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'When close is too close' – Krill fishing close to the coast

Submitted by ASOC

"When close is too close"- Krill fishing close to the coast

Abstract

For several years, ASOC has been calling for improved management of Antarctic krill fisheries by establishing feedback management procedures, improving monitoring through a strengthened CEMP program, and requiring 100% scientific observer coverage on board krill vessels among other issues. In this paper, ASOC urges CCAMLR to implement further protective measures to prevent excessive concentration of krill fishing in coastal areas close to predator colonies in Area 48. This is of particular relevance since fishing has been concentrating heavily in coastal areas lately. ASOC also calls on CCAMLR to continue to work towards strengthening the CEMP program, requiring mandatory reporting on green weight estimation methods, and obtaining 100% observer coverage on the krill fishing fleet.

1. Status of the krill fishery and management implications

Recent trends in the fishery

Over the past several years, the krill fishery has become increasingly spatially concentrated in Subarea 48.1, with an increase in the fishing effort along the western coast of the Antarctic Peninsula. More than half of the total catch in the last three years was taken in this subarea. Fishing in the current season has followed this same pattern, with 86% of catches occurring in Subarea 48.1, particularly in SSMUs Bransfield Strait West and Bransfield Strait East. Furthermore, the monthly cumulative catch of krill reported through May 2013 of approximately 150,000 tonnes is far greater than any of those reported through May in the past five seasons. Already by mid-June 2013, Subarea 48.1 was closed for the remainder of the season since the catch limit was reached. This is the second time since the establishment of CM 51-07 just four years ago that the Subarea was closed before the end of the fishing season. The favorable conditions regarding sea-ice coverage seem to be an important factor that influences the location of krill fishing operations.

One of the consequences of this concentration is that as catches increase in this area, it becomes difficult to identify unfished reference areas to be used in the future implementation of feedback management. For example, penguin colonies monitored near Cierva Cove within ASPA No. 132 were suggested as a useful reference for comparisons with other colonies in more commonly fished areas.[1] However, recent information indicates that the krill fishery has recently operated in the vicinity of Cierva Cove. Consequently, this raises concern on whether it could be used as a reference site in the future. Also, since under current management measures, fishing can occur up to the Subarea catch limit without any other protective measures, existing CEMP sites might be negatively impacted. Within each subarea, fishing activity can be highly concentrated in small areas close to CEMP sites, and this activity might have adverse consequences on the performance of indicator species like penguins not only during the breeding season but also during the winter.

Another consequence is that fishing is likely occurring very close to threatened predator populations. As previously reported by ASOC in CCAMLR-XXXI/BG/17, populations of Adélie (*Pygoscelis adeliae*) and chinstrap penguins (*Pygoscelis antarctica*) in the West Antarctic Peninsula/Scotia Sea area have declined more than 50% during the last 30 years.[2] In addition, a recent census of the large colony of Adélie

[1] WG-EMM-13/27 - Santos, M., Coria, N., Barrera-Oro, E. and Hinke, J. *Evaluation of populations of chinstrap and gentoo penguins at Cierva Cove (ASPA N° 132). Is this site an appropriate control area for non-fishing effects?*

[2] CCAMLR-XXXI/BG/17. ASOC. *Unhappy Feet: The Reduction of Adélie and Chinstrap Penguin Populations in the West Antarctic Peninsula/Scotia Sea.*

penguins in Hope Bay suggests a population decline of 17% of breeding pairs since 1985 (from 123,890 in 1985 to 102,899 in 2012[3]). Hope Bay has been identified as an Important Bird Area (IBA) by BirdLife International because it supports one of the largest penguin colonies in Antarctica. The reduction of the population in this area is of great concern and should be taken into account in management decisions.

This year, six Members submitted notifications for a total of 19 vessels intending to participate in the krill fishery. This results in eight more vessels as compared to the vessels that are in operation during the current fishing season (i.e. 11 vessels from five Members). The total intended krill catches is 545,000 tonnes. As already expressed in previous years, even though real catches are normally lower than notified catches, it is clear that the fishing capacity to reach the trigger level already exists. Therefore, catches can increase up to the trigger level with no further protective provisions in place. Thus, unless managed properly, the fishery could result in localized depletion of krill that can lead to negative impacts on krill predators in areas close to the coast.

Feedback management and the development of the krill fishery

The formerly envisioned plan by the Commission to develop a feedback management strategy in the krill fishery by 2014 is not feasible. As an alternative, a staged development of a feedback management strategy has been proposed. This approach would focus initially on using existing data and ongoing monitoring efforts, such as existing CEMP data and information from acoustic surveys by fishing vessels. Following this, the work will progress by increasing the collection of data and monitoring efforts. In order to accomplish this, CEMP would need to be extended and enhanced by establishing new CEMP sites, using remotely sensed imagery, and increasing acoustic survey effort using both fishing and research vessels.

Based on this implementation of the feedback management strategy, the development of the fishery is proposed to be done in four stages:

Stage 1: would be based on the continuation of the current trigger level and its spatial distribution among subareas (based on CM 51-07).

Stage 2: would allow an increase in catches from the trigger level to a higher interim catch limit and/or changes in the spatial distribution of catches that are adjusted based on decisions that consider information resulting from the existing CEMP and from absolute (or relative) biomass (or density) estimates made from krill surveys conducted by fishing vessels.

Stage 3: would allow a further increase to a higher interim catch limit and/or changes in the spatial distribution of catches that are adjusted based on decision rules that take into account the results from an "enhanced" CEMP.

Stage 4: would consist of a fully-developed feedback management strategy that is based on forecasts from ecosystem models, may involve structured fishing and/or reference areas, and would include catches up to the precautionary catch limit and/or changes in the spatial distribution of catches that are adjusted based on decisions that take account of results from an enhanced CEMP and other observation series.

It is envisioned that in all these stages, the spatial distribution of catches might be spread among subareas, individual or groups of SSMUs, or other areas that are defined by considering the spatial scales over which the fishery operates and over which CEMP data and other observations are integrated. In this context, it is important that the increasing pressure from the expanding krill fishery does not become the

[3] WG-EMM-13/43 - Santos, M., Coria, N., Barrera-Oro, E. and Hinke, J. *Abundance estimation of Adélie penguins colony at Esperanza/Hope Bay.*

determining factor to move from one stage to the next. Moving from one stage to the next should be determined only by the availability of the necessary scientific information. Therefore, ASOC would have significant reservations about any lifting of the trigger level until stage 4 is achieved. By the time stage 4 is fully implemented, models of feedback management will have been tested, reference areas are in operation, and a appropriate CEMP is in place. That is, an operationalised program of feedback management with appropriate safeguards needs to be installed before lifting the trigger level.

One question that remains important at this stage is whether, on the basis of current uncertainties, the trigger level and its spatial subdivision is still regarded as being suitable to achieve the objectives of the Convention without further controls on the fishery. Since CM 51-07 will be reviewed in 2014, there is a long list of inter-sessional activities that Members will need to conduct during 2013/14, including:

a) reviewing the status and trends of the krill population and the spatial distribution of the krill stock relative to predators;

b) estimating how much krill is needed to support predators in each subarea;

c) reviewing the foraging behavior of predators to characterize the link between successful feeding and the distribution and aggregation density of krill swarms; and

d) reviewing the abundance of predators in each subarea. In addition, the spatial distribution of the fishing effort and the behavior of the fishery will be reviewed to describe situations in which the distribution of fishing effort may change the availability of krill to predators.

Finally, the uncertainties in the above mentioned elements will be assessed to determine whether the trigger level and its spatial distribution among subareas is meeting the objectives of the Convention with a high level of confidence.

The need for further interim protective measures

There is urgency in providing some further interim protective measures to the current management of krill catches by subarea until a fully developed feedback management system is in place. This is clearly needed in light of: (a) The concentrated fishing in Subarea 48.1, (b) the reduction of penguin populations in this area, (c) the observed fishing in the vicinity of ASPAs and CEMP sites, (d) the potential increases in fishing vessels (based on current notifications). CCAMLR needs to address the question of whether, on the basis of current uncertainties, the trigger level and its spatial subdivision is still considered to be appropriate for predator protection.

Until the feedback management system is in place, it is advisable to move some of the fishing effort to pelagic areas to protect predators. Thus, as proposed by the Ukraine in 2009 ~~(CAMLR-XXVIII/48),~~[4], subarea catch limits should be distributed between coastal and pelagic areas, using the proportions of 27% and 73% that correspond to the estimated krill biomass distribution between coastal and pelagic areas respectively, based on the estimates of the CCAMLR 2000 synoptic survey. ~~This would be in line with the precedent when the Commission agreed on in Conservation Measure 51-05 (2008) for the exploratory krill fishery in the Statistical Subarea 48.6, where the catch limit was distributed between coastal and pelagic areas. Those similar~~Similar considerations can be applied within each of the Subareas 48.1, 48.2, 48.3 and 48.4 by establishing an interim catch limit distribution of 73% in pelagic areas and 27% in coastal areas in accordance with the average of krill biomass distribution estimates in these subareas. This

[4] CCAMLR-XXVIII/48. Ukraine. *Proposed amendments to Conservation Measure 51-01 (2008) Precautionary Catch Limitations on Euphausia superba in Statistical Subareas 48.1, 48.2, 48.3 and 48.4.*

would imply that up to 27% of total catches in each subarea could be taken within the limits of 60 nautical miles of known breeding colonies of land-based krill-dependent predators.

CCAMLR needs to agree on a distribution of subarea catch limits (in Subarea 48.1, 48.2, 48.3 and 48.4) between coastal and pelagic areas, using the proportions of 27% and 73% that correspond to the average of krill biomass distribution between coastal and pelagic areas respectively, based on the estimates of the CCAMLR 2000 synoptic survey. For this CCAMLR would need to amend CM 51-07, noting that from the catch limits determined by the percentage distribution of the trigger level for each Subarea, 27% is to be fished in coastal areas (within the limits of 60 nautical miles from the coast) and 73% in pelagic areas.

2. Complementary actions to strengthen krill management

Improving CEMP

To effectively assist CCAMLR in the development of the feedback management of the Antarctic krill fishery, the CCAMLR Ecosystem Monitoring Program (CEMP) should be enhanced. As it has been recognized, in its current configuration CEMP does not allow distinguishing the impacts of fishing from those associated with environmental change, its main objective. In addition, some CEMP sites have been discontinued in recent years and data submitted to the CEMP has decreased. Future monitoring in some of these areas might be unlikely given financial and logistical constraints. The location for new CEMP sites seems to be a complex issue since it involves logistical considerations (such as the accessibility of the sites) and scientific considerations. The latter are frequently related to the possibility of integrating time and spatial coverage, including the integration of predator summer and winter foraging areas.

Important considerations are also related to the lack of understanding of the procedures to establish CEMP sites and other issues related to the establishment of associated time-series of data, including how to report and archive data. One interesting area of work to be promoted when it comes to monitoring is the construction of remotely operated cameras for use at multiple sites. Since the krill fishery might be potentially operating at a different spatial scale than current CEMP monitoring, the use of remotely operated cameras would help in understanding the scales that are relevant to predator monitoring, something that is key for the development of a feedback management strategy.

An enhanced CEMP will require additional sources of funding. Following recent developments in CCAMLR, general priorities for the CEMP Fund should follow a strategic plan to progress the staged development of a feedback management strategy that has been agreed. In this context it would be key for fishing nations to contribute financially to the fund to facilitate the development of the envisioned feedback management of the krill fishery.

CCAMLR needs to invest the necessary human and financial resources in order to progress in the enhancement of CEMP, which is key for the development of a feedback management strategy. Fishing nations should take the lead in contributing to the further development of the CEMP Fund.

3. Green weight

Although some Members have been reporting direct measurements of green weight and the methods used to estimate green weight to the Secretariat, other Members still do not provide descriptions and analyses on how they estimate green weight. CCAMLR should make this reporting a mandatory part of the krill fishing notification procedures. This is fundamental since this not only affects assessments of krill stocks, but also the estimations of the impact of krill removals on predators. Moreover, it raises important enforcement issues.

CCAMLR needs to make mandatory that Members submit the descriptions on how green weight is estimated as part of the krill fishing notification procedures.

4. Systematic scientific observer coverage for the krill fishery

As already advised by the Scientific Committee in previous years, 100% scientific observation across all vessels in the krill fishery is the best way to achieve systematic observer coverage. A robust scientific observation program is necessary to understand the overall behavior and impact of the fishery on dependent predators and the ecosystem. According to new analyses, the scientific observer coverage during the 2011/12 fishing season was approximately 79% of vessel months. Although this level of coverage exceeds the minimum requirements in CM 51-06, ASOC continues to promote the need for 100% observers on board krill fishing vessels.

CCAMLR should insist on 100% observation across all vessels in the krill fishery.