combination of geomorphological features with subduction of a hot-spot seamount spreading chain into a deep trench system (both the Kermadec and Tonga Trenches reach depths over 10km). The Kermadec Trench has an endemic eelpout, <i>Notoliparis kermadecensis</i> , very poorly known aphyonid fish, very rare stephanoberycids, and the deepest-living fish, <i>Abyssobrotula galathea</i> , which was sampled in the 1950s at 8370m.					
<b>Special importance for life-history stages of species</b>	Areas that are required for a population to survive and thrive.	X			
<i>Explanation for ranking</i> Trenches tend to be isolated, and the Kermadec-Tonga Trench faunal communities will not occur elsewhere. Hence the site is potentially very important for the survival of hadal species. Areas beyond the EBSA boundaries will be important for functional connectivity with the trench habitats. The sill, at 5100m, may be very important for connectivity between the Kermadec and Tonga trenches.					
<b>Importance for threatened, endangered or declining species and/or habitats</b>	Area containing habitat for the survival and recovery of endangered, threatened, declining species or area with significant assemblages of such species.			X	
<i>Explanation for ranking</i> There is potential “use” of both the Kermadec and Tonga Trenches by humpback and sperm whales (and possibly other great whale species) along their migration route. However, reasons for this are not known.					



<b>Vulnerability, fragility, sensitivity, or slow recovery</b>	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.			<b>X</b>	
<i>Explanation for ranking</i>					
The seamounts of the Louisville Chain have both stony and octocorals, which vary in abundance with depth. These coral groups can form important biogenic habitat with an abundant associated community. Coldwater corals and deep-sea glass sponge species are very fragile to disturbance. Deep-sea benthic invertebrate fauna have slow growth rates and high longevity (e.g., Rogers et al. 2007). Such fauna have very slow recovery rates (e.g., Williams et al. 2010).					
<b>Biological productivity</b>	Area containing species, populations or communities with comparatively higher natural biological productivity.			<b>X</b>	
<i>Explanation for ranking</i>					
The region is not productive on a large spatial scale, but there could be considerable upwelling due to the dramatic changes in depth and form driven by topography. Anecdotal reports from fishers suggest high numbers of seabirds near seamounts when line fishing. Amphipods can reach high densities in the trenches.					
<b>Biological diversity</b>	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.				<b>X</b>
<i>Explanation for ranking</i>					
The large depth range (2000–8000 m), as well as habitat complexity means it is very likely that the junction has high biodiversity relative to the surrounding areas. The Tonga and Kermadec trenches, like all hadal depths, have low biodiversity relative to shallower habitat, but it is a highly specialized fauna. The seamount fauna, which can be diverse and abundant, is well known on other seamounts within the region.					
<b>Naturalness</b>	Area with a comparatively higher degree of naturalness as a result of the lack of or low level of human-induced disturbance or degradation.				<b>X</b>
<i>Explanation for ranking</i>					
There is no known commercial human impact. There has been some limited research sampling (geophysical surveys, seabed core samples). On geological time scales, the area does have natural disruption as the seamounts subduct into the trench.					

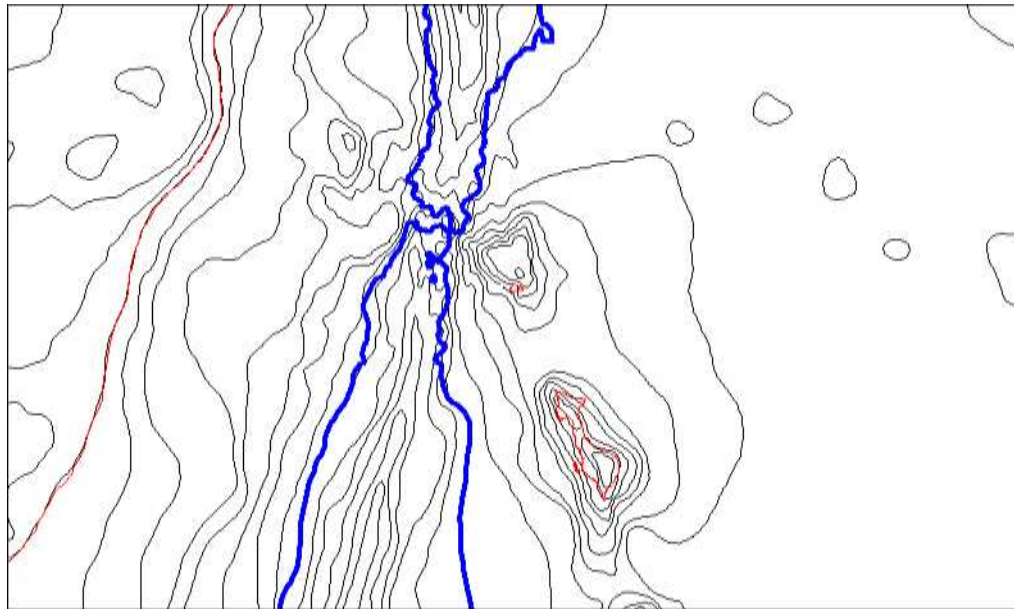
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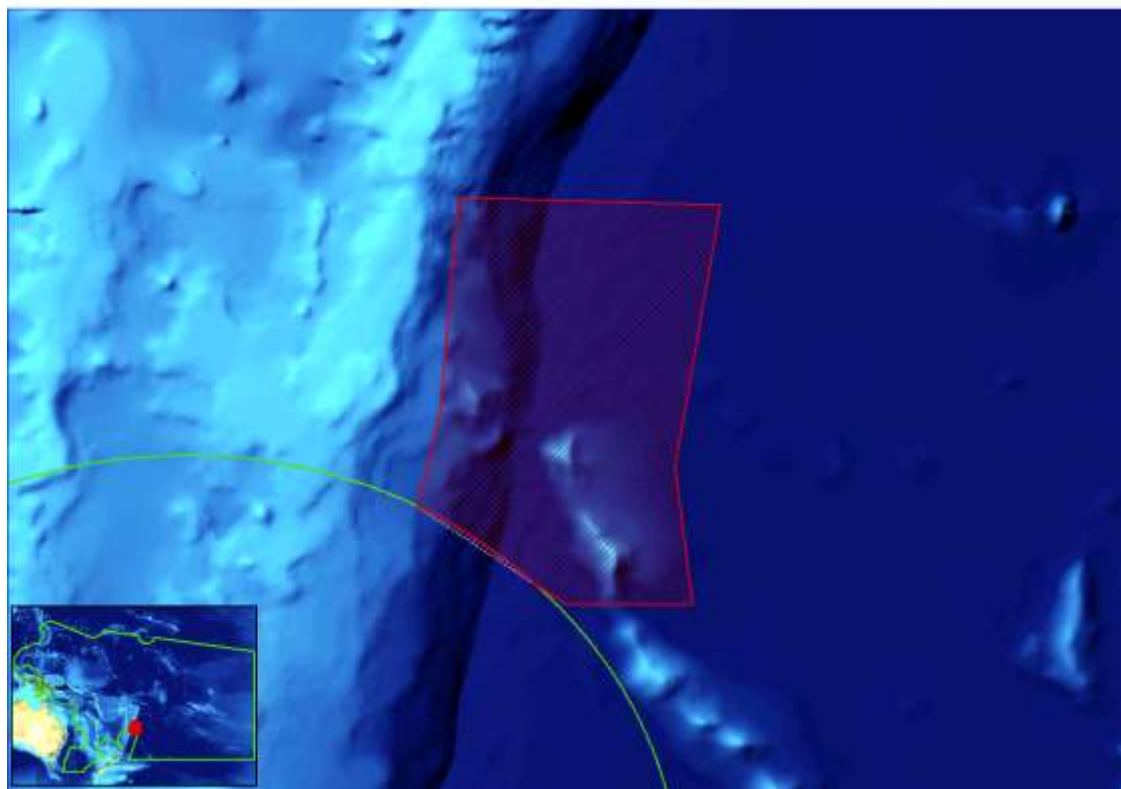
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**Maps and Figures**



**Figure 1:** Bathymetric map of the Junction area.



**Figure 2:** Area meeting EBSA criteria

## Area No. 7: Monowai Seamount

### Abstract

Monowai seamount comprises an active volcanic cone, with a caldera that has extensive hydrothermal venting at depths of about 1200 m. Vent communities comprise tubeworms, dense beds of bathymodiolid mussels, lithodid crabs, and zoarcid fishes. The seamount is at the northern end of a series of vent communities along the Kermadec back arc, which has broadly similar fauna.

### Introduction

The Kermadec arc extends north-east from New Zealand and represents the southern portion of the ~2,500 km long Tofua–Kermadec arc, formed by the subduction of the Pacific Plate westwards underneath the Australian Plate. There are over 30 volcanic seamounts along the Kermadec Arc, many of which have active hydrothermal venting (de Ronde et al. 2005).

The site consists of a seamount structure, with a cone in the south and a caldera feature on its northern side (Figure 1). The cone is relatively shallow, with its summit at a depth of 120 m, and the basal depth of the caldera floor at 1500 m.

The area has been researched by a number of nations and research voyages in the last 10 years. These surveys have included remotely operated vehicle (ROV) and manned submersible dives, which have studied geological, geochemical, geophysical and biological properties of the caldera and its hydrothermal vent communities. The site is active: the hydrothermal venting occurs on the caldera floor, while the cone undergoes frequent eruptive activity, which has resulted in substantial changes to its shape and size (Wright et al. 2008).

### Location

The seamount site is outside New Zealand's EEZ, but in the area of the extended continental shelf. It is south of the Tongan EEZ boundary. The site is square-shaped. Boundaries are latitudes -25.7° S to -25.94° S, longitudes 182.5° W to 183.0° W.

### Feature description of the proposed area

The Kermadec arc, which extends north-east from New Zealand, is one of the most hydrothermally active submarine volcanic systems globally. Monowai seamount, located at the mid-point along the ~2530 km long Tofua-Kermadec arc system, consists of a large caldera and volcanic cone. The large elongate caldera measures about 8 x 6 km and is 35 km<sup>2</sup> in area. To the south is a large stratovolcano, the Monowai cone, which rises to within 120 m of the sea surface and has been volcanically active for several decades. Unlike most of the calderas along the arc and globally, mafic volcanic rocks (basalts) dominate the site, with some andesites (Leybourne et al. in press).

The caldera has hydrothermal vents distributed over an appreciable section of the floor, termed "Mussel Ridge". Chemosynthetic communities are based on the tubeworm (*Lamellibrachia juni*), highly abundant bathymodiolid mussels (*Bathymodiolus brevior*), lithodid crabs (*Paralomis hirtella*), and alvinocarid shrimps (*Alvinocaris niwa* and *Alvinocaris longirostris*). Zoarcid eels are also common. This fauna is generally similar to species also found further south, at least on Brothers Seamount, although the relative composition differs between most sites (Rowden and Clark 2006).

General oceanic production in the region of the site appears low, but localized productivity associated with the venting sites is clearly high and supports high densities of mussels.

**Feature condition and future outlook of the proposed area**

The site is largely unaffected by human activities. There is no known bottom trawling (New Zealand data), and no mining licenses issued by the International Seabed Authority. At this time there is no known minerals interest. Research activities have occurred, with a number of research voyages involving multibeam mapping, some dredging, and direct sampling with ROVs and manned submersibles.

**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
<b>Uniqueness or rarity</b>	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
<i>Explanation for ranking</i> Hydrothermal vents occur along the Kermadec back-arc. Each vent field typically has different faunal communities, varying in species composition or relative abundance. Monowai differs from nearby seamounts, and is the northern extent of what appears to be a Kermadec-associated fauna, distinct from sites further north (NIWA unpublished analyses). The extent of the chimney fields, lower temperature and more diffuse venting are restricted to the seamount-caldera confines, with a normal non-chemosynthetic benthic fauna away from the sites of venting.					
<b>Special importance for life-history stages of species</b>	Areas that are required for a population to survive and thrive.	X			
<i>Explanation for ranking</i> Hydrothermal vent species generally have a restricted range, tied to the specific chemical and depth conditions of the particular locality. It is clear that the site provides suitable conditions for the reproduction, establishment, and growth of the existing faunal communities. However, hydrothermal communities have to adapt to changing conditions as the location and chemistry of vent fields change.					
<b>Importance for threatened, endangered or declining species and/or habitats</b>	Area containing habitat for the survival and recovery of endangered, threatened, declining species or area with significant assemblages of such species.			X	
<i>Explanation for ranking</i> It is unknown whether threatened or endangered species depend on the area. The main habitats proposed are benthic, and so less relevant in general terms for groups such as seabirds and marine mammals. Two species of vent shrimp ( <i>Alvinocaris niwa</i> and <i>Alvinocaris longirostris</i> ) are on the New Zealand list of threatened species, due to their restricted distribution around certain hydrothermal vents.					
<b>Vulnerability, fragility,</b>	Areas that contain a relatively high proportion of sensitive habitats, biotopes or species that			X	

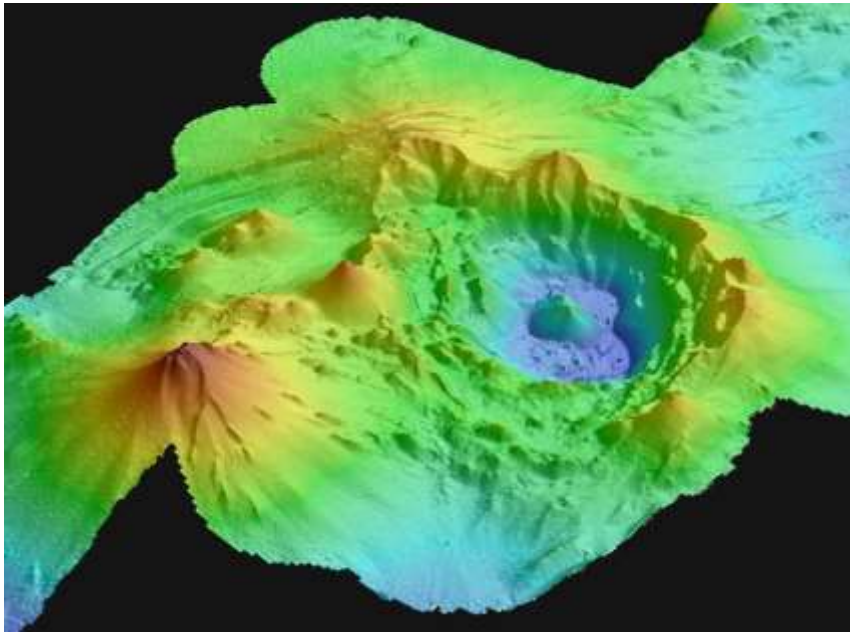
<b>sensitivity, or slow recovery</b>	are functionally fragile (highly susceptible to degradation or depletion by human activity or by natural events) or with slow recovery.				
<i>Explanation for ranking</i> The vent habitat is highly fragile and sensitive to human disturbance. If venting is disrupted, or ceases, then the communities will die out or change in composition and/or abundance. This might rank the criterion as high, but given that there is considerable natural disturbance in the area, the fauna has to adapt to survive natural events.					
<b>Biological productivity</b>	Area containing species, populations or communities with comparatively higher natural biological productivity.				<b>X</b>
<i>Explanation for ranking</i> The region is not productive on a large spatial scale, but hydrothermal activity results in high localized productivity. The venting around Monowai caldera on “Mussel Ridge” supports dense mussel beds and associated abundance of chemosynthetic communities.					
<b>Biological diversity</b>	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.				<b>X</b>
<i>Explanation for ranking</i> The site has both “normal” seamount and hydrothermal vent communities. As such, the diversity is higher than either type of habitat separately. The cone is relatively shallow (120 m) and hence there is a considerable variety of conditions to affect faunal composition as depth ranges from relatively shallow summit depths (with photic zone communities) down to 1500 m.					
<b>Naturalness</b>	Area with a comparatively higher degree of naturalness as a result of the lack of or low level of human-induced disturbance or degradation.				<b>X</b>
<i>Explanation for ranking</i> There is no known commercial human impact. There is some disruption caused by research sampling from submersibles and ROVs. However, this probably has much less effect than the high natural disruption.					

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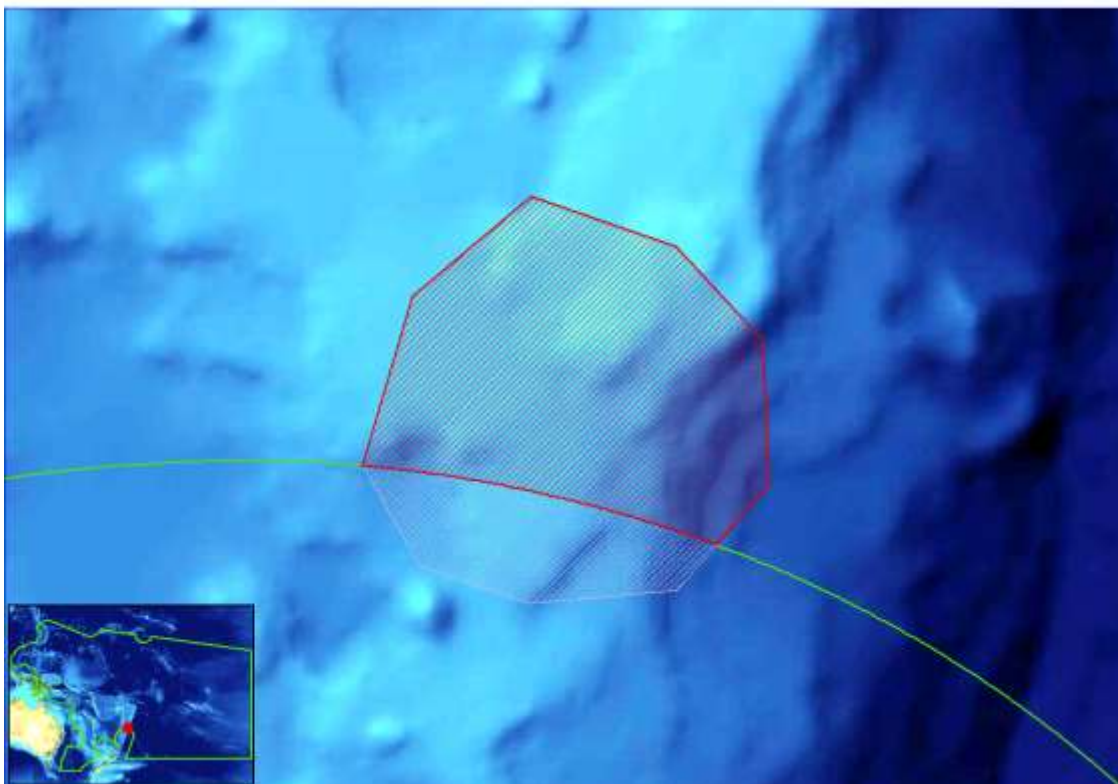
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### Maps and Figures



**Figure 1:** 3-D image of Monowai seamount, showing the cone and caldera features (compiled from swath bathymetry, NIWA).



**Figure 2:** Area meeting EBSA criteria

## **Area No. 8: New Britain Trench Region**

### **Abstract**

The southern waters of New Britain lie over the New Britain Trench. The area has high species productivity and richness. This region extends to include clusters of fishable seamounts and hydrothermal vent aggregation in the western, northern to eastern sides of New Ireland, indicating spots of ecological and biological importance.

### **Introduction**

The New Britain Trench and hydrothermal vent cluster is located in the north-east of Papua New Guinea, including the passage between New Ireland and New Britain.

### **Location**

See map for the geographic location of the feature. This area currently mostly lies within the EEZ of Papua New Guinea but extends 50km on the western side of the Trench, possibly extending partially towards New Caledonian waters.

### **Feature description of the proposed area**

- Deep trench, very high eddy energy (UNEP/CBD/RW/EBSA/WSPAC/1/2)
- Region of high tuna catch, high tuna productivity, and high sea surface temperature (UNEP/CBD/RW/EBSA/WSPAC/1/2)
- Catch of other species high (vents location)/ distinct seamounts with species richness around the vents area
- Indication of sperm whales in the southern part of the trench
- Fishable seamounts (south of trench) as well as around vents, deep sea coral patches (UNEP/CBD/RW/EBSA/WSPAC/1/2)
- Some indication of species richness, according to OBIS data and tuna migratory paths (UNEP/CBD/RW/EBSA/WSPAC/1/2)
- Aggregation of hydrothermal vents, seamounts and canyons, with high biological diversity (UNEP/CBD/RW/EBSA/WSPAC/1/2)
- Endangered Beck's Petrel (*Pseudobulweria becki*)
- Tuna (yellow fin, marlin and big-eye) richness (UNEP/CBD/RW/EBSA/WSPAC/1/2)

### **Feature condition and future outlook of the proposed area**

- Presence of hydrothermal vents – mining potential, tuna-fishing grounds and tuna hotspots;
- Leatherback turtle monitoring, connectivity studies within BSSC;
- University of PNG deep-sea studies

**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
<b>Uniqueness or rarity</b>	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 geomorphologic or oceanographic features			X	
<i>Explanation for ranking</i> Contains trench, vents and “at-risk” seamounts in one particular area. High aggregation of vents (UNEP/CBD/RW/EBSA/WSPAC/1/2)					
<b>Special importance for life-history stages of species</b>	Areas that are required for a population to survive and thrive.		X		
<i>Explanation for ranking</i> Potentially for whales, turtles and other species. Green turtle migration path data indicate site importance for green turtles foraging pathways from Marshall Islands into PNG; Endangered Beck’s petrel ( <i>Pseudobulweria becki</i> )					
<b>Importance for threatened, endangered or declining species and/or habitats</b>	Area containing habitat for the survival and recovery of endangered, threatened, declining species or area with significant assemblages of such species.			X	
<i>Explanation for ranking</i> Potential for other turtle species (leatherback turtle); Endangered Beck’s petrel ( <i>Pseudobulweria becki</i> )					
<b>Vulnerability, fragility, sensitivity, or slow recovery</b>	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	
<i>Explanation for ranking</i> Significant presence of “at-risk” seamounts. Fishing pressures – tuna production. Hydrothermal vent organisms fragile to environmental changes					
<b>Biological productivity</b>	Area containing species, populations or communities with comparatively higher natural biological productivity.			X	
<i>Explanation for ranking</i> Very high eddy energy and tuna productivity (UNEP/CBD/RW/EBSA/WSPAC/1/2).					



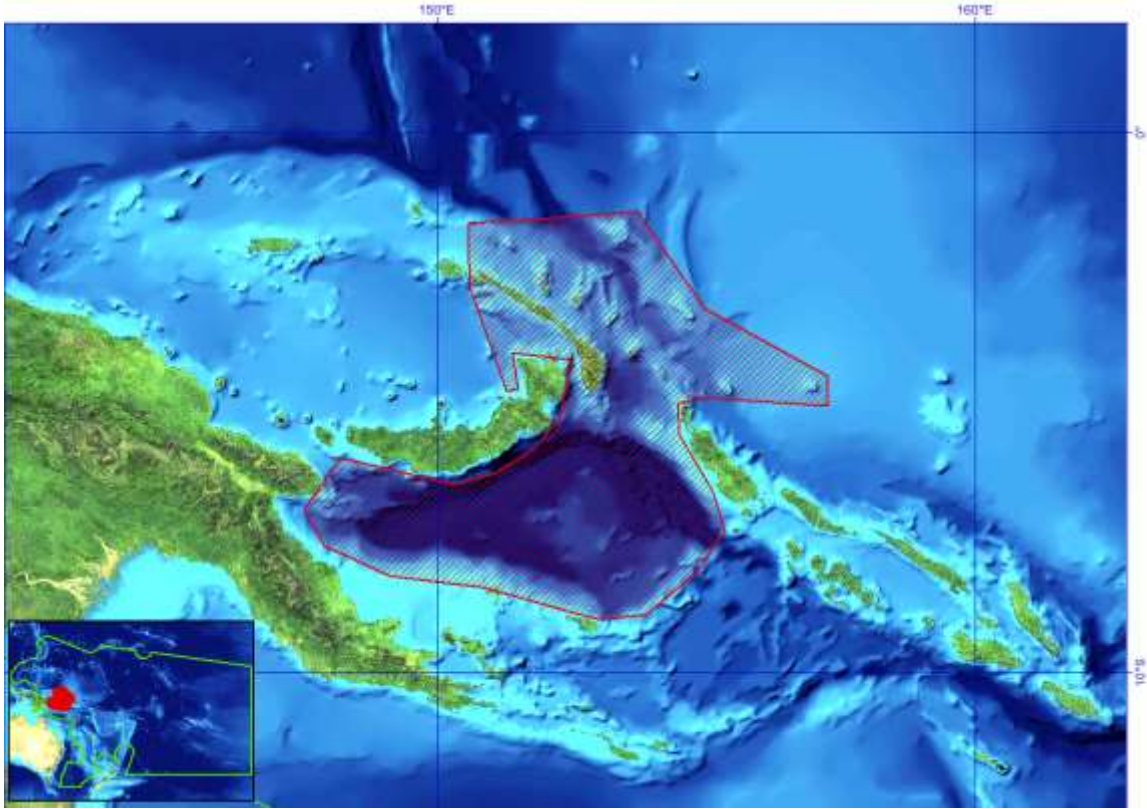
<b>Biological diversity</b>	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.			<b>X</b>	
<i>Explanation for ranking</i> High OBIS count/species richness. Vents, seamounts and trench providing variety of habitats and communities (UNEP/CBD/RW/EBSA/WSPAC/1/2).					
<b>Naturalness</b>	Area with a comparatively higher degree of naturalness as a result of the lack of or low level of human-induced disturbance or degradation.				<b>X</b>
<i>Explanation for ranking</i> Area has “at-risk” seamounts – not fished.					

**References**

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**Maps and Figures**



**Figure 1:** Area meeting EBSA criteria

## Area No. 9: New Hebrides Trench Region

### Introduction

The New Hebrides Trench is a large oceanic trench between New Caledonia and Vanuatu. The area extends from the southern extent of Papua New Guinea, wrapping around the southern extent of Vanuatu. The New Hebrides Trench region includes both Abyssal and Lower Bathyal features and seamounts within the national jurisdiction of Vanuatu but straddles a portion of New Caledonian waters. The site surrounds three major islands – Efate, Tanna and Erromango, and covers a range of habitats, including seamounts and deep trenches (up to 7600m deep).

### Location

The area is located between New Caledonia and Vanuatu, from a northern extent of 17.921° S, 166.975° W to a southern extent of 21.378°S, 170.961°W. The area extends 50km on either side of the main trench, which is approximately 1500km long.

### Feature description of the proposed area

- Deep trench (UNEP/CBD/RW/EBSA/WSPAC/1/2).
- Important deep-sea fishing and live reef fish food trade potentials. High energy eddy for northern and southern part of the trench (UNEP/CBD/RW/EBSA/WSPAC/1/2).
- Catch rate of tuna and marlin high for northern part of the trench (UNEP/CBD/RW/EBSA/WSPAC/1/2).
- Some indication from OBIS of threatened species (UNEP/CBD/RW/EBSA/WSPAC/1/2).
- Some seamounts with high numbers of tuna species on southern side of trench (UNEP/CBD/RW/EBSA/WSPAC/1/2).
- Two distinct fishable seamounts on top of trench towards Fiji.
- Indications of deep-sea coral (Vanuatu and Fiji).
- Deep-sea corals (high) with high productivity on seamounts and trench (UNEP/CBD/RW/EBSA/WSPAC/1/2).
- High slopes with potentially deepwater fauna (UNEP/CBD/RW/EBSA/WSPAC/1/2).
- Presence of approximately half of the known hydrothermal vents in the western Pacific region (UNEP/CBD/RW/EBSA/WSPAC/1/2).

### Feature condition and future outlook of the proposed area

Presence of hydrothermal vents, indicating mining potential, tuna fishing grounds and tuna hotspots.

**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
<b>Uniqueness or rarity</b>	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
<i>Explanation for ranking</i> One of two trenches in the area (UNEP/CBD/RW/EBSA/WSPAC/1/2).					
<b>Special importance for life-history stages of species</b>	Areas that are required for a population to survive and thrive.				X
<i>Explanation for ranking</i> Some indication of cold-water deep corals and other species (UNEP/CBD/RW/EBSA/WSPAC/1/2) (e.g., freshwater eel juvenile stage habitat); the area includes the likely spawning grounds of three species of freshwater eel that undertake long migrations from New Zealand and Australia: <i>Anguilla dieffenbachia</i> (New Zealand longfin eel), <i>A. australis</i> (New Zealand shortfin eel) and <i>A. reinhardtii</i> (Australian longfin eel). They mature and spawn in the area, and larvae return to their home rivers in Australia and New Zealand (Jellyman and Bowen 2009, Jellyman and Tsukamoto 2010).					
<b>Importance for threatened, endangered or declining species and/or habitats</b>	Area containing habitat for the survival and recovery of endangered, threatened, declining species or area with significant assemblages of such species.	X			
<i>Explanation for ranking</i> Potential for other turtle (possibly leatherback) and dugong species					
<b>Vulnerability, fragility, sensitivity, or slow recovery</b>	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	
<i>Explanation for ranking</i> “At-risk” seamounts contain fragile communities (UNEP/CBD/RW/EBSA/WSPAC/1/2).					
<b>Biological productivity</b>	Area containing species, populations or communities with comparatively higher natural biological productivity.		X		
<i>Explanation for ranking</i> High eddy energy – moderate tuna productivity as well as predicted presence of deep-water coral					

(UNEP/CBD/RW/EBSA/WSPAC/1/2).					
<b>Biological diversity</b>	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.				<b>X</b>
<i>Explanation for ranking</i> OBIS data show high ranking for species diversity. The variety of trenches, deep-water corals and seamounts offer a variety of habitats to support biological diversity (UNEP/CBD/RW/EBSA/WSPAC/1/2).					
<b>Naturalness</b>	Area with a comparatively higher degree of naturalness as a result of the lack of or low level of human-induced disturbance or degradation.				<b>X</b>
<i>Explanation for ranking</i> The site has limited impact from fishing or mining activities.					

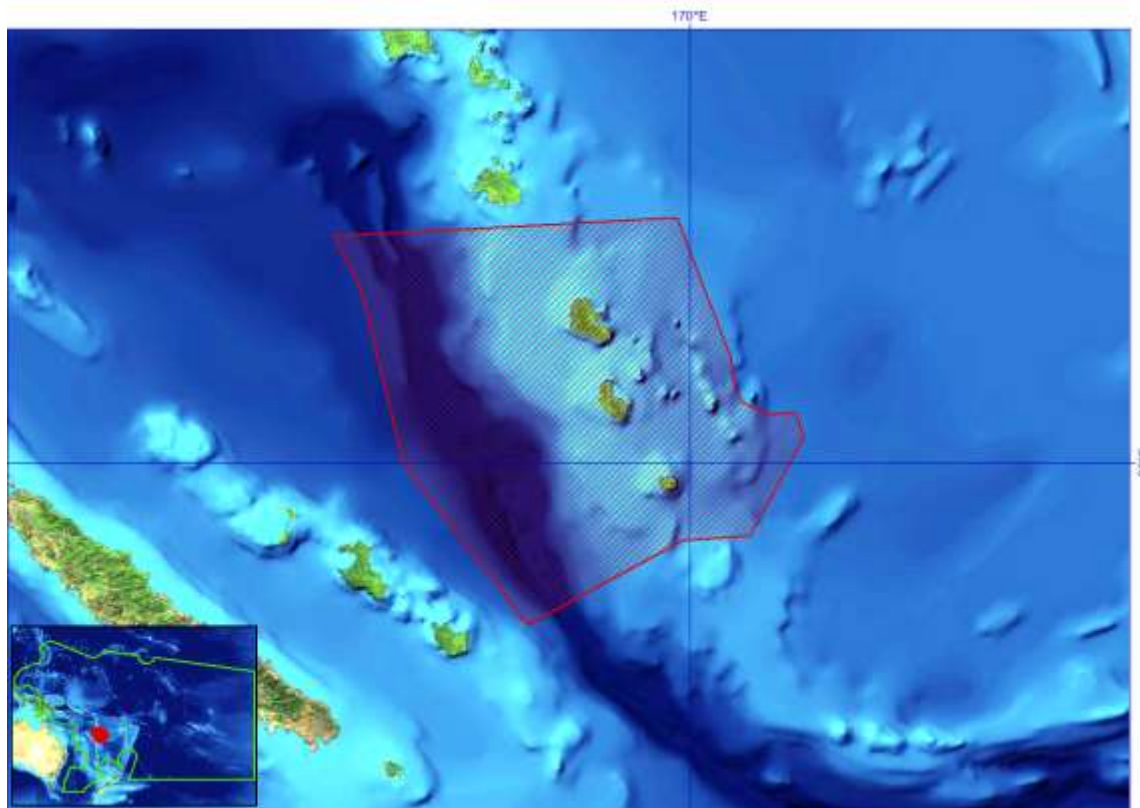
**References**

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**Maps and Figures**



**Figure 1.** Area meeting EBSA criteria

**Area No. 10: Rarotonga Outer Reef Slopes**

**Introduction**

The proposed EBSA covers an approximate area of 8,000 km<sup>2</sup>, with depths ranging from 80 m to 300 m. Rarotonga is the largest and most populous island in the Cook Islands, and accordingly is located within the national jurisdiction of the Cook Islands. The boundaries of the area would extend 50 km out to sea from the reef edge of Rarotonga.

**Location**

The area is located at latitude 21°12' S and longitude 158°46' W.

**Feature description of the proposed area**

Based on the currently available data, the outer reef of Rarotonga contains 12 endemic fish species occurring at depths to 300m but possibly deeper (McCormack 2007). These species include; Powell’s false-moray (*Powellichthys ventriosus*) (J. L. B. Smith 1965); Cook Islands Flashlightfish (*Photoplepharon rosenblatti*)<sup>1</sup> (Baldwin, Johnson, and Paxton, 1997); Fairy-Basslet (*Pseudanthias privaterra*); *Belonoperca pylei* (Baldwin and W. L. Smith 1998); an undescribed *Malacanthus*; peppermint angelfish (*Centropyge boylei*) (Pyle 1992, Pyle and Randall 1993); Narcosis Angelfish (*Centropyge narcosis*) (Pyle 1992); Claire’s Wrasse (*Cirrhilabrus claire*); an undescribed *Cirrhilabrus*; *Pseudocheilinus ocellatus* (Randall 1999); Deepwater Sandperch – an undescribed *Parapercis*; and Latticed Goby – an undescribed *Stiphodon*. Furthermore, the available OBIS data indicates that the area contains several vulnerable and threatened species, including corals and other IUCN Red List species, such as whales and sharks, inhabit the area (McCormack 2007). The area also has a high value for shallow-water species as reflected in the OBIS data sets.

**Feature condition and future outlook of the proposed area**

Rarotonga is the biggest and most populous island of the Cook Islands, and its environment is threatened by human activities, especially eutrophication and pollution from land-based activities. Anchor damage from cruise ships may be a possible threat to the surrounding environment but this requires further study. The Cook Islands humpback whale population is genetically distinct from neighbouring populations in French Polynesia and Tonga, but due to limited annual re-observations, we are unable to estimate population abundance. Interactions between IUCN Red List species and longline fisheries have been observed and reported, and includes interactions with marine turtles (Ministry of Marine Resources 2010) and Oceanic Whitetip Shark (*Carcharhinus longimanus*) (Ministry of Marine Resources 2009, Passfield 2008). National swordfish fisheries are centered around Rarotonga, which could suggest that interactions may continue in the future.

**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
<i>Explanation for ranking (references)</i>					
The outer reef slopes of Rarotonga are known to be habitats for 12 fish species endemic to Rarotonga					

(McCormack 2007).					
Special importance for life-history stages of species	Areas that are required for a population to survive and thrive.	X			
<i>Explanation for ranking (references)</i>					
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
<i>Explanation for ranking (references)</i>					
OBIS data indicates that the area has high value for IUCN Red List species.					
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			
<i>Explanation for ranking (references)</i>					
Biological productivity	Area containing species, populations or communities with comparatively higher natural biological productivity.	X			
<i>Explanation for ranking (references)</i>					
Biological diversity	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.				X
<i>Explanation for ranking (references)</i>					
OBIS data indicate that the area has a high diversity of shallow-water species (UNEP/CBD/RW/EBSA/WSPAC/1/2).					
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			
<i>Explanation for ranking (references)</i>					

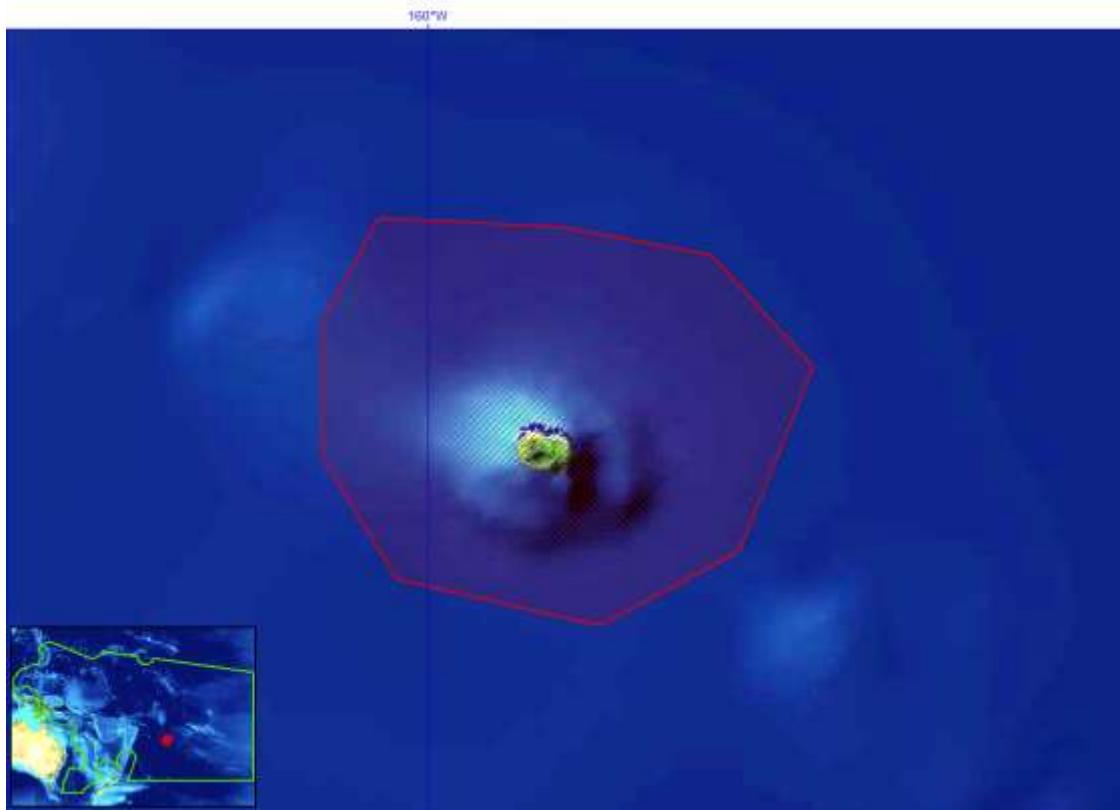
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### Maps and Figures



**Figure 1:** Area meeting EBSA criteria

## Area No 11: Samoan Archipelago

### Abstract

The Samoan Archipelago consists of six islands and one atoll in American Samoa, and two large islands and four islets in the Independent State of Samoa. Despite the political division, the islands of the archipelago comprise a biodiversity hotspot within the western South Pacific, and they show considerable connectivity, from the micro-faunal (e.g., coral larvae) to the mega-fauna (e.g., whales and turtles). The governments are committed to a collaborative programme of research and management (Two Samoas Initiative) of their shared marine resources.

### Introduction

The area proposed is centred on the waters surrounding the Samoan Archipelago. Although the archipelago is politically divided between American Samoa and the Independent State of Samoa, there is considerable connectivity between the various islands of the archipelago. The catch rates of albacore tuna are amongst the highest in the region, partly because of the concentration of seamounts within the archipelago. Tagging and photo-ID. studies of hawksbill turtles and humpback whales demonstrate the connectivity between the islands of the archipelago and other areas such as Fiji, Tonga, Cook Islands and French Polynesia. Rose Atoll is an important nesting site for up to 135,000 sooty terns (Birdlife International). Coral spawning may provide replenishment not only for the reefs of the Samoan Archipelago, but also for areas as far distant as the Cook Islands.

### Location

Approximately 15° S and between 166° W and 174° W.

### Feature description of the proposed area

The waters surrounding the Samoan Archipelago lie along the northern edge of the South Pacific Gyre, a series of connected ocean currents with a counter-clockwise flow. The major surface currents affect the area: the westward-flowing South Equatorial Current and the eastward-flowing South Equatorial counter-current. The area is also characterized by numerous seamounts to the west and east of the main islands.

### Feature condition and future outlook of the proposed area

Specific areas (particularly the near shore and south coast of Upolu) were severely damaged by the 2009 tsunami and are slowly recovering. The American Samoan government has declared Rose Atoll as a National Monument, and both EEZs have been declared as sanctuaries for whales and turtles (additionally for sharks in Samoa). There have also been local initiatives to declare coastal marine protected areas.

Extensions of the National Marine Sanctuary system in American Samoa will include notably Swains Island (~140 km<sup>2</sup>); and Rose Atoll (~34,000km<sup>2</sup>). Samoa has the much smaller and coastal Aleipata and Safata marine protected areas. There is also a network of fish reserves. The Samoan Archipelago has been recognized in the Pacific Oceanscape framework (endorsed by all governments in the Pacific Islands region) as a key Ocean Arc. Both governments support and engage in the Two Samoas Initiative, supported by Secretariat of the Pacific Regional Environment Programme (SPREP) and Conservation International (CI). The available science for the archipelago has been recently analysed, and a considerable amount of information has been brought together by the US National Oceanographic and Atmospheric Administration (Kendall and Poti 2011) to support the Two Samoas Initiative. Swain's Island is politically part of American Samoa but has a significantly different oceanographic environment and seems to have different assemblages of coral species (Douglas Fenner and Domingo Ochavillo, in prep.). It is suggested that Swain's be considered as a separate area meeting EBSA criteria in the future.

### Assessment of the area against CBD EBSA Criteria

CBD EBSA	Description	Ranking of criterion relevance
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Criteria (Annex I to decision IX/20)	(Annex I to decision IX/20)	(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				<b>X</b>
<i>Explanation for ranking (references)</i>					
The waters surrounding these islands constitute the Samoan “hotspot” and contain some rare species, e.g., a rare deepwater lobster species (musical furry lobster, <i>Palibythus magnificus</i> ), is reported only from Samoa (the only known specimen) and the Tuamotu Archipelago (photograph only) at 90-300 metres depth (Davie, P.J.F. 1990); a deepwater snapper species ( <i>Lutjanus mizenkoi</i> ), is known only from Samoa and Indonesia at 100-150 metres depth (Allen, G.R. 1985); endemic coral reef fish in Rose Atoll; rare coral species; diverse oceanographic environments (e.g., Swains Island, Rose Atoll, compared to other islands); The Vailulu’u is a unique seamount system with hydrothermal vents and a thriving eel population (Wegmann and Holzwarth 2006). The seamount system also hosts unidentified polychaetes, sponges, crinoids, octopus and crabs.					
Special importance for life-history stages of species	Areas that are required for a population to survive and thrive.				<b>X</b>
<i>Explanation for ranking (references)</i>					
The archipelago (and Savai’i in particular) is a potential source of coral reef larvae and associated organisms for colonisation and replenishment of other South Pacific areas (Kendall and Poti 2011); Rose Atoll is a critical habitat for some seabirds (e.g., sooty tern (Wegmann and Holzwarth 2006); populations of endangered hawksbill turtles (IUCN Red List 2008) and humpback whales (IUCN Red List 2008) are inter-connected (MNRE, unpublished data).					
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.				<b>X</b>
<i>Explanation for ranking (references)</i>					
Presence of marine turtles (hawksbill and green), humpback whales and other marine mammals and near-threatened seabirds					
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.				<b>X</b>

<i>Explanation for ranking (references)</i> Coral bleaching (associated with elevated sea surface temperatures) (Kendall and Poti 2011) has been reported. Some areas (especially south coast of Upolu) were also impacted by the 2009 tsunami, with some indications now of recovery. Storms and cyclones have been noted to negatively impact coastal habitats.					
Biological productivity	Area containing species, populations or communities with comparatively higher natural biological productivity.				X
<i>Explanation for ranking (references)</i> High catch rates for albacore tuna (Davie 1990); some localized upwellings; high marlin catch rate (Davie 1990); significant number of fishable seamount areas (Davie 1990)					
Biological diversity	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.				X
<i>Explanation for ranking (references)</i> Diverse habitats (mesophotic reefs, seamounts) (Kendall and Poti 2011) high pelagic fish species diversity (Allen 1985); diverse bathyal provinces (Kendall and Poti 2011) and deep water geomorphic classifications (Wegmann and Holzwarth 2006). The Vai'lulu'u seamount is characterized by a highly diverse marine environment where volcanic, hydrothermal, oceanographic and biological processes are interlinked (Wegmann and Holzwarth 2006). The seamount's hydrothermal vents host a specific microbial community and an eel population.					
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
<i>Explanation for ranking (references)</i> Presence of some relatively less-impacted areas (e.g., Swains and Rose Atoll National Monument, uninhabited islands); some uninhabited islands are marine protected areas in Independent Samoa; proposed significant extensions of National Marine Sanctuary system in American Samoa ( <a href="http://fagatelebay.noaa.gov">http://fagatelebay.noaa.gov</a> ).					

## References

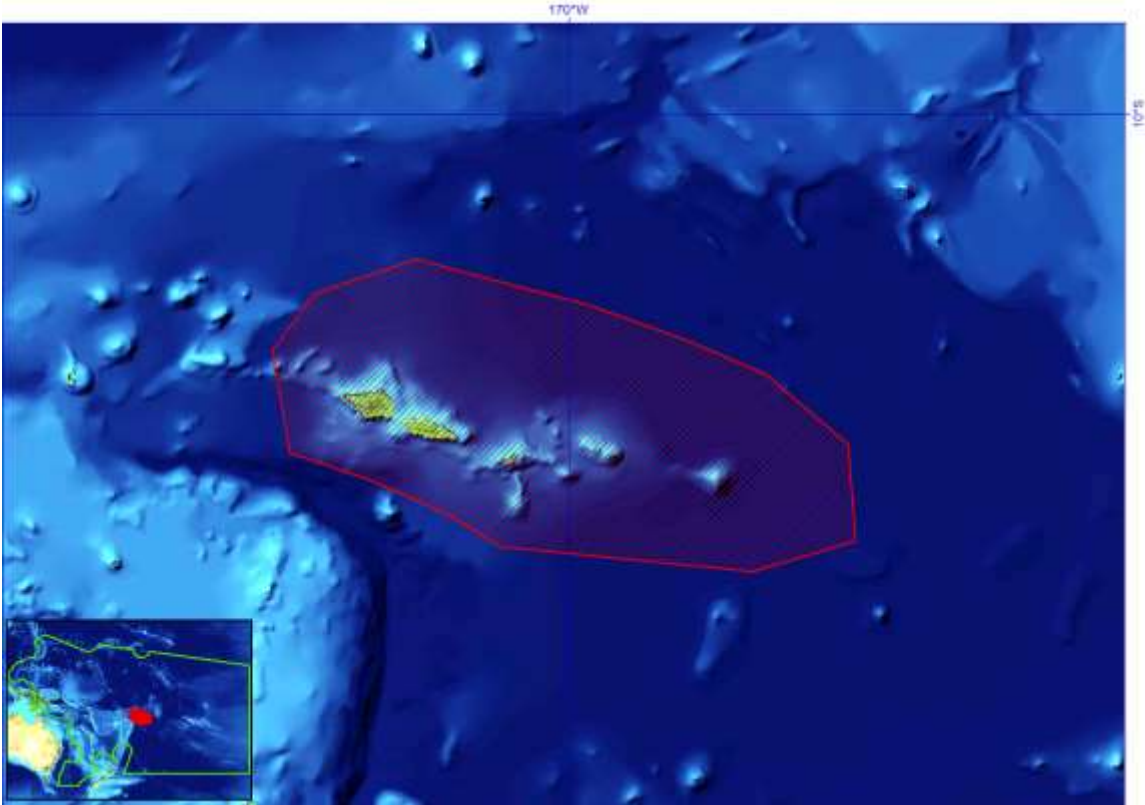
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**Maps and Figures**

Figure 1: Area meeting EBSA criteria



## Area No. 12: Suvarrow National Park

### Abstract

The proposed area consists of a 50 km band around the island of Suvarrow, Cook Islands. It is a very important foraging ground for several seabird species, which nest on nearby Suvarrow Atoll. Data has been sourced from national reports, scientific papers and online repositories.

### Introduction

This area covers approximately 8,700 km<sup>2</sup>, with depths ranging to 3000 m and sea surface temperatures at around 28.7°C. The bathymetry shows that the island sits near the southern extreme of the Manihiki plateau, a submerged Early Cretaceous oceanic crust with pelagic sediments that covers an area of 500,000 km<sup>2</sup>, with crust thickness between 1,500m and 2,000 m (Japan International Cooperation Agency 2001). OBIS data shows that there are important seamounts surrounding the area that could contribute to foraging resources.

### Location

Suvarrow is a remote atoll in the northern Cook Islands (central Pacific Ocean) at latitude 13°14' S and longitude 163°05' W, approximately 800 km north-west of Rarotonga (Jones 2001). Suvarrow is located within the national jurisdiction of the Cook Islands. The boundaries of the area proposed would extend 50km out to sea from the reef edge of Suvarrow.

### Feature description of the proposed area

Suvarrow is an important seabird breeding and foraging area for several species in the central Pacific Ocean, including sooty tern (*Sterna fuscata*), lesser frigatebird (*Fregata ariel*), brown noddy (*Anous stolidus*), red-tailed tropicbird (*Phaethon rubricauda*) and boobies (*Sula spp*). The atoll has the only large colonies of sooty tern and brown booby (*Sula leucogaster*) in the Cook Islands, with sooty tern population at 240,000 individuals (BirdLife International 2011). Suvarrow is a breeding and foraging site for 9% of the global lesser frigatebird population and 3% of the global red-tailed tropicbird population (Jones 2001), however these percentages will be revised in the near future and increase to 13% and 4% respectively (BirdLife International 2011). The populations on Suvarrow are recognised as being important for maintaining and managing seabird populations on other islands (Jones 2008). The importance of Suvarrow is reflected in its status as a BirdLife International Important Bird Area (IBA), being the most significant seabird nesting and foraging site in the Cook Islands (BirdLife International 2011).

Migratory birds, such as bristle-thighed curlew (*Numenius tahitiensis*) and wandering tattler (*Heteroscelus incanus*) overwinter on Suvarrow, and the atoll also provides habitat for coconut crabs and two threatened species of turtle (Jones 2001). Green turtle (*Chelonia mydas*) and hawksbill turtles (*Eretmochelys imbricata*) nest on the island before migrating to feeding grounds, possibly in Fiji (Bell 2001). Humpback whales (*Megaptera novaeangliae*) calve and breed in the area and represent a genetically distinct population from other Pacific humpback populations, all of which are vulnerable as a result of historical catch patterns (Donaghue 2011).

### Feature condition and future outlook of the proposed area

Suvarrow is a national park, and the terrestrial ecosystem is legally protected. This protection includes a moratorium on development on the island. Regulations are currently being prepared to support the declaration. The seabird populations declined slightly from 2000 to 2008, thus further conservation and management support may be warranted (Jones 2008) (see figure 1).

**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			
<i>Explanation for ranking (references)</i>					
Special importance for life-history stages of species	Areas that are required for a population to survive and thrive.				X
<i>Explanation for ranking (references)</i>					
The area is an important foraging area for many seabirds, including lesser frigatebirds (13% of the global population), fed-tailed tropic birds (4% of the global population) and the Cook Islands only large colony of sooty terns (240,000 individuals (BirdLife International 2011). Turtles are known to occur in the area, where they mate and proceed to the islands to nest (Bell 2011, McCormack 2007). The area is important for birthing and nursing humpback whales, and sperm whales have been photographed in the area (McCormack 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	
<i>Explanation for ranking (references)</i>					
Important for nesting turtles and calving humpback whales, which are threatened and vulnerable species (IUCN 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			
<i>Explanation for ranking (references)</i>					
Biological productivity	Area containing species, populations or communities with comparatively higher natural biological productivity.			X	

<i>Explanation for ranking (references)</i>				
Seabird populations are significantly higher in the area when compared to other areas, particularly within the Cook Island (BirdLife International 2011).				
Biological diversity	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.	X		
<i>Explanation for ranking (references)</i>				
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		
<i>Explanation for ranking (references)</i>				

**References**

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**Maps and Figures**

Seabird chick numbers on Suvarrow - 2008 vs 2000 data.

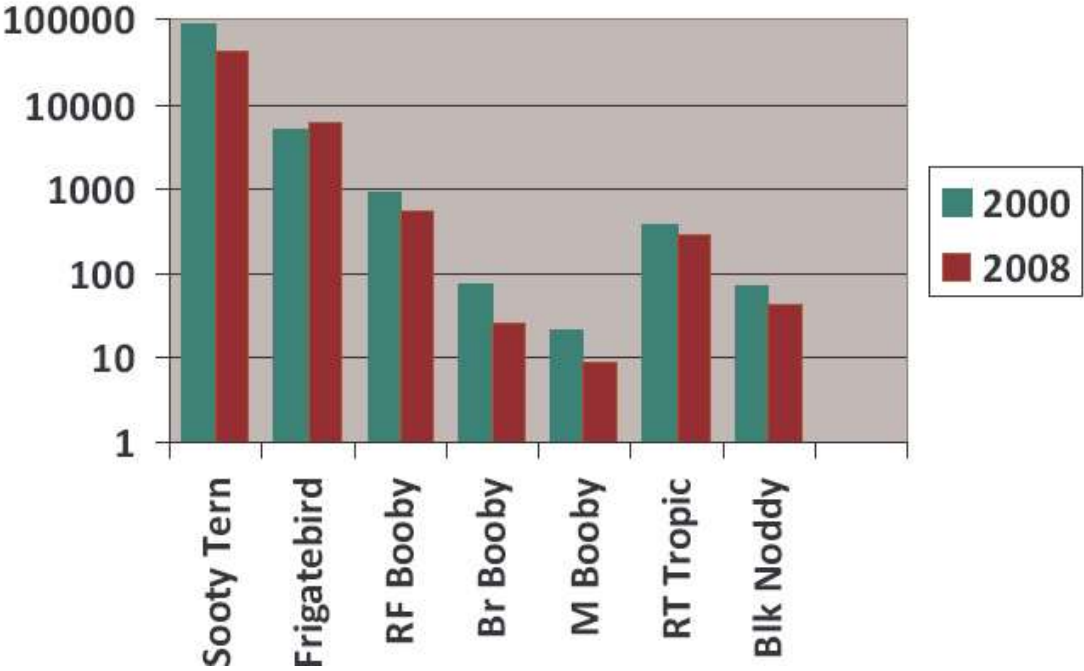


Figure 1: Comparison of seabird chick numbers on Suvarrow from 2000 to 2008 (Jones 2008).

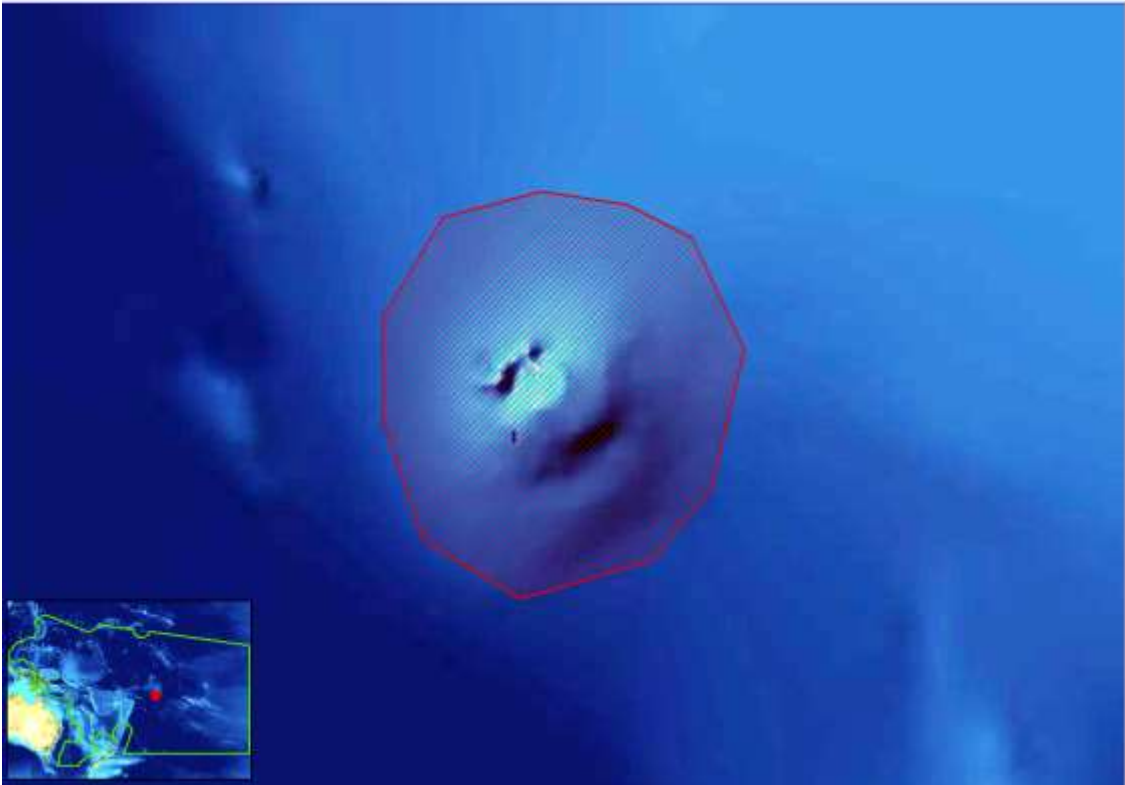


Figure 2: Area meeting EBSA criteria

**Area No. 13: South of Tuvalu/Wallis and Fortuna/North of Fiji Plateau**

**Abstract**

The south end of Tuvalu’s EEZ, overlapping into the northern tip of Fiji waters, has been identified as an area of seamount aggregations and potential cold-water corals. The high density of seamounts clustered in this area suggests high catch and high productivity, which indicates that the site is very vulnerable to unsustainable harvesting.

**Introduction**

The area has been identified from the high catch activity and high productivity (<http://doi.pangea.de/1/0.1594/PANGEA>; UNEP/CBD/RW/EBSA/WSPAC/1/2) and has multiple large submarine canyons. This pocket of high seas partially sits along the Wallis and Fortuna plateau, with a depth ranging from 3000 to more than 5500 metres. It has consistent high catches of marlin and tuna, and a high density of seamounts. This area contains IUCN Red List species; is a turtle migration route; and has a high proportion of potential deep-sea coral habitats (UNEP/CBD/RW/EBSA/WSPAC/1/2).

*Note: Deep-sea fishing studies have been carried out by the Secretariat of the Pacific Community in the south island of Tuvalu.*

**Location**

The central point is 180.122° W, 12.36° S. The area covers more than 50% of Tuvalu’s EEZ and is within three national jurisdictions (Tuvalu, Fiji, Wallis Fortuna). The estimated total area is more than 325,000 km<sup>2</sup>, and approximately 75,000 km<sup>2</sup> of this area falls within Tuvalu’s EEZ.

**Feature description of the proposed area**

A number of prominent features were identified from data provided in the data report (UNEP/CBD/RW/EBSA/WSPAC/1/2) including cold-water corals, seamounts and knolls, high species richness, according to OBIS (transitional zone between high and low environmental gradient), deep-sea species, and the area has low salinity.

**Feature condition and future outlook of the proposed area**

The area’s high productivity makes it highly vulnerable to illegal fishing activity. The area is also vulnerable to the effects of climate change. The area is believed to be in static condition.

**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
<b>Uniqueness or rarity</b>	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 area contains a substantial number of shallow and deep seamounts and has multiple large submarine canyons.					

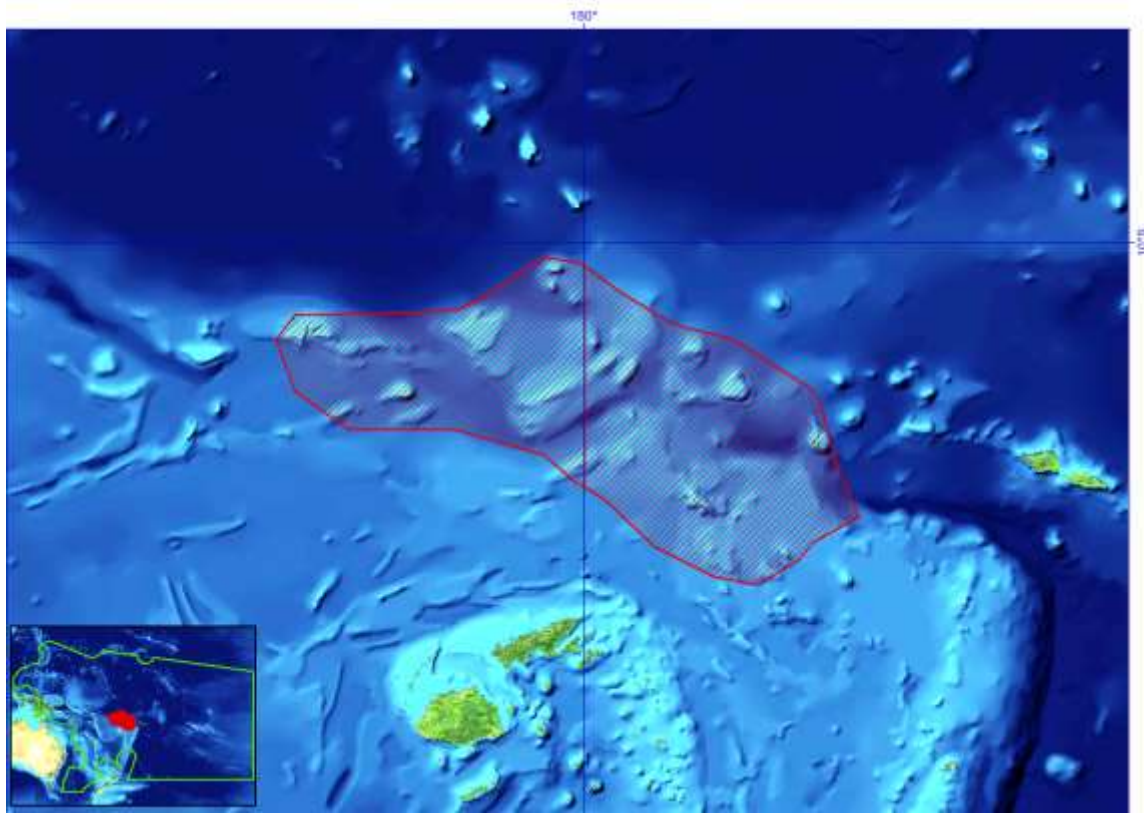


<b>Special importance for life-history stages of species</b>	Areas that are required for a population to survive and thrive.	X			
<b>Importance for threatened, endangered or declining species and/or habitats</b>	Area containing habitat for the survival and recovery of endangered, threatened, declining species or area with significant assemblages of such species.			X	
One threatened species has been identified in Tuvalu waters and multiple in Fiji waters (UNEP/CBD/RW/EBSA/WSPAC/1/2).					
<b>Vulnerability, fragility, sensitivity, or slow recovery</b>	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
Cold-water corals and deep-sea species highly vulnerable to degradation by human activity and to the impacts of climate change.					
<b>Biological productivity</b>	Area containing species, populations or communities with comparatively higher natural biological productivity.				X
The site shows high tuna and marlin catch, and there is an ongoing major fishery in the area. The island of Niulakita to the far south of Tuvalu is a popular nesting site for green turtles, based on anecdotal data, which is also widely supported by the general patterns of turtle migration.					
<b>Biological diversity</b>	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.			X	
<b>Naturalness</b>	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	

**References:**

UNEP/CBD/RW/EBSA/WSPAC/1/2. 2011. *Compilation of Submissions of Scientific Information to Describe EBSAs in the Western South Pacific Region.*

**Maps and Figures**



***Figure 1. Area meeting EBSA criteria***

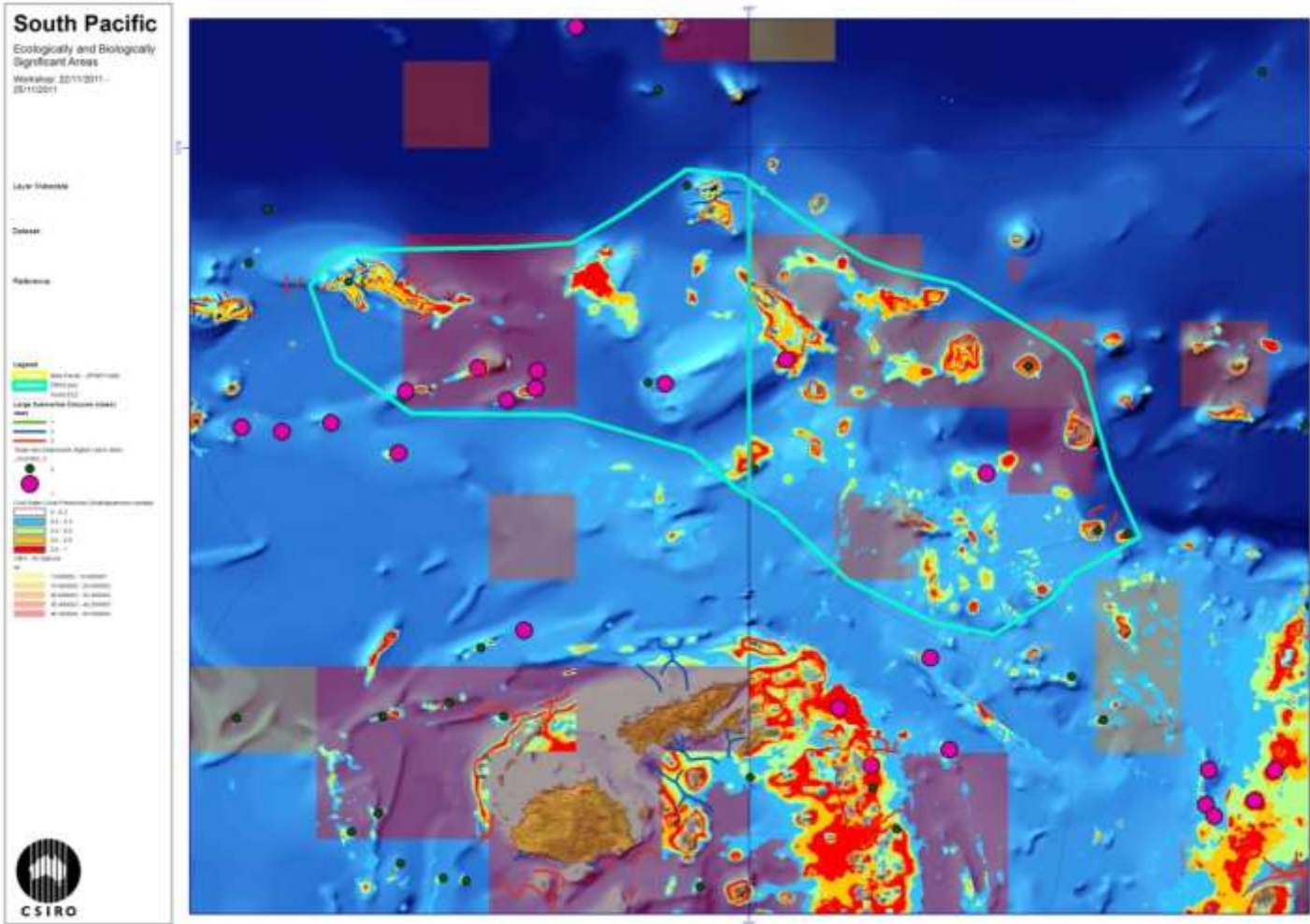


Figure 2. Features included in the proposed area

**Area No. 14: Vatu-i-Ra/Lomaiviti, Fiji****Abstract**

The Vatu-i-Ra/Lomaiviti region is a hotspot for charismatic megafauna (i.e., cetaceans, sharks, turtles, seabirds), as well as a biodiversity centre for deep-sea species. Despite the relatively small overall area, there is a diverse benthic geomorphology, including channels, submarine canyons and seamounts. The area is surrounded by shallow coastal areas with globally significant marine value (WWF 2004).

**Introduction**

The Vatu-i-Ra/Lomaiviti area includes a deep channel, in excess of 700 m, cutting across the Bligh Waters/Vatu-i-Ra Passage. The deep waters lie directly above highly productive reef areas, with high currents and potential upwelling supporting some of the highest coral reef fish biomass values recorded in the western Pacific (Mamane et al. 2003). Vertically Generalized Production Model (VGPM) global ocean productivity values are high throughout the channel, though this may also be influenced by terrestrial runoff (UNEP/CBD/RW/EBSA/WSPAC/1/2). The area contains five bird colony extensions identified as globally significant by BirdLife International, centred at: Vatu-i-Ra Island (black noddies); Namenalala Islands (red-footed boobies); Mabualau Island (black noddies); Gau Island (Fiji petrel); Koro/Gau islands (collared petrel) (BirdLife International 2011). The waters adjacent to Ovalau, Makogai and Vatu-i-Ra island have long been identified as an important migratory corridor for the endangered Oceania sub-population of humpback whale (*Megaptera novaeangliae*) (Dawbin 1964, Appendix A), and there is a new confirmed record of calving in deep waters adjacent to Vatu-i-Ra Reef (Smith et al. 2011). In addition, the region supports two resident spinner dolphin pods that rest at Moon Reef during the day and feed at depth during the night (WDCS, unpublished data). There are important turtle nesting and foraging areas around the shallow and coastal margins (in particular Yadua, Namena, Makogai, Wakaya, Vatu-i-Ra, Motoriki and Gau islands), and satellite tracks show turtle movement through the area (WWF, unpublished data). There is a confirmed grey reef shark breeding ground at Nigali Passage off Gau Island in shallower areas, and the Fiji Department of Fisheries has records of catches of scalloped hammerhead from the area. There are at least two shallow seamounts (E6, Mt. Mutiny) within proximity of the Vatu-i-Ra channel.

**Location**

Deep channel and submarine canyons between Viti Levu and Vanua Levu covering Bligh Waters from the edge of the Yasawa Island group and western edge of the Great Sea Reef, through the Vatu-i-Ra Passage, and covering the deep waters around Namena Marine Reserve and islands of Lomaiviti province to the south-east. The area is entirely within Fiji's EEZ, with a focus on areas outside of traditional fisheries management area (qoliqoli) boundaries.

**Feature description of the proposed area**

Bird colony extension data available from BirdLife International's World Bird Database (jez@birdlifepacific.org.fj);

Humpback migration data and spinner dolphin data available from Whale and Dolphin Conservation Society (Cara Miller, cara.miller@wcds.org);

Humpback calving location shapefile available from Wildlife Conservation Society Fiji (sjupiter@wcs.org);

Turtle nesting, foraging and movement data available from WWF South Pacific Programme (Merewalesi Laveti, mlaveti@wwfpacific.org.fj);

Deep-sea biodiversity available from OBIS (UNEP/CBD/RW/EBSA/WSPAC/1/2);

Shallow seamount location information can be obtained from the Nai'a liveboard dive boat by WCS Fiji);

*Additional data supporting nomination:*

Historic sperm whale capture (UNEP/CBD/RW/EBSA/WSPAC/1/2)

Cold water coral predictions (UNEP/CBD/RW/EBSA/WSPAC/1/2)

VGPM Global Ocean Productivity (UNEP/CBD/RW/EBSA/WSPAC/1/2)

**Feature condition and future outlook of the proposed area**

The deep waters and currents through Vatu-i-Ra Passage support highly productive shallow adjacent ecosystems, therefore it is likely though unconfirmed that the deeper ecosystems are also productive. BirdLife International, in partnership with NatureFiji/MareqetiViti and with technical support from the Pacific Invasives Learning Network, the Pacific Invasives Initiative and the New Zealand Department of Conservation, carried out a successful rat eradication campaign on Vatu-i-Ra Island in 2006 and 2007, and the island now supports a globally significant congregation of breeding black noddies that feed in the deep waters of the Vatu-i-Ra Passage. Wildlife Conservation Society, in partnership with the Whale and Dolphin Conservation Society and Fiji Department of Fisheries, hopes to carry out future surveys to determine if the deep waters adjacent to Vatu-i-Ra Reef are a consistent breeding spot for the Oceania sub-population of humpback whales. Provincial administrators and other government representatives have indicated preliminary interest in protecting this important area (Jupiter et al. 2011).

**Assessment of the area against CBD EBSA Criteria**

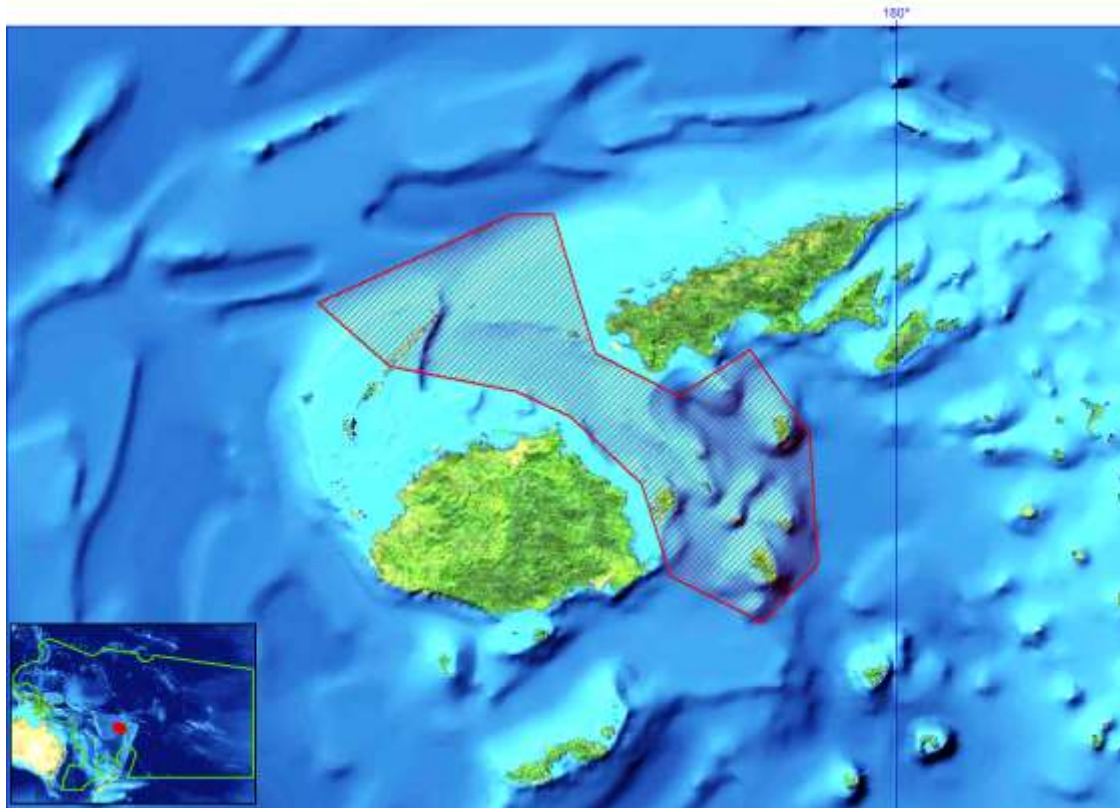
CBD EBSA Criteria (Annex I to decision IX/20)	Description (Annex I to decision IX/20)	Ranking of criterion relevance (please mark one column with an X)			
		Don't Know	Low	Some	High
<b>Uniqueness or rarity</b>	Area contains either (i) unique (“the only one of its kind”), rare (occurs only in few locations) 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	
<i>Explanation for ranking</i> Gau Island is the only recorded location for the Fiji petrel worldwide (BirdLife International 2011)					
<b>Special importance for life-history stages of species</b>	Areas that are required for a population to survive and thrive.			X	
<i>Explanation for ranking</i> Important feeding/breeding ground for seabirds (BirdLife International 2011) Record of calving of Oceania sub-population of humpback whales (Smith et al. 2011; WCSFiji, unpublished GIS data); further data needed to confirm consistency of site for breeding					
<b>Importance for threatened, endangered or declining species and/or habitats</b>	Area containing habitat for the survival and recovery of endangered, threatened, declining species or area with significant assemblages of such species.				X
<i>Explanation for ranking</i>					

See above for Fiji petrel and Oceania sub-population of humpbacks Also important habitat for scalloped hammerhead (Fiji Department of Fisheries, unpublished data)					
<b>Vulnerability, fragility, sensitivity, or slow recovery</b>	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
<i>Explanation for ranking</i> Humpbacks/sharks long-lived species with older age at first reproduction					
<b>Biological productivity</b>	Area containing species, populations or communities with comparatively higher natural biological productivity.				X
<i>Explanation for ranking</i> Vertically Generalized Production Model (VGPM) global ocean productivity values are high, but this may also be influenced by terrestrial runoff (UNEP/CBD/RW/EBSA/WSPAC/1/2).					
<b>Biological diversity</b>	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.				X
<i>Explanation for ranking</i> OBIS maps of TEP, deep species, shallow species, all species all show very high diversity in this region (UNEP/CBD/RW/EBSA/WSPAC/1/2).					
<b>Naturalness</b>	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
<i>Explanation for ranking</i> Deep areas fairly unsurveyed, but adjacent shallow habitats are largely in exceptional condition. Some long-line fishing occurring in area.					

## References

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- Jupiter S, Tora K, Mills M, Weeks R, Adams V, Qauqau I, Nakeke A, Tui T, Nand Y, Yakub N (2011) Filling the gaps: identifying candidate sites to expand Fiji's national protected area network. Outcomes report from provincial planning meeting, 20-21 September 2010. Wildlife Conservation Society Fiji, Suva, Fiji, 65 pp.
- Marnane M, Allen G, Farley L, Sivo L, Dulunaqio S (2003) Scientific report on an expedition to the Vatu-i-Ra/Lomaiviti passage, 10-24 May 2003. Wildlife Conservation Society, Suva, Fiji, 15 pp.
- Smith BD, Fox M, Naisilisili W, Dulunaqio S, Jupiter S (2011) Status of cetaceans in the Vatu-i-Ra Seascape and the development of local capacity for their research and conservation. Wildlife Conservation Society, Suva, Fiji, 23 pp.
- WWF (2004) Setting priorities for marine conservation in the Fiji Islands Marine Ecoregion. WWF South Pacific Programme, Suva, Fiji, 79 pp
- UNEP/CBD/RW/EBSA/WSPAC/1/2. 2011. *Compilation of Submissions of Scientific Information to Describe EBSAs in the Western South Pacific Region*.

## Maps and Figures



**Figure 1:** Area meeting EBSA criteria

**Appendix A.** Additional scientific information on humpback whales to be considered within the EBSA proposal for Vatu-i-Ra/Lomaiviti, Fiji.

Recently, land-based humpback whale surveys led by the Fiji Department of Fisheries have been conducted in concert at two project sites; Levuka (Ovalau) and Makogai. In 2010, 60 humpback whales were seen during 120 hours of observation time from Makogai. Numerous mother-calf pairs were sighted on consecutive survey days (as determined by photo-identification of flukes) indicating the potential importance of this site for calving and breeding for this species. During the same survey year (with 118 hours of observations), 25 individuals were documented from the Levuka look-out point. Individuals seen from this site were documented to occur in the deep section of Vatu-i-Ra passage and appeared to be travelling in a northerly direction. Repeat surveys were conducted in 2011 from both sites. Despite having a similar number of observation hours and consistent timing with the 2010 surveys, lower numbers were seen at both sites; 12 at Makogai and 7 at Levuka. All sightings were made within the Vatu-i-Ra passage. These numbers are higher than the initial surveys conducted by researchers from Southern Cross University (SCU) in previous years. A brief summary of SCU sightings efforts are as follows: 2002 (Levuka) – three confirmed sightings in three weeks; 2003 (Levuka) – one confirmed sighting in four weeks (reports from fishers also); 2008 (Levuka) – two sightings in three weeks; 2009 (Makogai) - 16 sightings in three weeks. All surveys also took place in August and September (as did the Fiji Department of Fisheries surveys) however it should be noted that systematic counts and survey design were not always used in the SCU surveys. The recent observations of both SCU and the Fiji Department of Fisheries project are all substantially lower than observations collected by Dawbin in the late 1950s. Some key points from Dawbin's work are: (i) sightings took place at Levuka, Naigani and Wakaya, (ii) maximum weekly counts of 238 individuals were recorded, (iii) total of 1648 humpbacks were counted over three years, and (iv) substantially more humpbacks were observed in 1957.

## Area No. 15: South Tasman Sea

### Abstract

An area of abyssal plain below the sub-tropical front limited to the north by a line between the approximate intersection of 36° S, and 40° S with the Australia and New Zealand EEZs to the north, and 46° S to the south and bounded on the west and east by the Australian and New Zealand EEZs. It is an area of rapid change in physical and chemical oceanography, frontal density, and primary productivity. The highest bird densities in the SPREP area occur in this region, and it contains identified foraging areas for breeding and non-breeding birds. Two shallow seamounts in the north-west are categorized as high risk, indicating the likely presence of cold-water coral communities that have not been impacted by deep-water trawling. Seven additional deepwater seamounts (3000-3500 m summit depth) and overall five seamount types occur in this one area.

### Introduction

The South Tasman Front is an area of rapid change in physical and chemical oceanography, frontal density, and primary productivity ([www.oregonstate.edu/oceanproductivity](http://www.oregonstate.edu/oceanproductivity)). The highest bird densities in the SPREP area occur in this region, and it contains foraging areas for both breeding and non-breeding seabirds (Global Procellariiform Tracking Database). Two seamounts in the north-west are categorized as high risk (Clark and Tittensor 2010), indicating the likely presence of cold-water coral communities that have not been impacted by deep-water trawling.

### Location

South Tasman Sea between 36° S (NW), 40° S (NE) and 45° S (S) bounded on the west and east by the Australian and New Zealand EEZs. The site covers a large portion of the Tasman Sea, it is bordered on the north by the Lord Howe Rise and contains many seamounts on its eastern border with the Tasman Abyssal Plain. The average depth of the site is 4962 m, but is punctuated with seamounts that lead to a maximum slope angle of 32.4°. The Gascoyne Seamount at the site's north-west corner rises from depths of around 4500m to only 25m below the sea surface. The site has a significant thermal gradient which finds southerly sea surface temperatures around 10°C cooler than northern regions; the average sea surface temperature for the site between 2002 and 2010 was 15°C. The site had high average chlorophyll-a concentrations (0.33 of mg m<sup>-3</sup>) and primary productivity (646 mgC/m<sup>2</sup>/day) between 2002 and 2010. The dynamic nature of the region produces chlorophyll-a “blooms” across the site during different months, although the southern and central regions appear to have the consistently highest mixing and productivity.

### Feature description of the proposed area

An area of abyssal plain below the sub-tropical front between Australia and New Zealand containing seven seamounts at summit depths around 3000-3500m and two shallower seamounts (1200 and 1300m summit depth) in the north-west sector. These seamounts have not been sampled.

The deeper abyssal seafloor (~4000-5000 m ) was sampled using epibenthic sleds in 1982, yielding several species that are rare in the biological collection of the National Institute of Water and Atmospheric Research (New Zealand):

- black coral (*Schizopathes affinis*)
- urchin (*Aceste bellidifera*)
- brittlestar (*Ophium loveri*)
- brittlestar (*Amphiophiura bullata convexa*)



- galatheid (*Munidopsis antonii*)
- decapod crustacean (*Ethusina challengerii*)
- gastropod (*Halyastres chimera*)
- asteroid (*Damnaster tasmani*)
- holthurian (*Deima validum*)

Analyses undertaken by BirdLife International show that the area qualifies as a marine Important Bird Area for three seabirds on the IUCN Red List and is estimated to hold over 1% of the world’s population of each species. The primary species for qualification are Buller’s albatross (*Thalassarche bulleri*, Near Threatened), Antipodean albatross (*Diomedea antipodensis*, Vulnerable) and Cook’s petrel (*Pterodroma Cookii*, Vulnerable).

As well as being used as a key foraging area, the site is also known to be important for birds transiting to forage on the Australian (Tasmania) coast, this also includes the Near Threatened white-capped albatross (*Thalassarche steadi*), as well as the species listed above.

Outside of the breeding season the area is known to be important for white-capped albatross (*Thalassarche steadi*), wandering albatross (*Diomedea exulans*) and Antipodean albatross (*Diomedea antipodensis*); both wandering and Antipodean albatross are classified as Vulnerable on the IUCN Red List (IUCN 2010).

**Feature condition and future outlook of the proposed area**

The feature is primarily pelagic where the physical environment is changing steadily under the influence of increasing southerly penetration of the East Australian Current and its eddy field. The two seamounts in the north-west are categorized as high risk, indicating that they likely contain deep-water coral communities that have not been impacted by deepwater trawling.

All of the seabird species present are vulnerable to incidental by-catch in fisheries, particularly long-line. All seabird species are vulnerable to surface pollution events, particularly oil spills.

**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	
<i>Explanation for ranking (references)</i> Only area of sub-tropical convergence in this region, containing the highest bird densities in the western South Pacific area. Samples from the deeper abyssal seafloor (~4000-5000m) have yielded rarely sampled species.					
Special importance	Areas that are required for a population to survive and thrive.				X

for life-history stages of species					
<i>Explanation for ranking (references)</i>					
The site is an important foraging area for a number of seabird populations breeding on surrounding land masses and is used during multiple life-history stages including both breeding and non-breeding seasons. It is also used as an important transit area for species feeding in other areas as they travel to and from colonies.					
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
<i>Explanation for ranking (references)</i>					
The site is known to be important for a number of seabirds that are included on the IUCN Red List, primarily Buller's albatross ( <i>Thalassarche bulleri</i> , Near Threatened), Antipodean albatross ( <i>Diomedea antipodensis</i> , Vulnerable) and Cook's petrel ( <i>Pterodroma Cookii</i> , Vulnerable), but also white-capped albatross ( <i>Thalassarche steadi</i> , Near Threatened) and wandering albatross ( <i>Diomedea exulans</i> , Vulnerable) during their non-breeding season.					
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
<i>Explanation for ranking (references)</i>					
Important breeding and foraging area for seabirds of low productivity. Two seamounts predicted to hold fragile deep-sea coral that has not been fished. Seabirds threatened due to by-catch during long-lining.					
Biological productivity	Area containing species, populations or communities with comparatively higher natural biological productivity.				X
<i>Explanation for ranking (references)</i>					
An ocean front contributing to high surface productivity, and two seamounts predicted to support deepwater coral communities					
Biological diversity	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.			X	
<i>Explanation for ranking (references)</i>					
The highest diversity of seabird species in the Tasman Sea is among the highest in the world; the Sea qualifies as an Important Bird Area under BirdLife criteria (see BirdLife International 2009)					
Contains two seamounts predicted to support cold-water coral in an unfished condition.					
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	

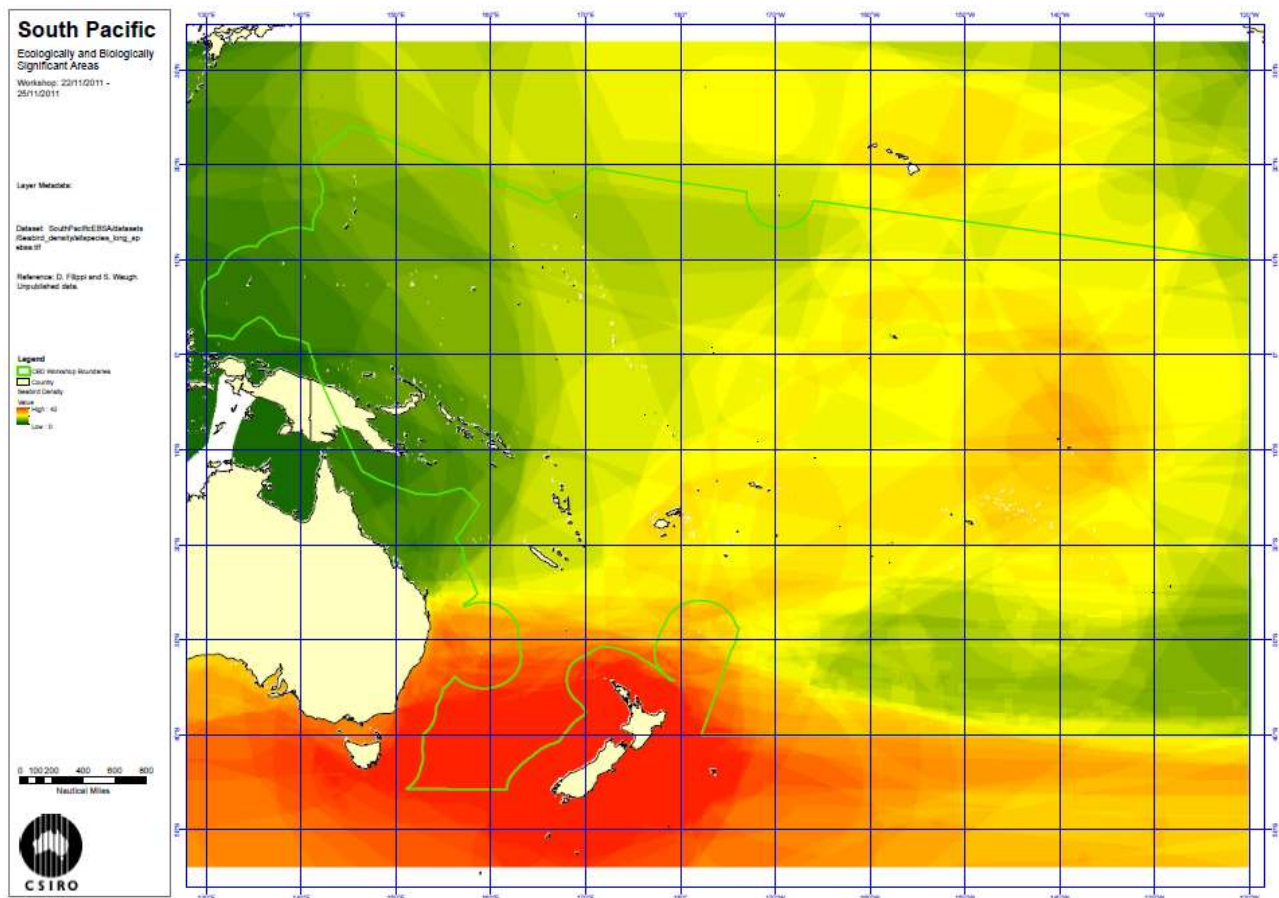
*Explanation for ranking (references)*

Pelagic environment being affected by climate change and bird populations threatened due to longline bycatch. The two shallow seamounts in the north-west are reported as unfished.

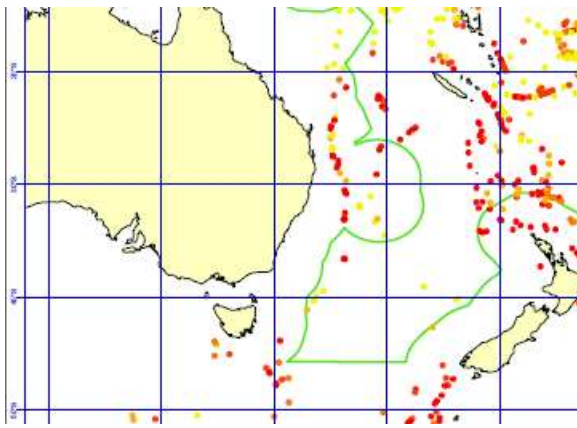
**References**

- Global Procellariiform Tracking Database. BirdLife International. [www.seabirdtracking.org](http://www.seabirdtracking.org) Accessed 01/10/11. Any requests to use the tracking data used for this site in any publication need to be agreed with the data owners. An initial request should be sent to BirdLife International to coordinate this process. See <http://www.seabirdtracking.org/terms.php> for full terms of reference.
- BirdLife International (2009) Designing networks of marine protected areas: exploring the linkages between Important Bird Areas and ecologically or biologically significant marine areas. Cambridge, UK: BirdLife International.
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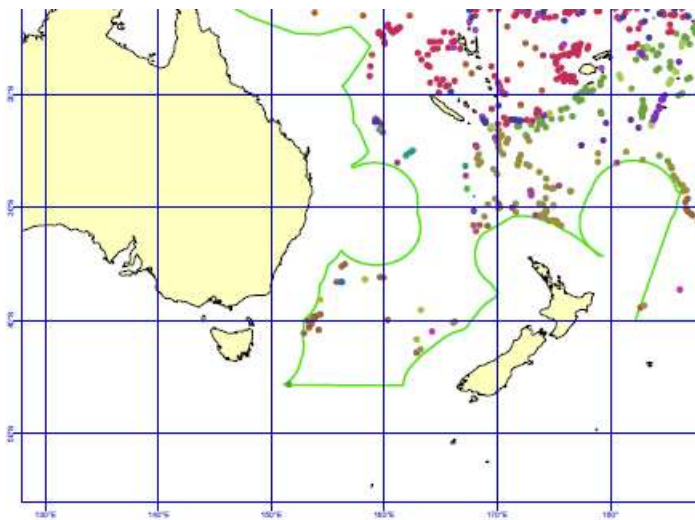
**Maps and Figures**



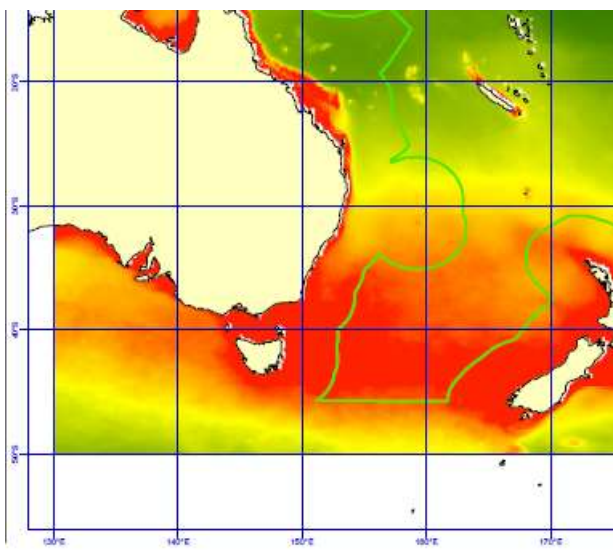
**Figure 1.** Seabird density, showing high density in South Tasman Sea (D. Filippi and S. Waugh. Unpublished data)



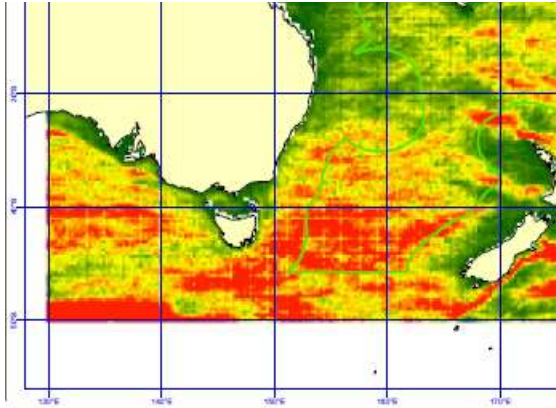
**Figure 2. High-risk seamounts showing two seamounts in north-west region of the proposed area (Clark and Tittensor 2010)**



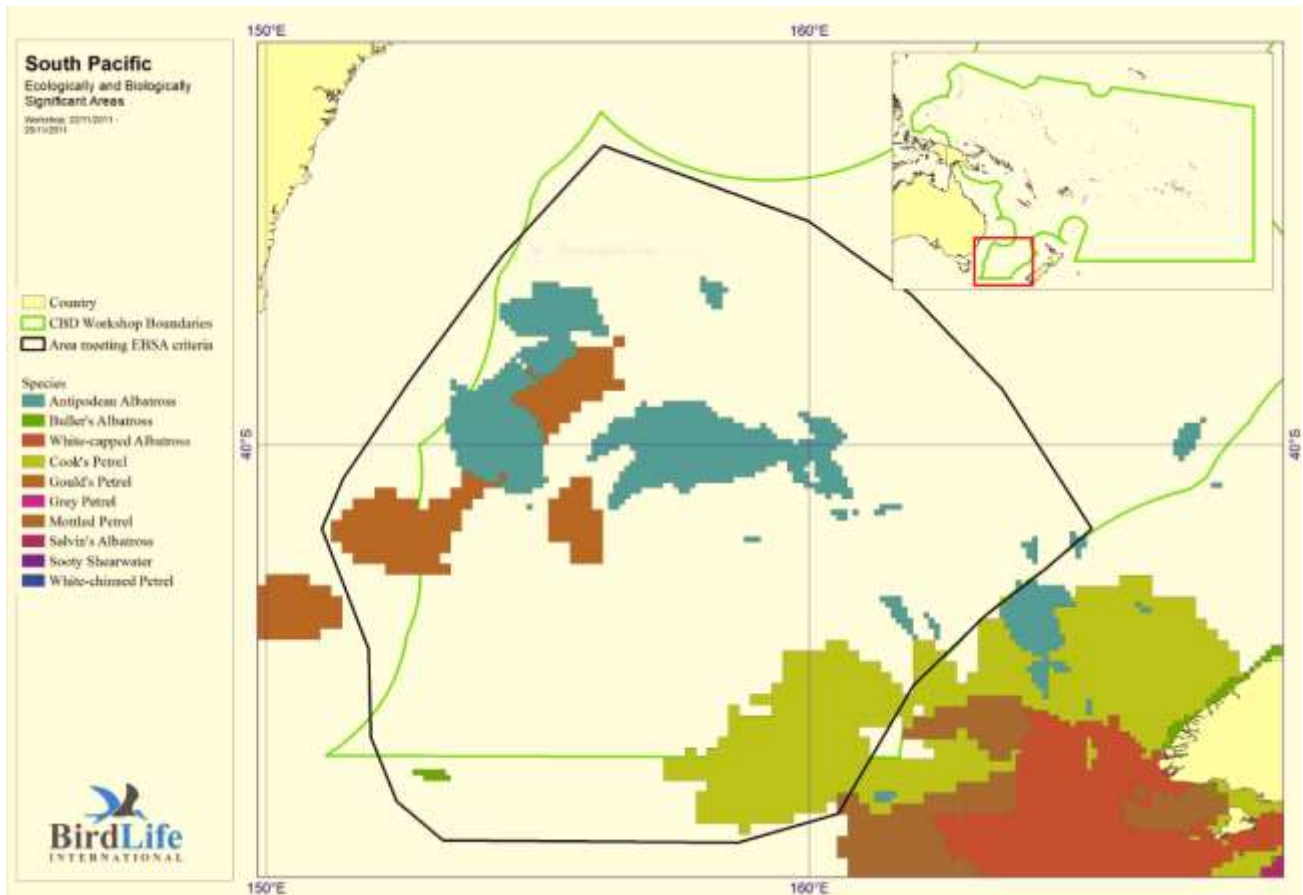
**Figure 3. Seamount classification showing five classes of seamounts in the proposed area (Clark et al. 2011).**



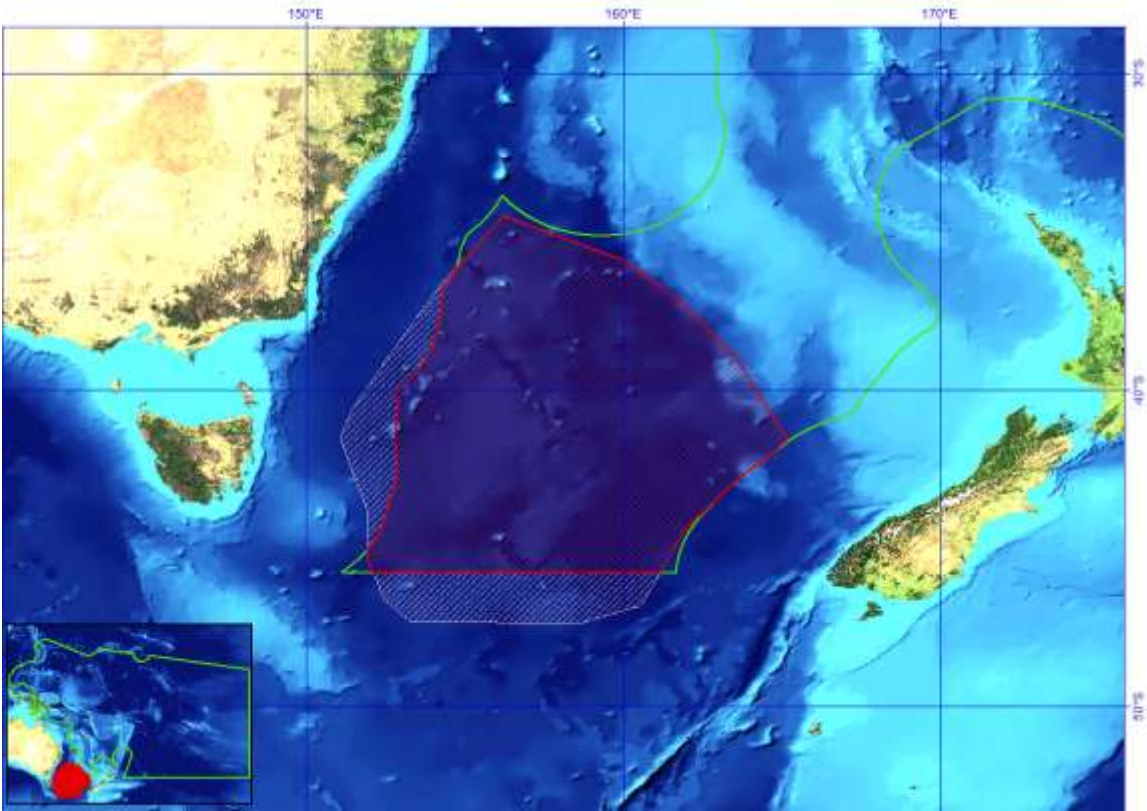
**Figure 4. VGPM global productivity showing area of high primary production (<http://www.science.oregonstate.edu/ocean.productivity>).**



**Figure 5.** SST Global frontal density (Cayula and Comillon 1992 algorithm applied to GHRSSST Microwave Infrared Global Composite: <https://www.ghrsst.org>)



**Figure 6.** BirdLife International seabird sites. Key areas are shown for different seabird species. Data accessed via [www.seabirdtracking.org](http://www.seabirdtracking.org)



**Figure 7.** Area meeting EBSA criteria

## **Area No.16: Equatorial High-Productivity Zone**

### **Abstract**

The Central Pacific high productivity zone is a large-scale oceanographic feature, comprising the western extent of flow from the Pacific south equatorial current. This westerly flowing cool upwelling tongue of water brings high nutrients to the surface waters of the central Pacific Ocean supporting high primary production over a large area. There is strong benthic-pelagic coupling, with benthic secondary production in the 4000-5000m abyssal plains being strongly related to the surface primary productivity. Historically high sperm whale abundance was recorded in this area. This large-scale oceanographic feature is highly influenced by El Nino events and is potentially susceptible to climate change. This area is rated “high” for uniqueness, due to its large scale as well as being a major component of the oceanographic processes within the Pacific Ocean; it is also rated as “high” for primary productivity.

### **Introduction**

The Pacific south equatorial current initiates along the coast of South America and flows west along the equator into the central Pacific (Ganachaud et al. 2011). This “cool tongue” of water is the result of upwelling driven by the Trade Winds; the water mass is high in nutrients, resulting in high primary production, which is linked to high benthic secondary production (Chavez et al. 1999). Underlying this pelagic area is abyssal flat sedimented plains and lower bathyal deep-water trenches, between 4000 and 5000m deep (Harris and Whiteway 2009). Distribution of meiofaunal (63-300µm) and macrofaunal (300µm-3mm) abundance and biomass have been shown to be highly correlated to surface primary productivity, indicating strong linkages between surface primary production and benthic secondary production (ISA 2010). The associated “warm pool” in the central western Pacific is a closely related oceanographic feature, which is formed from high rainfall causing lower salinity and warmer conditions, down to approximately 100m depth (Cravatte et al. 2009). Primary and secondary productivity between the “cool tongue” and the “warm pool” have potential linkages, in part through the Eastern Warm Pool Convergence Zone (Grandperrin 1978; Lehodey 2001; Picaut et al. 2001; Lihodey et al. 2011).

### **Location**

The area is located from latitudes of approximately 5° N to 5° S of the equator, and longitudes of approximately 120° W (the limit of the workshop geographic scope) to approximately 165° E. The area includes waters outside of national jurisdiction but also includes areas with the EEZ of Kiribati, as well as Palmyra Atoll, Jarvis Island and Howard Island (USA), the Marshall Islands and Nauru.

### **Feature description of the proposed area**

This is primarily a pelagic feature in the equatorial central Pacific Ocean. The feature includes the western extreme of the Pacific south equatorial current, and as such is a component of a much larger ocean feature that extends across the Pacific to the Americas. This current is strongly influenced by El Nino events (Cane 1983). The area is characterized by high kinetic energy and high front density, both measures of ocean boundaries and indicators of areas with high productivity (Cagula and Cornillon 1995; Zainuddin et al. 2006). Associated with the current are high surface nutrient concentrations of nitrate, phosphate and silicate (Ridgway 2002). Related to these physical and chemical features, direct evidence of high primary productivity, as evidenced by SeaWiFS satellite-based estimates of chlorophyll-a (fig. 7) and VGPM productivity models have been measured (fig. 8). The high primary productivity within this area is linked to benthic secondary production (ISA 2010) and has possible links to high secondary production, further west in the “warm pool” oceanographic feature (Grandperrin 1978; Lehodey 2001; Lehodey et al. 2011). Additionally, both historical records of high capture rates for sperm whales (Townsend 1931; 1935), and current mammal observations (OBIS 2011), are supported by this highly productive area.

**Feature condition and future outlook of the proposed area**

The area is currently in good condition; there is evidence of human activity in the high historic catch of sperm whales relative to current observations (Townsend 1931; 1935). The area is remote, however, is commercially fished and may be vulnerable to climate change (Ganachaud et al. 2011).

**Assessment of the area against CBD EBSA Criteria**

This area includes the westerly extreme of a major oceanographic feature of the Pacific Ocean, as well as the interaction of this upwelling zone with a major surface feature of the western central Pacific; it is therefore (highly) unique. One of the main resulting characteristics of the area is high nutrients in the “cool tongue” resulting in high primary and secondary productivity, and extremely high secondary productivity in the “warm pool” region; thus the area also receives a high ranking for biological productivity due to the very large extent of the area and the rate of productivity. Finally, this area is highly vulnerable; historically this has been shown from the very high historical catches of sperm whales, which are no longer present. The area is also highly vulnerable to the impacts of climate change, and the subsequent changes to oceanographic patterns.

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
<b>Uniqueness or rarity</b>	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
<i>Explanation for ranking</i> The immense size of the area and its location at the westerly extreme of a major Pacific oceanographic feature, make it globally unique.					
<b>Special importance for life-history stages of species</b>	Areas that are required for a population to survive and thrive.		X		
<i>Explanation for ranking</i> This area has not been identified as specifically important for life-history stages of particular species, despite high observation effort.					
<b>Importance for threatened, endangered or declining species and/or habitats</b>	Area containing habitat for the survival and recovery of endangered, threatened, declining species or area with significant assemblages of such species.		X		
<i>Explanation for ranking</i> This area has not been identified as specifically important for threatened, endangered or declining species, despite high observation effort.					
<b>Vulnerability, fragility, sensitivity, or slow recovery</b>	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			



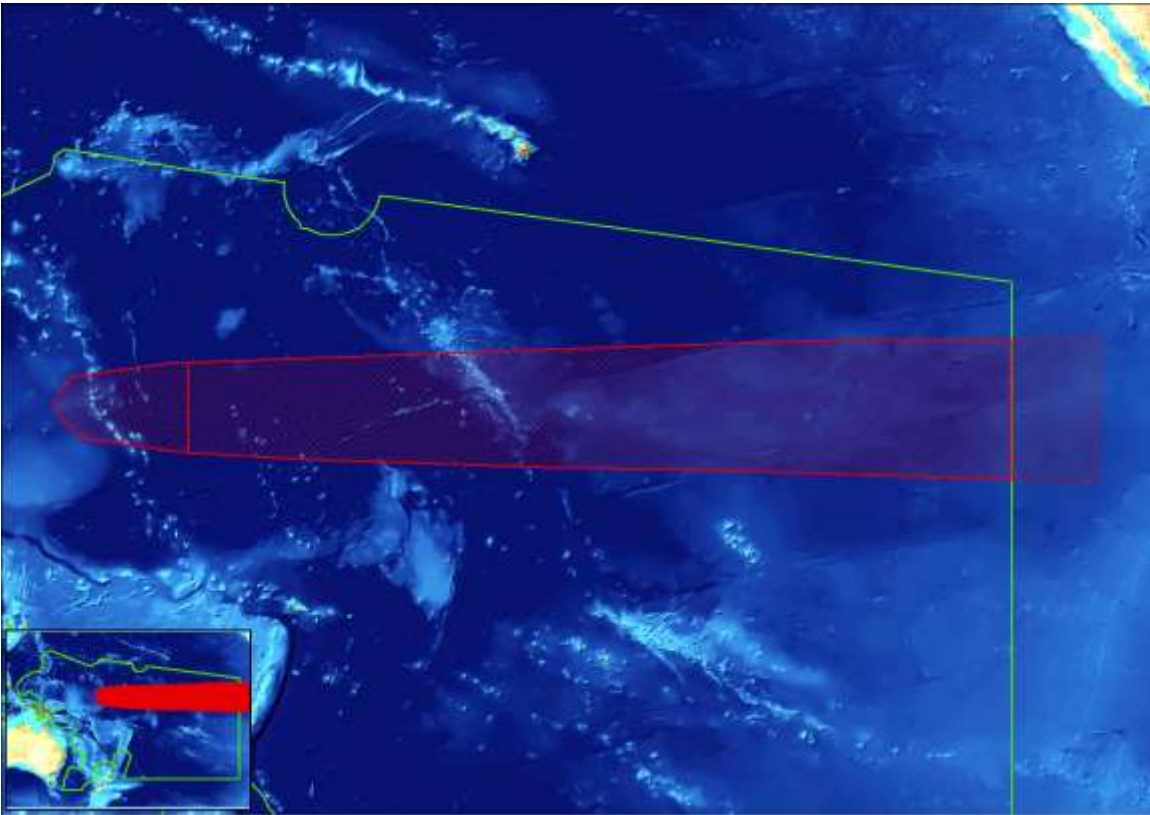
<i>Explanation for ranking</i> Even though in the high seas, this area has seen large-scale change, such as the decline in whale abundance due to harvesting. Climate change may cause changes to the strength of upwelling, altering nutrient cycling and primary production processes.					
<b>Biological productivity</b>	Area containing species, populations or communities with comparatively higher natural biological productivity.				X
<i>Explanation for ranking</i> This area has high primary productivity, over a large area of the Pacific Ocean (1000s of square kilometres). Evidence is provided in chlorophyll a and historical high sperm whale captures (Townsend 1931; 1935). There is additionally evidence of linkages to secondary fisheries production (Grandperrin 1978; Lehodey 2001; Lehodey et al. 2011).					
<b>Biological diversity</b>	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.		X		
<i>Explanation for ranking</i> This area does not have notably high biological diversity.					
<b>Naturalness</b>	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		
<i>Explanation for ranking</i> There has been a long history of human use of the resources in this area, directly related to the significance of the area as a highly productive open-ocean area.					

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## Maps and Figures



**Figure 1: Area meeting EBSA criteria**

## Area No 17: Central Louisville Seamount Chain

### Abstract

The Louisville Seamount Chain extends 4000km into the western South Pacific east of New Zealand. It is a unique set of oceanic seamounts in this region, with no other features rising to upper bathyal depths between the New Zealand Plateau and the East Pacific Rise. The seamounts host a variety of deepwater fish species and are spawning grounds for orange roughy. The area has been extensively fished (mainly for orange roughy), but this site has been chosen to include a range of seamount and guyot features that cover a wide variety of topographic characteristics and depths (and hence different habitats and faunal communities), some or parts of which have not been fished. Species records from by-catch in fisheries include cold-water corals, sponges, and deep-sea echinoderms that are frequently found on seamounts around New Zealand. The seamounts are likely to have productive and diverse benthic invertebrate communities and importance for orange roughy and other fish populations.

### Introduction

The Louisville Seamount Chain is a line of seamount and guyot features in the western Pacific, which extends over 4000 km south-east from New Zealand (figure 1). The seamounts form over a rift in the mantle, in a similar way to the Hawaiian Islands. The Chain comprises more than 80 seamounts rising from the abyssal seafloor at 4000 m depth to peaks often rising between 500 and 1000 m from the surface (Lonsdale 1988). The surface oceanographic conditions change from subtropical in the north to temperate in the south. Open-ocean productivity values in the region surrounding the chain are low, but the seamounts themselves are potentially sites of increased productivity as a result of localised upwelling caused by the interaction of steep topography and ocean currents, and allochthonous inflow of plankton (e.g., White et al. 2007).

The site includes 13 seamounts (several with multiple peaks) spanning a distance of 1000 km and a range of summit depths from 250 m to over 4000 m depth (figure 2). There is good bathymetric information from New Zealand sources as well as global satellite altimetry analyses. Several of the seamounts have been swath-mapped (figure 3). Physical and biological data have been sourced from a number of research voyages to the area (mainly geological data from US and German surveys) and from New Zealand fisheries logbooks, scientific observer reports, and fish and invertebrate collection records.

### Location

The section of the Louisville Ridge included in the site extends from latitudes 31° S to 40° S, and longitudes 172°30' W to 167°00' W. It is entirely beyond EEZ boundaries, east of New Zealand. It is located within the Convention Area of the South Pacific Regional Fisheries Management Organisation (SPRFMO).

### Feature description of the proposed area

The oceanic seamount chain is a striking topographic feature of the South Pacific. The seamounts are all very large, rising several thousand metres from the abyssal seafloor. The Chain is likely to be geographically important for biogeography across the western to central South Pacific, with seamounts acting as “stepping stones” for dispersal (e.g., Rowden et al. 2010).

The site includes a number of seamounts, several with multiple peaks. The southern-most five have been fished: Forde-Danseur, #239, #474, and #482 (NIWA seamounts database numbers) extensively for orange roughy (e.g., Clark 2004); and #753 for alfoncino. The alfoncino-targeted fishing has been minor compared with that for orange roughy. New Zealand fishery logbook data show that catches have declined in recent years. This has partially been the result of high fuel costs and decreased interest in fishing the area, but fish aggregations still occur, and the seamounts are known to be spawning sites of

orange roughly (based on fisheries Scientific Observer Programme records). The Forde-Danseur seamount complex is a single seamount edifice with four peaks that lies at the northern limit of any sizeable orange roughly catches. The summit depths of the seamounts range from 250 m (seamount #753) to peaks on Burton seamount, which are typically over 2000 m. Historical bottom-trawl fishing in the area has focussed mainly on the depth range between 600m and 1200m, with a maximum fishing depth of about 1600m. The northernmost is Louisville guyot, which is a large flat-topped feature that adds to the complexity of habitat types covered in this area.

Biological data have been sourced primarily from fisheries by-catch samples. Recorded benthic invertebrate taxa include cold-water corals (the stony corals *Solenosmilia variabilis* and *Enallopsammia rostrata*, black corals, bamboo corals), sponges, and deepwater urchin (*Demechinus horridis*). The fauna will differ on the deeper seamounts to the north, as predicted habitat suitability for these coldwater stony corals is lower (Davies and Guinotte 2011), and different benthic communities will occur as a result of variability in substrate type and depth (e.g., Clark et al. 2010). The seamounts essentially function as a chain of “oases” for animals that cannot survive at abyssal depths, or need hard rocky surfaces for attachment.

**Feature condition and future outlook of the proposed area**

Fishing continues on the Louisville Ridge, managed by flag states under the voluntary interim measures applied to signatory states of the developing SPRFMO. The seamounts in question are within the New Zealand trawling footprint, and bottom-fishing activities are being managed using a three-tiered system: some areas are left open to fishing, some are subject to a move-on rule if evidence of a vulnerable marine area (VME) is encountered in a trawl, and some have been closed to fishing. Once the SPRFMO Convention enters into force (additional signatories are still required), these voluntary measures will be reviewed and replaced with conservation and management measures negotiated by SPRFMO Parties.

**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
<b>Uniqueness or rarity</b>	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
<i>Explanation for ranking</i> A number of seamounts on the Louisville Seamount Chain have similar topographical characteristics. However, the area selected here contains seamounts that range in depth at the summit from 250 m to over 4000 m; several also have a multiple-peak structure and include a large flat-topped guyot. It is the only chain of oceanic seamounts in the southern part of the western South Pacific that reach upper bathyal depths.					
<b>Special importance for life-history stages of species</b>	Areas that are required for a population to survive and thrive.				X
<i>Explanation for ranking</i>					

<p>Orange roughy are recorded as spawning on the southern three seamounts. It is not known how extensively, if at all, orange roughy move between seamounts. The seafloor between the seamounts is deep, and the fish would need to move through midwater, which has not been recorded.</p>					
<p><b>Importance for threatened, endangered or declining species and/or habitats</b></p>	<p>Area containing habitat for the survival and recovery of endangered, threatened, declining species or area with significant assemblages of such species.</p>				<p>X</p>
<p><i>Explanation for ranking</i>                  It is uncertain whether marine mammals use the Louisville Ridge seamounts for navigation or feeding. However, there are indications that humpback whales track southwards from the Kermadec Ridge along the Louisville seamount chain. <i>Solenosmilia variabilis</i> and <i>Enallopsammia rostrata</i> are very long-lived, biogenic habitat-forming species of cold-water stony coral that form the basis of complex benthic communities and have been declared protected species inside New Zealand's EEZ.</p>					
<p><b>Vulnerability, fragility, sensitivity, or slow recovery</b></p>	<p>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.</p>				<p>X</p>
<p><i>Explanation for ranking</i>                  There are few biological samples from the Louisville seamounts. However, deepwater seamount benthic invertebrates have been found on the summits of a number of seamounts in the chain nearby these seamounts: <i>Solenosmilia variabilis</i> and <i>Enallopsammia rostrata</i> (protected species within the New Zealand EEZ), the zoanthid <i>Savilia</i>, stone crab (<i>Neolithodes brodei</i>), and the echinoderms <i>Demechinus horridus</i> and brisingid <i>Novodinia novaezelandiae</i>. Stony corals are long-lived species that are slow-growing (e.g., Rogers et al. 2007) and are very slow to recover from disturbance (Williams et al. 2010). These are fragile and potentially vulnerable species. By-catch species recorded by scientific observers from New Zealand include several species of low productivity deepwater dogfish widely regarded as "vulnerable" to exploitation (e.g., <i>Daltias licha</i>, <i>Centrophorus squamosus</i>, <i>Etmopterus baxteri</i>, <i>Centroscymnus</i> spp.).</p>					
<p><b>Biological productivity</b></p>	<p>Area containing species, populations or communities with comparatively higher natural biological productivity.</p>				<p>X</p>
<p><i>Explanation for ranking</i>                  The seamount has supported high orange roughy catches for a number of years on these seamounts. Catch rates on the three southern seamounts have often been high (several tens of tonnes per tow) although the majority of catch since 1995 has come from seamounts to the south of the site proposed here. Alfonsino (<i>Beryx splendens</i>) have also been reported to aggregate on and near #753.</p>					
<p><b>Biological diversity</b></p>	<p>Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.</p>				<p>X</p>
<p><i>Explanation for ranking</i>                  The topography of the seamounts is complex, with multiple-peaks and summits at varying depths. This varied topography and seafloor composition (both hard and soft substrate) is highly likely to support a diverse array of species (based on seamount research done in other parts of the New Zealand EEZ). The degree of fishing also varies between the three southern features. A wide diversity of by-catch species have been recorded by New Zealand observers. The recorded by-catch of the orange roughy fishery</p>					

comprises over 80 demersal fish species.					
<b>Naturalness</b>	Area with a comparatively higher degree of naturalness as a result of the lack of or low level of human-induced disturbance or degradation.			<b>X</b>	
<p><i>Explanation for ranking</i></p> <p>The five southern seamounts (Forde-Danseur, #239, #474, #753 and #482) have been heavily fished. However, the northern seamounts have not, and hence are likely to contain unaffected benthic communities. Even the fished seamounts still have areas untouched by bottom fishing in which highly biodiverse benthic communities are likely to have survived (eg., Clark et al. 2010).</p>					

**Sharing experiences and information applying other criteria**

<b>Other Criteria</b>	<b>Description</b>	<b>Ranking of criterion relevance</b> (please mark one column with an X)			
		<b>Don't Know</b>	<b>Low</b>	<b>Some</b>	<b>High</b>
Range of habitat types	The area contains a wide range of habitat types with high complexity and biodiversity				<b>X</b>
<p><i>Explanation for ranking</i></p> <p>The topographic characteristics of features included in the area have high contrast. Features include large single conical seamounts, multiple-peak seamounts (where the individual peaks are each &gt;250 m elevation), guyot structures (flat-topped seamounts which are often sediment-covered in contrast to small-summit seamounts), and a wide range of depths.</p>					

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## Maps and Figures

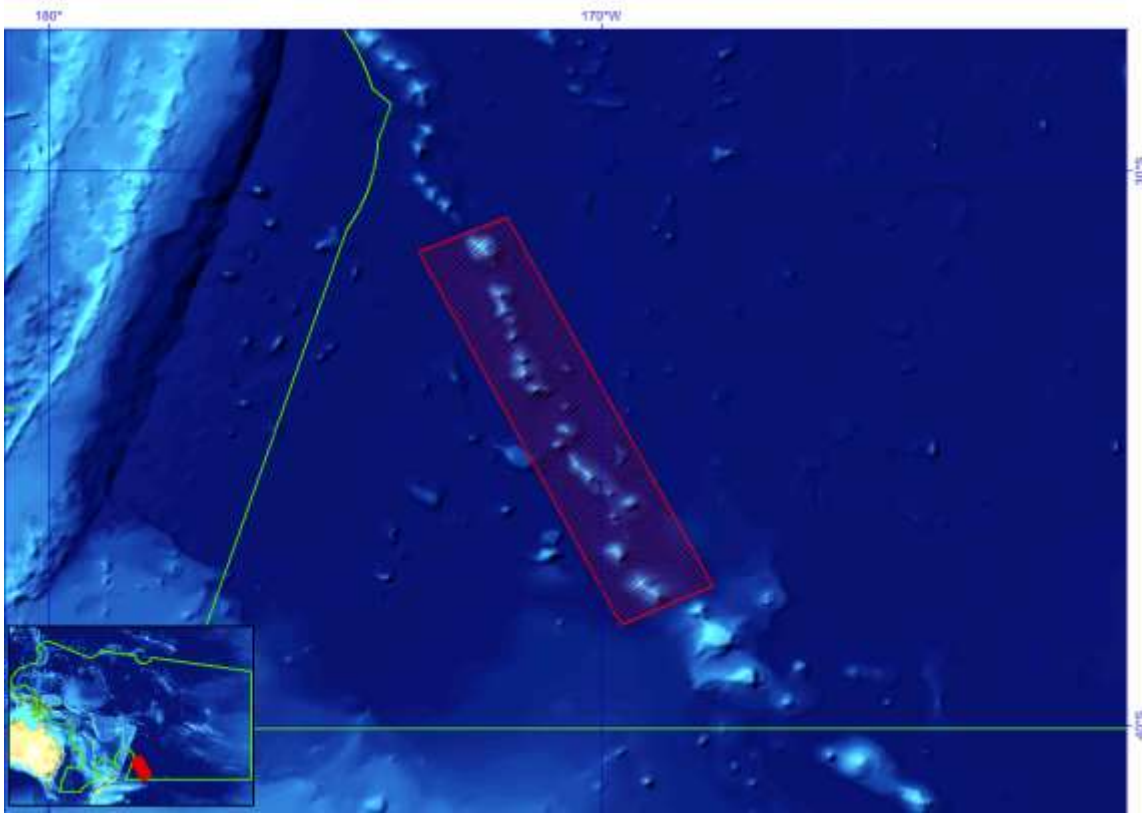


**Figure 1:** The general location of the site on the Louisville Seamount Chain.





**Figure 2.** A more detailed figure of bathymetry and seamount names (#753 refers to NIWA seamount database numbers) of the proposed site.



**Figure 3:** Area meeting EBSA criteria

## **Area No. 18: Western South Pacific High Aragonite Saturation State Zone**

### **Abstract**

Climate change is predicted to have negative impacts on marine ecosystems in the Pacific over the next 100 years. Studies have shown that as the ocean takes up atmospheric CO<sub>2</sub>, thereby mitigating the rate of climate change, there is a concomitant increase in ocean acidification. This in turn means a reduction in carbonate ion concentration and hence a reduced ability of reef-building organisms to calcify. Tropical reef-building corals secrete calcium carbonate as aragonite and tend to show a reduction in calcification rate at lower seawater aragonite saturation states (Langdon and Atkinson 2005). Aragonite is the principal crystalline form of calcium carbonate deposited in coral skeletons (Hoegh-Guldberg et al. 2007). Values of aragonite saturation states above 4 are considered optimal, between 3.5 and 4 are considered marginal, 3-3.5 very marginal, and no corals historically are found below values of 3 (Guinotte et al. 2003). In the Pacific the value of aragonite saturation state in surface waters on average has dropped from around 4.5 to a current value of 3.7 over the last 200 years.

Current measurements show an area to the east of American Samoa has the highest aragonite concentrations at present. As ocean acidification is driven primarily by the uptake of atmospheric CO<sub>2</sub> the rates of decrease in aragonite saturation state are similar for the entire region. Consequently those areas with currently higher aragonite saturation states are the least affected for the longest period under climate change projections. Therefore, this area has special biological and ecological value as an area where the impact from ocean acidification will be slowest and from which recovery may potentially be the quickest.

### **Introduction**

An area of the western South Pacific, located in the South Equatorial Current, currently has aragonite saturation rates that are the highest in the present day and are projected to be last to drop below the key thresholds of 3 and 3.5.

Currently the rate of change of ocean acidification under each emission scenario is very similar over the entire region and so in the future no matter which “carbon” emission scenario eventuates, this area remains the most likely to have highest aragonite concentrations for the longest. Emissions of anthropogenic CO<sub>2</sub> are driving these changes rather than changes in SST and Salinity.

### **Location**

The area is a zone from approximately 12 to 16 °S, and from 174 to 156 °W.

### **Feature description of the proposed area**

This is the zone of aragonite saturation currently above 4 (optimal conditions), as shown in the final report of Australia’s Pacific Climate Change Science Program (2011). Throughout most of the sub-tropical and tropical Pacific Island region, the saturation state in pre-industrial times exceeded 4.5. By the mid 1990s, the uptake of anthropogenic CO<sub>2</sub> had resulted in a widespread decline in the aragonite saturation state to 3.7.

### **Feature condition and future outlook of the proposed area**

Projections of changes in ocean acidification in the Pacific under any emission scenarios currently considered by the international community are perilous for marine calcifiers and the entire food chain within ocean ecosystems. This proposed area is centred on the zone that stands out as the place with the least impact of ocean acidification on key ecosystem services, over the longest period.

### **Assessment of the area against CBD EBSA Criteria**

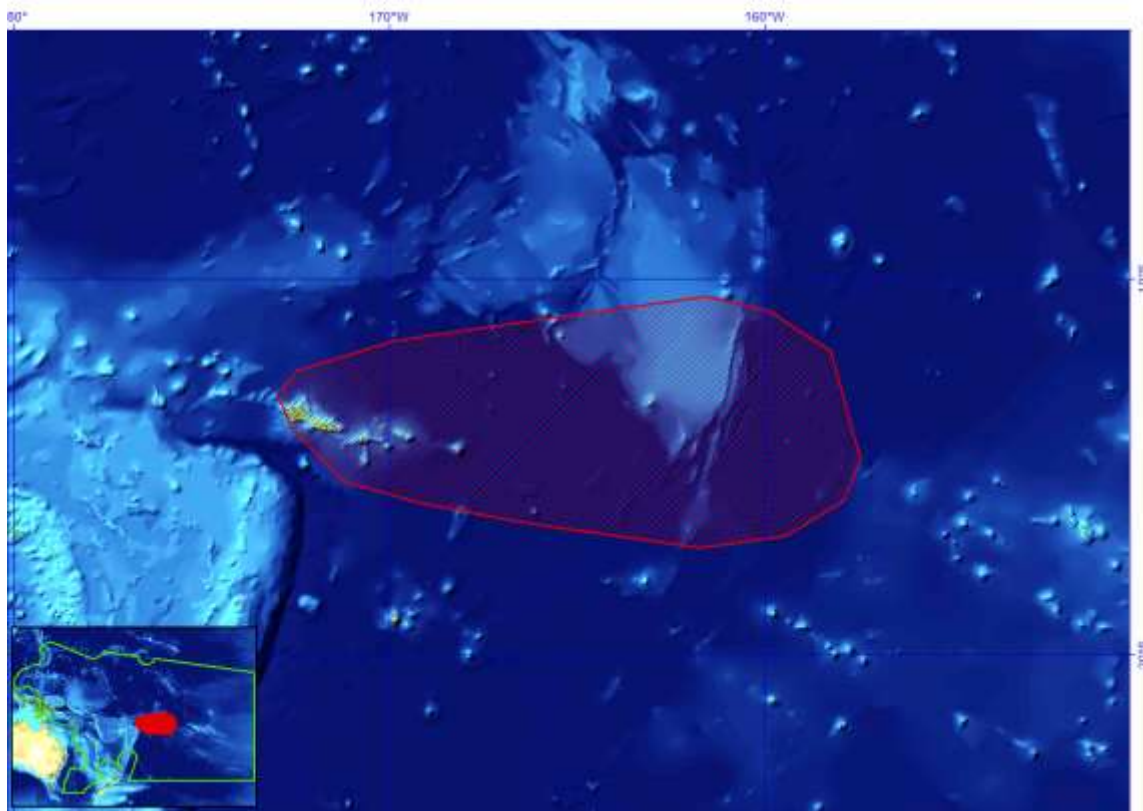
<b>CBD EBSA Criteria</b> (Annex I to decision IX/20)	<b>Description</b> (Annex I to decision IX/20)	<b>Ranking of criterion relevance</b> (please mark one column with an X)			
		Don't Know	Low	Some	High
Uniqueness or rarity	Area contains either (i) unique (“the only one of its kind”), rare (occurs only 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
<i>Explanation for ranking (references)</i> Distinct oceanographic feature in the western South Pacific considered to have the highest likelihood to persist into the future.					
Special importance for life-history stages of species	Areas that are required for a population to survive and thrive.			X	
<i>Explanation for ranking (references)</i> Under future climate change scenarios this may become a crucial area for maintaining ecosystem services					
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			
<i>Explanation for ranking (references)</i>					
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			
<i>Explanation for ranking (references)</i>					
Biological productivity	Area containing species, populations or communities with comparatively higher natural biological productivity.	X			
<i>Explanation for ranking (references)</i>					
Biological diversity	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.	X			
<i>Explanation for ranking (references)</i>					
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 (references)****References:**

Guinotte, J., Buddemeier, R. and Kleypas, J., 2003. Future coral reef habitat marginality: temporal and spatial effects of climate change in the Pacific basin. *Coral Reefs* 22: 551-558.

Hoegh-Guldberg, O. et al., 2007. Coral reefs under rapid climate change and ocean acidification. *Science* 318(5857): 1737.

Langdon, C. and Atkinson, M.J., 2005. Effect of elevated pCO<sub>2</sub> on photosynthesis and calcification of corals and interactions with seasonal change in temperature/irradiance and nutrient enrichment. *J. Geophys. Res.* 110(C9):C09S07.

**Maps and Figures**

**Figure 1:** Area meeting EBSA criteria

## Area No. 19: Clipperton Fracture Zone Petrel Foraging Area

### Abstract

This area in the east-central Pacific has primarily been identified as the core foraging area for Pycroft's petrel (*P. pycrofti*, listed as Vulnerable by IUCN) with a small area also used by the black-winged petrel (*Pterodroma nigripennis*, Least Concern). The site has been identified based on satellite tracking data obtained for these species and shows the site to be important to these species during their non-breeding season (July-October). It is estimated to be used by some 50% of the global population of Pycroft's petrel. A number of migratory seabird species also pass through the area on their way to more distant non-breeding areas.

### Introduction

The site covers a region of abyssal plain centred on 7°N, 135°W lying in the north-east of the western South Pacific region. It encompasses key non-breeding foraging areas for Pycroft's petrel, a threatened seabird that breeds in northern New Zealand. The area is equatorial and lies on and to the north of the Pacific Equatorial Upwelling zone. This is an area of strong equatorial current and parallel counter currents, which cause ocean mixing and high levels of primary productivity.

### Location

The area is bounded by 12.9°N, 137.9°W and 0.2°N and 130.6°W at its north-western and south-eastern-most limits, respectively. It falls well outside any EEZ and covers an area of 749,270 km<sup>2</sup>. The site is situated over the abyssal plain, with an average depth of 4624 m, although several seamounts rise to minimum depths of 1060 m, with 20° slope angles (UNEP/CBD/RW/EBSA/WSPAC/1/2). The average sea surface temperature of the site from 2002 to 2010 was 26°C. However within the site, monthly fluctuations between 12°C and 29°C were observed during this time, associated with El Niño/El Niña-southern oscillation (ENSO) periodicity. Average chlorophyll concentration across the site between 2002 and 2010 was 0.16 mg m<sup>-3</sup> and primary productivity was 347.3 milligrams of carbon per square metre per day over the same time period (from the VGPM algorithm; UNEP/CBD/RW/EBSA/WSPAC/1/2). From 2002 to 2010 VGPM values had a range of 811 mg C/m<sup>2</sup> per day, showing significant temporal productivity changes within the site and highlighting the dynamic nature of the region.

### Feature description of the proposed area

This area has primarily been identified as the core non-breeding foraging area for Pycroft's petrel that nest on Red Mercury Island, New Zealand, a site that holds some 80% of the global population. The site qualifies as an Important Bird Area under BirdLife International criteria (see BirdLife International 2009).

A number of other threatened species also transit the area in low numbers during migration to distant non-breeding areas. These include sooty shearwater (*Puffinus griseus*), Gould's petrel (*Pterodroma leucoptera*) and Cook's petrel (*Pterodroma cookii*).

Satellite tracking data for Pycroft's petrel and black-winged petrel were split to represent trips made during both the breeding and non-breeding movements, each of which were analysed separately. Each trip was analysed to identify the area where the individual spent the most intense 50% of its time at-sea, and this was defined as an area of foraging. These areas were overlain and counted to calculate how regularly an area was used by the wider population. A threshold (1% of the global population of each species) was applied to these counts to isolate areas used by the most birds, and the resulting site defines the proposed area.

While seabirds occur at the water's surface and in the upper water column, their distribution can often be explained by a range of oceanographic processes such as sea surface temperature, wind speed and

direction, as well as ocean currents. It was not possible to conduct habitat modelling approaches for this submission, though these could be developed in future and may help statistically quantify the underlying factors explaining seabird distribution and abundance within this site.

The area overlaps with an area identified by the International Seabed Authority for deep-sea mining interests. It also overlaps part of area no. 16, Equatorial High-Productivity Zone, an area identified for its geomorphological characteristics.

#### Feature condition and future outlook of the proposed area

Only one year of satellite tracking data was available for each of the qualifying species found at this site, therefore plasticity in the site is unknown. Pycroft's petrel were tracked in 2009, however, and black-winged petrel in 2010, showing some inter-annual stability, which, coupled with the fact that such high proportions of tracked individuals used this area, could lead to the conclusion that the site is relatively static. This may be disrupted by quasiperiodic El Niño Southern Oscillation events, which send warm waters west through the area. A potential increase in such events in the future, due to climate change, may affect the area's integrity. No analysis of modelled ENSO scenarios and their potential impact on this site have been conducted at this time.

The site is inherently linked to processes occurring across the Pacific basin in New Zealand. Changes on the breeding grounds that affect the population of Pycroft's petrels will affect the continuity of the proposed area. The population may be projected to increase in the future owing to invasive alien species management on the breeding grounds, thereby likely increasing the number of individuals using the foraging area during the non-breeding season.

Future expansion of deep-sea mining operations within the boundary of this proposed area might be expected to increase incidental mortality owing to collisions with artificially lit infrastructure. Petrels are particularly susceptible to light pollution, the impacts of which can be expected to be relatively severe in remote areas. Many seabird species are vulnerable to incidental by-catch in fisheries, particularly long-line. All seabird species are vulnerable to surface pollution events, particularly oil spills.

#### 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	
<i>Explanation for ranking (references)</i> This site encompasses the primary non-breeding area utilized by Pycroft's petrel ( <i>Pterodroma pycrofti</i> , Vulnerable), a trans-oceanic migrant breeding in New Zealand.					
Special importance for life-history stages of species	Areas that are required for a population to survive and thrive.				X

<p><i>Explanation for ranking (references)</i>                  This site encompasses the primary non-breeding area utilized by Pycroft's petrel (<i>Pterodroma pycrofti</i>, Vulnerable), and represents an important non-breeding area used by black-winged petrel (<i>Pterodroma nigripenni</i>, Least Concern); both trans-oceanic migrants breeding in New Zealand.</p>					
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
<p><i>Explanation for ranking (references)</i>                  This site is estimated to support &gt;50% of the global population of the Vulnerable Pycroft's petrel (<i>Pterodroma pycrofti</i>) and is its primary site during the non-breeding season.</p> <p>A number of other threatened species also transit the area in low numbers during migration to distant non-breeding areas. These include sooty shearwater (Near Threatened), Gould's petrel (Vulnerable) and Cook's petrel (Vulnerable)</p>					
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	
<p><i>Explanation for ranking (references)</i>                  The two main trigger species in this area, Pycroft's and black-winged petrels, are susceptible to light pollution. Operations that involve lights used at night are likely to induce high collision rates and cause significant mortality. Pycroft's petrel, a threatened species with a small global population and low reproductive rate, is likely to be particularly vulnerable. Many seabird species are vulnerable to incidental by-catch in fisheries, particularly long-line. All seabird species are vulnerable to surface pollution events, particularly oil spills.</p>					
Biological productivity	Area containing species, populations or communities with comparatively higher natural biological productivity.			X	
<p><i>Explanation for ranking (references)</i>                  This area overlaps a high productivity area that occurs within the Central Pacific Equatorial Productivity Zone (area no. 16).</p>					
Biological diversity	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.		X		
<p><i>Explanation for ranking (references)</i>                  At indicated, this area is the primary site for Pycroft's petrel during the non-breeding season, when it is also used intensively by black-winged petrel. Other species known to pass through the site during trans-equatorial migrations include sooty shearwater, Cook's petrel and Gould's petrel.</p>					
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 (references)*

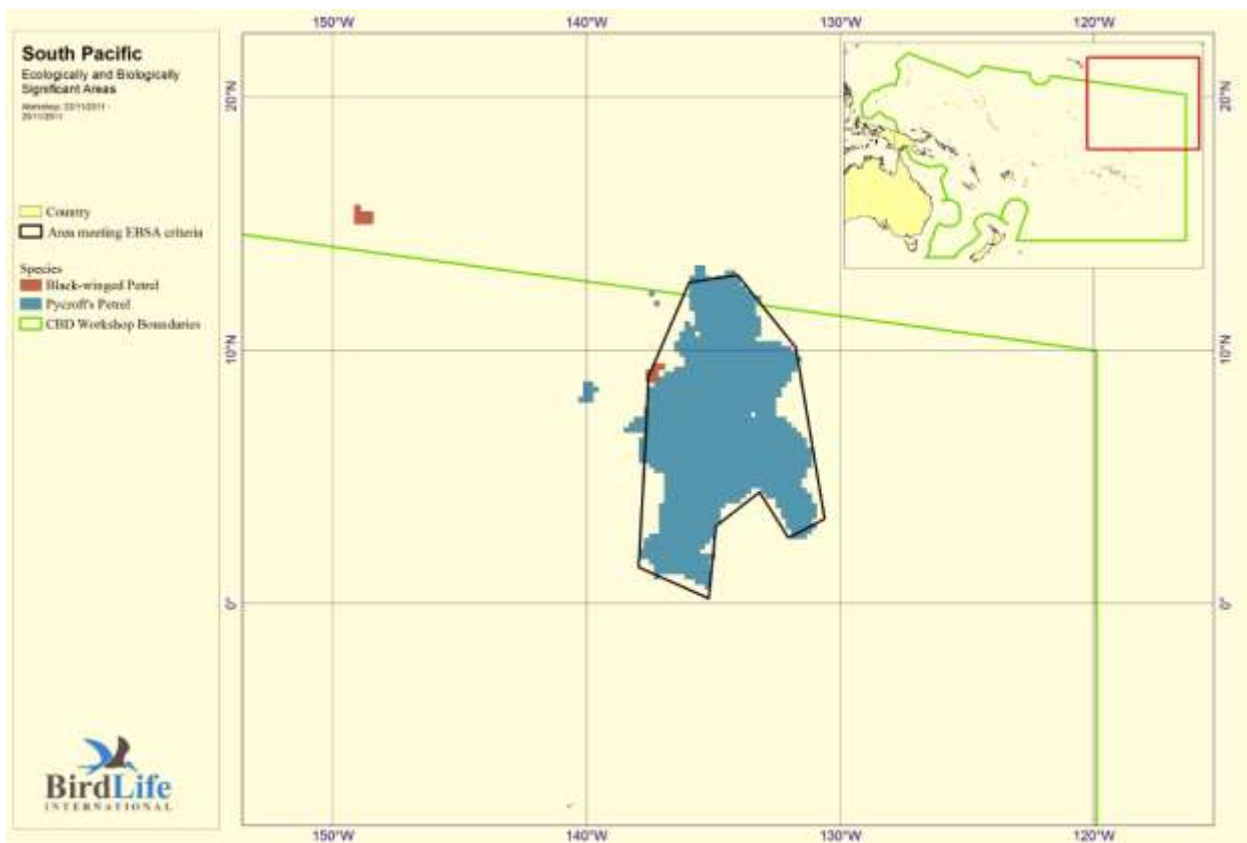
This site is highly remote in the far-reaches of the Pacific high-seas. As such, human activity to date is expected to have been comparatively low, and the system likely retains a high degree of ecological integrity.

**References**

Global Procellariiform Tracking Database. BirdLife International. [www.seabirdtracking.org](http://www.seabirdtracking.org) Accessed 01/10/11. Any requests to use the tracking data used for this site in any publication need to be agreed with the data owners. An initial request should be sent to BirdLife International to coordinate this process. See <http://www.seabirdtracking.org/terms.php> for full terms of reference.

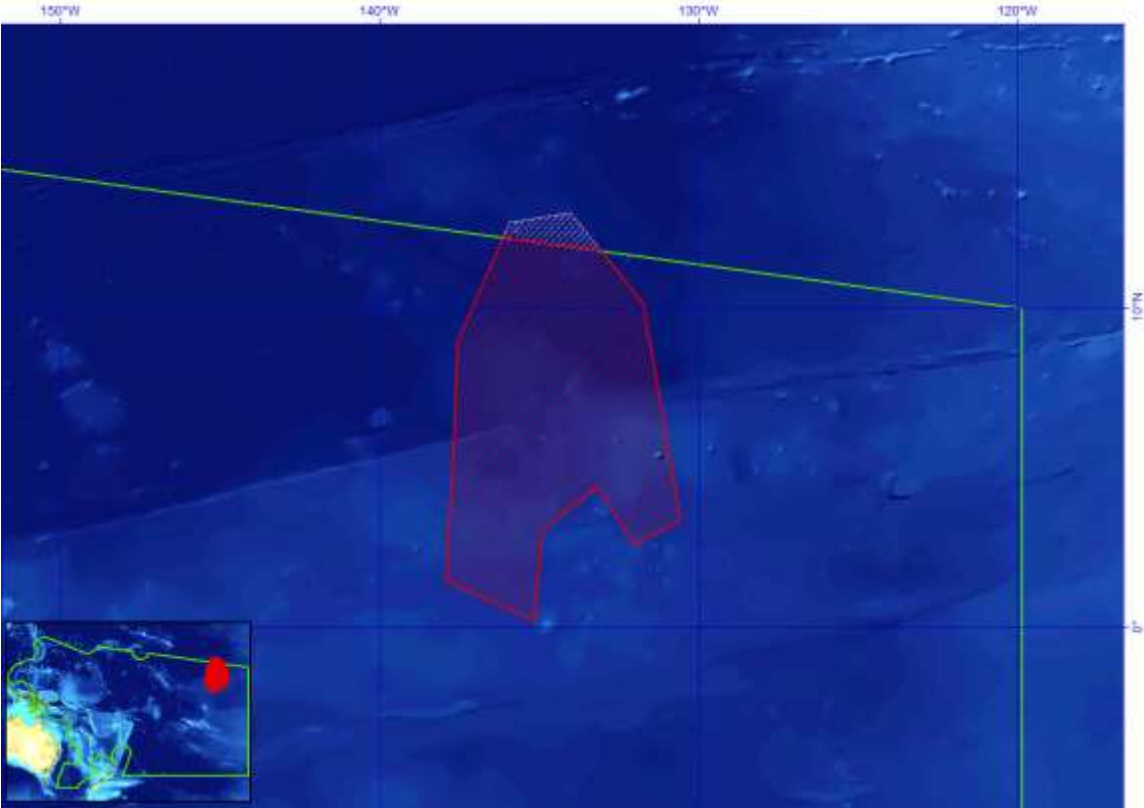
BirdLife International (2009) Designing networks of marine protected areas: exploring the linkages between Important Bird Areas and ecologically or biologically significant marine areas. Cambridge, UK: BirdLife International.

UNEP/CBD/RW/EBSA/WSPAC/1/2. Compilation of Submissions of Scientific Information to Describe EBSAs in the Western South Pacific Region.

**Maps and Figures**

**Figure 1.** BirdLife International seabird sites. Key areas are shown for different seabird species. Data accessed via [www.seabirdtracking.org](http://www.seabirdtracking.org)





**Figure 2:** Area meeting EBSA criteria

## Area No. 20: Northern Lord Howe Ridge Petrel Foraging Area

### Abstract

This area south-west of New Caledonia has primarily been identified as the core foraging area for the endemic New Caledonian subspecies of Gould's petrel (*Pterodroma leucoptera caledonica*, listed as Vulnerable on IUCN Red List). The site has been identified based on satellite tracking data obtained for this species and shows the site to be important during its breeding season (October-April), when 50-65% of the global population may be present. A number of other seabirds can also be found in the area.

### Introduction

This site extends along the Lord Howe Ridge, south-west from New Caledonia's EEZ, through an area beyond national jurisdiction to the Australian EEZ north-east of Lord Howe Island. Geomorphologically, the area sits within a zone of low silicate, phosphate, salinity and sea surface height relative to surrounding areas in the western South Pacific.

### Location

The area is bounded by 22.7° S, 160° W and 31.9° S and 165.9° W at its north-western and south-eastern most limits, respectively. It falls partially inside the New Caledonian and Australian EEZs and covers an area of 319,037 km<sup>2</sup>. To the north, the site overlaps with the New Caledonia Basin, a deepwater region that gives the site a maximum depth of 3715 m. Moving south towards the Lord Howe Rise, the depth of the site decreases to 1193 m, giving an average site depth of 1871 m and a gentle maximum slope angle of 6.7 degrees (UNEP/CBD/RW/EBSA/WSPAC/1/2). Between 2002 and 2010 the average temperature of the site was 22°C, and the chlorophyll concentration was 0.12 mg m<sup>-3</sup> (UNEP/CBD/RW/EBSA/WSPAC/1/2). A latitudinal temperature and productivity gradient is observed and finds lower sea surface temperatures correlated with higher chlorophyll concentrations in the south of the site. Average annual primary productivity from 2004 found that the north of the site ranged from 280 to 320 mgC/m<sup>2</sup>/day, while in the south values were between 400 and 550 mgC/m<sup>2</sup>/day (UNEP/CBD/RW/EBSA/WSPAC/1/2).

### Feature description of the proposed area

The site qualifies as an Important Bird Area under BirdLife criteria (see BirdLife International 2009) and has primarily been identified as the core foraging area for the endemic New Caledonian subspecies of Gould's petrel (representing 50-65% of the global population, based on BirdLife International 2011).

Satellite tracking data for Gould's petrel were split to represent trips made during both the breeding and non-breeding movements, each of which was analysed separately. Each trip was analysed to identify the area where the individual spent the most intense 50% of its time at-sea, and this was defined as an area of foraging. These areas were overlain and counted to calculate how regularly an area was used by the wider population. A threshold (1% of the global population of this species) was applied to these counts to isolate areas used by the most birds, and the resulting site defines this area meeting EBSA criteria.

As well as being important as a foraging area, the site has been shown to be used in transit by birds moving to foraging grounds further to the south.

From other satellite tracking studies (e.g., Rayner et al. 2011) the site is also known to be important for a number of other threatened species that breed in New Zealand. The site is used by the northern populations of Cook's petrel (*Pterodroma Cookii*, Vulnerable) breeding on Little Barrier Island; great-winged petrel (*Pterodroma macroptera*, Least Concern) breeding on the Alderman (Ruumaahua) Islands; and Parkinson's petrel (*Procellaria parkinsoni*, Vulnerable) breeding on Great and Little Barrier islands.

While seabirds occur at the water surface and in the upper water column, their distribution can often be explained by a range of oceanographic processes such as sea surface temperature, wind speed and direction, as well as ocean currents. It was not possible to conduct habitat modelling approaches for this

submission, though these could be developed in future and may help statistically quantify the underlining factors explaining seabird distribution and abundance within this site.

**Feature condition and future outlook of the proposed area**

Satellite tracking data for Gould’s petrel was collected during the breeding seasons in two consecutive years, and movements were shown to be similar between years; on this basis, the site is thought to be static. Seabirds using the area are particularly susceptible to surface pollutants, particularly oil spills. Parkinson’s petrel is known to occur in fisheries by-catch, though this is not currently thought to be an issue for the *Pterodroma* species present.

**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	
<i>Explanation for ranking (references)</i> This is the main foraging area used by the Gould’s petrel ( <i>Pterodroma leucoptera</i> ) population from New Caledonia (this is one of two populations globally; it represents an endemic subspecies and is currently experiencing an ongoing and rapid population decline).					
Special importance for life-history stages of species	Areas that are required for a population to survive and thrive.				X
<i>Explanation for ranking (references)</i> This is a core foraging area for the New Caledonian population of Gould’s petrel during the breeding season (Oct-Apr). In addition the site is used in transit by birds foraging in other areas. Satellite tracking data has also shown the site to be used by Cook’s petrel ( <i>Pterodroma Cookii</i> ), great-winged petrel ( <i>Pterodroma macroptera</i> ) and Parkinson’s petrel ( <i>Procellaria parkinsoni</i> ).					
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	
<i>Explanation for ranking (references)</i> This is the primary foraging area for Gould’s petrel from New Caledonia. This species is listed as Vulnerable by the IUCN Red List. Other threatened seabirds known to occur here include Cook’s petrel (Vulnerable) and Parkinson’s petrel (Vulnerable).					

It is also an area used by transiting green turtles ( <i>Chelonia mydas</i> , Endangered, SPREP regional marine turtle database) and humpback whales ( <i>Megaptera novaeangliae</i> , Endangered) during migration (C. Garrigue, unpublished data available on request).					
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	
<i>Explanation for ranking (references)</i> This area provides key foraging habitat for an entire population of a declining threatened species with low reproductive output. Any threats apparent in the region will pose a serious risk to the persistence of this species.					
Biological productivity	Area containing species, populations or communities with comparatively higher natural biological productivity.	X			
<i>Explanation for ranking (references)</i>					
Biological diversity	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.		X		
<i>Explanation for ranking (references)</i> The site is a BirdLife Important Bird Area (see Birdlife International 2009). It is known to be used by Gould's, Cook's, great-winged and Parkinson's petrel.					
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			
<i>Explanation for ranking (references)</i>					

**References**

SPREP regional marine turtle database.

Global Procellariiform Tracking Database. BirdLife International. [www.seabirdtracking.org](http://www.seabirdtracking.org) Accessed 01/10/11. Any requests to use the tracking data used for this site in any publication need to be agreed with the data owners. An initial request should be sent to BirdLife International to coordinate this process. See <http://www.seabirdtracking.org/terms.php> for full terms of reference.

Rayner, M.J., Hauber, M.E., Steeves, T.E., Lawrence, H.A., Thompson, D.R., Sagar, P.M., Bury, S.J., Landers, T.J., Phillips, R.A., Ranjard, L., Shaffer, S.A. 2011. Contemporary and historical separation of transequatorial migration between genetically distinct seabird populations. *Nature*. 2:332

BirdLife International (2009) Designing networks of marine protected areas: exploring the linkages between Important Bird Areas and ecologically or biologically significant marine areas. Cambridge, UK: BirdLife International.

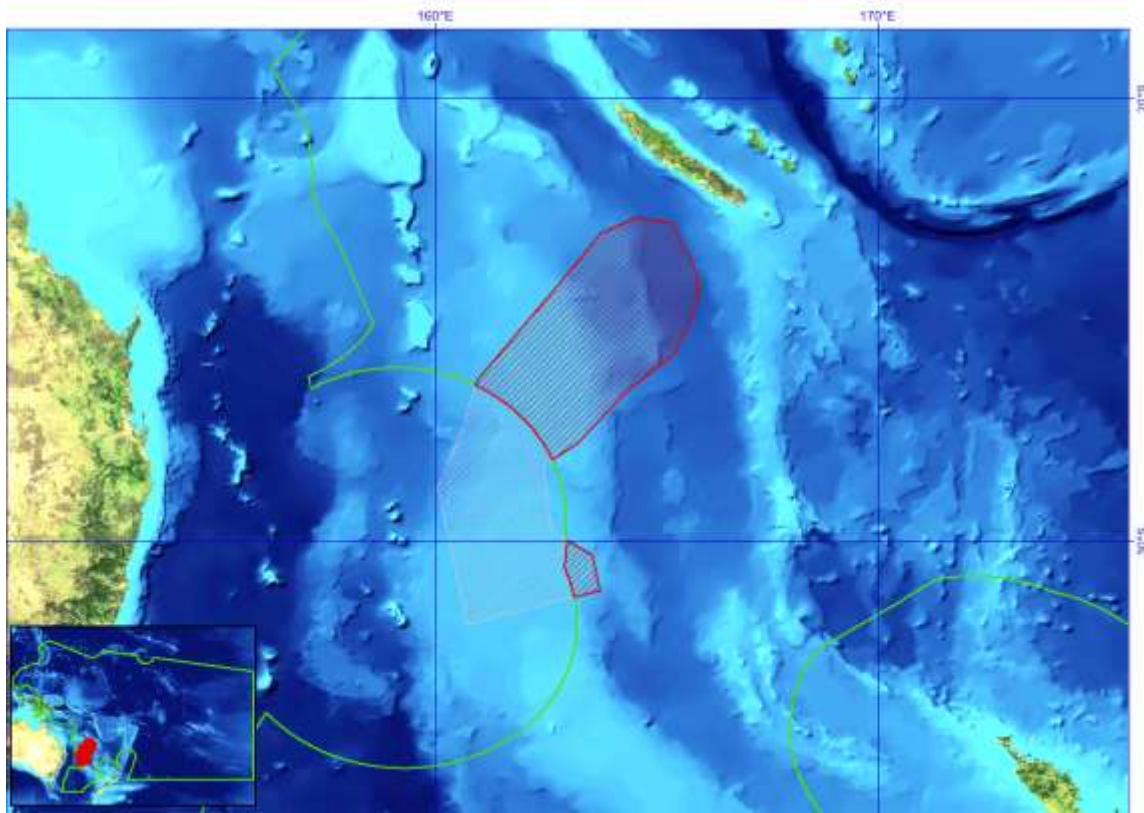
BirdLife International (2011) Species factsheet: *Pterodroma leucoptera*. Downloaded from <http://www.birdlife.org> on 30/11/2011. Recommended citation for factsheets for more than one species: BirdLife International (2011) IUCN Red List for birds. Downloaded from <http://www.birdlife.org> on 30/11/2011.)

UNEP/CBD/RW/EBSA/WSPAC/1/2. 2011. *Compilation of Submissions of Scientific Information to Describe EBSAs in the Western South Pacific Region.*

Maps and Figures



**Figure 1.** BirdLife International seabird sites. Key areas are shown for different seabird species. Data accessed via [www.seabirdtracking.org](http://www.seabirdtracking.org)



**Figure 2:** Area meeting EBSA criteria

## Area No. 21: Northern New Zealand/South Fiji Basin

### Abstract

This area north of New Zealand and west of the Kermadec Islands has primarily been identified as the core foraging area for the Parkinson's petrel (*Procellaria parkinsoni*) during the breeding season (Oct-June), a species listed as Vulnerable on the IUCN Red List. The site has been identified based on data obtained for this species from light data loggers, which show the site to be important during November-May when >40% of the global population of this species may be present. A number of other seabird species can also be found in the area.

### Introduction

This site extends from the south Fiji basin to the north of New Zealand and west of the Kermadec Ridge centred on 31°S, 176°E. It encompasses key foraging areas utilized by breeding Parkinson's petrel, a threatened seabird that breeds on Great Barrier and Little Barrier islands in northern New Zealand. Adjacent areas to the south within the New Zealand EEZ are also recognized as being of equal importance for this species but are not treated within this submission.

### Location

The site is bounded by 30° N, 174.7° E at the north-east axis, the New Zealand EEZ to the south, the Three Kings Ridge to the west and the Kermadec Ridge to the east. The site may be an important area of upwelling. Situated over the southern portion of the south Fiji Basin, the site is predominately deepwater and has an average depth of 3973m (UNEP/CBD/RW/EBSA/WSPAC/1/2). However, there are several seamounts that rise to 1343 m, causing slope angles of 17.3 degrees. Between 2002 and 2010, sea surface temperature averaged 19°C, but within the site values ranged by as much as 10°C over that period (UNEP/CBD/RW/EBSA/WSPAC/1/2). The mixing of cool and warmer waters in this region, the presence of seamounts and proximity of the two ridge systems causes relatively high primary productivity in the site, with values averaging 437.6 mgC/m<sup>2</sup>/day (calculated from VGPM, a remotely sensed metric of primary productivity) between 2002 and 2010 (UNEP/CBD/RW/EBSA/WSPAC/1/2).

### Feature description of the proposed area

The site qualifies as an Important Bird Area under BirdLife criteria (see BirdLife International 2009) and has primarily been identified as a core foraging area for Parkinson's petrel (*Procellaria parkinsoni*) during the breeding season (Nov-June). During the non-breeding season this species migrates north-east toward Central America. Light data logger tracking data were available from both the two known breeding sites for this species, Little and Great Barrier Island, New Zealand (which hold 3,500-5,000 individuals) allowing the site to be defined based on data representing the entire global breeding population. It is thought that the immature proportion of the population also use this region (ACAP, 2011).

Tracking data for Parkinson's petrel were split to represent trips made during both the breeding and non-breeding movements, each of which was analysed separately. Each trip was analysed to identify the area where the individual spent the most intense 50% of its time at-sea, and this was defined as an area of foraging. These areas were overlain and counted to calculate how regularly an area was used by the wider population. A threshold (1% of the global population of this species) was applied to these counts to isolate areas used by the most birds, and the resulting site defines this area meeting EBSA criteria.

A number of other species are also known to occur in this area, and satellite tracking data shows that Antipodean albatross (*Diomedea antipodensis*) breeding on Antipodes Islands, New Zealand use the site during the breeding season. In addition, Cook's petrel (*Pterodroma cookii*), white-chinned petrel (*Procellaria aequinoctialis*), Pycroft's petrel (*Pterodroma pycrofti*) and sooty shearwater (*Puffinus griseus*) have all been tracked to the site.

While seabirds occur at the water’s surface and in the upper water column, their distribution can often be explained by a range of oceanographic processes such as sea surface temperature, wind speed and direction, as well as ocean currents. It was not possible to conduct habitat modelling approaches for this submission, though these could be developed in future and may help statistically quantify the underlining factors explaining seabird distribution and abundance within this site.

**Feature condition and future outlook of the proposed area**

This site is believed to be static as all three years of tracking data for the Parkinson’s petrel show birds to be using this area. No predictions are available under future climate change scenarios. In the short-term the most likely disruption to the integrity of this site is population decline owing to incidental mortality in fisheries. All of the seabird species present are vulnerable to incidental bycatch in fisheries, particularly long-line. All seabird species are vulnerable to surface pollution events, particularly oil spills.

**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	
<i>Explanation for ranking (references)</i> This area, together with a contiguous area to the south within the New Zealand EEZ has been identified as the most important foraging area for both the Little and Great Barrier Island (both New Zealand) populations of Parkinson’s petrel. These two colonies represent the only known breeding sites for this species, and thus the feeding area is used by a large proportion (>40) of the entire global population.					
Special importance for life-history stages of species	Areas that are required for a population to survive and thrive.				X
<i>Explanation for ranking (references)</i> This area, together with a contiguous area to the south within the New Zealand EEZ encompasses the breeding-season foraging range of > 40% of the global population of Parkinson’s petrel.					
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
<i>Explanation for ranking (references)</i> Parkinson’s petrel is the primary qualifying species at this site, and is classified as Vulnerable on the IUCN Red List.					



A number of other threatened species are known to occur in the area including: Antipodean albatross ( <i>Diomedea antipodensis</i> ) Cook's petrel (Vulnerable), white-chinned petrel (Vulnerable), Pycroft's petrel (Vulnerable) and sooty shearwater (Near Threatened).					
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
<i>Explanation for ranking (references)</i> Parkinson's petrel is a slowly reproducing species and is highly susceptible to by-catch in pelagic fisheries. Its global population is already small and faces extinction if population declines occur. A number of other species found at the site are also susceptible to fisheries by-catch.					
Biological productivity	Area containing species, populations or communities with comparatively higher natural biological productivity.		X		
<i>Explanation for ranking (references)</i> Data layers available from (UNEP/CBD/RW/EBSA/WSPAC/1/2) give no indication of elevated productivity levels within this area meeting EBSA criteria.					
Biological diversity	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.		X		
<i>Explanation for ranking (references)</i> Although this site was primarily identified for Parkinson's petrel, a number of other species are known to occur in the area, including; Antipodean albatross, Cook's petrel, white-chinned petrel, Pycroft's petrel and sooty shearwater.					
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			
<i>Explanation for ranking (references)</i>					

**References**

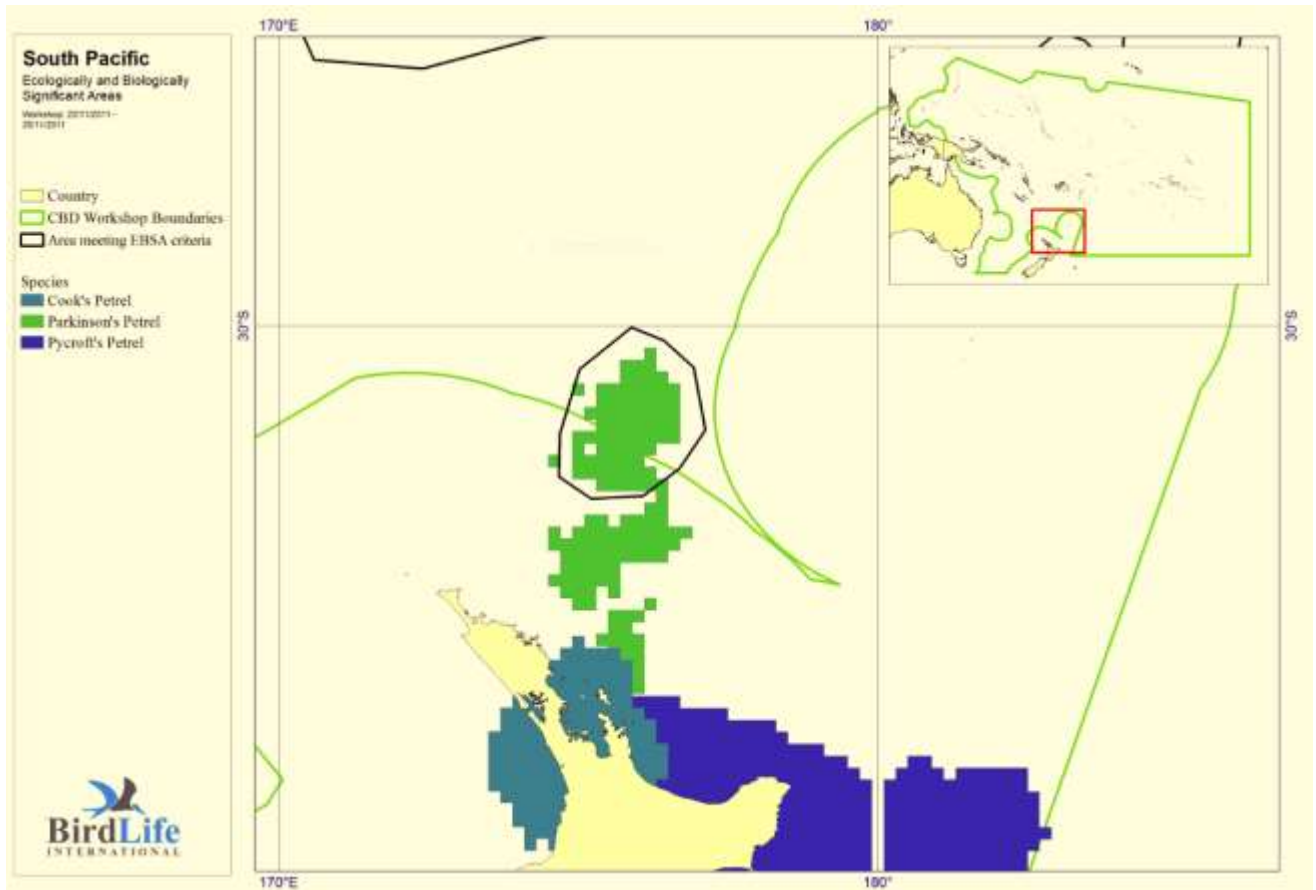
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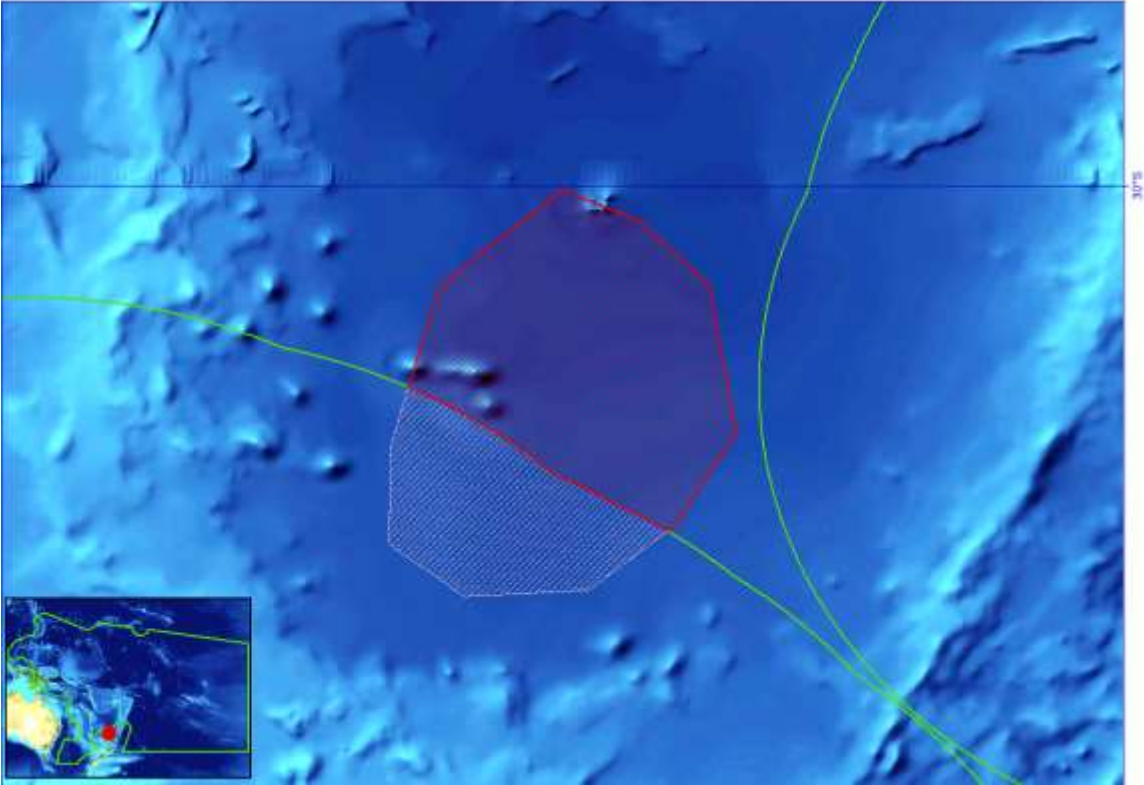
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## Maps and Figures



**Figure 1.** BirdLife International seabird sites. Key areas are shown for different seabird species. Data accessed via [www.seabirdtracking.org](http://www.seabirdtracking.org)



**Figure 2.** Area meeting EBSA criteria

## Area No: 22: Taveuni and Ringgold Islands

### Abstract

This area, located on the waters surrounding the north-east Fiji Islands, supports a diverse array of communities and habitats within a compact area. It supports globally and regionally significant populations of marine turtles, humpback whales, seabirds and semi-nomadic reef fish and may hold concentrations of cold-water corals. This is a key foraging area surrounding Fiji's most significant nesting sites for hawksbill and green turtles, and the last remaining nesting site in Fiji for the latter. It also encompasses four marine Important Bird Areas (IBAs) that identify foraging areas based upon seaward extensions around nesting colonies.

### Introduction

The waters surrounding Taveuni and the Ringgold Islands in the north-east Fiji Islands support a diverse array of communities and habitats in a compact area that includes deep channels, sheltered areas, small islands and sand cays. The area supports globally and regionally significant populations of marine turtles, humpback whales, seabirds and semi-nomadic reef fish, and may hold concentrations of cold-water corals. The site is the main foraging areas for Fiji's most significant nesting sites for hawksbill (*Eretmochelys imbricate* Critically Endangered) and green turtles (*Chelonia mydas*, Endangered). Taveuni, the third-largest island in Fiji is located next to a major shipping passage and some of the most significant soft coral walls in the country. This area also encompasses four marine Important Bird Areas (IBAs) that identify foraging areas based upon seaward extensions around nesting colonies: Taveuni, Vetauua, Qelelevu and Nukubasaga and Nukupureti.<sup>1</sup>

The people of the area have special customary relations with sharks, which they revere and do not eat. Unfortunately, such close relationships with the local biodiversity are now seriously threatened by fishing.

More research is needed to determine the state of the biodiversity in this special region.

### Location

This area lies in the north-east Fiji Islands, encompassing Taveuni and the Ringgold Islands within an area of 17,500 km<sup>2</sup> centred on 16° S, 179° W.

### Feature description of the proposed area

The area encompasses deep-water areas to the east of Taveuni and a productive channel between Taveuni and Vanua Levu. The Ringgold Islands of Vetaua, Nukusemanu, Nukubasaga, Nukupureti and Qelelevu

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<sup>1</sup> BirdLife International maintains an online database (<http://seabird.wikispaces.com/>) of seabird ecology and foraging ranges, as a basis for identifying key foraging areas around breeding sites that qualify as IBAs. The majority of congregatory seabirds are central-place foragers during the breeding season, returning to their breeding colony regularly to share incubation duties or feed chicks. These species, many of which forage in association with pelagic fish schools, radiate from colonies with individual and inter-trip variation in the distance travelled from the colony.

Identifying foraging areas up to the maximum foraging range recorded would be a poor representation of the foraging area for the majority of birds, since these extremes apply to only a small percentage of birds. The approach adopted here was to define sites based on their importance to a greater proportion of the colony, and this was done by selecting the maximum range to which IBA threshold numbers of a trigger species travelled. This was determined using a foraging frequency curve to assess at what distance this cut off was reached.

This methodology was applied to each trigger species at each breeding site, and site- and species-specific foraging ranges were therefore defined that would ensure IBA criteria have been met.

For far-ranging species (e.g., shearwaters, Pterodroma, frigatebirds, tropicbirds) basing extensions on foraging ranges is less useful, as the areas identified can be overly large. However a radius can still be applied, but intending to capture near-colony high-use areas, such as for rafting before coming ashore, rather than all foraging areas. These precautionary distances were set on a species-by-species basis and were determined based on tracking studies and experience gained in other parts of the world (e.g., Arcos et al. 2009, Ramirez et al. 2008).

are either sand cays or raised coral atolls that support key turtle and seabird nesting habitat.. The turtle and seabird populations in this area are indicative of high surface productivity.

The Budd, Nukusemanu, and Heemskercq Reefs form part of the group. The group is mostly uninhabited, but Qelelevu has a small village. In 2008 Pacific rats were eradicated from seven of the islands (BirdLife International 2011).

**Feature condition and future outlook of the proposed area**

The Ringgold Islands have a very low human population, but pressures are relatively high, driven in particular by the Beche-de-Mer harvest and incidental exploitation associated with this practice. The shipping lane potentially represents a source of disruption to underwater populations, but seabirds are thought to be relatively secure following invasive alien species management on their nesting islands.

**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		
<i>Explanation for ranking (references)</i> While this area supports globally significant assemblages of species, the known level of endemism is not especially high.					
Special importance for life-history stages of species	Areas that are required for a population to survive and thrive.				X
<i>Explanation for ranking (references)</i> This is a key breeding and foraging area for hawksbill and green turtles that are considered to be resident in Fiji, and the last remaining nesting location in Fiji for the latter (Batibasaga et al. 2006; Sharma-Gounder et al. 2010; SPREP 2011).  This area supports globally and regionally significant populations of seabird species within four marine IBAs: black noddy ( <i>Anous minutus</i> , 40,000, >5% Pacific population) and red-footed booby ( <i>Sula sula</i> , 6,000, >1% global population). These populations spend a large proportion of their time within 20km radius of their breeding colonies, making large parts of this area important for maintaining the breeding life-history stage for these species in Fiji and the Pacific (BirdLife International 2011).  The area supports migratory movements of humpback whales and resident spinner dolphins.					
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

<i>Explanation for ranking (references)</i>					
As well as the green turtle (Endangered) and humpback whale ( <i>Megaptera novaeangliae</i> , Endangered) listed above, the area supports nationally (and regionally) significant populations of humphead wrasse ( <i>Cheilinus undulates</i> , Endangered) and green humphead parrotfish ( <i>Bolbometopon muricatum</i> , Vulnerable) which, although associated with reef areas, have been shown to move between sites through deeper ocean habitats.					
Taveuni is the only site in Fiji where Tahiti petrel ( <i>Pseudobulweria rostrata</i> , Near Threatened) is believed to breed. The area supports a globally significant population of this species, with comparatively high densities recorded during at-sea surveys (BirdLife International, unpublished data).					
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	
<i>Explanation for ranking (references)</i>					
Turtles, wrasse and parrotfish are particularly susceptible to over-exploitation (Reynolds et al. 2002; Sadovy 2007; IUCN 2011).					
Biological productivity	Area containing species, populations or communities with comparatively higher natural biological productivity.			X	
<i>Explanation for ranking (references)</i>					
This region supports the largest seabird colonies in Fiji (BirdLife International 2011), indicating high surface productivity (Ballance et al. 1997).					
Biological diversity	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.			X	
<i>Explanation for ranking (references)</i>					
This is a relatively small area that combines a number of habitats, important communities and priority species. In addition to the turtles, seabirds, marine mammals and threatened reef fish documented above, the area is predicted to support high cold-water coral diversity (Davies et al. 2011) and has comparatively high deep-water species diversity (Vanden Bergh 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	
<i>Explanation for ranking (references)</i>					
The area retains globally significant breeding populations of green and hawksbill turtles, seabirds and harvest-susceptible fish-species indicative of retained "naturalness". However, these are subject to moderate levels of exploitation owing to human activities associated with beche-de-mer harvesting. These activities are already having an impact, one which could increase in the future.					

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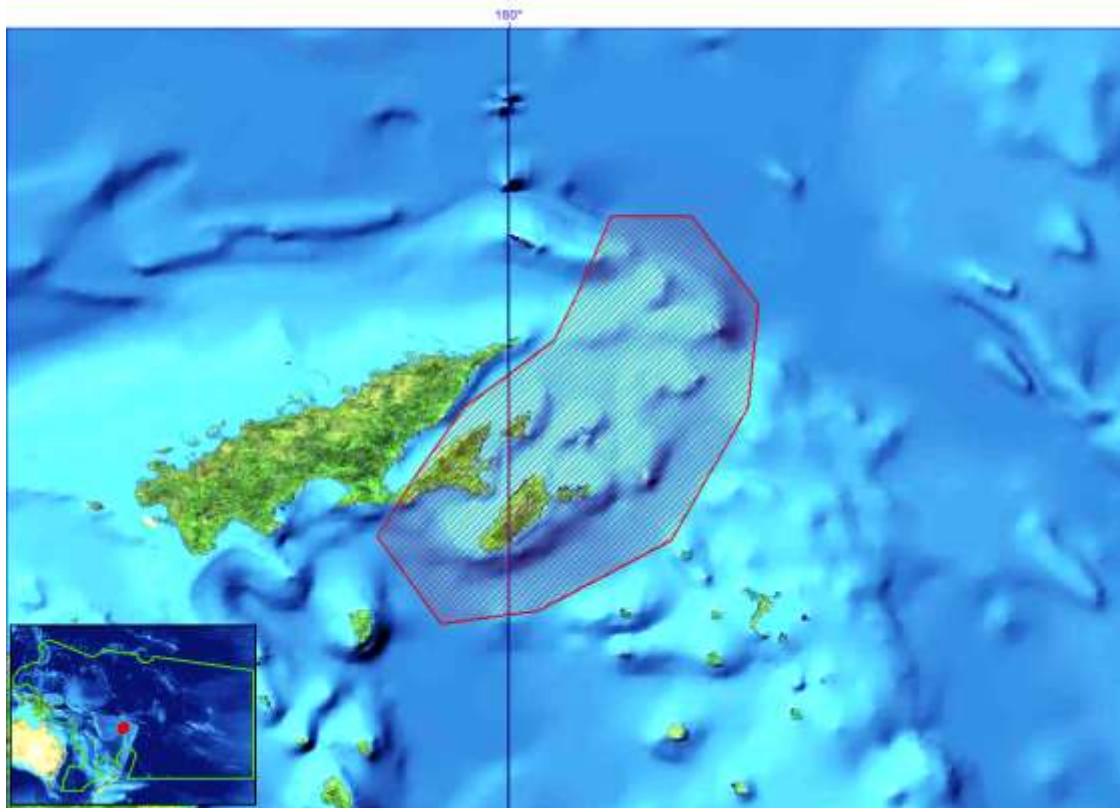
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### Maps and Figures



**Figure 1.** Area meeting EBSA criteria

### Area No 23: Manihiki Plateau

#### Abstract

Manihiki Plateau is proposed as an area meeting EBSA criteria due to the thickness of its sediment and its higher elevation than the surrounding sea floor. Long-term surveys, aimed at identifying important deposits of seabed minerals, have noted that there are sediment-eating organisms present, but these have not been identified.

#### Introduction

The Manihiki Plateau is an oceanic plateau in the western South Pacific Ocean. The Manihiki Plateau was formed by volcanic activity 125 to 120 million years ago during the mid-Cretaceous period at a triple junction plate boundary called the Tongareva triple junction.

During a 2001 cruise by a Japanese research vessel looking for seabed minerals, isopoda was the dominant macrobenthosa recorded, with only a few polychaeta appearing. Five phyla and eight biogroups appeared, as well as confirmed traces (mounds, feces, and trails) of organisms. Sponges appeared most frequently, followed by sea cucumbers and starfishes. Among the planktons and nektons, shrimps were most abundant, followed by fishes and jellyfishes. Many faeces tend to appear where small manganese nodules occur densely. Many trails occur in crust areas, where sea cucumbers tend to occur—thus the trails are believed to be those of sea cucumbers. Although many mounds are found in crust areas, sea cucumbers do not form mounds. It was inferred that sediment-eating organisms other than cucumbers inhabit these areas and left these mounds.

#### Location.

A very large area approximately located at 155° W and 18° S.

#### Feature description of the proposed area.

A plateau rising from a depth of around 5000m to around 3000m. High density of manganese nodules identified.

#### Feature condition and future outlook of the proposed area.

Relatively natural, some pelagic fishing in the area, and some threats if seabed mining goes ahead.

#### 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	
<i>Explanation for ranking (references)</i>					



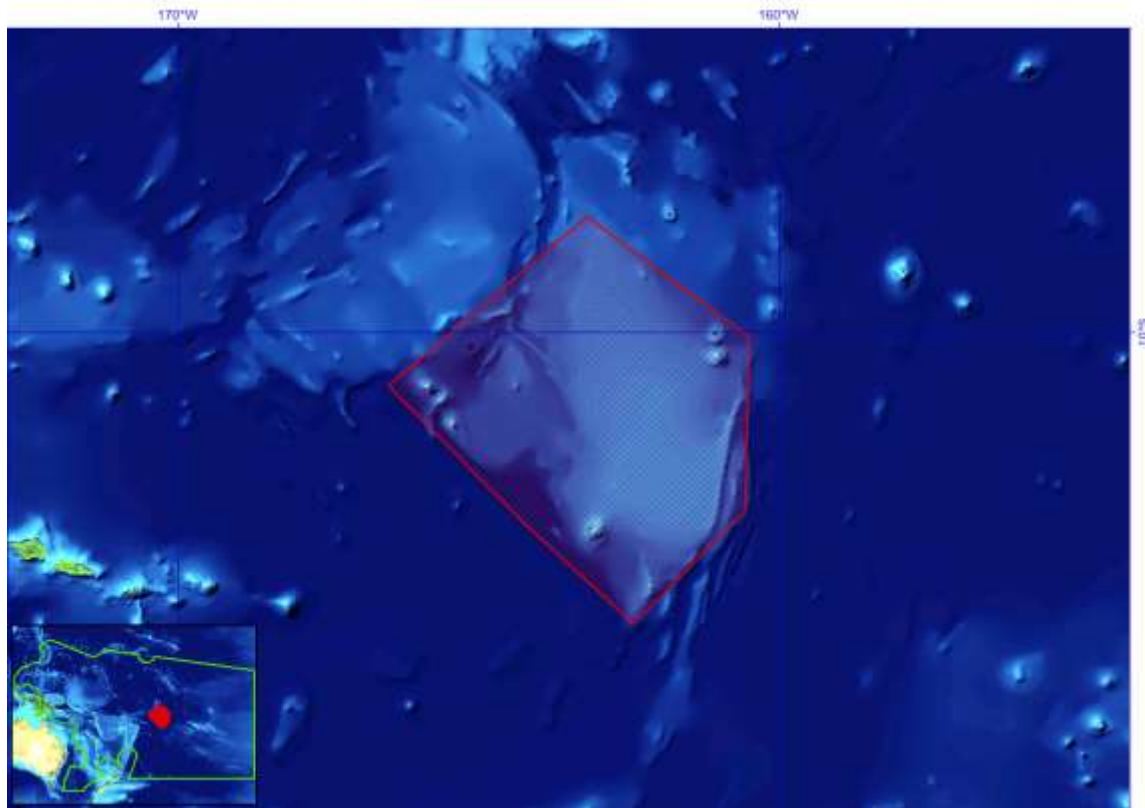
<p>The Japanese and Tui cruise reports show some unusual and possibly rare species. The plateau itself is reasonably unique, a large surface area rising from 5,500m to around 3000 to 3,500 m. Pukapuka Atoll has an endemic brittle star recorded on its reef slope. The Tui cruise also found a rare species of cowrie, <i>Cypraea bernardi</i>, in 1000m of water off Nassau, well outside its recorded depth range. There is also an undescribed <i>Malacanthus</i> (fish species), which is endemic (CINHP database).</p>					
Special importance for life-history stages of species	Areas that are required for a population to survive and thrive.		X		
<p><i>Explanation for ranking (references)</i> It is likely that the sediment-eating organisms found here would not be able to survive in other habitats, as the mineral-rich sediments are quite unique.</p>					
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			
<p><i>Explanation for ranking (references)</i></p>					
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		
<p><i>Explanation for ranking (references)</i> This habitat is highly vulnerable to seabed mining, but as mining is only in the planning stages, it is difficult to give this a higher rank at this stage</p>					
Biological productivity	Area containing species, populations or communities with comparatively higher natural biological productivity.			X	
<p><i>Explanation for ranking (references)</i> See UNEP/CBD/RW/EBSA/WSPAC/1/2.</p>					
Biological diversity	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.		X		
<p><i>Explanation for ranking (references)</i> The cruise reports indicate a comparatively high biodiversity for this water depth.</p>					
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	
<p><i>Explanation for ranking (references)</i> There are only a few very small communities living on atolls and a sand cay on the plateau. There is some pelagic fishing in the area, but this is only in the top 100m of the water column and would not affect the seabed.</p>					

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## Maps and Figures



**Figure 1.** Area meeting EBSA criteria

**Area No. 24: Niue Island and Beveridge Reef**

**Abstract**

The isolated island of Niue is the world’s largest single coral island and is not part of any archipelago. The waters around Niue have been identified as part of an important migratory route for endangered humpback whales. A number of other endangered marine mammals have been sighted in Niue’s waters. The endemic black-banded sea krait has also been found from near shore areas out to approximately 100km from Niue’s fringing reef. Beveridge reef is an isolated patch reef rising sharply from the sea floor and is included here as it is likely to contain some endemic species due to its isolation.

**Introduction**

Niue is an uplifted coralline island with the greater part of its coast comprising an ancient, raised reef platform forming cliffs that rise to around 60 m above sea level. Niue has no lagoon, and the outer reef slope descends precipitously to 1000 m within 5 km of the shore. Cliffs predominate along much of the coastline, and there are relatively few locations for ocean access. The island is located just east of the deep Kermadec Trench and is moving slowly towards this trench, into which it will eventually disappear in millions of years from now.

**Location**

Around Niue, 19° S, 169.50° W, extending south-east for 125 nm to encompass Beveridge Reef.

**Feature description of the proposed area.**

The reef area has been estimated to measure about 620 ha. Although the island’s land area is only 259 km<sup>2</sup>, Niue’s EEZ extends over an area of 390 000 km<sup>2</sup>. Located in this zone about 125 nautical miles south-east of Niue Island is the semi-exposed Beveridge Reef. This is included in the proposed area as cetaceans, some of which are threatened, are known to migrate through the area annually. The black-banded sea krait (*Laticauda semifasciata schistorynchus*) is endemic to Niue. Beveridge Reef, located 125 nm southeast of Niue, is an undersea mountain capped by a lagoon about 7km long and 3.5km wide. It is a pinnacle rising steeply from a depth of 5,500m and is included within the area described as meeting EBSA criteria as it has a unique range of habitats associated with the depth range in which it is located and is likely to be highly productive compared to the surrounding waters.

**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
<p><i>Explanation for ranking (references).</i>                      The waters around Niue are known to contain vulnerable species of marine mammals, including humpback, sperm, and sei whales (Olive Andrews, pers. comm.) There is also an endemic sea snake found on Niue’s reefs, which has a range of up to 100km from shore, according to IUCN  <a href="http://mapservices.iucnredlist.org/IUCN/mapper/index.html?ID_NO=176740">http://mapservices.iucnredlist.org/IUCN/mapper/index.html?ID_NO=176740</a></p>					

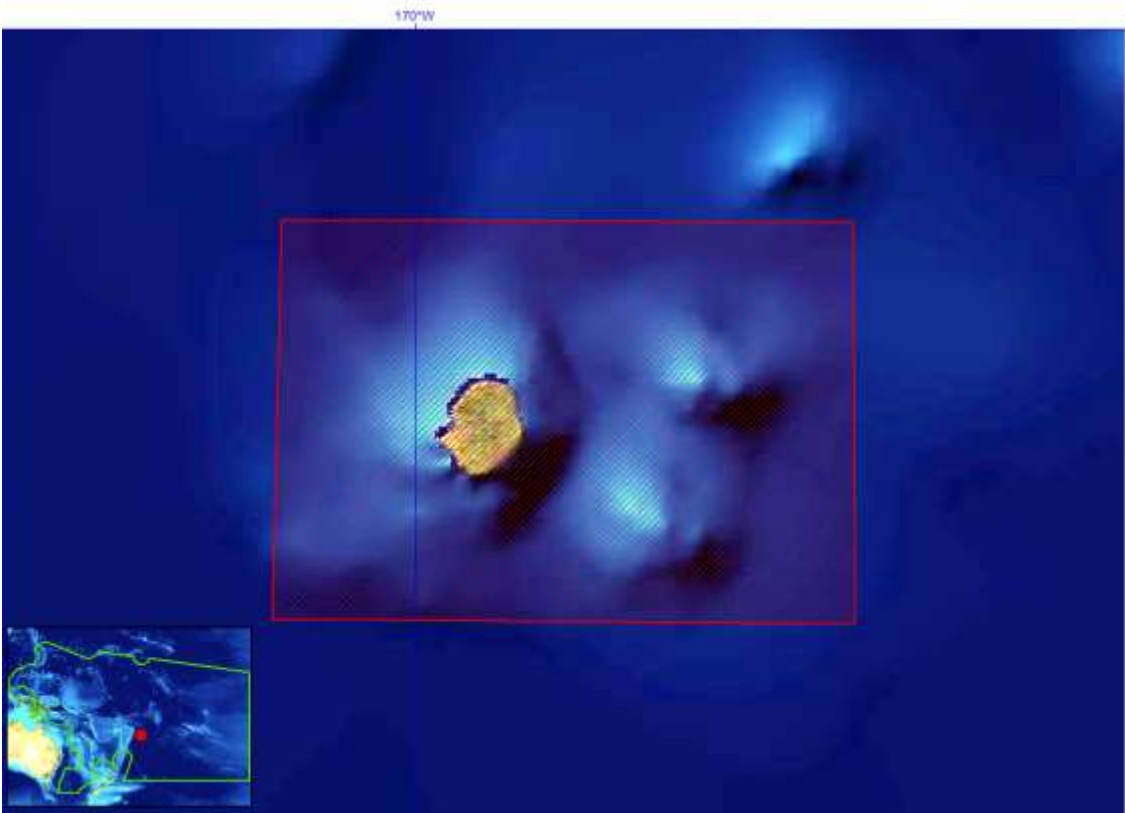
Special importance for life-history stages of species	Areas that are required for a population to survive and thrive.	X			
<i>Explanation for ranking (references)</i>					
Importance for threatened, endangered or declining species and/or habitats	Area containing habitat for the survival and recovery of endangered, threatened, declining species or area with significant assemblages of such species.			X	
<i>Explanation for ranking (references)</i> Niue appears to be a migratory corridor for Endangered Oceania humpback whales. There are also sperm whales present (Vulnerable) and sei whales at the northern limit of their distribution in the Southern Hemisphere. There have been several anecdotal reports of mother/calf humpbacks in January which could indicate that there are Northern Hemisphere humpbacks wintering there (not confirmed by science) (Olive Andrews, pers. comm).					
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			
<i>Explanation for ranking (references)</i>					
Biological productivity	Area containing species, populations or communities with comparatively higher natural biological productivity.		X		
<i>Explanation for ranking (references)</i> The area around Niue and Beveridge Reef is likely to be more productive than the surrounding seas, due to upwelling, as there are no other significant islands or reefs for hundreds of miles.					
Biological diversity	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.	X			
<i>Explanation for ranking (references).</i>					
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	
<i>Explanation for ranking (references).</i> The small population of Niue, and the fact that there are no fishing fleets operating from Niue, suggest that the area is likely to be still quite natural. The island is also composed of coral, with no rivers or streams, so there is no sediment runoff to damage the surrounding reef.					

**References**

Michael L. Guinea, Sea snakes of Fiji and Niue, Faculty of Science, Northern Territory University

Olive Andrews, Director, Whaleology; Program Director, Whales Alive; Leader, Niue Whale Research

Maps and Figures



**Figure 1:** Area meeting EBSA criteria

## Area No. 25: Palau Southwest

### Abstract

Based on available physical and biological data, an area within Palau's Exclusive Economic Zone (EEZ), which includes a series of seamounts, the waters surrounding two bird-nesting sites, and various deep-water coral communities is described as an area meeting EBSA criteria.

### Introduction

The deep ocean area south-west of the main Palauan archipelago contains a number of notable characteristics with regards to offshore oceanic environments that may be deemed worthy of some degree of protected status. Within the region, this convergence of clustered seamounts, high-energy eddies, and various deep-water benthic communities suggests a potential counterpoint for interactions between deep-sea, pelagic marine and oceanic-going avian species. Considering the role played by these areas of the offshore environment, having some management in place may ensure the seamounts are considered important features of open-ocean environments, as they provide depth relief for a number of deep-sea species, as well as hard substrate for benthic species to occur. Additionally, seamounts may be utilized as aggregation sites for deep-sea fish and other mobile species during reproduction. In some instances, the looping of water flow can provide a situation where microorganisms are "trapped", enabling a steady diet for other marine species (Clark et al. 2010). The proposed site is situated in a zone of strong oceanic currents and covers a number of geomorphic features with diverse topography (UNEP/CBD/RW/EBSA/WSPAC/1/2). Although no biological surveys have been conducted in the area, this diversity of structure provides a potential for numerous habitats, inferring that biological diversity is moderate to high in the area. OBIS records indicate that the area has high species richness, and SPC data on marlin catch rates suggest it is a high-catch area (UNEP/CBD/RW/EBSA/WSPAC/1/2).

### Location

The proposed EBSA has a total area of approximately 80 km<sup>2</sup>, and extends 360 km from north to south, and 130 km from east to west, with a central point near the coordinates 4°N, 132°E.

### Feature description of the proposed area

The area has strong oceanic currents which may facilitate biological interactions at different depths. It contains diverse geomorphology, indicating numerous possible habitat types to support deepwater benthic species. Given the high velocity of seawater movement caused by eddies, it can be inferred that there is a high degree of upwelling and downwelling movement of the water column at different locations within the area, suggesting the presence of primary productivity. There are 13 seamounts occurring within the proposed boundaries of the area, with one of these seamounts considered a high-catch area for tuna species. Some of the seamounts potentially peak in shallow depths (<100m).

There are several species of seafaring birds listed under CITES that have made two sites within the proposed area their nesting grounds. It should be noted that colonies of the red-footed booby (*Sula sula*) that nest at these sites may be the largest in Micronesia and are among the largest in the world. Helen Reef and Merir Island are both known green turtle nesting sites, and the population in Palau appears to be distinct from other Pacific populations (Maison et al. 2010). Flipper tagging suggests that the turtles migrate over large distances.

### Feature condition and future outlook of the proposed area

There is currently no information available on the ecological characteristics of the deepsea portions of the proposed site. Additionally, little or no data is available with regards to the role the area plays in various life-history stages of species. Due to the island's limited resources, in-depth resource assessments of the area are unlikely in the near future. There is currently some oil exploration in Palau, however, the

proposed area for exploration is on the northern end of the main archipelago and will not likely affect the site. There is no publicly available information on talks on exploration for the area on or around the proposed area, although there may be proposals in the future for seabed mining or oil exploration in the 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	
<i>Explanation for ranking (references)</i> Data compiled indicates numerous locations with the proposed area that are ideal habitats for cold-water coral species (UNEP/CBD/RW/EBSA/WSPAC/1/2). There are two nesting sites for five species of sea-going birds that are considered threatened by CITES and several seamounts, some of which have been recorded as being areas of high catch.					
Special importance for life-history stages of species	Areas that are required for a population to survive and thrive.			X	
<i>Explanation for ranking (references)</i> Important nesting sites for the following threatened species of sea-going birds (IBA nesting sites layer). <ul style="list-style-type: none"> <li>• black noddy</li> <li>• common white tern</li> <li>• brown booby</li> <li>• great crested tern</li> <li>• red-footed booby</li> <li>• sooty tern</li> </ul>					
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	
<i>Explanation for ranking (references)</i> See above for explanation.					
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			

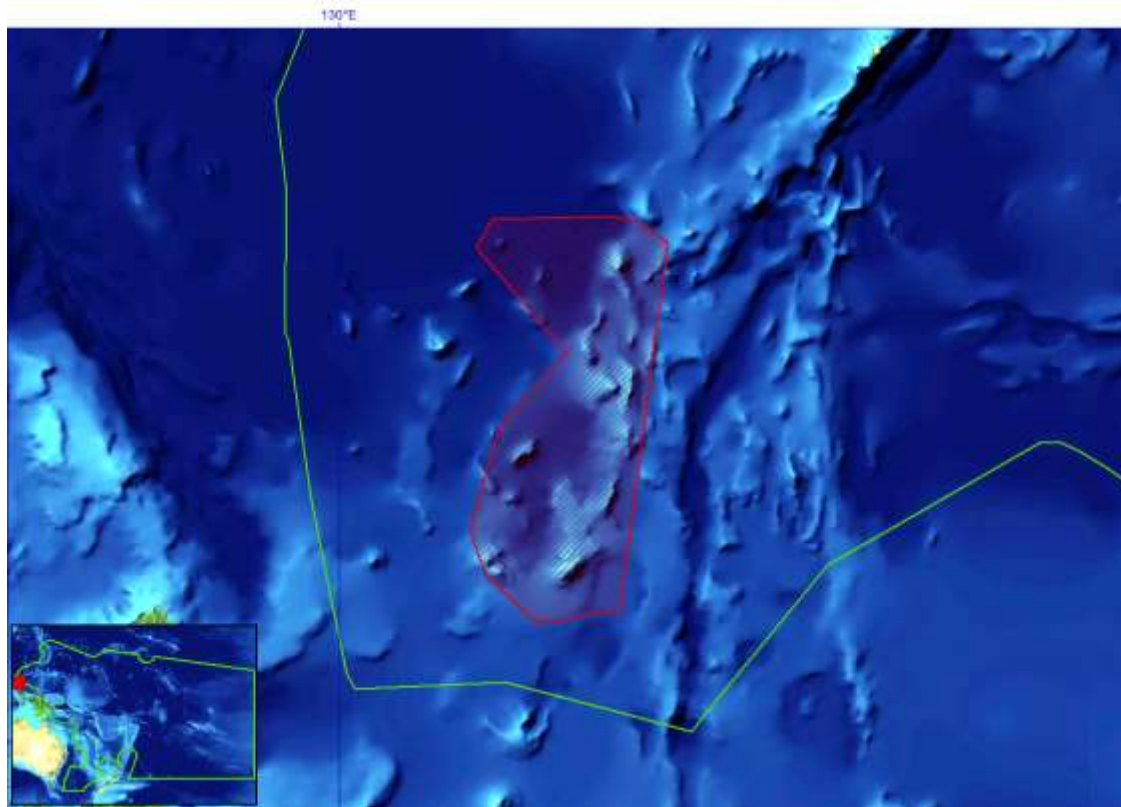
<i>Explanation for ranking (references)</i>					
There are gaps in data with regards to species within the area, therefore no information can be provided on the presence/absence of vulnerability.					
Biological productivity	Area containing species, populations or communities with comparatively higher natural biological productivity.	X			
<i>Explanation for ranking (references)</i>					
Biological diversity	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.			X	
<i>Explanation for ranking (references)</i>					
OBIS data suggest it is an area of high diversity (UNEP/CBD/RW/EBSA/WSPAC/1/2).					
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		
<i>Explanation for ranking (references)</i>					
There have been several cases of fishing vessels caught within the area, as well as reported catch rates from commercial longline tuna fishing companies.					

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**Maps and Figures**



**Figure 1:** Area meeting EBSA criteria



## **Area No. 26: Tongan Archipelago**

### **Abstract**

The waters surrounding the islands of the Tongan Archipelago contain unique geomorphic features, notably the Tonga Trench. It is the most important breeding location for the endangered Oceania population of humpback whales and supports globally significant populations of eight seabird species.

### **Introduction**

The Tongan archipelago consists of 174 islands, only 37 of which are inhabited, and encompasses at least 400,000 km<sup>2</sup> of ocean, spread across 8.5° of latitude. It contains globally significant populations of eight seabird species and the most significant population in Oceania of endangered humpback whales. The area encompasses diverse geomorphic features owing to the juxtaposition of the Tongan ridge, providing a backbone for the archipelago itself, and the adjacent Tonga Trench, the second-deepest ocean trench. In addition, the area contains a number of other diverse habitats.

### **Location**

The Tongan Archipelago is situated along the boundary of the Pacific and Australian tectonic plates, between 15° S and 23° 30' S, and 173° to 177° W, spanning about 950 km on the north/south axis.

### **Feature description of the proposed area**

The most significant feature is the Tonga Trench, which is located on the eastern boundary and is 10,882 metres deep at its deepest point (the Horizon Deep). The Tonga Trench results from the active subduction zone where the Pacific Plate is being subducted below the Tonga Plate and the Indo-Australian Plate. The Tonga Trench extends north-northeast from the Kermadec Islands and turns west, north of the Tonga Plate and becomes a transform fault zone.

Plate convergence at the trench is taking place at an approximate rate of 15 cm per year; however, recent Global Positioning Satellite measurements indicate in places the rate approaches 24 cm per year, which is the fastest plate velocity recorded on the planet. Consequently, this is one of the Earth's most seismically active zones. Along the Tonga Trench, mantle-derived melts are transferred to the island arc systems (the islands of the Tongan Archipelago), and likewise such intense tectonic activity is also associated with formation of seafloor hydrothermal vents and the unique fauna associated with these.

The archipelago also includes a number of seamounts, notably the Capricorn Seamount, which rises from a depth of 5,450m to within 360m of the surface (Anonymous, Seamount Catalog). This has been an extremely productive seamount in terms of fisheries, with catch rates six times greater than those yielded by other regional long-line fisheries (RDA International Inc., 1994).

The description of seabird foraging areas within the proposed area, based upon the application of species and site specific foraging radii derived from foraging ranges documented in published literature (see UNEP/CBD/RW/EBSA/WSPAC/1/2 for a full description of methods).

### **Feature condition and future outlook of the proposed area**

Although this is an important area for many globally important seabirds, there is only one seabird reserve. Some marine protected areas have been established, but they are nearshore, and enforcement of regulations is generally poor. Inshore fisheries are generally heavily or over-exploited. Tonga relies heavily on the presence of humpback whales in the winter season as a source of foreign exchange from whale-based tourism. Impacts of climate change may result in increased frequency of cyclonic events and other associated adverse impacts, including ocean acidification.

**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
<i>Explanation for ranking (references)</i>					
The archipelago is abutted by the Tonga Trench and contains four IBAs that together support globally significant populations of eight seabird species (Birdlife International 2011); the largest breeding population of endangered humpback whales in Oceania, according to SPWRC; and an endemic species of giant clam (Lovell and Palaki <sup>2000</sup> ).					
Special importance for life-history stages of species	Areas that are required for a population to survive and thrive.				X
<i>Explanation for ranking (references)</i>					
The archipelago contains four IBAs that together support globally significant populations of eight seabird species (BirdLife International 2011); and the largest breeding population of endangered humpback whales in Oceania, according to SPWRC.					
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
<i>Explanation for ranking (references)</i>					
The archipelago contains the largest breeding population of endangered humpback whales in Oceania. It is also an important migratory corridor for green turtles nesting in countries east of Fiji (SPREP; Bell et al. 2008) (e.g., French Polynesia and Cook Islands).					
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
<i>Explanation for ranking (references)</i>					
The endemic species of giant clam has been severely overfished (Lovell and Palaki 2000), and the breeding					

<p>marine turtle population seems to be declining. The Tongan population of humpback whales is slowly recovering from near-extirpation (Jackson et al. 2006). The area has been identified as having habitat likely to support a high level of occurrence of deepwater corals (<i>Solenosmillia variabilis</i>) (Davies and Guinotte 2011) and <i>Enallopsammia rostrata</i> (Davies and Guinotte 2011). Stocks of deepwater snapper and grouper have declined in recent years owing to fishing pressure (Tonga Department of Environment 2004).</p>					
Biological productivity	Area containing species, populations or communities with comparatively higher natural biological productivity.			X	
<p><i>Explanation for ranking (references)</i></p> <p>The largest and most significant breeding population of endangered humpback whales in Oceania occurs in Tonga (Baker et al. 2006). The presence of globally significant seabird populations totalling in excess of 250,000 individuals of multiple species is indicative of high surface productivity in the system (BirdLife International 2011). Capricorn Seamount has been found to be a particularly productive tuna-fishing area (RDA International 1994).</p>					
Biological diversity	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.			X	
<p><i>Explanation for ranking (references)</i></p> <p>The area contains a rich topography from the Tongan Rise across the continental slope to the adjacent Tonga Trench. This range of topography likely provides a wide range of habitat. Habitat modelling indicates a rich diversity of cold-water corals. The habitat for deepwater snapper supports an economically valuable fishery (Tongan Ministry of Fisheries 2005). A high percentage of the species found in the Tonga Trench may be endemic (De Fontaubert 2001). Pelagic species abundance and diversity are mostly found in the epipelagic zone (commonly to 200 metres depth) (Tonga Department of Environment 2004).</p>					
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	
<p><i>Explanation for ranking (references)</i></p> <p>The archipelago consists of 174 islands, of which only 37 are inhabited (Lovell and Palaki 2000). Human-induced disturbance of much of the offshore waters is therefore relatively low, although exploration licences have been issued for deepwater mining, and some preliminary exploration has taken place. A high percentage of the species found in the Tonga Trench may be endemic (De Fontaubert 2001).</p>					

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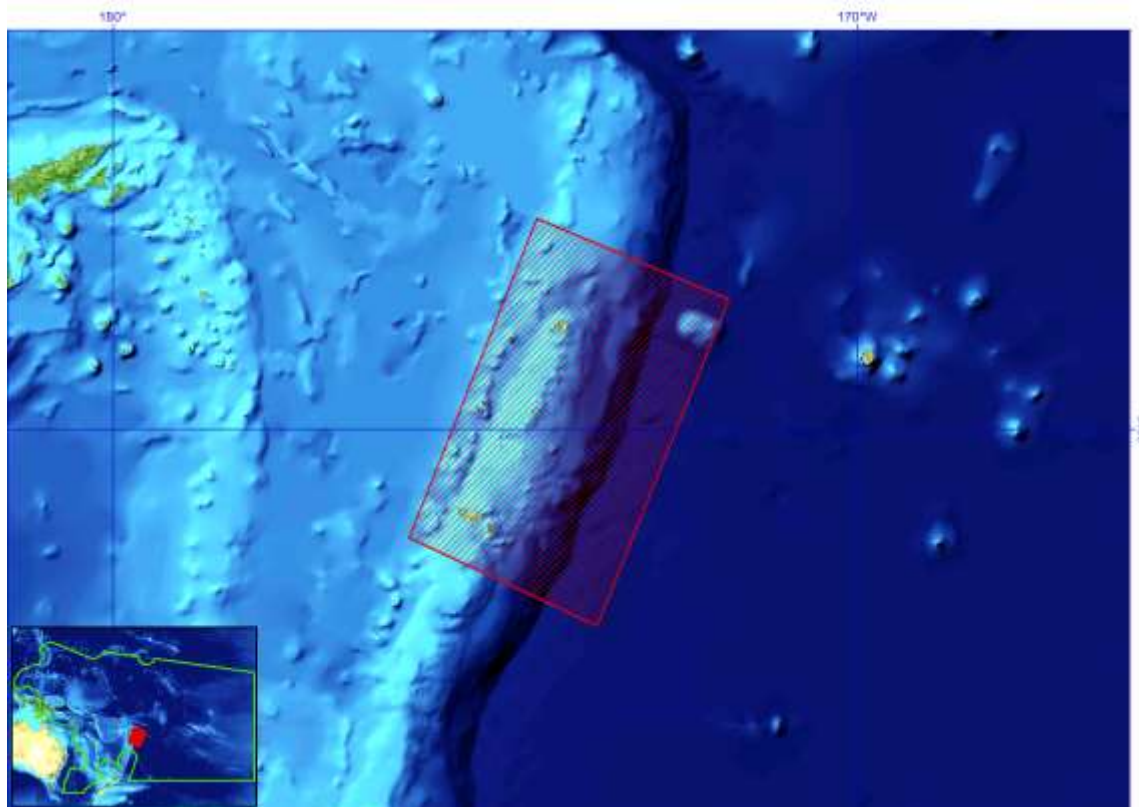
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## Maps and Figures



**Figure 1:** Area meeting EBSA criteria

## **Area for Future Consideration: Marquesas Archipelago Deep-sea Waters**

### **Abstract**

The Marquesas archipelago waters appear to be unique within the 5 million km<sup>2</sup> EEZ of French Polynesia, in terms of primary productivity and related biological implications.

### **Introduction**

The area is located in the northern region of French Polynesia, not far from the southern edge of the east equatorial high productivity tongue. The islands are surrounded by a 4000 m deep oceanic floor, less than 30 nm offshore.

Localized at the very northern fringe of French Polynesia and close to the equator, this archipelago is the only one in French Polynesia with substantial nutrient enrichment of the waters. Although the origin of this enrichment is not completely understood (in particular the relative influence of the equatorial upwelling vs. the local upwelling taking place on the western side of the archipelago), the recorded data for coastal fish population abundance, as well as the captures of pelagic species, reveal the unusual trophic richness of these islands compared to other Polynesian waters. Observations of top predators, such as marine mammals and sharks, confirm those suggestions.

The 13 small islands that comprise the Marquesas archipelago have very steep slopes and lack modern coral reefs (Knight 1978). Nonetheless, they possess large areas of drowned reef platforms between 125 and 50 m deep, the most recent of which are around 9000 years old (Rougerie and Wauthy 1993). This geological peculiarity, whose drivers are still not clear (in particular the impact of the El Niño/La Niña-Southern Oscillation phenomena – Cabioch et al. 2008), is unique in Polynesia and very rare in this region. The limited availability of coastal reef habitats may benefit other little-known or never studied habitats (i.e., lava tubes, caves, which may offer high ecological value).

The distance of this archipelago from the centre of Indopacific ocean biodiversity explains the low coastal-specific diversity. Nevertheless, the isolation of the archipelago favoured the emergence of the exceptional endemism that is recorded in some taxonomic groups (14% of coastal fishes species, 10% of mollusk species). These inventories are still scarce (especially for mollusks, crustaceans, sponges), and present knowledge of the species distribution must be increased. These questions also concern the deep fauna biodiversity, which remains poorly known.

### **Location**

The area of interest is located within French jurisdiction and under French Polynesian legislation. The proposed boundaries of the area are approximately: 50 nm to the east of islands, 100 nm to the north and south, and 150 nm to the west.

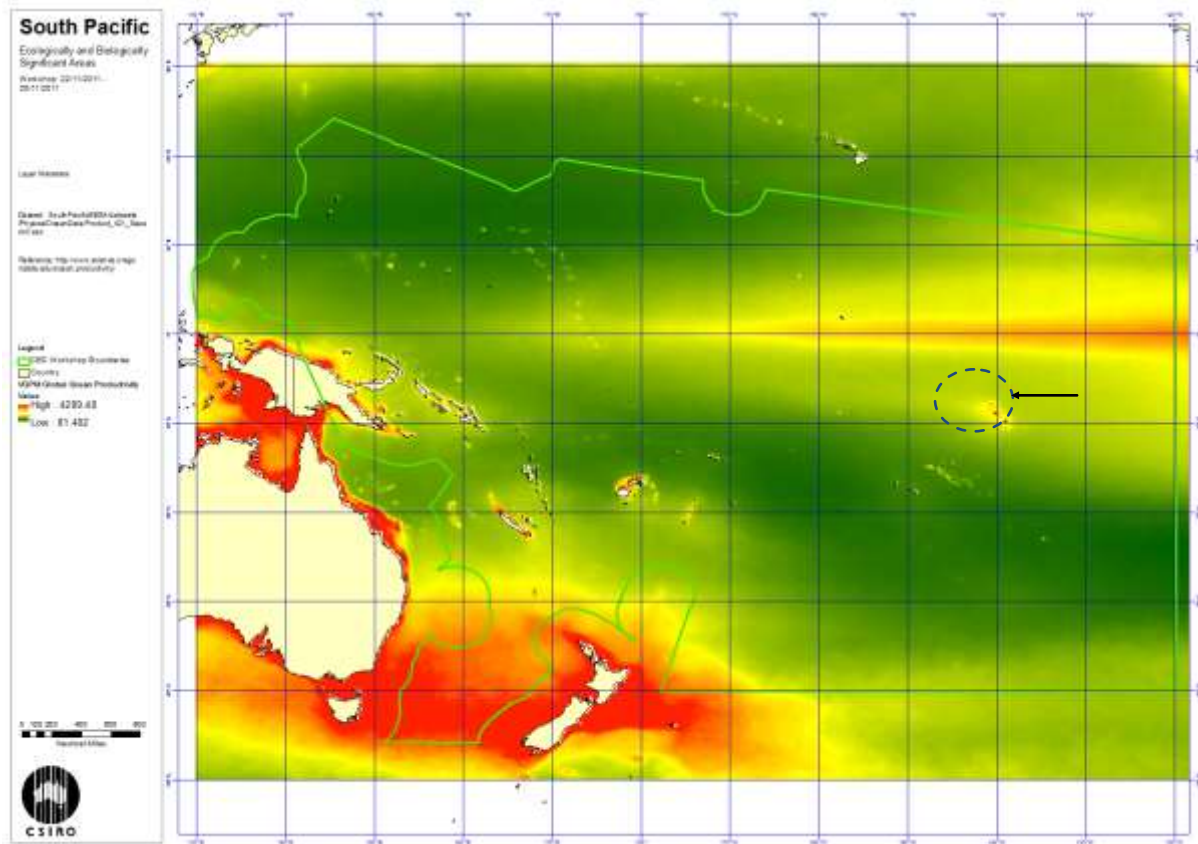
### **Feature description of the proposed area**

#### **I. OCEANIC FEATURES**

Located between the 8th and 11th parallels, the Marquesas archipelago is at the fringe of the south Pacific Gyre. It is the only archipelago of French Polynesia to be crossed by the South Equatorial Current. The counter current of the Marquesas, which seems to be related to the rotation of the wind around the islands, is a permanent (except during the El Niño/La Niño/La Niña period) and a local phenomenon (Martinez et al. 2009).

French Polynesian waters are ultra-oligotrophic, except in the area of the Marquesas Islands, because of two phenomena: the influence of the equatorial upwelling (which, even reduced and irregular, can extend its influence to the northern part of the Tuamotu archipelago) and the enrichment of a local island.

Recent research shows that the periods of chlorophyll blooms around the Marquesas Islands can be related to several factors, such as the total current and the temperature at the surface of water. The total currents are always strong in the Marquesas Islands, and the turbulence that they create when passing through the islands would drive to water mixing and consequently production of a significant phytoplankton biomass all year long. A seasonal increase in current speed (August) would amplify the phenomenon when the surface temperature decreases to reach its minimum in October.



## II. GEOLOGICAL FEATURES

The Marquesas Islands are young volcanic islands (Fatu hiva: 2 million years; Eiao: 6 million years). Their alignment, on a much more northerly axis than the other archipelagoes, testifies to a change in the direction of the lithospheric plate from the area of fracture of the Marquesas Islands (Morhange 1993).

## III. BIODIVERSITY FEATURES

Diversity and abundance of fish fauna both in coastal and pelagic waters, and the *pelagos* in general, are important features, probably in relation with the nutrient enrichment present in this area.

**Sharks:** 10 species recorded. Tiger shark (*Galeocerdo cuvier*) and the very vulnerable whale shark (*Rhincodon Typus*) are known to be frequently observed in the archipelago.

**Marine mammals:** 13 species have been observed in the Marquesas archipelago, especially delphinids, sperm whales, baleen whales and pilot whales. The area supports the highest marine mammal density observed in French Polynesia.

**Birds:** This area contains at least 18 bird species that justify the identification of six marine Important Bird Areas (IBA). Collectively these identify key foraging habitats for five seabird species including three

globally significant populations of Endangered phoenix petrel (*Pterodroma alba*) (BirdLife International 2011).

**Feature condition and future outlook of the proposed area**

- Very few studies and previous research conducted
- An important oceanographic research study is being conducted in the archipelago on the “Braveheart” research vessel (October 2011 to March 2012): a 90-day fieldwork programme is assembling the research capacities of several French and international research agencies (e.g., CNRS, MNHN, IRD, IFREMER, several universities) funded by the French marine protected areas agency.

**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
<b>Uniqueness or rarity</b>	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			
<i>Explanation for ranking</i> Inshore endemism is known to be high in some already-studied groups (fishes, mollusks). This situation must be confirmed for deep-sea environments.					
<b>Special importance for life-history stages of species</b>	Areas that are required for a population to survive and thrive.	X			
<i>Explanation for ranking</i> The primary productivity of Marquesas waters probably has significant consequences on the marine food web and abundance of fishes and top predators. Therefore, this area can be suspected to be an essential feeding area for numerous species.					
<b>Importance for threatened, endangered or declining species and/or habitats</b>	Area containing habitat for the survival and recovery of endangered, threatened, declining species or area with significant assemblages of such species.				X
<i>Explanation for ranking</i> Habitats suitable to top predators illustrated by high abundance of marine mammals, sharks and marine					

birds relative to other parts of French Polynesia. This area contains six marine Important Bird Areas, including three globally significant populations of Endangered phoenix petrel ( <i>Pterodroma alba</i> ) (BirdLife International 2011).					
<b>Vulnerability, fragility, sensitivity, or slow recovery</b>	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.			<b>X</b>	
<i>Explanation for ranking</i> Presence of fragile deep-benthic environments (see biological diversity).					
<b>Biological productivity</b>	Area containing species, populations or communities with comparatively higher natural biological productivity.				<b>X</b>
<i>Explanation for ranking</i> Highest primary production (chlorophyll) encountered in French Polynesian waters and in the central Pacific at the same latitude. The area is located on the edge of the east equatorial high productivity tongue. Presence of significant stocks of large pelagic fish species.					
<b>Biological diversity</b>	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.				<b>X</b>
<i>Explanation for ranking</i> High diversity of marine mammals and birds relative to other parts of French Polynesia. Highest deep-sea benthos diversity known in French Polynesia (especially around Hiva Oa and Nuku Hiva islands)					
<b>Naturalness</b>	Area with a comparatively higher degree of naturalness as a result of the lack of or low level of human-induced disturbance or degradation.			<b>X</b>	
<i>Explanation for ranking</i> Few bottom-fishery activities occur in the area. Few activities on land with very few impacts. Potential impact of fisheries to be confirmed.					

## References

- For deep benthic species information and references see: [www.mnhn.fr/musorstom/index.html](http://www.mnhn.fr/musorstom/index.html).
- For 2011 marine mammals and birds aerial census data (REMMOA project) please contact: [pierre.watremez@aires.marines.fr](mailto:pierre.watremez@aires.marines.fr) and see page related to project on [www.aires-marines.fr](http://www.aires-marines.fr).
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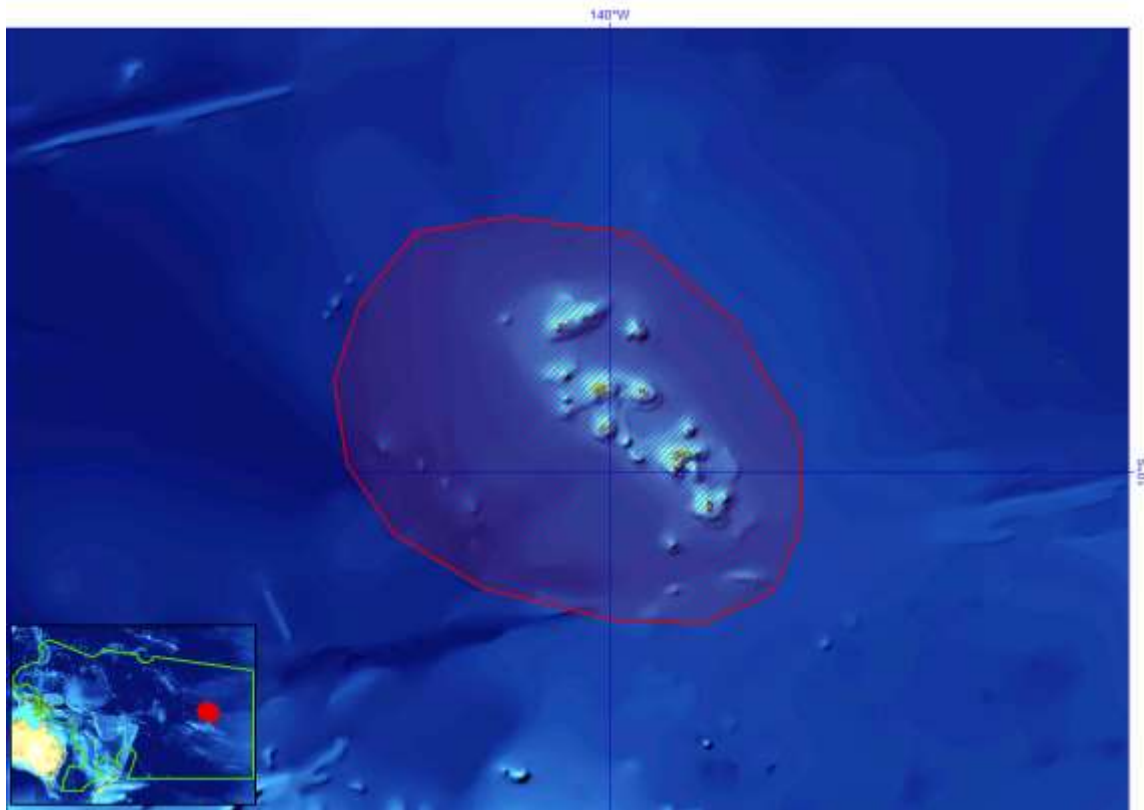
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### Maps and Figures



**Figure 1.** Area meeting EBSA criteria

## Area for Future Consideration: Pitcairn Islands

### Abstract

The waters surrounding Pitcairn Islands support multiple globally significant populations of nine seabird species, including the entire global population of Henderson petrel (*Pterodroma atrata*, Endangered) and well over 90% of the global population of Murphy's petrel (*P. ultima*, Near Threatened). The area has been defined by seaward extensions to encompass key foraging areas and high use (e.g., rafting) areas used by these bird populations. The intervening seas have also been recognized within the area owing to projected broader biological importance illustrated by the endemic lobster *Jasus caveorum*.

### Introduction

The Pitcairn Islands are a group of four volcanic islands in the South Pacific Ocean. The four islands – Pitcairn, Henderson, Ducie, and Oeno – are spread over several hundred kilometres of ocean. The islands themselves support three Important Bird Areas (IBAs), surrounded by three marine IBAs.<sup>2</sup>

### Location

This EBSA encompasses areas of deep-sea surrounding the four islands, Ducie, Oeno, Henderson and Pitcairn that constitute the Pitcairn Islands from 23°55'26" to 25°04'00" S and 124°47'11" to 130°44'03" W. The area lies within the Pitcairn EEZ, extending up to 85 km from the islands within it.

### Feature description of the proposed area

The proposed area that meets EBSA criteria surrounds all four of the volcanic Pitcairn Islands: Pitcairn, Henderson, Ducie and Oeno islands. The islands are spread over several hundred kilometres of ocean and have a total land area of about 47 km<sup>2</sup>. Only Pitcairn, the second-largest and measuring 3.2 km across, is inhabited. The total area of ocean captured within the proposed area is 280,000 km<sup>2</sup>. The four islands have been identified by BirdLife International as separate Important Bird Areas (IBAs) that support globally significant seabird populations. The area supports the entire breeding population of Henderson petrel (*Pterodroma atrata*, Endangered), as well as >50% of the global population of Murphy's petrel (*P. ultima*, Near-Threatened); and the foraging range of two regionally significant populations of common white tern (*Gygis alba*) totaling c.45,000 individuals. The area supports key transit and/or foraging areas for these species. The islands themselves are the emergent tips of volcanoes rising from the abyssal plain, with surrounding seas throughout most of the proposed boundary >3,000 m deep. This site is being

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<sup>2</sup> BirdLife International maintains an online database (<http://seabird.wikispaces.com/>) of seabird ecology and foraging ranges, as a basis for identifying key foraging areas around breeding sites that qualify as IBAs. The majority of congregatory seabirds are central place foragers during the breeding season returning to their breeding colony regularly to share incubation duties or feed chicks. These species, many of which forage in association with pelagic fish schools, radiate from colonies with individual and inter-trip variation in the distance travelled from the colony.

Identifying foraging areas up to the maximum foraging range recorded would be a poor representation of the foraging area for the majority of birds, since these extremes apply to only a small percentage of birds. The approach adopted here was to define sites based on their importance to a greater proportion of the colony, and this was done by selecting the maximum range to which IBA threshold numbers of a trigger species travelled. This was determined using a foraging frequency curve to assess at what distance this cutoff was reached.

This methodology was applied to each trigger species at each breeding site, and site- and species-specific foraging ranges were therefore defined that would ensure IBA criteria have been met.

For far-ranging species (e.g. shearwaters, *Pterodroma*, frigatebirds, tropicbirds) basing extensions on foraging ranges is less useful, as the areas identified can be overly large. However a radius can still be applied, but intending to capture near colony high use areas, such as for rafting before coming ashore, rather than all foraging areas. These precautionary distances were set on a species by species basis and were determined based on tracking studies and experience gained in other parts of the world (e.g. Arcos et al. 2009, Ramirez et al. 2008).

nominated for the globally significant seabird populations that it supports; it has not been fully considered in terms of other taxonomic groups likely to be represented.

**Feature condition and future outlook of the proposed area**

Deep seas within this feature are inherently linked to terrestrial sites where the seabirds that trigger EBSA criteria at the site breed. The area is remote and adjacent to only a small human population inhabiting Pitcairn Island. The outlook for this site is therefore not anticipated to deteriorate. Furthermore, the seabird populations that sustain this EBSA may increase in the future owing to on-going management of invasive alien species on the islands where they breed.

**Assessment of the area against CBD EBSA Criteria**

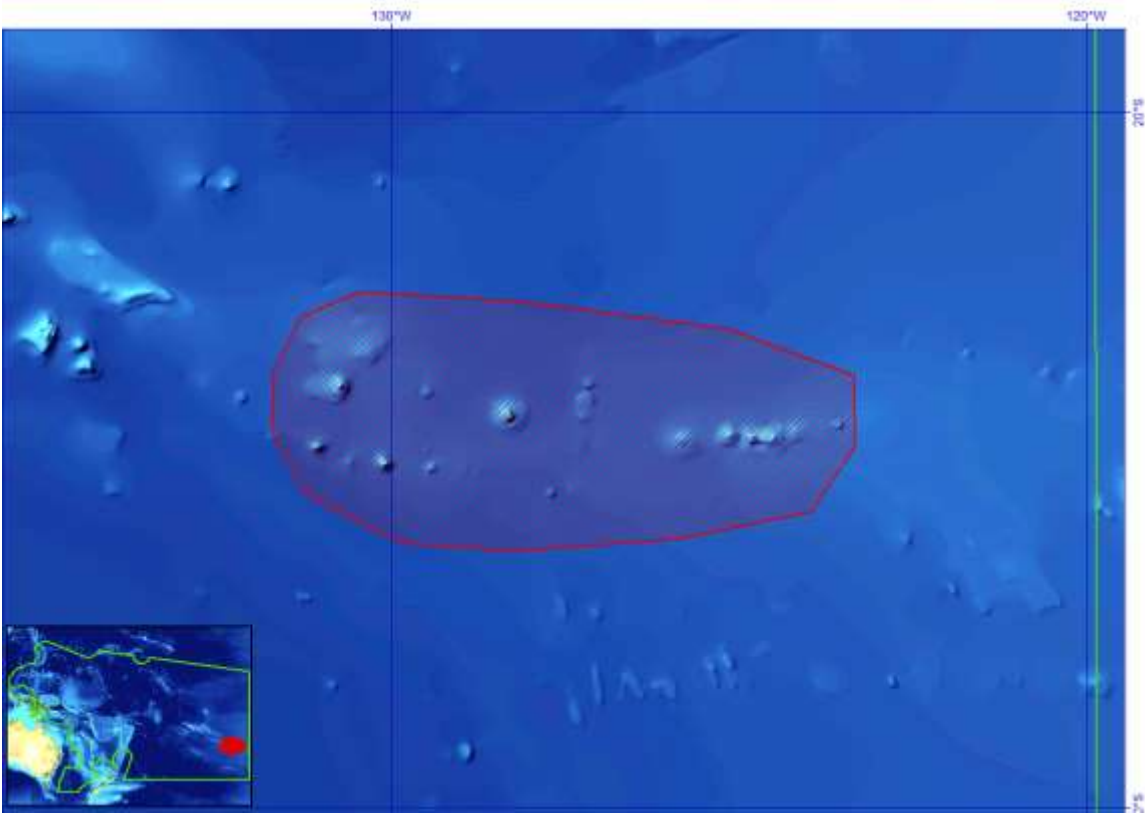
CBD EBSA Criteria (Annex I to decision IX/20)	Description (Annex I to decision IX/20)	Ranking of criterion relevance (please mark one column with an X)			
		Don't Know	Low	Some	High
Uniqueness or rarity	Area contains either (i) unique (“the only one of its kind”), rare (occurs only in few locations) 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	
<i>Explanation for ranking (references)</i> This area supports the entire breeding population of Henderson petrel ( <i>Pterodroma atrata</i> , Endangered), as well as >50% of the global population of Murphy’s petrel ( <i>P. ultima</i> ,(Near Threatened).					
Special importance for life-history stages of species	Areas that are required for a population to survive and thrive.				X
<i>Explanation for ranking (references)</i> This site supports the foraging range of a two regionally significant populations of common white tern ( <i>Gygis alba</i> ) totaling c.45,000 individuals.					
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
<i>Explanation for ranking (references)</i> Important breeding and foraging area for multiple globally threatened and Near Threatened seabirds: Henderson petrel (Endangered), phoenix petrel <i>P. alba</i> (Endangered) and Murphy’s petrel (Near Threatened).					
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	
<i>Explanation for ranking (references)</i>					

A critical area adjacent to breeding seabird habitat. The species represented have low productivity and a high age of maturity rendering them potentially susceptible to any negative impacts within the area.					
Biological productivity	Area containing species, populations or communities with comparatively higher natural biological productivity.	X			
<i>Explanation for ranking (references)</i>					
Biological diversity	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.	X			
<i>Explanation for ranking (references)</i>					
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			
<i>Explanation for ranking (references)</i>					

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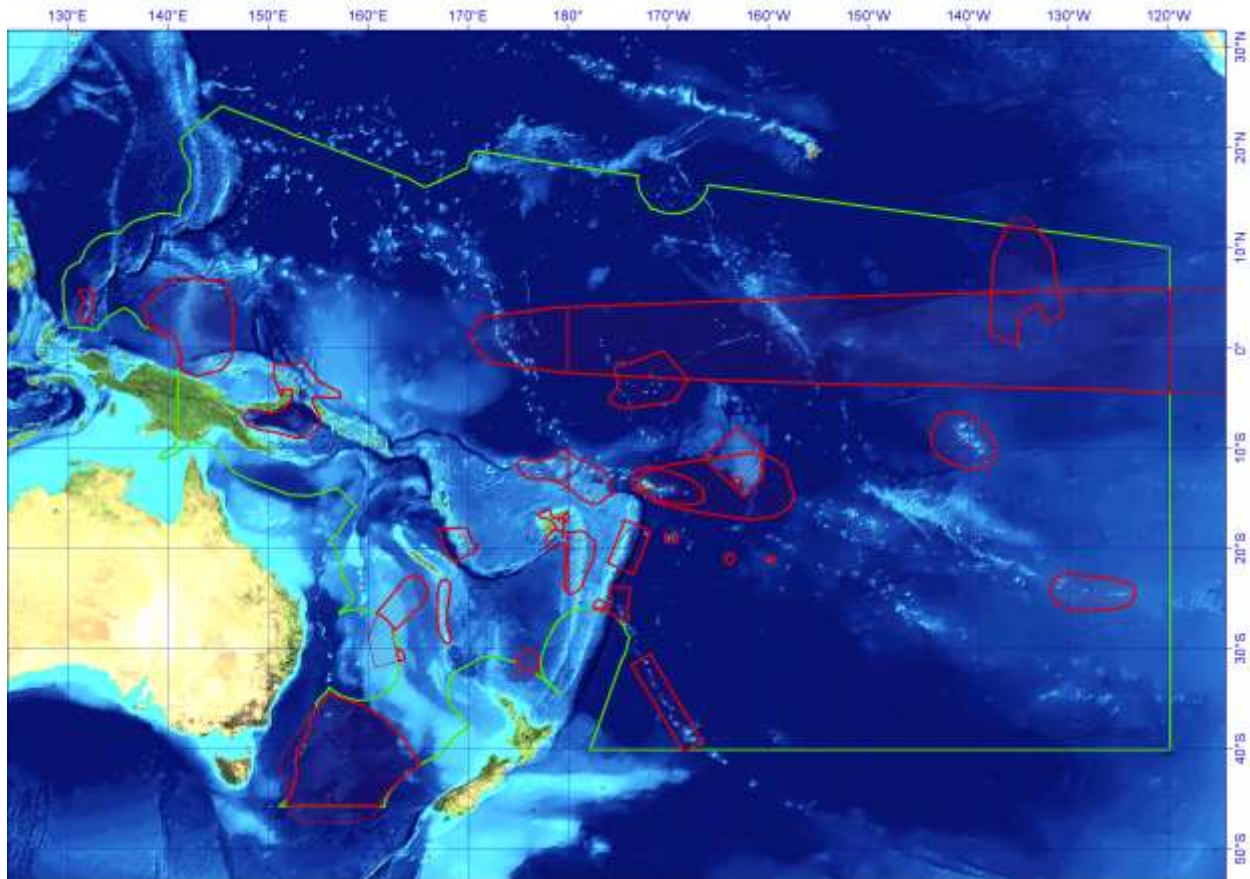
## Maps and Figures



**Figure 1.** Area meeting EBSA criteria

*Annex VI*

**MAP DESCRIBING WORKSHOP GEOGRAPHIC SCOPE AND AREAS MEETING EBSAs  
CRITERIA IN WESTERN SOUTH PACIFIC REGION AS AGREED BY THE WORKSHOP  
PLENARY**



*Note: The polygon in red depicts areas that meet scientific criteria for ecologically or biologically significant marine areas (annex I to decision IX/20), as described by the workshop. The polygon in green depicts the geographic scope of the workshop.*

*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**

1. Workshop participants recognized that there is still more existing data that was not available to the workshop and noted the need for future work to contact these other data systems to include wherever possible for future regional, sub-regional or national efforts to further elaborate the description of additional areas meeting EBSAs criteria in the Western South Pacific. Furthermore, participants recognized that some countries were not represented at the workshop, and therefore some potential areas meeting EBSAs criteria might have been missing.
2. Conclusions of this meeting were made drawing on the background document prepared for the workshop (UNEP/CBD/RW/EBSA/WSPAC/1/2) that was collated prior to the workshop. During the workshop, some other data sets were identified and used in defining and refining EBSA regions. The data layers in the initial background document (UNEP/CBD/RW/EBSA/WSPAC/1/2) are available electronically (<http://www.cbd.int/doc/meetings/mar/rwebsa-wspac-01/official/rwebsa-wspac-01-02-en.pdf>).
3. Participants emphasized that in data-poor regions, efforts such as describing areas meeting EBSAs criteria could benefit from modelling distributions of selected species. Future work would benefit from modelling ranges of species of special interest, like Red-listed species or species that are of special ecological importance.
4. Participants identified an urgent need for the development of a regional data repository, including the data layers developed in efforts such as this workshop, available to all Parties, as well as regional partners and organizations. In particular, the continuation of the EBSA process would benefit from two potential activities:
  - Establishing a regional data inventory of available data relevant to the EBSA process. SPREP should take a lead in formulating mechanisms to document data availability within the region.
  - Providing links between the CBD EBSA repository, and repositories of data underlying the scientific assessment on describing EBSAs. Usually these background data will be technical in nature and would be best managed by the specialists. Several repositories already exist, and rather than building new infrastructure, good use should be made of the efforts of organizations such as the High Seas Viewer developed by UNEP-WCMC, of the Ocean Data Portal of IOC, and of the National Oceanographic Data Centres that exist in many countries. A mechanism, linking closely to the CBD EBSA repository, should be developed to track the location of datasets used in the EBSA process, and to make these links an integral part of the CBD EBSA repository.
5. Workshop participants recognized with appreciation the contribution made by experts from Australia (CSIRO) in assembling the data relevant to the present workshop. The workshop welcomed the offer of CSIRO to provide a temporary repository for data used in this workshop, and to make the data available through a searchable portal.
6. Participants recognized the important need for additional research and capacity development to ground truth some of the identified areas, and to improve the biological baseline for the whole region to facilitate the description of other potential areas meeting EBSAs criteria.
7. It was recognized that, being the first regional EBSA workshop convened by CBD Secretariat, this has been a learning process for participants and has also increased understanding and capacity to identify and define significant areas, which will be of benefit to CBD Parties in continuing this process in other regions of the world. The type of documentation on describing areas meeting EBSAs criteria developed

during the workshop will provide especially useful examples for experts compiling appropriate data and information prior to attending future such workshops.

8. Workshop participants recognized that the process was based on a data-driven expert knowledge approach rather than a comprehensive process – this was unavoidable due to constraints related to data availability at multiple spatial scales. CBD may consider what other approaches could be used to supplement the expert knowledge approach, in an effort to ensure a system of EBSA description that allows for comparable definitions in different regions throughout the world.

9. Participants recognized that this is a first effort to define EBSAs in the Western South Pacific, and that the list is not exhaustive and may not necessarily capture all of the most significant areas meeting EBSAs criteria within the Western South Pacific. Rather, the submitted areas for the description of EBSAs are justifiable under EBSA criteria, but can represent those areas that had sufficient data available or were known well enough to be described.

10. Recognizing that COP 10 requested the regional workshop to describe areas meeting EBSAs criteria in marine areas both within and beyond national jurisdiction, participants noted the challenge of missing representation from some Parties (due to lack of nominations or cancellation of trips), as there was uncertainty about the description of EBSAs within jurisdictions in the Parties that were not represented by their experts.

11. Participants suggested that a summary table of areas meeting EBSAs criteria be created according to classes and types of areas meeting EBSAs criteria, to clarify the diversity of areas and justifications. This could enable evaluation of how adequately the proposed areas for the description of EBSAs cover biogeographic or topographic classes that could be used to identify other potential areas meeting EBSAs criteria.

12. Workshop participants noted data gaps related to offshore fisheries. The workshop requested that SPREP/SPC follow up on possible mechanisms to use fisheries data to further elaborate the description of EBSAs, which can be submitted collectively to CBD Secretariat by countries or the the Council of Regional Organisations of the Pacific (CROP) secretariats.

13. Participants noted that data were sought from relevant sources on top ocean predators and cetaceans, but were not fully available for this workshop. They recognized the potential value of these data for describing areas meeting EBSAs criteria and identified a need for development of mechanisms to include improved top predator and cetacean data in future description of areas meeting EBSAs criteria.

14. There was a recognized need to continue to build capacity within countries to further elaborate the description of EBSAs, particularly to determine mechanisms to assist in the more detailed scientific assessment of areas meeting EBSAs criteria at a national scale, where requested, to assist in planning and management processes.

15. In the light of recognized gaps and needs above, participants identified the need for additional regional workshops to describe additional potential areas meeting EBSAs criteria.

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