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The Ross Sea Region Marine Protected Area: Current proposal and looking forward

Submitted by ASOC

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The Ross Sea Region Marine Protected Area:
Current proposal and looking forward

ASOC

Abstract

MPAs are an important tool for biodiversity conservation with benefits for fisheries management. Since MPA planning commenced, CCAMLR has identified the Ross Sea as a key region in a representative system of Southern Ocean MPAs due to its scientific and biological value. The original joint US-NZ MPA proposed in 2012 was designed to meet an array of ecological and scientific objectives while also allowing for an economically viable toothfish fishery in the Ross Sea. Since 2012, Ross Sea region MPA proponents have continued to negotiate with all CCAMLR Members, taking into account their concerns, which are reflected in the current proposal. Through this document, ASOC highlights the revisions made to the current Ross Sea region MPA proposal, emphasizing that any further concessions will seriously undermine the ability of the MPA to meet its objectives. We also comment on the opportunities for research fishing throughout the Ross Sea, including in currently closed SSRUs and potentially in the Ross Sea region MPA. We further emphasize that a long duration for the MPA is of critical importance. ASOC encourages CCAMLR Members to adopt the Ross Sea region MPA proposal in its current 2015 revision.

Introduction

Marine protected areas (MPAs) that conserve biodiversity can lead to more and larger fish, bolstering fisheries.[1] To be effective, and especially in cases of high uncertainty or risk (as in the case of the Southern Ocean), MPAs must be large enough to protect key ecological processes and the life histories of the animals that live there.[2] Further, they must include no-take areas and be in place for long periods of time.[3]

Throughout MPA planning, CCAMLR identified the Ross Sea as a key region in a representative system of Southern Ocean MPAs due to its unique scientific and ecological value.[4] As one of the most-studied ocean ecosystems in Antarctica, the Ross Sea is globally significant as a living laboratory and has been critically important for long-term research.[5] Ecologically, the Ross Sea is one of the most productive stretches of the Southern Ocean,[6] and supports large populations of mammals and birds, including more than one-third of all Adélie penguins and one-quarter of all emperor penguins.[7]

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[1] Ballantine, B, "Fifty years on: Lessons from marine reserves in New Zealand and principles for a worldwide network," *Biological Conservation* 176 (2014): 297-307; Costello, MJ, "Long live Marine Reserves: a review of experiences and benefits," *Biological Conservation* 176 (2014): 289-296.
[2] Gaines SD, C White, MH Carr & SR Palumbi, "Designing marine reserve netowrks for both conservation and fisheries management," *Proceedings of the National Academy of Sciences* 107 (2010): 18286-18293.
[3] Edgar GJ, *et al*. "Global conservation outcomes depend on marine protected areas with five key features," *Nature* 506 (2014): 216-220.
[4] See e.g., SC-CAMLR *Report of the XXVII Meeting of the Scientific Committee* (2008), Figure 12.
[5] Ainley DG, G Ballard & J Weller, "Ross Sea Bioregionalization, Part I," *CCAMLR WG EMM-10/11* (2010).
[6] Arrigo KR, DL Worthen, A Schnell & MP Lizotte, "Primary production in Southern Ocean waters," *Journal of Geophysical Research* 103 (1998): 15 587–15 600.
[7] Ainley et al. 2010.

Having been designed with fisheries management as a key consideration within the MPA's objectives, and in line with the MPA principles outlined above, the Ross Sea region MPA proposal includes large no-take areas. While MPAs are generally considered to be permanent (see below), the duration in the 2015 proposal matches the scale and timeframe of the ecological and life history processes of the wildlife that live in the Ross Sea. The MPA proposal's objectives are to conserve marine living resources, maintain ecosystem structure and function, and protect vital ecosystem processes and areas of ecological significance while promoting scientific research and allowing for a commercially viable toothfish fishery. To meet these multiple objectives, and as an attempt to meet the concerns of many CCAMLR Member States, the original combined US-NZ Ross Sea region MPA proposed in 2012 contained many concessions. For example, the main fishing grounds on and around Iselin Bank were left out of the Ross Sea region MPA proposal, despite the ecological importance of the area.[8]

Over the course of CCAMLR discussions since 2012, the proposed area for protection has been reduced by more than 40%. Ross Sea MPA proponents have continued negotiating and making concessions since 2012 to meet the needs and desires of CCAMLR Members. ASOC is disappointed that reductions to the MPA proposal included the removal of large areas proposed for protection in the northern Ross Sea. A large portion of the originally proposed no-take area (General Protection Zone) on the Ross Sea shelf and slope has now been changed to a "Special Research Zone (SRZ)," where research fishing would be allowed, but on a limited basis, and where greater tagging rates would be required. We recognize, as described below, that the inclusion of an SRZ should facilitate sustainable management for toothfish while still meeting the goals of the Ross Sea region MPA. However, the SRZ should not be expanded further. To maintain the strength of the Ross Sea region MPA, the remaining Ross Sea shelf and slope and Balleny Islands must remain as a no-take General Protection Zone.

Special Research Zone

ASOC has advocated for full protection of the Ross Sea shelf and slope due to its importance to an array of predators, including toothfish, seals, whales, and penguins.[9] However, we recognize that, in accordance with advice from the Scientific Committee, the SRZ was deemed critical in ensuring the integrity of the toothfish tagging program.[10] Given that the tagging program forms the foundation of the Ross Sea toothfish population model and stock assessment,[11] the sustainability of the fishery depends upon it. The SRZ aimed to achieve a fishery reference site that halves the past catch in this area by having less (rather than zero catch) fishing while requiring increased tagging efforts.[12] Increased tagging efforts in this region would then provide information that could directly inform more sustainable management of the Ross Sea toothfish fishery. In doing so, the SRZ meets the larger Ross Sea region MPA objective of protecting the

[8] See, e,g. Ballard G, D Jongsomjit & DG Ainley, "Ross Sea Bioregionalization, Part II: Patterns of co-occurrence of mesopredators in an intact polar ocean ecosystem," *CCAMLR WG-EMM 10/12* (2010), which suggests that Iselin Bank is one of the areas of highest species richness and conservation importance in the Ross Sea, as it is utilized by Minke whales, Ross Sea killer whales, Crabeater and Weddell seals, emperor and Adélie penguins, and multiple flying seabird species.
[9] Ibid.
[10] See e.g., SC-CAMLR *Report of the First Intersessional Meeting of the Scientific Committee* (2013), para 2.31 (ii, iv and v); CCAMLR-XXXI/16 (2012) *A proposal for the establishment of a Ross Sea region Marine Protected Area*. Delegation of New Zealand; See also CCAMLR *Report of the XXXI Meeting of the Commission* (2012), paras 7.69-7.77.
[11] E.g., Mormede S, A Dunn & SM Hanchet, "A stock assessment model of Antarctic Toothfish (*Dissostichus mawsoni*) in the Ross Sea Region incorporating multi-year mark recapture data," *CCAMLR Science* 21 (2014): 39-62.
[12] *CCAMLR-XXXI*, paras 7.68-7.75.

ecological structure and function of the ecosystem. Further, the SRZ can still provide a low-fished reference area that can be compared to the heavily fished slope areas including Iselin Bank.[13]

The 2015 version of the MPA includes an expanded SRZ, which would allow fishing in part of the southern area of Subarea 88.2A, an area that under current management measures has a zero allowable catch.[14] This area was included in the Ross Sea region MPA no-take zone because much of it contains persistent pack ice, which is heavily utilized by penguins, seals, whales and toothfish (besides also being a safety threat to fishing vessels).[15] Extending the Ross Sea SRZ into the eastern Ross Sea was a direct concession to meet some CCAMLR Member's desires for some fishing in this area while addressing the objectives of the MPA.

While ASOC does not endorse expanding the SRZ, we acknowledge the scientific justification provided in the 2015 proposal. Based on the proposed revisions, research fishing within an expanded SRZ may provide information on toothfish distribution and movements on the Ross Sea slope that could lead to improved stock assessments and understanding of ecosystem interactions.[16] However, to ensure meeting the overall ecological objectives of the Ross Sea region MPA, fishing within the SRZ should be designed to not interfere with the protection of the species and ecological processes that the MPA was designed to protect. Expanding the SRZ any further (beyond what is already in the revised 2015 Ross Sea region MPA proposal) risks reducing the no-take area on the slope and in the eastern Ross Sea, undermining the integrity of the Ross Sea region MPA as a conservation tool, both for fisheries and the broader Ross Sea ecosystem.

Opportunities for Research Fishing

Under CCAMLR's current fishery conservation measures for Ross Sea toothfish, some of the Ross Sea has a zero catch limit, or is "closed" on a year-to-year basis to exploratory toothfish fishing (Figure 1).[17] However, while SSRUs 88.2A and B have a zero catch limit, 200 tonnes were approved for removal via research fishing in the northern seamounts (North of 70°S) by a joint proposal by New Zealand, Norway, Russia and the UK for the 2014/15 and 2015/16 season.[18] Similarly the toothfish pre-recruit survey conducted by New Zealand under CM 24-01 was approved in the 2014/15 season to catch fish from SSRUs J, L and M, which also have catch limits of zero. These examples demonstrate that despite a zero TAC in SSRUs, Members can propose research fishing in any given year or over several years and, if approved by the Commission, can fish even in "closed" SSRUs in accordance to CM 24-01, a point stressed by the Scientific Committee during discussions over zero TAC SSRUs in the Ross Sea.[19] Further, while ASOC does not advocate any fishing in the no-take General Protection Zone, the Ross Sea region MPA allows for it. The draft Ross Sea region MPA CM specifically provides that "Members may conduct scientific research that does not undermine the scientific objectives in

[13] See SC-CAMLR-XXXIII/BG/23r1 (2014) *Chronology of previously submitted scientific documents, and updated maps and analyses supporting MPA planning in the Ross Sea Region*, pg 5; also Figure 2 pg 11.
[14] See CCAMLR Conservation Measure 41-10 (2014) *Limits on the exploratory fishery for* Dissostichus spp. *in Statistical Subarea 88.2 in the 2014/15 and 2015/16 season.*
[15] Ainley et al. 2010; SC-CAMLRXXXIII/BG/23r1 Figure 7 & 9
[16] See, e.g., SC-CAMLR *Report of the XXXII Meeting of the Scientific Committee* (2013), para 3.76 (iv-b)
[17] CCAMLR Conservation Measure 41-09 (2014) *Limits on the exploratory fishery for Dissostichus spp. in Statistical Subarea 88.1 in the 2014/15 season;* And CCAMLR Conservation Measure 41-10.
[18] SC-CAMLR *Report of the XXXIII meeting of the Scientific Committee* (2014), paras 3.217 – 3.229.
[19] E.g., see SC-CAMLR-IM-I, para 2.28.

paragraph 3 and is in accordance with Conservation Measure 24-01."[20] This again refutes the argument that an MPA that closes areas to fishing would impede data gathering or research,[21] a point that has also been reiterated by the Scientific Committee.[22]

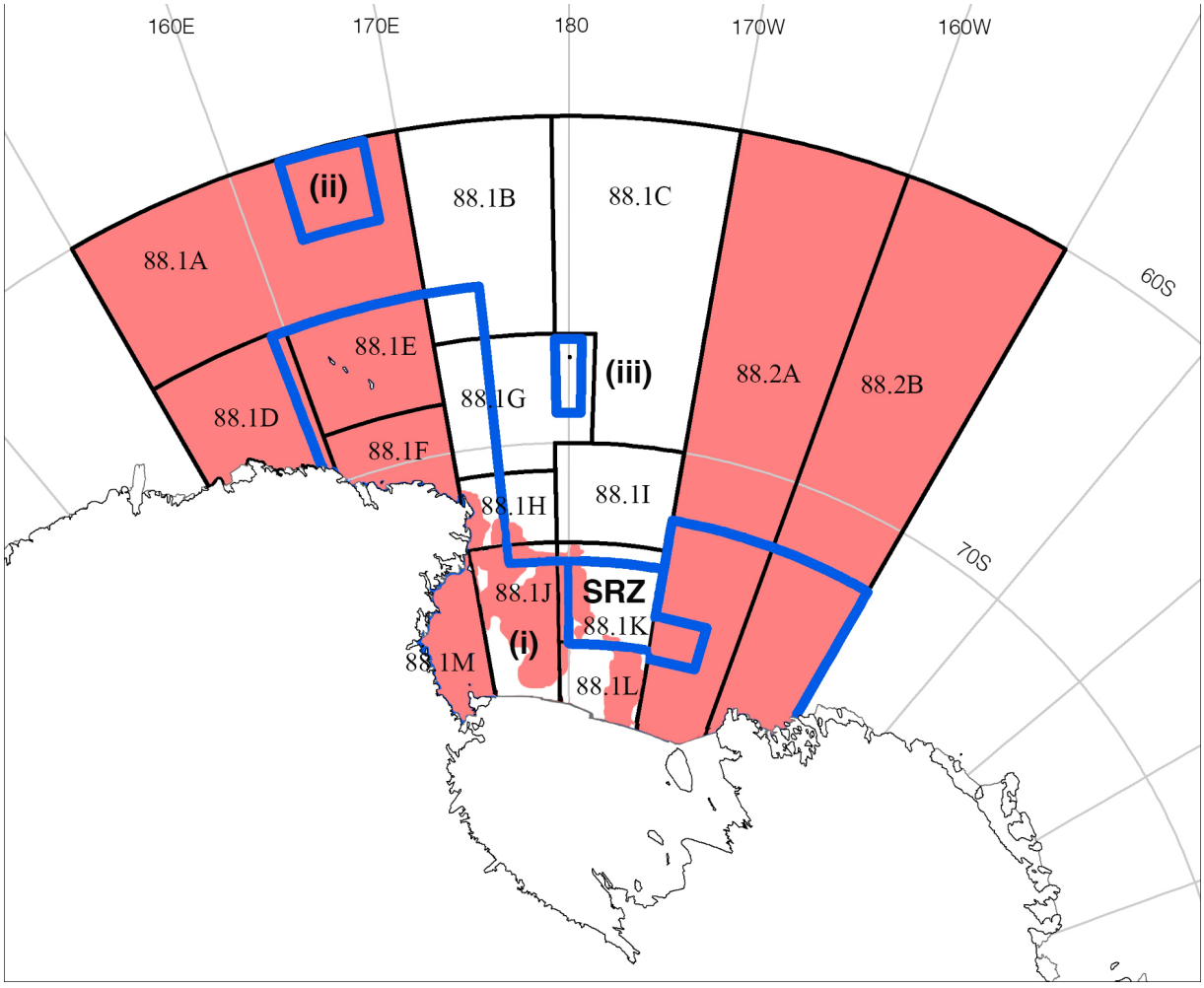

Figure 1. CCAMLR SSRUs labeled and outlined in black. Areas colored in pink represent Ross Sea SSRUs with a zero catch limit for toothfish. Areas shaded in pink on the Ross Sea shelf that are shallower than 550m are also closed to fishing (per CM 22-08). The 2015 proposed Ross Sea Region Marine Protected Area is outlined in Blue. Notwithstanding the zero TAC, research fishing was conducted in the northern area of 88.2A and B in the 2014/15 season, and also in the shelf region (for the pre-recruit survey).

Duration

The IUCN has declared that MPAs should be permanent.[23] Scientific literature suggests that duration of an MPA is directly linked to positive outcomes, such that the longer an MPA is in

[20] CCAMLR-XXXIV/29 (2015) "A proposal for the establishment of a Ross Sea Region Marine Protected Area," *Delegations of New Zealand and the USA,* paragraph 7 of the draft Conservation Measure, pg 6.
[21] SC-CAMLR-IM-I, paras 2.19-2.20.
[22] SC-CAMLR-IM-I, para 2.23.

place, the greater benefit it has on the ecosystem, including leading to more and larger fish inside the MPA, as well as spillover effects outside the MPA.[24] Currently, the Ross Sea region MPA has a proposed 50-year period of designation, with a ten-year review period.

This proposed 50-year duration is linked to the objectives of the MPA, which include having reference areas for fishing and climate change. This period of designation reflects the relatively long life spans of many of the species the Ross Sea region MPA aims to protect. This includes Antarctic toothfish which live up to 40 years,[25] minke whales which live up to 50 years,[26] killer whales which may live 50 years or more,[27] crabeater and Weddell seals which live on the order of 20-40 years,[28] Adélie penguins which live 15-20 years[29] and emperor penguins which live an average of 20 years, but potentially up to 50 years.[30] Being able to detect the changes in these species' populations will take decades, especially given the variability and unpredictability of climate change. Seeing the effects of fishing on toothfish as well as potential propagations throughout the food web will take a similarly long time. Moreover, a 50-year duration is in line with Article II.3 of the CCAMLR Convention, which states that "(*c) prevention of changes or minimisation of the risk of changes in the marine ecosystem which are not potentially reversible over two or three decades, taking into account the state of available knowledge of the direct and indirect impact of harvesting...*"

ASOC strongly supports a permanent duration of the Ross Sea region MPA proposal, and feels that a 50-year duration clause should be the minimum acceptable period based on the precautionary principle on which CCAMLR was founded. Along with this duration, CCAMLR should incorporate designated review periods allowing the opportunity for Members to review the efficacy of the MPA in light of its original values and objectives, and to consider new science that may inform the future management of the MPA. Further, in line with international standards and with the CCAMLR rules of procedure, the decision to change the MPA after 50-years time should be based on consensus.

Conclusion and Recommendations

The current proposed Ross Sea region MPA (2015) is supported by science that has been repeatedly endorsed by the Scientific Committee.[31] Over the recent years of negotiation, considerable political concessions have been made, resulting in a reduction of over 40% from

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[23] See e.g., IUCN protected area definition at https://www.iucn.org/about/work/programmes/gpap_home/pas_gpap/;
[24] Edgar et al. 2014; Molloy PP, IB McLean & IM Cote, "Effects of marine reserve age on fish populations: a global meta-analysis," *Journal of Applied Ecology* 46(2009): 743-751; Claudet J, *et al.* "Marine reserves: size and age do matter," *Ecology Letters* 11(2008): 481-489.
[25] Brooks CM, AH Andrews, JR Ashford, N Ramanna, CD Jones, C Lundstrom & GM Cailliet, "Age estimation and lead-radium dating of Antarctic toothfish (Dissostichus mawsoni) in the Ross Sea. *Polar Biology* 34: 329–338.
[26] See American Cetacean Society Minke Whale fact sheet at http://acsonline.org/fact-sheets/minke-whale/ and Minke Whale fact sheet at http://www.nmfs.noaa.gov/pr/species/mammals/cetaceans/minkewhale.htm.
[27] See NOAA Killer Whale fact sheet at http://www.nmfs.noaa.gov/pr/species/mammals/whales/killer-whale.html. See also
Olesiuk PF, GM Ellis and JK Ford, "Life history and population dynamics of northern resident killer whales (Orcinus orca) in British Columbia," DFO Canadian Science Advisory Secretariat Research Document 2005/045.
[28] See Knox GA, *Biology of the Southern Ocean*, Chapter 8: Seals. 2nd ed. Taylor and Francis (2007); Also see Riffenburgh B, *Encyclopedia of the Antarctic*, entry on Crabeater and Weddell Seals, Routledge (2006).
[29] Ainley DG. *The Adélie Penguin: Bellwether of Climate Change* (2002). New York: Columbia University Press.
[30] Mougin J-L & M van Beveren, "Structure et dynamique de la population de manchots empereur *Aptenodytes forsteri* de la colonie de l'archipel de Pointe Géologie, Terre Adélie". *Comptes rendus de l'Académie des sciences* 289D (1979): 157–60.
[31] See SC-CAMLR *Report of the XXX meeting of the Scientific Committee* (2012) paras 5.45 -5.47; SC-CCAMLR-IM-I, paras 2.31-2.33; SC-CAMLR-XXXII, paras 5.45-5.49.

the original proposal. This MPA proposal still leaves areas open for a commercially viable toothfish fishery, and allows for research fishing within the Special Research Zone.

ASOC supports the designation of a large, no-take marine protected area in the Ross Sea and believes the science supports this goal. As such, ASOC has been disappointed to see continued concessions in the Ross Sea region MPA proposal. Despite our disappointment with reduced ambitions in the Ross Sea, the current proposal still includes the core elements of the original MPA. While much of the northern area originally proposed for seasonal protection has been removed, much of the ecologically rich Ross Sea shelf and slope along with the Balleny Islands (zone i) remains proposed for protection, as well as the northwestern seamounts (zone ii), and Scott Seamount (zone iii). The MPA collectively still comprises many areas important for the life history of birds and mammals, as well as reference areas aimed at improving current understanding of the potential impacts from climate change and fishing.

As such, the Ross Sea region MPA continues to provide a true opportunity for ecosystem-based management in the Ross Sea and can meet its objectives and those of the Convention. ASOC appreciates the efforts of all CCAMLR Members in participating in ongoing negotiations for a Ross Sea region MPA. **The current design and boundaries, which accommodate fishing interests as well as meeting conservation goals, reflect a collaborative process with the end result being a CCAMLR MPA rather than one belonging to any specific Member State.** We stress that any further concessions will severely undermine the ability of the Ross Sea region MPA to meet its conservation objectives and urge CCAMLR Members to adopt the current (2015) version of the Ross Sea region MPA.