CLIMATE CHANGE AND THE ROLE OF CCAMLR

Submitted by ASOC
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Abstract

Fishing magnifies the sensitivity of ecosystems to the effects of climate change. In the Southern Ocean, CCAMLR has the capacity to reduce this sensitivity by appropriately adapting fishing strategies. ASOC advocates that the role of CCAMLR in the climate change context continues to lie in: 1) coordinating with the Committed on Environmental Protection (CEP) in addressing climate change, including monitoring efforts, data collection and area protection; 2) extending the use of Marine Protected Area (MPAs) networks; 3) extending the application of the Precautionary Approach to include the uncertainties raised by climate change; 4) strengthening the CCAMLR Ecosystem and Monitoring Program (CEMP); and 5) providing leadership in reducing the emissions of greenhouse gases during the course of fishing activities.

1. Introduction

The ATME on Climate Change held in Norway in April 2010 recommended that CCAMLR and CEP coordinate with each other to address the issue. Climate change is a major global issue and its relevance and importance for Southern Ocean food webs is recognized and appropriate actions are now needed.

In recent years, CCAMLR has begun to take climate change into consideration. CCAMLR has the capacity to help mitigate responses of the ecosystem to climate change by reviewing current fishing strategies now, for it is likely that those now construed as precautionary will be inadequate in the future. It has been shown in other ecosystems that fishing magnifies the sensitivity of foodwebs to effects of climate change, e.g. Baltic Sea (Osterblom et al. 2007), Benguela Current (Watermeyer et al. 2008a, b) and California Current (Hsieh et al. 2006, 2008). In order to fulfil its objectives and international obligations, CCAMLR now needs to take actions to integrate ecosystem and fisheries management with an understanding of the ecological consequences of climate change (Perry et al. 2009; Trathan and Agnew, 2010; ASOC, 2007).

ASOC advocates that the role of CCAMLR in climate change continues to lie in:

- coordinating with the CEP and other relevant bodies in:
  - addressing climate change science and policy issues on regional and global scales
  - monitoring efforts and data collection (for example through the Southern Ocean Observing System)
  - strengthening the protected area systems to address the challenges
- extending the application of the Precautionary Approach
- strengthening CEMP
- extending the use of Marine Protected Area networks
- providing leadership in reducing the emissions of greenhouse gases during the course of fishing activities

2. Coordination with CEP

The ATME on Climate Change made a total of thirty recommendations that summarize their advice for actions to the Antarctic Treaty Consultative Parties (ATCPs) (Norway and UK, 2010). Several of these recommendations refer to the coordination between CCAMLR and the CEP in monitoring efforts, data collection and area protection. In ASOC’s view, these recommendations merit special consideration by SC-CCAMLR:

Recommendation 19: The ATME recommends that the CEP consider developing a climate change response work programme. Such a work programme should attempt to incorporate, inter alia:
The need to continue to afford a high priority to the management of non-native species;
A classification of existing protected areas according to climate change vulnerability;
The need for more sophisticated and coordinated ecosystem monitoring, including the need for increased collaboration between CEP and SC-CAMLR;
A review of existing management tools to assess their continuing suitability in a climate change context (e.g. EIA guidelines (particularly with regard to planned long-term activities), Specially Protected Species guidelines, the guide to the preparation of management plans).

**Recommendation 26:** The ATME recommends recognizing the responsibilities of and need to coordinate with CCAMLR, that the CEP consider, and advise the ATCM accordingly, as to means by which automatic interim protection might be afforded to newly exposed areas, such as marine areas exposed through ice-shelf collapse.

**Recommendation 27:** The ATME recommends that the CEP and SC-CAMLR be encouraged to ensure that sufficiently frequent biodiversity surveys and adequate monitoring programmes are established to provide an understanding of climate change induced responses in species distribution and abundance.

**Recommendation 28:** The ATME recommends that CEP and SC-CAMLR continue to develop means for collecting and sharing data and information on the status and trends of species of interest to both bodies (seals, penguins and seabirds), including the need to cooperate with other experts bodies such as SCAR and ACAP.

### 3. Expanded Use of Marine Protected Area Networks

Networks of Marine Protected Areas can help to buffer against the impacts of climate-related stresses by sustaining stable populations and increasing the resilience of communities and ecosystems. In addition, Marine Protected Area networks:

- Can serve as reference areas in order that the combined effects of fishing and climate change can be evaluated (Trathan and Agnew, 2010; ASOC, 2010);
- Should contain features such as buffer zones and connectivity that will help to accommodate uncertainty and range shifts of species as a result of climate change;
- Should consider connectivity between sites to enhance protection for highly migratory or mobile species and species that visit different areas throughout their life cycle.
- Should protect refugia or areas less likely to change to provide species with extra “breathing space” to deal with the impacts of climate change;
- Can be used to help exercise precaution over the management of areas where new conditions have been developed (e.g., retreat of sea ice or collapse of ice shelf), where our knowledge is sparse and uncertainty is high (Trathan and Agnew, 2010).

### 4. Application of the Precautionary Approach

CCAMLR’s application of the precautionary approach now needs to include the uncertainties related to climate change. Under some scenarios of climate change, even moderate levels of fishing may exacerbate any declines, and populations may not be able to recover within two to three decades in the absence of fishing, which is the CCAMLR requirement (Barrera-Oro et al. 2000; Barrera-Oro and Marschoff 2007). Modelling has shown that various exploited Southern Ocean vertebrates are sensitive to the kinds of environmental changes underway now. Moreover, little is known about what form ecosystems are likely to take as experience perturbations from climate change (Cheung et al., 2008; Trathan and Agnew, 2010).

There is an urgent need for CCAMLR to develop means to ensure that its Conservation Measures can specifically include uncertainties raised by the impacts of climate change. The application of the
A precautionary approach requires CCAMLR to add “insurance factors” to regulations governing a variety of non-climate stressors (including fishing) to minimize the risk of irreversible changes in the marine ecosystem. Furthermore, it requires an assessment of the full range of plausible scenarios, including potential tipping points, in addition to management options that maximize the choices for the future.

Existing Conservation Measures relating not only to fisheries in general and but also with regard to the associated risk of fishing for Antarctic krill need to be reviewed to ensure that they are sufficiently precautionary to take into account possible climate change impacts.

5. **Strengthening CEMP**

CCAMLR has already recognized that in its current configuration, CEMP does not allow distinguishing the impacts of fishing from those associated with environmental change (ASOC, 2010). Under climate change, effective management systems must be able to incorporate uncertainty and respond to new information and unforeseen circumstances in a timely fashion. Towards this goal, CEMP needs to be reformed and expanded in its coverage, so as to allow incorporation of monitoring data into the formulation of specific conservation measures, under a truly adaptive management system in the context of ecosystem change (ASOC, 2010). Improvements to CEMP include:

- Decision rules must be developed to allow adaptive management through appropriate data arising from operational monitoring (which is designed to respond to a specific management objective), as opposed to the current *modus operandi* of surveillance monitoring (which is not directly linked to any specific management objective) (ASOC, 2010).
- CEMP should be periodically reviewed to allow for adjustments in the design and operation of the program as required by feedback management needs (ASOC, 2010).
- Monitored parameters should be extended to include other aspects of the ecosystem that are of interest in the context of climate change (Trathan and Agnew, 2010).
- Areas closed to fishing that are complementary to fished areas should be designated to act as reference or control areas (Trathan and Agnew, 2010; ASOC, 2010).


Greenhouse gas emissions from Antarctica are very low compared to the rest of the world. Nevertheless, Article II, section c) of the Convention gives CCAMLR the responsibility to manage the ecosystems of the Southern Ocean, including its management in the face of environmental change. Effective mitigation of climate change effects today will substantially reduce the scale of future management actions that CCAMLR accordingly will have to adopt. In some cases, impacts of climate change will be irreversible and will not be able to be addressed via ecosystem resource management (Kirby et al., 2009). Therefore, ASOC urges CCAMLR to take a holistic approach to climate change and embrace the necessities of climate-related management issues (discussed above) as well as mitigation of climate change. To this end, ASOC urges CCAMLR and its individual Members to:

- Establish a mandatory obligation to record greenhouse gas emissions from their activities in the Antarctic and Southern Ocean;
- Complete IMO defined ships energy management plans for vessels of all types operating in the Southern Ocean, with a view to increasing fuel efficiency of all vessels
- Progressively reduce greenhouse gas emissions from other general sources through energy efficiency and renewable energy initiatives for all activities taking place within the Southern Ocean
In addition, since any greenhouse gas emitted anywhere in the world contributes to climate change and adversely affects the Antarctic, CCAMLR and its Members also have the capacity as well as legal and moral obligations to contribute to enhanced mitigation through:

- Communicating to international and national bodies that are leading efforts on climate change solutions and mitigation on the implications for the Antarctic, including regularly updating bodies such as the UNFCCC about the latest science in Antarctica.
- Taking political positions at international negotiations that lead to climate-friendly global solutions.

7. References


