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The World's Largest Protected Area in the Ross Sea, Antarctica

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Abstract

In 2016, CCAMLR twenty-five members, many of which with fishing interests in the Antarctic, agreed to create the world's largest protected area in the Ross Sea. This MPA is also an example of how states can achieve conservation goals in an international space by consensus. Currently, it is crucial that CCAMLR members continue the necessary research, monitoring and enforcement of the MPA in order to make sure the MPA fulfills its conservation objectives. Moreover, CCAMLR members should actively participate in the development of a management plan and put in place the necessary resources to implement the MPA. CCAMLR has been praised as a leader in the international management of oceans resources and thus, it must continue with its commitment to achieve a significant system of MPAs in the Southern Ocean.

Key words

Ross Sea, CCAMLR, Souther Ocean, Conservation, Marine Protected Areas

Introduction

In October 2016, the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR), comprised of 24 countries and the European Union, agreed to designate the world's largest marine protected area (MPA) in the Ross Sea. After years of negotiations, this occasion marked the first time that world leaders have agreed — and by consensus — to set aside a large area of the high seas for protection from commercial fishing.

The Ross Sea, the most productive stretch of the Southern Ocean, teems with biodiversity and an abundance of life (Arrigo et al. 2015). It is home to more than one-third of the world's Adélie penguin population, one-fourth of the world's Emperor penguins, as well as large populations of Weddell seals, Minke whales, Antarctic petrels, and three types of killer whales, including one unique to the Ross Sea (Ainley et al. 2010). This living laboratory offers scientists a prime opportunity to observe the effects of climate change on Southern Ocean ecosystems, as well as to better understand the impacts of commercial fishing on marine ecosystems.

The Ross Sea also supports the world's largest commercial fishery for Antarctic toothfish (Dissostichus mawsoni), with an annual catch limit for the 2016/2017 season of 2,870 tonnes (CCAMLR 2016a). The presence of a commercial fishery in the region presented a significant challenge to the co-proponents of the Ross Sea MPA proposal, the United States and New Zealand, to design an MPA that achieved desired conservation benefits, while accommodating economic interests of the up to a dozen CCAMLR member countries who fish there.

The tension between fishing and preservation in Antarctic waters, as revealed during Ross Sea MPA negotiations, is illustrative of the increasing tension within CCAMLR over its very purpose and mandate. Article II of the Convention on the Conservation of Antarctic Marine Living Resources (CAMLR Convention) states the objective of the Convention as "the conservation of Antarctic marine living resources", where conservation includes rational use (CCAMLR 1980). Rational use allows for commercial harvesting but mandates a strict, precautionary and ecosystem-based approach. Some fishing countries, particularly during MPA negotiations, have increasingly interpreted rational use as a right to fish rather than a responsibility to conserve (Jacquet et al. 2015). Despite compelling scientific evidence justifying the closure of the entire Ross Sea to industrial fishing (CCAMLR 2004, ASOC 2010), the zoning approach that evolved to accommodate differing interests ultimately led to a compromise to meet the needs of a diverse, but majority fishing, Commission.

Management of the Ross Sea region marine protected area

Coming into force on December 1, 2017, the Ross Sea region MPA encompasses 1.55 million km2. However, the MPA technically extends from the coastline, including the waters under the Ross Ice Shelf, adding an additional 0.51 million km2, for a total area protected of 2.06 million square kilometers (CCAMLR 2016b). The MPA will be in place until at least December 2052, for a 35-year duration. At that point, CCAMLR must agree via consensus to extend the MPA or it will expire.

The Ross Sea region MPA is a critical starting point for establishing a system of protected areas in the Southern Ocean under Conservation Measure 91-04 (CCAMLR 2011), which provides a framework for large-scale marine protections within the CCAMLR management area. The Ross Sea was the first MPA to be designated under this conservation measure, and sets the stage for future MPA designations in East Antarctica, the Weddell Sea, and the waters west of the Antarctic Peninsula.

The Ross Sea Region MPA consists of three distinct management zones that offer different levels of protection.

Figure 1: The Ross Sea region marine protected area, including the boundaries of the General Protection Zone, composed of areas (i), (ii), and (iii), the Special Research Zone (SRZ), and the Krill Research Zone (KRZ). The Ross Sea Region MPA was designated in 2016 by CCAMLR Conservation Measure 91-05. Image from CCAMLR Conservation Measure 91-05.

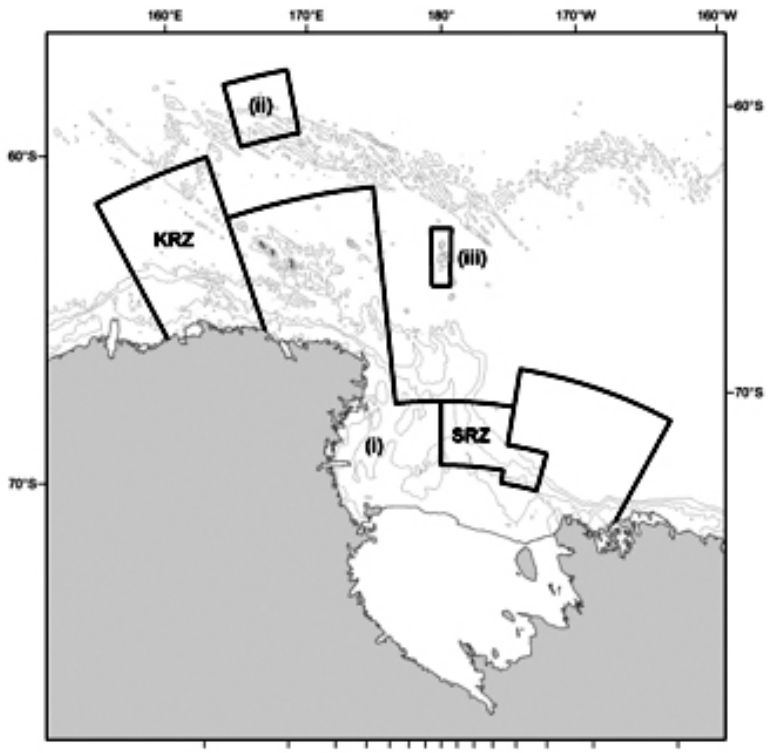

Figure 1. *The Ross Sea region marine protected area, including the boundaries of the General Protection Zone, composed of areas (i), (ii), and (iii), the Special Research Zone (SRZ), and the Krill Research Zone (KRZ). The Ross Sea Region MPA was designated in 2016 by CCAMLR Conservation Measure 91-05. Image from CCAMLR Conservation Measure 91-05.*

The general protection zone (encompassing areas i, ii, and iii; Figure 1) covers an area of 1.12 million km2 that is designated as fully protected and prohibits commercial fishing. Area (i) protects sensitive areas in the Ross Sea, including key biodiversity hotspots such as the Balleny Islands as well as large portions of the Ross Sea continental shelf and slope, which are important for biodiversity, a large number of birds and mammals, and for toothfish early life history. Area (ii) protects the northern seamounts and area (iii) protects the Scott Seamounts, both of which were included in the MPA for their unique habitat types.

The krill research zone (KRZ) was a late-stage addition to the joint US - New Zealand proposal in 2015 considered in part due to commercial krill interests expressed by the Chinese. This area had been identified in the original United States 2012 Ross Sea region MPA proposal as having potential for krill research that would support the overall objectives of the MPA (United States Department of State 2012). The area covers over 322,000 km2 to the east of the general protection zone, and prohibits toothfish fishing, but allows for exploratory commercial research fishing for Antarctic krill. The special research zone (SRZ) covers approximately 110,000 km2 over the continental shelf and slope and allow for targeted commercial research fishing for toothfish (Dissostichus spp.) and Antarctic krill (Euphausia superba). This zone developed during CCAMLR negotiations, was a compromise between countries that wanted this area closed due to its ecological importance and those countries who saw this area as instrumental for toothfish tag-recapture studies, which form the basis of the toothfish stock assessment. The SRZ is thus designed to encourage more robust toothfish management by requiring a greater tagging rate, but has a reduced overall fishing rate. Having a reduced fishing rate in the SRZ enables the area to serve as a "fishery reference zone" where ecosystem impacts of fishing can be compared between this lightly fished area to the heavily fished area just north of the SRZ. The SRZ also allows for commercial krill research fishing in limited amounts. The krill provision was added to the SRZ late in the MPA negotiations and was linked to discussions with the Chinese on the KRZ. The scientific value of krill fishing in this area is highly questionable, though, and may potentially compromise a critical foraging area for seabirds and whales.

Looking Ahead: Robust research, monitoring, management and enforcement

The MPA is designed to foster international research among all CCAMLR members in the region. It requires members to report findings of their research activities within the MPA every five years. Based on ongoing research and monitoring, the MPA will be reviewed by CCAMLR every ten years to assess the efficacy of the conservation measure, as well as to potentially adjust boundaries or management measures should the MPA prove to fall short of its intended objectives. Any changes to the MPA during the initial 35-year duration must be approved via consensus. After 35-years the MPA is set to terminate unless all members choose to extend its duration. A potential extension, which would be important to ensure long-term protection of the Ross Sea ecosystem, depends on strong research, monitoring and enforcement.

CCAMLR members are currently developing a research and monitoring plan, required under

CCAMLR Conservation Measure 91-04, as a management tool to measure whether the MPA is meeting its objectives and to measure changes in ecosystem functioning. CCAMLR will also need to develop a management plan, which will provide for management and administrative arrangements for achieving MPA objectives. Finally, mechanisms for enforcement in this large, remote area must also be considered by CCAMLR. Putting resources towards research, monitoring, management and enforcement will be the responsibility of all individual CCAMLR member countries.

Conclusion

The Ross Sea Region MPA is the first of its kind, and will serve as a model for future CCAMLR MPAs, as well as other high seas MPAs. What CCAMLR accomplished was remarkable. Twenty-five member governments, many of which represent countries that fish in the Antarctic, agreed to set aside the largest protected area in the world, safeguarding some of the most pristine marine ecosystems in existence. It is crucial, now that the MPA has been adopted, that CCAMLR members commit to pursuing the research, monitoring and enforcement needed. All CCAMLR countries must actively participate in the development of these management plans, and to put forth the resources required to make the MPA effective.

This MPA is an example of how we can achieve conservation objectives in a complex international space, but also serves as a starting point to achieve something more ambitious. As the Commission pursues a broader network of MPAs, they can set a new precedent to ensure that Southern Ocean MPAs not only include large, fully-protected areas, but also strive for a long duration with no hard stop. CCAMLR has been lauded as a leader in international ocean management, and must carry forward its commitment to achieve a meaningful system of MPAs in the Southern Ocean. The Ross Sea MPA represents a first step in the right direction.

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