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COMMISSION

**A proposal for the establishment of a Ross Sea Region
Marine Protected Area**

Delegations of New Zealand and the USA

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A PROPOSAL FOR THE ESTABLISHMENT OF A ROSS SEA REGION MARINE PROTECTED AREA

Delegations of New Zealand and the United States

Abstract

The delegations of New Zealand and the United States submit this revised proposal for the establishment by the Commission for the Conservation of Antarctic Marine Living Resources (Commission or CCAMLR) of a marine protected area (MPA) in the Ross Sea Region (“Ross Sea Region Marine Protected Area”). First submitted at CCAMLR XXXI in October 2012 and again at CCAMLR SM-II in July 2013 (CCAMLR-SM-II/04), our delegations propose that CCAMLR establish this MPA to conserve marine living resources; maintain ecosystem structure and function; protect vital ecosystem processes and areas of ecological significance; and promote scientific research, including through the establishment of reference areas. We thank Members for the many constructive discussions and comments regarding the Ross Sea Region MPA proposal at the recent meetings of the Scientific Committee and Commission in Bremerhaven in July 2013, and thank the Scientific Committee for its extensive efforts to develop its advice (SC-CAMLR-IM-I Report). After careful consideration of that advice, the proposal has been revised. Among the key revisions are changes to the proposed MPA boundaries in the areas of the northern seamounts and Scott seamount; changes to the catch limit formula in the Special Research Zone as a percentage of the overall catch limit for the Ross Sea fishery, thus linking this catch limit to the Scientific Committee’s regular stock-assessment process; and clarifying that the Commission may amend the MPA Conservation Measure following each 10-year review. We look forward to working together with Members at CCAMLR XXXII to achieve consensus to establish an MPA in the Ross Sea Region.

Background

1. Following SC-CAMLR-IM-I and CCAMLR SM-II, the delegations of the United States and New Zealand have carefully considered the advice in the Scientific Committee’s report from Bremerhaven (SC-CAMLR-IM-I) and the many constructive discussions and comments regarding the Ross Sea Region MPA proposal (CCAMLR-SM-II/04). Recalling paragraphs 2.23-2.24, we carefully noted the advice contained in paragraphs 2.30-2.33 of that report, and on this basis have developed this revised proposal.
2. Revisions to the proposal include the following: (a) addition of new paragraphs to the preamble to highlight other important aspects related to the proposal; (b) changes to the proposed MPA boundaries in the areas of the northern seamounts and Scott seamount; (c) changes to the catch limit formula for the Special Research Zone; (d) clarification that the Commission may amend this MPA Conservation Measure following each 10-year review; and (e) corresponding edits to the Management Plan (Annex B) and Priority Elements of Research and Monitoring Plan (Annex C).

Addition of New Preambular Paragraphs

3. Four new paragraphs were added to the preamble to highlight and clarify additional important aspects related to the proposal that have been the subject of discussions with CCAMLR Members.

- First, we have highlighted the intention that fishing opportunities displaced by the Ross Sea Region MPA would be redistributed to areas of the Ross Sea Region outside the MPA, including areas that currently have a zero catch limit.
- Second, we have recognized the important role of fishing vessels, as well as research vessels, as platforms for scientific research in the Ross Sea Region.
- Third, we have recognized the importance of collaboration among CCAMLR Members in designing and conducting research to achieve the objectives of the MPA.
- Finally, we have highlighted that regular review of the MPA will be necessary to determine whether the objectives of the MPA are being achieved.

Changes to the Proposed MPA Boundaries

4. The Scientific Committee undertook extensive analysis during its meeting in Bremerhaven and provided specific advice in paragraphs 2.30-2.33 of its report pertaining to the proposed boundaries of the Ross Sea Region MPA. The advice clearly indicated that MPA designation to achieve many specific objectives within different regional components of the proposed Ross Sea Region MPA are strongly supported by science (specifically, components A, C, D, E, and F in SC-CAMLR-IM-I Figure 1) and that the proposal was developed as an integrated whole with individual regional components that by themselves may not meet the overall objectives. The Scientific Committee also advised that there was insufficient evidence to support the spawning protection objective for the northern seamounts (components G and H in SC-CAMLR-IM-I Figure 1) and the size of Scott Seamount (component F in SC-CAMLR-IM-I Figure 1), and as such these areas should be reduced in size or otherwise modified, and that further research to understand toothfish spawning was a priority.

5. On this basis several significant boundary revisions have been proposed in response to the Scientific Committee's advice: (a) that scientific evidence was insufficient to support the toothfish spawning protection objective for the northern seamounts (paragraph 2.32, components G and H in SC-CAMLR-IM-I Figure 1); (b) that the size of the area proposed around Scott Seamount should be revised to match the dimensions of the corresponding benthic habitats (paragraph 2.31 (vi), component F in SC-CAMLR-IM-I Figure 1); and (c) that seamounts are an important deep sea habitat for biodiversity and that some representative protection is required in the north (paragraph 2.33). Revisions have been made as follows:

- First, the proposal no longer includes the proposed Spawning Protection Zone;
- Second, the proposal includes a reduced area of the northwest seamounts as part of the General Protection Zone to provide representative protection to northern benthic habitats;
- Third, the proposal includes a reduced area around Scott Seamount (component F in SC-CAMLR-IM-I Figure 1), corresponding to the size of the benthic habitats identified in the benthic bioregionalisation (WG-EMM-10/30 Figure 1);

- And finally, the proposal no longer includes the northeastern seamounts (component H in SC-CAMLR-IM-I Figure 1) because the bioregions found there are also found in the area already proposed for protection in the northwest.

In the future, CCAMLR may wish to revisit protection of the northern seamount areas of the Ross Sea Region once further research on toothfish distribution and life cycle dynamics (including spawning and movement) and deep sea habitats has been conducted.

6. The resulting size of the revised Ross Sea Region MPA proposed is 1.3 million square kilometers, forty-one percent smaller than the proposal in CCAMLR-SM-II/04. A comparison of the proposal in CCAMLR-SM-II/04 and revised proposal for CCAMLR-XXXII can be found in figure 1 and table 1 below.

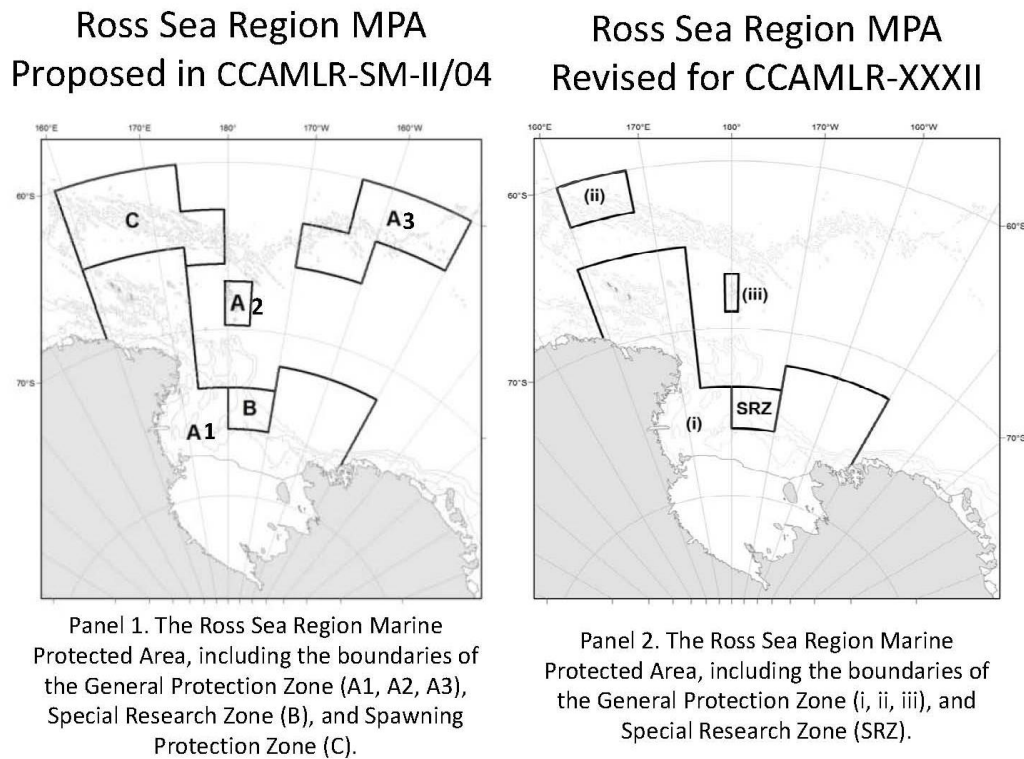


Figure 1. Comparison of boundaries of the proposed Ross Sea Region MPA as submitted in CCAMLR-SM-II/04 and as revised for CCAMLR-XXXII.

Table 1. Size comparison of original and revised Ross Sea Region MPA (RSRMPA) proposals. Labels A1, A2, A3, B, and C refer to Panel 1 above. Labels SRZ, i, ii, and iii refer to Panel 2 above.

Area	RSRMPA as Proposed in CCAMLR-SM-II/04 (M sq km) (see Figure 1, Panel 1)	RSRMPA Revision Proposed to CCAMLR-XXXII (M sq km) (see Figure 1, Panel 2)
General Protection Zone (GPZ) main	1.09 (A1)	1.09 (i)
GPZ NE seamounts	0.46 (A3)	0
GPZ Scott seamount	0.054 (A2)	0.022 (iii)
Special Research Zone	0.085 (B)	0.085 (SRZ)
Spawning Protection Zone NW seamounts	0.59 (C)	0
GPZ NW seamounts	0	0.14 (ii)
Total Area	2.279	1.337

Special Research Zone

7. The Special Research Zone (SRZ) provides CCAMLR an opportunity to create an area to advance research to increase scientific understanding about the ecosystem effects of climate change and fishing and continue to inform the science-based management of the Ross Sea toothfish fishery. In response to the Scientific Committee’s advice in paragraph 2.31(ii and v), the proposal includes revisions concerning the catch limit formula for the SRZ, directly linking the establishment of this catch limit to the total precautionary catch limit for the Ross Sea Region. The level of directed toothfish fishing inside the SRZ is proposed at a level proportionate to the total allowable catch for the Ross Sea Region, to achieve the following: (i) maintain the continuity and integrity of the existing toothfish tagging program; and (ii) be low enough to ensure the development of ecosystem-scale contrasts between a lightly fished area (the SRZ – component C in SC-CAMLR-IM-I Figure 1) and the ecologically similar, fishing grounds around Mawson and Iselin Banks (component B in SC-CAMLR-IM-I Figure 1).

8. We propose that directed fishing for toothfish in the SRZ, in accordance with Conservation Measure 41-09, be limited to 10% of the total catch limit for Statistical Subarea 88.1 and SSRUs 88.2 A and B, combined, established for that season (the “base catch limit”). This formulation clearly establishes the catch limit in the SRZ as a proportion of the total catch limit for the Ross Sea Region.

9. If the fishery in the SRZ was not closed during the previous fishing season pursuant to paragraph 1 of Conservation Measure 31-02, we propose the catch limit in the SRZ would be the sum of a “base catch limit” and the unharvested portion of the catch limit in the SRZ established

for the previous fishing season, but would not exceed two times the base catch limit. This is designed to ensure the average annual catch is at a level that maintains the continuity and integrity of the toothfish tagging program, despite potential inter-annual variability arising from access limitations due to ice.

10. If the fishery in the SRZ was closed during the previous fishing season and the catch limit in the SRZ for that fishing season was exceeded, it is proposed that the Scientific Committee would advise the Commission on any changes to the catch limit for the SRZ or any other action required to achieve the objectives of the MPA and ensure the integrity and viability of the Ross Sea toothfish stock assessment. In determining the need for this advice, the Scientific Committee would consider the normal variation in overall catch taken, occurring as a result of the standard operational practice of estimating the closure date and time for the SRZ. If the Scientific Committee concludes that catch above the limit for the SRZ exceeds normal expectations, further advice would be provided to the Commission.

11. The revised proposal continues to include a proposed increase in the required toothfish tagging rate in the SRZ to 3 fish per tonne. Under the tagging program, captured toothfish are tagged and released alive during normal fishing operations, and the rate at which fish are tagged and subsequently recaptured is the foundation of the toothfish stock assessment. The tagging program also provides important information on toothfish growth rates, movement patterns, and life cycle migrations.

12. Recognising that improved science outcomes in the SRZ will be achieved in the future through well-designed research fishing rather than by Olympic fishing alone, the Scientific Committee should be encouraged to promote research proposals submitted under Conservation Measure 24-01 pursuant of research priorities for this zone.

13. The revised proposal is consistent with the advice in paragraph 2.31(ii) and (v) of the Report of SC-CAMLR-IM-I. We propose different levels of catch along the continental slope (components B, C, and D in Figure 1 from the Report of SC-CAMLR-IM-I), such that:

- i. the fishing grounds around Mawson and Iselin Banks remain outside of the MPA, so that catches from component B of the continental slope remain at levels consistent with historical catches (assuming displaced effort is reassigned to the northern Ross Sea Region or to currently closed areas outside the MPA);
- ii. the SRZ (component C) is being established as a zone where local exploitation rates are reduced relative to those occurring in the fishing grounds over Mawson and Iselin Banks (component B) providing a reference area to investigate the ecosystem effects of climate change and fishing while maintaining the integrity and continuity of the toothfish tagging programme;
- iii. well-designed research fishing pursuant to Conservation Measure 24-01 will continue to be allowed in areas of the southeastern continental slope inside the MPA (component D) to support the objectives of the MPA by increasing the numbers of toothfish that are tagged and recaptured in the RSR and providing an area that can be compared with component C to further understand toothfish distribution and movement, and the ecosystem effects of climate change and fishing .

Clarification Regarding Amendments to the MPA Conservation Measure Following Reviews

14. An additional sentence was added to paragraph 12 to clarify that based on the findings of each 10-year review the Commission may amend this Conservation Measure and its Annexes. We also note that paragraph 10 continues to state that the Commission, with consideration of advice by the Scientific Committee, may amend this Conservation Measure and its annexes at any time.

Corresponding Edits to the Management Plan and Priority Elements of Research and Monitoring Plan

15. Based on the revisions described above, particularly the modifications to the proposed MPA boundaries, we have made several corresponding edits to the Management Plan (Annex B) and Draft Priority Elements of the Research and Monitoring Plan. In the Management Plan, the specific objectives and features listed in paragraph 1(ix) were amended to reflect revisions made to the boundaries and protection objectives associated with the northern seamount areas. In the Priority Elements of the Research and Monitoring Plan, a priority element under Fisheries Research in Table 1 was modified to reflect the advice of the Scientific Committee in paragraph 2.31(v).

Research and monitoring plan

16. A draft research and monitoring plan to accompany a CCAMLR MPA in the Ross Sea Region was submitted as paper SC-CAMLR-IM-I/BG/03 Rev. 1, reflecting research priorities identified to date in discussions with other CCAMLR Members. We are continuing this engagement and seek input from all CCAMLR Members with an interest in research in the Ross Sea Region to further develop this plan on an ongoing basis.

17. Consistent with paragraph 2.24 of SC-CAMLR-IM-I, research and monitoring will focus not only on harvested resources but on the entire ecosystem and will include fishery independent research. Research programmes as described in the plan will be fundamental for evaluating the MPA and adapting its design, if necessary.

Conclusion

18. We acknowledge the long hours and extensive efforts undertaken by the Scientific Committee in Bremerhaven to develop its advice and the many comments received from Members on the proposal at CCAMLR SM-II, and previously during CCAMLR XXX, XXXI and in the intersessional periods. We look forward to working together with Members at CCAMLR XXXII to achieve consensus to establish an MPA in the Ross Sea Region.

CONSERVATION MEASURE 91-XX (2013)

Ross Sea Region Marine Protected Area

Species all

Area 88.1 and 88.2 **A and B**

Season all (commencing 1 December 2014)

Gear all

The Commission,

Recalling its endorsement of the work program of the Scientific Committee to develop a representative system of Antarctic Marine Protected Areas (MPAs) with the aim of conserving marine biodiversity in the Convention Area, and in accordance with the decision at the World Summit on Sustainable Development in 2002 to achieve a representative system of MPAs by 2012;

Acknowledging also the decision at the 2012 United Nations Conference on Sustainable Development noting the importance of conserving by 2020 areas important for biodiversity and ecosystem services, through representative and well-connected systems of protected areas;

Conscious of the important leadership role that CCAMLR plays internationally through its role in the conservation of marine biodiversity, including through the on-going development of a representative system of CCAMLR Marine Protected Areas;

Noting the agreement to progress work towards a representative system of MPAs within the Convention Area by 2012 and the identification of the Ross Sea Region as a priority area for conserving marine biodiversity;

Noting the designation of a general framework for the establishment of CCAMLR MPAs as an important contribution toward achieving a representative system of CCAMLR MPAs;

Anticipating that establishment of CCAMLR MPAs will benefit from the exchange of information between CCAMLR and the Antarctic Treaty Consultative Meeting;

Desiring to implement Articles IX.1(f) and 2(g) of the CAMLR Convention, which provide that conservation measures, formulated on the basis of the best scientific evidence available, may designate the opening and closing of areas, regions or sub-regions for purposes of scientific study or conservation, including special areas for protection and scientific study;

Recognizing also that the Ross Sea Region contains features of exceptional ecological value and scientific importance and that the Ross Sea shelf is one of the most productive area of the Southern Ocean and one of the few places in the world that still has its full community of top-level predators;

Recognizing furthermore that the Ross Sea Region is among the best studied areas of high-latitude, continental shelf ocean in the Southern Hemisphere, with unique time-series data describing the region's geological, oceanographic, climatic, and ecological history, which offer rich opportunities for the study of climate change effects in the region;

Recognizing that establishment of CCAMLR MPAs can provide important opportunities to understand the ecosystem impacts of climate change separate from those of fishing;

Recognizing also that the establishment of zones provides a mechanism to achieve protection and scientific objectives while still allowing some fishing to occur in specific areas within MPAs;

Noting the intention that fishing displaced by this MPA would be redistributed to areas outside of the MPA in the Ross Sea Region, including areas that currently have a zero catch limit;

Recognizing the importance of fishing vessels, as well as research vessels, as platforms for scientific research and data collection in the Ross Sea Region to inform fisheries management and ecosystem science;

Recognizing the importance of collaboration among CCAMLR Members in conducting research and monitoring to achieve the objectives of the MPA;

Noting that regular review of the MPA will be necessary to evaluate whether the objectives of the MPA are still relevant or being achieved;

hereby adopts the following in accordance with Articles II and IX of the Convention to establish an MPA in the Ross Sea Region for the purpose of achieving the conservation of Antarctic marine living resources, where conservation includes rational use:

1. The area defined in Annex 91-XX/A is designated as the Ross Sea Region Marine Protected Area (the MPA) pursuant to Conservation Measure 91-04. The provisions of Conservation Measure 91-04 apply to this MPA.
2. The MPA is designated to contribute to the following objectives:
 - i) to conserve ecological structure and function throughout the Ross Sea Region at all levels of biological organization, by protecting habitats that are important to native mammals, birds, fishes, and invertebrates;
 - ii) to provide a reference area in which fishing is limited, to better gauge the ecosystem effects of climate change and fishing, and to provide other opportunities for better understanding the Antarctic marine ecosystem;
 - iii) to promote research and other scientific activities (including monitoring) focused on marine living resources;

- iv) to protect a representative portion of benthic and pelagic marine environments;
 - v) to protect large-scale ecosystem processes responsible for the productivity and functional integrity of the ecosystem;
 - vi) to protect core distributions of trophically dominant pelagic prey species;
 - vii) to protect core foraging areas for land-based top predators or those that may experience direct trophic competition from fisheries;
 - viii) to protect coastal locations of particular ecological importance;
 - ix) to protect areas of importance in the life cycle of Antarctic toothfish; and
 - x) to protect known rare or vulnerable benthic habitats.
3. The MPA shall be divided into the ~~three~~**two** zones defined in Annex 91-XX/A:
- (i) the General Protection Zone, **and**
 - (ii) the Special Research Zone, ~~and~~
 - ~~(iii) the Spawning Protection Zone.~~

Restricted, Prohibited, and Managed Activities

- 4. Except as authorized under paragraphs 5 **and**, 6, ~~and~~ 7, fishing activities are prohibited within the MPA.
- 5. Members may conduct scientific research that does not undermine the objectives in paragraph 2 and is in accordance with Conservation Measure 24-01, except that Members are prohibited from conducting research for which catches may exceed the amounts specified in Annex 24-01/B unless the specific research is agreed, in advance, by the Commission, on advice from the Scientific Committee. Members are encouraged to conduct research consistent with Annex 91-XX/C.
- 6. Members may conduct directed fishing for *Dissostichus* spp. in the Special Research Zone (SRZ) in accordance with Conservation Measure 41-09 subject to the following conditions:
 - (i) **The base catch limit in the SRZ shall be 10% of the total catch limit for Statistical Subarea 88.1 and SSRUs 88.2 A and B, combined, established for that season.**
 - (ii) **The catch limit in the SRZ for the 2014/15 fishing season shall equal the base catch limit. In each following fishing season:**

- (a) **If the fishery in the SRZ was not closed during the previous fishing season pursuant to paragraph 1 of Conservation Measure 31-02, the catch limit in the SRZ shall be the sum of the base catch limit and the unharvested portion of the catch limit in the SRZ established for the previous fishing season, but shall not exceed two times the base catch limit.**
- (b) **If the fishery in the SRZ was closed during the previous fishing season and the catch limit in the SRZ for that fishing season was exceeded, the Scientific Committee shall advise the Commission on any changes to the catch limit for the SRZ or any other action required to achieve the objectives of the MPA and ensure the integrity and viability of the Ross Sea toothfish stock assessment. In determining the need for this advice the Scientific Committee shall consider the normal variation in overall catch taken, occurring within standard operational practice, in any season, as the closure date and time is based on an estimate of when the catch limit for the SRZ will be reached. Where the Scientific Committee concludes that variation above the catch limit for the SRZ exceeds normal expectations, further advice shall be provided to the Commission.**
- (iii) ***Dissostichus* spp. caught in the SRZ shall be tagged and released at a rate of at least three fish per tonne green weight.**

~~(i) the total catch of *Dissostichus* spp. in the Special Research Zone shall not exceed 1450 tonnes in each fixed five year period beginning in the 2013/14-2014/15 season;~~

~~— (ii) the total catch of *Dissostichus* spp. in the Special Research Zone shall not exceed 500 tonnes in any one season;~~

~~— (iii) the total catch of *Dissostichus* spp. taken in the Special Research Zone during any one season shall be considered as part of the annual catch limit established for SSRUs 88.1H, I and K;~~

~~— (iv) *Dissostichus* spp. shall be tagged at a rate of at least three fish per tonne green weight caught in the Special Research Zone; and~~

~~— (v) catches of *Dissostichus* spp. in excess of 1450 tonnes during any fixed five year period shall be deducted from the catch limit in the Special Research Zone for the next fixed five year period.~~

~~7. Members may conduct directed fishing for *Dissostichus* spp. within the Spawning Protection Zone in accordance with Conservation Measure 41-09, except that fishing shall only be permitted from 1 December to 31 March. The total catch shall be considered as part of the annual catch limit established for SSRUs 88.1A, B, C and G in Conservation Measure 41-09.~~

78. Fishing vessels and vessels conducting scientific research activities on Antarctic marine living resources should avoid dumping or discharging wastes or other matter within the MPA. At a minimum, the provisions of Conservation Measure 26-01 shall apply within the MPA.

89. Notwithstanding Conservation Measure 10-09, no fishing vessel may engage in transshipment² activities within the MPA, except in cases where vessels are involved in an emergency relating to safety of human life at sea or engaged in a search and rescue operation.

Management and Administrative Arrangements

910. The specific objectives and the features or areas within the Ross Sea Region associated with the objectives, as well as the management measures and administrative arrangements for achieving the objectives of the MPA are specified in the MPA Management Plan (Annex 91-XX/B).
101. The Commission, with due consideration of advice by the Scientific Committee may, at any time, amend this Conservation Measure and its Annexes.
112. Unless otherwise agreed by the Commission upon advice by the Scientific Committee, the Commission shall review this Conservation Measure at least every ten years to evaluate whether the objectives of the MPA are still relevant or being achieved, taking into account the advice of the Scientific Committee and the reports submitted pursuant to paragraph 187. **Based on the findings of each review, the Commission may amend this Conservation Measure and its Annexes.**
12. **The Commission shall take a decision to reaffirm or modify this MPA or adopt a new MPA at its meeting in 2064. This conservation measure shall remain in force until this decision enters into effect.**
133. CCAMLR Contracting Parties shall provide a copy of this Conservation Measure to all vessels licensed to fish in the CAMLR Convention Area.
- ~~14. The Commission shall take a decision to reaffirm or modify this MPA or adopt a new MPA at its meeting in 2064. This conservation measure shall remain in force until this decision enters into effect.~~

Compliance and Monitoring

145. Members participating in the CCAMLR System of Inspection are encouraged to carry out surveillance and inspection activities within the MPA to verify compliance with this Conservation Measure and other applicable Conservation Measures.
156. For the purpose of monitoring traffic within the MPA, in accordance with Conservation Measure 10-04, Flag States must notify the Secretariat prior to entry of their fishing vessels into the MPA. The Flag State may permit or direct that such notifications be provided by the vessel directly to the Secretariat. Vessels conducting scientific research activities on Antarctic marine living resources in or transiting the area are encouraged to inform the Secretariat of their plans for intended passage

² Transshipment means the transfer of harvested marine living resources and any other goods or materials to or from fishing vessels.

through the MPA, and vessel details including name, Flag State, size, radio call sign and IMO number.

Research and Monitoring Plan

167. Priority elements for scientific research and monitoring associated with this MPA are identified in Annex 91-XX/C. ~~Based on these priority elements, a Research and Monitoring Plan shall be introduced to the Commission in 2013.~~
178. Unless otherwise agreed by the Commission, Members shall submit to the Secretariat, for review by the Scientific Committee, a report on their activities conducted according to or related to the MPA Research and Monitoring Plan, including any preliminary results. These reports shall be submitted to and compiled by the Secretariat in 2019 and every 5 years thereafter. The Secretariat shall provide the reports to the Scientific Committee no later than 6 months prior to the 2024 Commission Meeting and every 10 years thereafter.

Cooperation with other States and Organizations

189. The Commission shall draw this Conservation Measure to the attention of any State that is not a Party to the Convention, whose nationals or vessels operate in the Convention Area.
- ~~1920.~~ The Commission shall communicate information about the MPA to the Antarctic Treaty Consultative Meeting, and shall encourage the Antarctic Treaty Consultative Meeting to take appropriate actions within its competence to contribute to the achievement of the objectives set forth in paragraph 2, particularly with regard to the designation and implementation of Antarctic Specially Protected Areas and Antarctic Specially Managed Areas in the Ross Sea Region; and the management of human activities, including tourism activities.
- ~~201.~~ Members are encouraged to work together to actively engage:
- (i) the International Maritime Organization with regard to ship traffic, vessel safety, and environmental protection issues, and
 - (ii) other international organizations,
- to take complementary actions within their competence to contribute to the achievement of the objectives set forth in paragraph 2.

**ROSS SEA REGION MARINE PROTECTED AREA BOUNDARIES AND MAP, INCLUDING
DEFINITIONS OF ZONES WITHIN THE MPA**

1. The General Protection Zone is comprised of three areas (Figure 1).

(i) The area bounded by a line starting where the meridian at 159°E intersects the coastline, thence due north to 65°S, thence due east to 173°45'E, thence due south to 73°30'S, thence due east to 180°, thence due south to 76°S, thence due east to 170°W, thence due north to 72°S, thence due east to 150°W, thence due south to the coastline, and thence along the coastline to the starting point.

(ii) The area bounded by a line starting at 62°30'S 160°E, thence due north to 60°S, thence due east to 168°E, thence due south to 62°30'S, and thence due west to the starting point.

(iii) The area bounded by a line starting at 69°S 179°E, thence due north to 66°45'S, thence due east to 179°W, thence due south to 69°S, and thence due west to the starting point.

~~(ii) The area bounded by a line starting at 69°45'S 179°30'E, thence due north to 67°10'S, thence due east to 176°15'W, thence due south to 69°45'S, and thence due west to the starting point.~~

~~(iii) The area bounded by a line starting at 66°S 170°W, thence due north to 63°20'S, thence due east to 163°45'W, thence due north to 60°S, thence due east to 150°W, thence due south to 63°20'S, thence due west to 160°W, thence due south to 66°S, and thence due west to the starting point.~~

2. The Special Research Zone is bounded by a line starting at 180° 76°S, thence due north to 73°30'S, thence due east to 170°W, thence due south to 76°S, and thence due west to the starting point.

~~3. The Spawning Protection Zone is bounded by a line starting at 159°E 65°S, thence due north to 60°S, thence due east to 173°45'E, then due south to 62°50'S, thence due east to 179°30'E, thence due south to 66°07'S, thence due west to 173°45'E, thence due north to 65°S, and thence due west to the starting point.~~

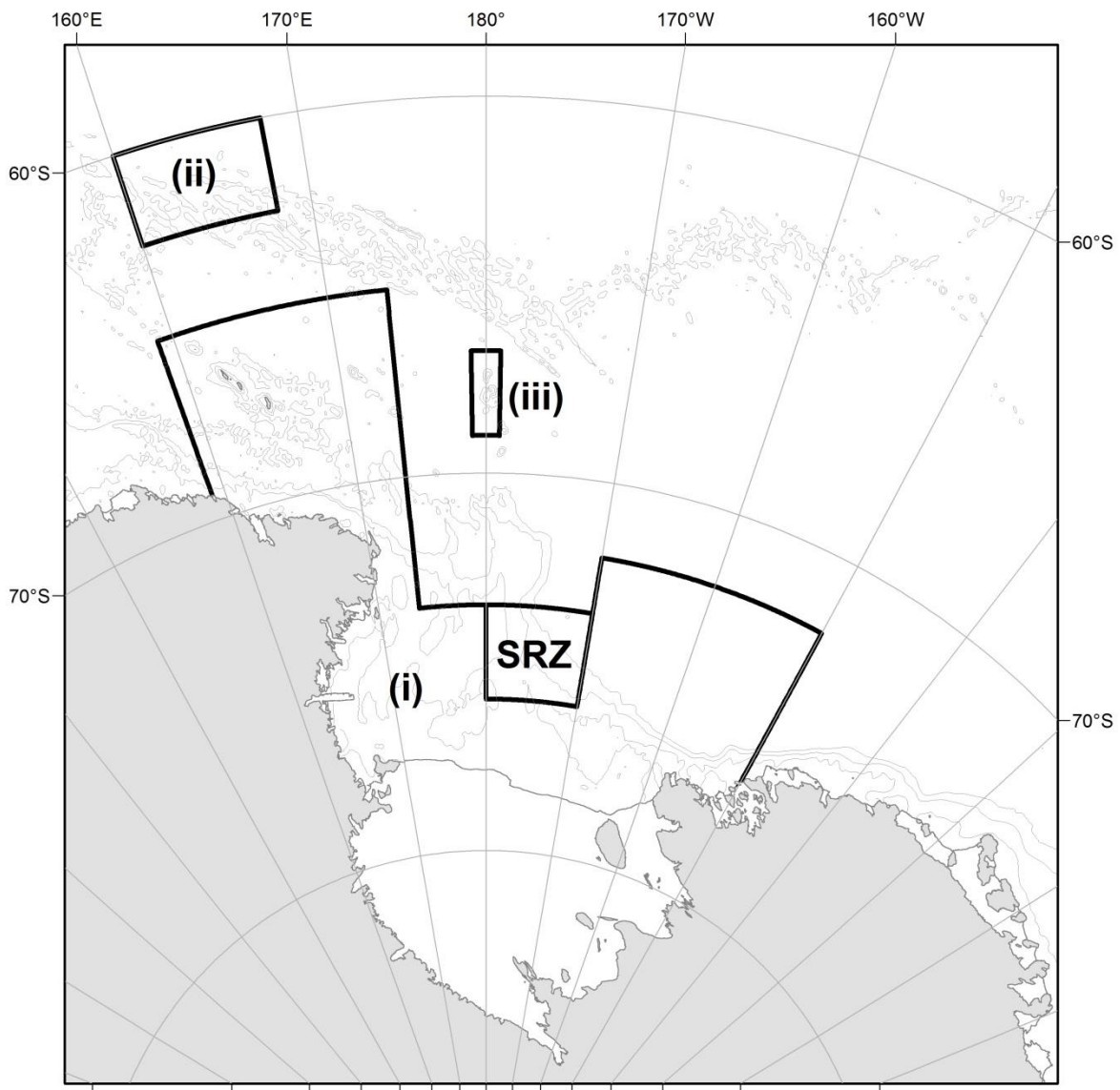


Figure 1. The Ross Sea Region Marine Protected Area, including the boundaries of the General Protection Zone, composed of areas (i), (ii), and (iii), and the Special Research Zone (SRZ). Depth contours are at 500 m, 1500 m, and 2500 m.

ROSS SEA REGION MARINE PROTECTED AREA MANAGEMENT PLAN

This management plan provides further details about the specific objectives and the features or areas within the Ross Sea Region MPA associated with the objectives in paragraph 2 of Conservation Measure 91-XX (2013), as well as the management measures and administrative arrangements for achieving them.

1. Specific objectives (with citations for additional information) are:
 - i) to conserve ecological structure and function throughout the Ross Sea Region, at all levels of biological organization, by protecting habitats that are important to native mammals, birds, fishes, and invertebrates (e.g., the habitats illustrated in SC-CAMLR-XXX/9 Figure 1);
 - ii) to provide a reference area in which fishing is limited, to better gauge the ecosystem effects of climate change and fishing, and to provide other opportunities for better understanding the Antarctic marine ecosystem (e.g., by developing contrasts similar to that illustrated in SC-CAMLR-XXX/9 Figure 2);
 - iii) to promote research and other scientific activities (including monitoring) focused on marine living resources (e.g., by providing Annex 91-XX/C as a guidance document that scientists can leverage within their domestic funding processes);
 - iv) to protect a representative portion of benthic and pelagic marine environments (see Figure 1 and Figure 2 in WG-EMM-10/30):
 - a. benthic bioregions, and
 - b. pelagic bioregions;
 - v) to protect large-scale ecosystem processes responsible for the productivity and functional integrity of the ecosystem (see WS-MPA-11/25 Figure 2a):
 - a. Ross Sea shelf front intersection with seasonal ice,
 - b. Polar front,
 - c. Balleny Islands and proximity,
 - d. Ross Sea polynya marginal ice zone, and
 - e. Eastern Ross Sea multi-year ice;
 - vi) to protect core distributions of trophically dominant pelagic prey species (see WS-MPA-11/25 Figure 2b):
 - a. Antarctic krill,
 - b. Crystal krill, and
 - c. Antarctic silverfish;
 - vii) to protect core foraging areas for land-based top predators or those that may experience direct trophic competition from fisheries (see WS-MPA-11/25 Figures 2c and 2d):
 - a. Adelie penguins,
 - b. Emperor penguins,
 - c. Weddell seals, and
 - d. Type C killer whales;

- viii) to protect coastal locations of particular ecological importance (see WS-MPA-11/25 Figure 2f):
 - a. southern Ross Sea shelf persistent winter polynya,
 - b. recurrent coastal polynyas,
 - c. Terra Nova Bay,
 - d. Victoria Coast platelet ice formation zone, and
 - e. Pennell Bank polynya;
- ix) to protect areas of importance in the life cycle of Antarctic toothfish (see WS-MPA-11/25 Figure 2e):
 - a. Subadult toothfish settlement areas on the Ross Sea shelf,
 - b. Dispersal corridors for maturing toothfish, **and**
 - c. Adult toothfish feeding areas on the Ross Sea slope;
 - ~~d. Northwestern *D. mawsoni* spawning areas, and~~
 - ~~e. Northeastern *D. mawsoni* spawning areas;~~
- x) to protect known rare or vulnerable benthic habitats (see WS-MPA-11/25 Figure 2f):
 - a. Balleny Islands and adjacent seamounts,
 - b. Admiralty seamount,
 - c. Cape Adare slope,
 - d. Southeast Ross Sea slope,
 - e. McMurdo Sound, and
 - f. Scott Seamount and adjacent underwater features.

Management and Administrative Arrangements

2. Responsibilities of the Commission include the following:
 - (i) consider advice from SC-CAMLR and SCIC relevant to reviews of the Conservation Measure establishing the MPA;
 - (ii) ensure that future Conservation Measures do not compromise the objectives of the MPA, as set forth in paragraph 2 of this Conservation Measure;
 - (iii) communicate with other organizations to promote consistency of complementary initiatives, protection measures, or activities being pursued or managed by such organizations, with this Conservation Measure, as appropriate; and
 - (iv) ~~a~~Agree to scientific research activity to be conducted in the MPA as required in paragraph 5 of this Conservation Measure.
3. Responsibilities of the Scientific Committee include the following:
 - (i) pursuant to paragraph 5 of this Conservation Measure, review and provide advice to the Commission regarding proposals for research in the Convention Area, noting whether the proposed research is consistent with Annex 91-XX/C and the objectives of the MPA as identified in paragraph 2 of the Conservation Measure; and
 - (ii) pursuant to paragraph ~~48-17~~ of this Conservation Measure, review reports of research activities that have been undertaken, and advise the Commission on issues identified in Annex 91-XX/C paragraph 5.

- (iii) to recommend research designs to optimize contributions to the toothfish tagging program by vessels fishing in the Special Research Zone and review any research plans submitted under Conservation Measure 24-01.

4. Responsibilities of the Secretariat include the following:

- (i) warehouse and manage information and data that are pertinent to the development, management, and review of the MPA (e.g., data collected during research surveys);
- (ii) support Members' monitoring and compliance of activities within the MPA; and
- (iii) provide URLs on the Secretariat website that link to the management plans, maps, and coordinates for Antarctic Specially Protected Areas and Antarctic Specially Managed Areas within or adjacent to the MPA.

5. Responsibilities of Members include the following:

- (i) when possible, participate in and cooperate to conduct research and monitoring consistent with activities outlined in the Research and Monitoring Plan; and
- (ii) submit reports to the Secretariat on their research activities pursuant to paragraph 17~~8~~ of this Conservation Measure.

**PRIORITY ELEMENTS FOR SCIENTIFIC RESEARCH AND MONITORING IN SUPPORT OF THE
ROSS SEA REGION MARINE PROTECTED AREA**

This Annex identifies priorities for scientific research³ pursuant to the objectives of the Ross Sea Region MPA and monitoring to evaluate the extent to which these objectives are being achieved. Other research that is consistent with the objectives of the MPA but not explicitly outlined here, is encouraged.

1. Research and monitoring undertaken in accordance with the Research and Monitoring Plan should seek to address the following questions:
 - Do the MPA boundaries continue to adequately encompass the priority populations, features and areas included pursuant of the MPA objectives?
 - What are the ecosystem roles of the identified habitats, processes, populations, life-history stages, or other priority features?
 - How are the priority features potentially affected by fishing, climate change, environmental variability, or other impacts?
 - Does the structure and function of the marine ecosystem differ between areas inside the MPA and areas outside the MPA, or do the populations or subpopulations of marine organisms that occur or forage inside the MPA differ from those that occur or forage outside the MPA?

2. The MPA objectives fall into three main categories: representativeness, threat mitigation, and scientific reference areas. Research associated with the MPA should seek to address these categories as follows:
 - Representativeness - Research and monitoring to assess whether the MPA is protecting an adequate proportion of all benthic and pelagic environments in the Ross Sea Region.
 - Threat mitigation - Research and monitoring to assess the extent to which threats to the achievement of Article II (3) and the objectives of this MPA are being effectively avoided or mitigated by the MPA, in locations where the risk of ecosystem impacts from harvesting activities may otherwise be high.
 - Scientific reference areas - Research and monitoring where the MPA provides opportunities to examine Antarctic marine ecosystems free from or with limited human impact, to understand, for example, the effects of fishing, environmental variability, and climate change on Antarctic marine living resources.

3. The Research and Monitoring Plan will be organized geographically, as follows:
 - Ross Sea continental shelf
 - Ross Sea continental slope

³ In accordance with Article VI of the CAMLR Convention.

- Balleny Islands and vicinity
- Northern Ross Sea region and seamounts

4. Priority research and monitoring activities are identified in Table 1. Members are encouraged, as far as possible, to collaborate and repeat the types of activities identified in Table 1.

5. The Scientific Committee will evaluate results arising from research and monitoring activities and advise the Commission on:

- the degree to which the specific objectives of the MPA are being achieved;
- the degree to which the specific objectives are still relevant in different areas of the MPA; and
- what management actions may be required to improve the achievement of the objectives for this MPA.

Table 1. Priority elements for scientific research and monitoring associated with the Ross Sea Region Marine Protected Area

Type of Research	Ross Sea continental shelf	Ross Sea continental slope	Balleny Islands and vicinity	Northern Ross Sea Region and seamounts	Priority elements
Ecosystem	✓	✓	✓	✓	Directed studies to address biological and ecological questions related to species demography and life history
	✓	✓	✓		Monitoring and research on pinnipeds and seabirds, including studies of reproductive biology and success as well as diets and foraging dynamics
	✓	✓	✓	✓	At-sea surveys or censuses to estimate the distribution and abundance of marine mammals, seabirds, fishes and invertebrates
	✓	✓	✓		Acoustic surveys to map distribution and abundance of Antarctic silverfish and krill, including dedicated research on silverfish in Terra Nova Bay
	✓	✓	✓		Radio and archival tagging, remote sensing and shore-based population censuses of marine mammals and seabirds
	✓	✓	✓		Ecosystem modelling, informed by diet and stable isotope sampling of key trophic components

Type of Research	Ross Sea continental shelf	Ross Sea continental slope	Balleny Islands and vicinity	Northern Ross Sea Region and seamounts	Priority elements
	✓	✓			Targeted sampling of Ross Sea shelf and slope communities with focus on middle trophic level organisms
	✓				Investigate oceanographic drivers of phaeocystis- vs. diatom-dominated production and consequences for higher-level trophic ecosystem function
				✓	First vessel-based surveys of demersal fish and benthic communities of Pacific-Antarctic fracture zone
				✓	Repeat surveys of Admiralty and Scott seamounts
Fisheries	✓				Continued annual survey for pre-recruit toothfish in southern Ross Sea shelf; see SC-CAMLR-XXX/7
	✓	✓		✓	Focused tag deployments and/or electronic archival or acoustic tags to examine/ validate toothfish life-cycle, abundance, movement and behavioural hypotheses
		✓		✓	Paired stratified surveys of fished vs. unfished slope and seamount habitats with contrasting local exploitation rates to monitor effects of fishing on Antarctic toothfish and demersal fishes
	✓	✓	✓	✓	Surveys and sampling to investigate life history hypotheses and biological parameters, including stock structure, of Antarctic toothfish
			✓		Targeted surveys to investigate the importance of the Balleny Islands as a potential nursery area for Antarctic silverfish and Antarctic toothfish
				✓	Winter surveys to improve knowledge of spawning and eggs/larvae/early life stages of Antarctic toothfish
Climate change / oceanography	✓	✓	✓	✓	Meteorological and oceanographic research, including satellite remote sensing, to characterize physical properties and dynamics of phytoplankton and zooplankton.
	✓	✓	✓	✓	Sea-ice remote sensing (type, concentration and extent)
	✓	✓		✓	Long-term monitoring of benthic ecosystem function
	✓	✓	✓		Development and validation of high resolution circulation model of the Ross Sea shelf and slope (e.g. ROMS), including resolving effects of sea-

Type of Research	Ross Sea continental shelf	Ross Sea continental slope	Balleny Islands and vicinity	Northern Ross Sea Region and seamounts	Priority elements
					ice (especially polynyas), ice shelf cavity, cross-shelf exchange and deep bottom-water formation in the Ross Sea. Addition of biological model
	✓	✓			Investigate deep bottom water formation (relevant to global oceanic circulation), slope water intrusion and cross-shelf nutrient exchange