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Protecting the Antarctic Marine Ecosystem: A Role for the ATCM

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Protecting the Antarctic Marine Ecosystem: A Role for the ATCM¹

Summary

This Information Paper calls on the ATCM to become more involved in issues related to the protection of the Antarctic marine ecosystem. Although CCAMLR is the primary body responsible for developing measures for the conservation of Antarctic marine living resources, the ATCM has ultimate responsibility for the protection of the Antarctic environment as a whole. The ATCM should support CCAMLR's efforts to implement an ecosystem approach to the management of Antarctic fisheries, and should consider complementary ways to protect the Antarctic marine ecosystem, especially in the face of climate change. The development of a comprehensive network of marine protected areas, and the management of the expanding krill fishery merit special attention.

1. ATCM's responsibility for protecting the Antarctic marine ecosystem

Marine and terrestrial ecosystems are inter-connected, especially in Antarctica. Antarctic seals, penguins and flying seabirds spend a large portion of their lives on land where they breed, but they forage at sea. Therefore, all existing wildlife in Antarctica depends on the ocean for food.

Although the management of Antarctic fisheries is directly under the competence of CCAMLR, the ATCM has an interest in and shared legal responsibility for protecting the marine environment. The negotiation and signing of CCAMLR responded to a mandate of the Antarctic Treaty to its Contracting Parties to take measures "in respect of the preservation and conservation of living resources in Antarctica"². As agreed by the Parties, CCAMLR is structurally related to the Antarctic Treaty. Although CCAMLR has its own mandate, CCAMLR bodies are required to coordinate their actions with the ATS. CCAMLR specifically requires Contracting Parties that are not parties to the Antarctic Treaty to "acknowledge the special obligations and responsibilities of the Antarctic Treaty Consultative Parties for the protection and preservation of the environment of the Antarctic Treaty Area", which includes not only terrestrial but also marine ecosystems.

There is a clear overlap between CCAMLR and the ATCPs concerning the implementation of the Environment Protocol. The Protocol does not exclude the protection of marine living resources from its area of competence - the Antarctic ecosystem south of 60° south. Although CCAMLR has pre-eminence in the conservation and management of marine living resources in Antarctica, parties to the Environment Protocol have a clear responsibility to look after the entire Antarctic environment, which encompasses the marine environment and its living resources.³

Both CCAMLR and the Environment Protocol have explicitly adopted an ecosystem approach to the protection of the Antarctic environment.⁴ This implies taking into account all aspects of the ecosystems and all aspects of a species' life cycle into the development of appropriate decisions. It also requires coordinating the policies of the different institutions that have jurisdiction over an area so as to implement strategies for the integrated management of land, water and living resources that promote conservation and sustainable use. Therefore, ATS institutions have a responsibility in regards to offering integrated policy solutions to ensure the everlasting protection of the Antarctic ecosystem.

The special position of CCAMLR as an integral part of the ATS has been recognised by the ATCM, which in 2006 adopted a Resolution "CCAMLR in the Antarctic Treaty System", calling on Parties to "regularly at the Antarctic Treaty Consultative Meetings reflect upon the contribution made by the Commission for the Conservation of Antarctic Marine Living Resources to the Antarctic Treaty system, including in respect of the conservation and protection of the Antarctic environment".

¹ Lead authors: Virginia Gascon, Gerry Leape and Rodolfo Werner

² Art. IX.1 (f) of the Antarctic Treaty as quoted by the Preamble of CCAMLR.

³ A. Fabra and V. Gascón, The Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR) and the Ecosystem Approach. *The International Journal of Marine and Coastal Law* 23 (2008) 567-598

⁴ See art. 2 of the Environment Protocol; CCAMLR art. II (3) (b)

Recollection by the ATCPs of their obligations with regard to the entirety of the Antarctic environment opens up opportunities for the further implementation of the ecosystem approach, particularly in view of the increasing influence of fishing interests on CCAMLR, which has not fully responded to some of the expectations held when the Convention was negotiated.⁵

Particularly pertinent to the special position of CCAMLR within the ATS are the development of a representative network of Marine Protected Areas (MPAs), the commercial exploitation of Antarctic krill, and the need to develop integrated policy approaches across the ATS to address the challenge of climate change. ASOC has submitted to this ATCM papers on MPAs and on climate change with more detailed considerations of those issues.⁶ Some specific considerations are offered below on the krill fishery and the role of the ATCM regarding management of this fishery.

2. The ATCM and krill

2.1 The krill fishery: issues and challenges

The krill fishery targets a key forage species in Antarctica and therefore affects the whole ecosystem that ATCPs have pledged to protect, especially through the Environment Protocol. Antarctic krill (*Euphausia superba*), is central to the Antarctic marine food web as most organisms are either direct predators of krill or are just one trophic level removed from it. For many marine mammals and sea birds, krill is the main food source. In addition, the krill fishery occurs in complete overlap with the foraging ranges of krill predators that are protected under Annex II of the Protocol. Therefore, a review and discussion of the issues and challenges pertaining to this fishery are relevant to this agenda item.⁷

Although CCAMLR has established a combined krill catch limit for the areas where krill are caught,⁸ this does not sufficiently take into account the relationships between krill, predators, and the fishery.⁹ CCAMLR recognised this problem and has engaged in a process to subdivide krill catch limits among small-scale management units (SSMUs) to prevent an excessive concentration of catches, especially in coastal areas. CCAMLR has delineated SSMUs in Area 48, but it has not yet been able to agree on catch limits for each of these SSMUs so as to minimize competition between the fishery and krill-dependent predators. In the meantime, an interim precautionary enforceable catch limit is in place for Subareas 48.1- 48.4. However, several members of the Scientific Committee of CCAMLR have expressed concern that this limit may not be as precautionary as previously assumed, especially if all the catch was concentrated in one area.¹⁰

The development of adequate management procedures for krill is also hampered by the insufficient level of scientific observer data from krill vessels. Although CCAMLR's working groups have repeatedly recommended full scientific observer coverage on board all krill fishing vessels for the last 5 years, CCAMLR has not yet been able to achieve consensus for approval of a mandatory conservation measure on krill observers in Subareas 48.1 to 48.4, where the krill fishery is concentrated. This represents a major impediment for CCAMLR to make progress on krill fisheries management.

There are important scientific uncertainties that affect krill fisheries management. In relation to krill predators, most research has been conducted on land-based predators (fur seals and penguins). In spite of

⁵ See New Zealand, *CCAMLR in the Antarctic Treaty System*, Working Paper 14, ATCM XXIX, 2006.

⁶ See ASOC IPs on "Marine Protected Areas in the Antarctic" and "Policy Implications Arising from SCAR's Report: Antarctic Climate Change and the Environment" (Climate change) for specific recommendations on these issues.

⁷ At the last Committee on Environmental Protection (CEP) meeting in Kiev, concern was expressed about the potential increase in the exploitation of krill, and its possible effects on the rest of the food web, especially on species of interest to the CEP under Annex II. CEP XI Report XXXI ATCM; para 334 – 335.

⁸ Subareas 48.1, 48.2, 48.3 and 48.4.

⁹ CCAMLR has recognized that the development of a feedback management system at the SSMU level would be the only way to adequately account for climate change. Under such a system, management measures are to be adjusted regularly, based on ecosystem monitoring indices. In other words, feedback management (a type of adaptive management) aims at detecting the impacts of fishing so as to allow the adjustment of management measures before irreversible changes occur. The development of a feedback management system will require a significant expansion of CCAMLR's Ecosystem Monitoring Program (CEMP) across all the areas that are subject to fishing. CEMP is now operative in a few sites only, providing insufficient coverage to respond to relevant questions for a feedback-management system.

¹⁰ See Report of the XXV Meeting of the Scientific Committee (CCAMLR SC XV, 2006), para. 3.11; Also, CCAMLR SC XXVII, 2008, paras. 3.9 and 3.32.

these efforts, better understanding of population sizes, diet and foraging ranges of key predator species is still needed in all SSMUs. On the other hand, there is a gap in the understanding of the foraging ecology of pelagic krill predators (baleen whales and fish) as compared to land-based predators. Normally, abundance estimates of whales, along with estimated prey consumption rates, have been used to estimate krill biomass consumed, and thus, empirical studies focused on baleen whales in the Antarctic have largely been limited to surveys for population assessments. In addition, the effect on fish populations, in particular species not directly targeted, is highly uncertain.

The effects of climate change and other environmental factors are an important challenge for the ecosystem-based management of the krill fishery. The life history and demography of Antarctic krill are intimately tied to seasonal sea ice conditions, climate, and the physical forcing of ocean currents. Environmental changes impact Antarctic krill populations – with subsequent risks and impacts for the entire Antarctic ecosystem. The potential cumulative impacts of climate change and fishing on krill and krill predators requires CCAMLR to incorporate environmental factors into management decisions, an area in which more work needs to be done.¹¹

2.2 Recent developments in CCAMLR

At CCAMLR XXVII, nine countries submitted krill notifications for 18 vessels with a projected catch of 629,000 tonnes.¹² This represents an increase of 120,000 tonnes from the notified catch of previous year and surpasses the interim krill catch limit of 620,000 tonnes which is in place for Subareas 48.1 to 48.4, where the fishery currently operates. Independently of the final catches that might occur in these Subareas, many delegations expressed concern at the meeting about this increase of notifications for it showed clearly that fishing capacity exists to exceed the current catch limit.

At its XXVII meeting CCAMLR was unable to make progress on the selection of options for the allocation of krill catch limits among SSMUs in spite of the multi-year effort undertaken by WG–EMM and WG–SAM, which resulted in science-based recommendations being submitted to last year’s meeting. CCAMLR also failed to agree on a conservation measure to require systematic scientific observer coverage on board all krill vessels. The Scientific Committee could not endorse a recommendation on observers from WG-EMM that reflected agreement accommodating proposals from different Members, including fishing nations, because a few delegations¹³ rejected this advice and blocked consensus. Notably, during the discussion of both SSMU allocation and scientific observers, some Scientific Committee delegations took positions different from those taken by their representatives in the working group. This insertion of politics into the Scientific Committee’s work, if not stopped, will greatly impact CCAMLR’s ability to achieve its mandate.¹⁴

2.3 Bioprospecting for krill

A particular krill-related issue of common interest between the ATCM and CCAMLR is bioprospecting. In the Antarctic Biological Prospecting Database¹⁵ we learn that Antarctic krill has been the source organism of the largest number of patents and commercial applications of all marine species in Antarctica, accounting for 60% of the records of Antarctic marine organisms used for marine bioprospecting. Patented applications of krill include a wide variety of commercial purposes, from cleaning agents, food and chemical processing, molecular biology, enzymes, aquaculture, pharmaceutical, nutraceutical, dietary supplements and skin care products.

There is not a widely accepted definition of bioprospecting. It has been noted that bioprospecting may comprise not only the exploration phase but also the development process through to full scale

¹¹ For more information, see: The need for a strategic plan for the management of the Antarctic krill fishery (CCAMLR-XXVI/BG/25)

¹² ASOC has learned that one of the vessels, the *Antarctic Navigator* (flagged to Norway), will not fish for krill the current season, reducing to 17 the number of vessels with intention to fish. The *Antarctic Navigator* had notified for 50,000 tonnes.

¹³ This working group agreement resulted in a recommendation to require 100% observers on board krill vessels for two initial years, starting from December 2009, after which the Scientific Committee would evaluate the level of ongoing observer coverage required for the krill fishery.

¹⁴ See CCAMLR XXVII Report, paragraphs 4.16- 4.27.

¹⁵ 56% of the records in the Antarctic Biological Prospecting Database originate from the marine environment; see: An update on biological prospecting in Antarctica, including the development of the Biological Prospecting Database, ATCM XXXI, WP11 submitted by Belgium, and Biological Prospecting in the Southern Ocean, a Role for CCAMLR. CCAMLR-XXVII/BG/36, submitted by IUCN.

commercialization and marketing.¹⁶ In view of the difficulties of distinguishing scientific research from commercial activities involving genetic resources, the Secretary General of the United Nations has indicated that the difference between research and bioprospecting “seems to lie in the use of knowledge and results of such activities rather than in the practical nature of the activities themselves”.¹⁷

The issue of bioprospecting has been on the ATCM agenda for several years.¹⁸ However, this emerging industry is still a completely unregulated activity.¹⁹ In 2005, a Resolution²⁰ was adopted, noting the need to exchange information on research activities in the Antarctic Treaty Area, in accordance with Article III (1) of the Antarctic Treaty, and recommending ATCPs to keep the issue of bioprospecting under review. The Resolution also noted Article 3 of the Environment Protocol, which provides for the regulation of activities in the Antarctic Treaty area to be planned and conducted so as to limit adverse impacts on the Antarctic environment and dependent and associated ecosystems. Unfortunately, this Resolution has triggered little response by ATCPs so far.

ASOC acknowledges that Antarctic bioprospecting is difficult to regulate. For example, bioprospecting activities may take place largely undetected. Currently, bioprospecting activities do not seem to result on Initial Environmental Evaluations or Comprehensive Environmental Evaluations under Annex I of the Environment Protocol, as the impacts of bioprospecting activities may be below the threshold required to trigger those assessments. The commercial purpose may not necessarily be declared in the assessment or permitting process. In fact, the purpose of the activity may emerge after the basic science has been carried out, sometimes even years after the collection of the samples. Biological prospecting requires sampling but may or may not require harvesting. Many processes or substances can be reproduced synthetically from the original source samples, a process that physically takes place outside Antarctica. In some instances, however, there may be a need to harvest organisms rather than to reproduce functions synthetically.²¹ Bioprospecting activities related to krill products may require the harvesting of krill.

Taking these considerations into account, certain krill fishing operations in Antarctica may be categorized as bioprospecting, in view of the nature of the products that result from these operations. This could be the case of krill extracted in Antarctica to obtain krill oil in order to produce nutraceuticals and dietary supplements.

CCAMLR is the body responsible for the conservation of Antarctic marine living resources and thus has the legal competence to regulate the extraction of marine resources for the purposes of bioprospecting. In addition, notifications to fish for krill that CCAMLR receives from Members include product type information²². The ATCM has an on-going debate on the regulatory needs of bioprospecting activities, including exchange of information. Moreover, the ATCM has a primary responsibility to ensure that these activities are conducted in accordance with the provisions of the Environment Protocol. It is therefore clear that there is significant overlap between the mandates of CCAMLR and the ATCM on bioprospecting of marine organisms. Consequently, ASOC urges both institutions to coordinate closely on this matter.

2.4 The Role of SCAR

SCAR has a role to play in addressing scientific uncertainties that affect the development of management procedures for the krill fishery, providing expertise and data on a wide range of issues from status of predator populations to oceanographic and environmental factors. This has been acknowledged by both CCAMLR and SCAR and some collaborative work is already underway. These links need to be reinforced and intensified so that SCAR can assist the work of the Scientific Committee of CCAMLR (SC-CAMLR), and duplication of work can be avoided. Of particular relevance to CCAMLR's work on krill are SCAR's Census

¹⁶ An update on biological prospecting in Antarctica, including the development of the Biological Prospecting Database, ATCM XXXI, WP11 submitted by Belgium, and Biological Prospecting in the Southern Ocean, a Role for CCAMLR. CCAMLR-XXVII/BG/36, submitted by IUCN.

¹⁷ A/60/63/Add.1, para 202, 15 July 2005.

¹⁸ An Intergovernmental Meeting of Experts on Biological Prospecting in the Antarctic Treaty Area was held in Baarn, Netherlands, on 3-5 February 2009. ASOC attended this meeting and advocated for greater transparency from Parties with regard to their bioprospecting-related activities or those organized from their countries, including a more effective implementation of Resolution 7 (2005).

¹⁹ See ASOC Reports to ATCM XXVII, XXVIII, XXIX, XXX and XXXI.

²⁰ Resolution 7 (2005) - Biological Prospecting in Antarctica.

²¹ ASOC report on the Intergovernmental Meeting of Experts on Biological Prospecting in the Antarctic Treaty Area, Baarn, Netherlands, 3 - 5 February 2009. The Baarn meeting helped to clarify many scientific, practical, and commercial aspects of how biological prospecting operates.

²² Conservation Measure 21-03 (2008) - Notifications of intent to participate in a fishery for *Euphausia superba*.

of Antarctic Marine Life (CAML), SCAR Action Group on Continuous Plankton Recorder Research (CPRAG), SCAR-MarBIN (SCAR-Marine Biodiversity Information Network); SCAR's Expert Group on Birds and Marine Mammals; and SCAR's new Action Group on Prediction of Changes in the Physical and Biological Environment of the Antarctic.

3. The CEP-SC CCAMLR Workshop: an opportunity for joint work

The forthcoming workshop between the CEP and the SC-CCAMLR represents an excellent opportunity to make progress towards an ecosystem-based, integrated approach towards the Antarctic marine ecosystem. As part of this work, ASOC urges the CEP and the SC-CCAMLR to analyze current threats to this ecosystem, including but not limited to fishing, climate change and marine pollution, and come up with practical mechanisms that would enable both bodies to complement each other's work to establish protective measures. For example, a system of providing recommendations and reporting to this effect between the CEP and SC-CAMLR, so as to provide consistent advice to the ATCM and CCAMLR on key matters should be considered.

Specific topics of common interest between the CEP and SC/CAMLR that should be a priority for this workshop include the development of marine protected areas, monitoring of the Antarctic ecosystem,²³ and the protection of top predators in Antarctica.

4. Recommendations

- The ATCM and CCAMLR should increase their efforts to effectively coordinate actions to address pressures on the Antarctic marine ecosystem, including climate change, fishing, marine pollution and bioprospecting, so as to provide integrated policy responses that ensure the long-term protection of the Antarctic.
- Regarding Antarctic krill, the ATCM should consider steps that support CCAMLR's efforts to develop a methodology for allocating krill catch limits among Small-Scale Management Units (SSMUs), and proposals to obtain relevant information for management, such as deploying scientific observers on board all krill fishing vessels.

²³ In accordance with Resolution 3 (2007) - Long-term Scientific Monitoring and Sustained Environmental Observation in Antarctica.