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## **Toward a System of Marine Protected Areas in the Southern Ocean**

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Submitted by ASOC



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# Toward a System of Marine Protected Areas in the Southern Ocean

Submitted by ASOC<sup>1</sup>

## Abstract

ASOC commends CCAMLR for its historic decision in 2016 to designate a large-scale marine protected area (MPA) in the Ross Sea region, which will come into force on December 1<sup>st</sup> this year. To continue momentum, CCAMLR Members must realize the extent of the commitment they made in 2009, and again in 2011 (CM 91-04) toward establishing a representative system of MPAs in the Convention Area. To realize this commitment, ASOC recommends that CCAMLR designate an MPA in East Antarctica this year, and in the Weddell Sea and the Antarctic Peninsula in 2018. Here ASOC provides an overview of these proposals and recommendations to ensure they meet their respective conservation objectives.

## East Antarctic MPA Proposal

A proposal for an East Antarctic Representative System of MPAs was first introduced in 2011, comprising of seven individual MPAs.

The proposed MPA covered a representative part of the Eastern Antarctica (Domain 7), one of the nine regions or "planning domains" into which the Convention Area was divided by CCAMLR for the purposes of developing MPAs (SC-CAMLR-XXX, Annex 6). Domain 7 is one of the largest domains in terms of its longitudinal extent.

The 2011 proposal aimed to meet several conservation, scientific, and climate change-related management objectives, in accordance with the provisions of Conservation Measure 91-04. Scientific knowledge about the marine ecosystem varies across this region. Accordingly, the EARSMPA proposal was designed to incorporate ecological uncertainties resulting from a variance in the availability of scientific data. Spatial models were developed using biogeography as a proxy for species richness (i.e., habitat diversity) with geomorphology and other physical factors assumed to also mean ecological diversity.

The original proposal incorporated the most important pelagic, benthic, and nursery areas, as well as reference areas to study the impacts of climate change (i.e. areas open or closed to fishing in which to attribute the causes of ecological change with and without interference from fishing activities). It also included replicate habitats, to ensure protection of important ecological processes.

The present proposal, East Antarctic MPA (EAMPA) includes three of the original seven areas: MacRobertson, Drygalski and D'Urville-Mertz. East Antarctica supports many colonies of Adélie and emperor penguins. About 640,000 pairs of Adélie penguins and an estimated 55,000 pairs of emperor penguins<sup>2</sup> forage over great distances. Large populations of minke, humpback, blue, and fin whales inhabit the waters of the East Antarctic,<sup>3</sup> as well as various species of seals, including crabeater, Weddell, Ross, and leopard seals.<sup>4</sup> Crabeaters are particularly prolific, with 1 million estimated to breed off East Antarctica.<sup>5</sup> The region also harbours up to 42

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<sup>1</sup>Lead authors Ryan Dolan, Nikki Bransome and Rodolfo Werner, with contributions from Claire Christian, Lyn Goldsworthy, Chris Johnson, Andrea Kavanagh, Winnie Lau, Ricardo Roura, Mike Walker and Barry Weeber.

<sup>2</sup> J.P. Croxall et al., "The Distribution and Abundance of Antarctic and Sub-antarctic Penguin: A Synthesis of Current Knowledge," (Cambridge: Scientific Committee on Antarctic Research, 1983), [http://www.birds.scar.org/activities/meetings/BIOMASS\\_Scientific\\_Survey\\_04\\_Wilson\\_Penguins.pdf](http://www.birds.scar.org/activities/meetings/BIOMASS_Scientific_Survey_04_Wilson_Penguins.pdf).

<sup>3</sup> K. Matsuoka et al., "Distributions and standardized abundance estimates for humpback, fin and blue whales in the Antarctic Areas III E, IV, V and VI W (35°E 145°W), south of 60°S," paper SC/D06/J7 presented to the IWC JARPA Review Meeting.

<sup>4</sup> Colin J. Southwell et al., "Taking account of dependent species in management of the Southern Ocean krill fishery: Estimating crabeater seal abundance off east Antarctica," *Journal of Applied Ecology* 45 (2008): 622DOI: 10.1111/j.1365-2664.2007.01399.x.

<sup>5</sup> Ibid.

percent of the world's little-known Ross seals, which have been designated a specially protected species under the Protocol on Environmental Protection to the Antarctic Treaty.<sup>6</sup>

Strong provisions for protection should be included to protect the coastal and ocean food web broadly, including in productivity hotspots, foraging areas for Adélie and emperor penguins, summer foraging ranges for flying seabirds and marine mammals, and representative benthic and pelagic regions. Climate change and fishery reference areas should also include no-take zones.

**ASOC welcomes the changes that have been made to the proposal including:**

- Additional protection of continental inner-shelf depressions and embayments landward of the outer 550m bathymetric contour, including areas that are deeper than 550m – further to the prohibition of fishing under Conservation Measure 22-08.
- A krill no-take zone – with prohibition of fishing for krill in the D'Urville Sea-Mertz area.

**ASOC questions whether clause 7, section 1 entitled 'Activities framework' is consistent with the core objectives of CCAMLR and seeks clarification and clearly worded text.**

**ASOC opposes a time-limited duration for any MPA.**

**ASOC supports the designation of an East Antarctic MPA in 2017 and urges CCAMLR to incorporate the following elements into the measure:**

- Inclusion of a timeframe for developing a detailed research and monitoring plan in the CM. This timeframe should not exceed two years. The plan should include information on how ongoing toothfish fishing in research blocks will be managed, ensuring that both existing fisheries management measures are respected and that the objectives of the MPA are not compromised.
- Furthermore, no krill fishing should occur within the MPA without a management plan that has been agreed by consensus.
- Implementation of additional precautionary krill fishery buffer zones to protect penguin colonies during summer foraging.
- Information on how and where additional no-take zones will be incorporated.

Finally, to fully achieve a system of protection in the East Antarctic that is representative of Domain 7, the designation of the Gunnerus, Enderby, Prydz and Wilkes areas, which were part of the original EARSMPA proposal, should continue to be a priority issue for CCAMLR. CCAMLR should undertake additional work and discussions about these designations starting at the next CCAMLR meeting.

## **Preliminary Proposal for a Domain 1 MPA**

### *Overview*

During 2017, Argentina and Chile made great advances toward developing a proposal to establish an MPA in the planning area known as Domain 1, which covers the South Atlantic region between the Weddell Sea to the east, the Bellingshausen Sea to the west, and the North Scotia Arc to the north, as well as the existing South Orkney Islands Southern Shelf MPA. Argentina and Chile initiated the process of developing an MPA proposal for Domain 1 in 2012. Over the last five years, both CCAMLR Members have convened several international meetings focused on Domain 1 to facilitate the collation, analysis, discussion and integration of data by interested CCAMLR Members. The process towards the preparation of the proposal for an MPA in Domain 1 has been well described in EMM-17/23 submitted to the working group meeting in July 2017. The proponents are to be commended for the degree of transparency and collaboration displayed.

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<sup>6</sup> *Ommatophoca rossii*," IUCN Red List of Threatened Species, accessed Sept. 10, 2014, <http://www.iucnredlist.org/details/15269/0>.

The Western Antarctic Peninsula–South Scotia Arc region is one of the most productive areas of the Southern Ocean, but has experienced significant warming. This warming in the region has resulted in changes in the dynamics of sea ice, with substantial declines in the duration and extension of its cover. This may be having an effect on the recruitment and distribution of Antarctic krill, the base of the Southern Ocean ecosystem. Research suggests southern areas in this region are becoming more important for Antarctic krill as temperatures and sea ice conditions change.<sup>7</sup> There is uncertainty about the effects of the rapid changes that this dynamic ecosystem is experiencing. Thus, in the spatial planning for this area, it is important to consider not only the current habitat for krill but also potential future habitat. The cumulative impacts of climate change in this region are likely to be profound. Declines in Adélie and chinstrap penguins due to climate change have already been observed.<sup>8</sup> By maintaining all trophic levels of the ecosystem and increasing species and genetic diversity, MPAs can enhance resilience to environmental change, including the impacts of climate change.<sup>9</sup>

An effective MPA in Domain 1 must be large, include no-take areas, and safeguard krill habitat as well as foraging ranges for predator species such as penguins, seals and whales. ASOC notes that many important areas for conservation are included in the proposal. In addition to the impacts of climate change, increasingly concentrated commercial fishing for Antarctic krill has been shown to reduce their local availability for land-based predators.<sup>10</sup> In the last ten years, krill fishing has moved south and concentrated in the Western Antarctic Peninsula, especially in the Bransfield and Gerlache Straits.

**The preliminary proposal presented by Argentina and Chile includes:**

- A **General Protection Zone (GPZ)** where only research fishing will be allowed. Although it is clear that this zone will be a no-take area, processes to establish catch limits proposed for research fishing should be clarified.
- A **Special Fisheries Management Zone (SFMZ)** where commercial krill fishing will be allowed in accordance to the conservation measures (CMs) agreed by the Commission. In order to achieve the conservation objectives of the MPA it needs to be clarified how management will differ from existing CMs.

The establishment of the GPZs (including climate change reference areas) and the development of risk assessment approaches and/or feedback management in the SFMZs provide the opportunity to harmonize the MPA with the management of the Antarctic commercial krill fishery in Domain 1.<sup>11</sup>

Decision-making could be adapted specifically to these zones, such as simultaneously enhancing CEMP to ensure that monitoring is conducted in a manner appropriate to the scale and management systems developed within these zones (see also SC-CAMLR-XXXVI/BG/31, *Progressing towards responsible, science-based and highly precautionary krill fisheries management*).

To mitigate the effects of anticipated climate change, and the impact of fishing, in the medium term CCAMLR should provide spatial protection, while developing appropriate krill management for areas outside the MPA. These could also be part of the research and monitoring plan for the area.

**ASOC recommends that an MPA for this area must:**

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<sup>7</sup>Atkinson et al. 2004. Long-term decline in krill stock and increase in salps within the Southern Ocean. *Nature*. 432: 100-103.; Atkinson et al. 2009. A re-appraisal of total biomass and annual production of Antarctic krill. *Deep Sea Research I*. 56: 727-740.

<sup>8</sup> Heather J Lynch et al., "Spatially Integrated Assessment Reveals Widespread Changes in Penguin Populations on the Antarctic Peninsula.," *Ecology* 93, no. 6 (2012): 1367–77, <http://www.ncbi.nlm.nih.gov/pubmed/22834377>.

<sup>9</sup> Olds AD, Pitt KA, Maxwell PS, Babcock RC, Rissik D, Connolly RM. Marine reserves help coastal ecosystems cope with extreme weather. *Glob Chang Biol* 2014; **20**: 3050–3058.

<sup>10</sup> WG-EMM-16 Report, paragraph 2.144...

<sup>11</sup>Krill fishing operations are currently managed in this area under CM 51-01, 51-04, 51-06 and 51-07.

- Include no-fishing buffer zones covering coastal foraging ranges of penguins and other krill predators, predominantly in the Bransfield and Gerlache Straits
- Include a permanent, contiguous no-fishing zone protecting the entire area near the Bellingshausen Sea and along the Western Antarctic Peninsula known to be sensitive spawning and nursery habitat for krill<sup>12</sup>
- Protect sensitive spawning and nursery habitat for other ecologically important fish species (i.e. icefish, silverfish, and toothfish), including those whose populations are still in recovery
- Include climate change reference areas and refuges, areas that can increase ecosystem resilience and climate change can be studied free from fishing activity.

### **A Proposal for a Weddell Sea MPA (WSMPA)**

A proposal for an MPA in the Weddell Sea by the European Union, developed under the leadership of Germany, was introduced to the SC-CAMLR in October 2016 (CCAMLR-XXXV-18). ASOC is pleased that the proposed 1.8 million square kilometers includes areas of conservation significance.

The proposal is comprised of a General Protection Zone (GPZ), where no commercial fishing would be allowed; Special Protection Zones (SPZs), where no fishing or the use of gear that interacts with the seafloor would be permitted; and Fisheries Research Zones (FRZs) associated with projected toothfish habitat.

The SPZs are currently constrained to a minimum area based on current knowledge of known nesting sites and vulnerable marine ecosystems (VMEs) and should be expanded to be more precautionary. The proposed operation of the FRZ is confusing and would benefit from being clarified. Furthermore, the FRZ covers 90 percent of toothfish habitat in area 48.6, this would prevent the MPA from achieving its conservation objectives.

### **Recommendations for the WSMPA**

#### *General Protection Zone (GPZ)*

- ASOC supports the General Protection Zone (GPZ) as proposed, and would oppose any diminution to the high level of protection it affords. Large, no-take areas have been proven to lead to better conservation outcomes in marine protected areas.<sup>13</sup>
- We support the inclusion of the eastern region encompassing Astrid Ridge, Maud Rise and nearby seamounts in the WSMPA as these were shown to be connected to the rest of the Weddell Sea region<sup>14</sup>.

#### *Special Protection Zone (SPZ)*

- The SPZ area could be enlarged to be more precautionary by using bioregionalization and other assessments to designate protection of other likely (but unverified) VME areas, nesting grounds or other vulnerable areas, as well as additional unique and rare areas (like diverse sponge habitats, canyons, and seamounts) as these become known.

#### *Fisheries Research Zone (FRZ)*

- The boundaries and objectives for the proposed FRZ in CCAMLR Subarea 48.6 are ambiguous and need clarification.
- As the FRZ currently covers 90 percent of the depth range of toothfish in Subarea 48.6, this will prevent achieving agreed conservation targets.

<sup>12</sup> See Figure 2.5 in Siegel, Volker, ed. 2016. *Biology and Ecology of Antarctic Krill*. Advances in Polar Ecology. Cham: Springer International Publishing.

<sup>13</sup>e.g., Edgar et al. 2014. Global conservation outcomes depend on marine protected areas with five key features. *Nature*. 506 (7487): 216-20.

<sup>14</sup> See report of WG-EMM 2013, SC-CAMLR-XXXII/03, 3.4-3.6).

- FRZ boundaries should be adjusted following the development of a multivariate toothfish habitat model, consideration of a toothfish stock/population hypothesis, and the identification of fisheries research objectives.
- FRZ boundaries should be adjusted to minimize impact on conservation features (e.g., Maud Rise and Astrid Ridge).

## **Conclusion**

ASOC advocates for the use of no-take areas in marine protection, as they have been demonstrated to be an essential component of successful MPAs, and underpin the efficacy of climate and fishery reference areas. CCAMLR MPAs should be designated to deliver clearly defined conservation benefits in regions deemed especially vulnerable, those important to land-based predators or other areas critical for the protection of biodiversity.

With the designation of the Ross Sea region MPA in 2016, CCAMLR has reaffirmed its commitment to establishing a network of large-scale marine protections in the Southern Ocean. ASOC strongly supports this process, and urges CCAMLR Members to establish an MPA in East Antarctica this year, and the Weddell Sea and the Antarctic Peninsula next year that uphold the provisions outlined in Article II of the Convention.