Report by the SC-CAMLR Observer to the CEP

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Summary

We report on the activities undertaken by CCAMLR in the 2022/2023 period relevant to the work of the CEP, including science capacity building, strategic planning, climate change, biodiversity, Antarctic species requiring special protection, spatial management, ecosystem monitoring and marine debris. Of particular note is recent progress to develop a five-year strategic plan for SC-CAMLR, updated terms of reference for SC-CAMLR working groups, including explicit consideration of climate change, and more detailed reporting of marine debris data as discussed at CEP XLIV.

*SC-CAMLR-41 meeting*

The 41st meeting of the Scientific Committee of the Commission for the Conservation of Antarctic Marine Living Resources (SC-CAMLR) was held in person 24 to 28 October 2022 in Hobart, Australia. Video and audio of the meeting was also streamed live to increase participation. The full report of the meeting, including the SC-CAMLR Representatives from each Member and Observer to SC-CAMLR-41, is available from the CCAMLR website:

<https://meetings.ccamlr.org/meetings/sc-camlr>.

The Chair of the Scientific Committee, Dr D. Welsford, noted that CCAMLR celebrated its 40th anniversary and highlighted the significant achievements towards ecosystem-based management.

Reports of the current information on CCAMLR fisheries are available in CCAMLR [fishery reports](https://fisheryreports.ccamlr.org/).

*SC-CAMLR capacity building*

At its October 2022 meeting the Scientific Committee further developed its science capacity by

awarding a new science scholarship, which along with the extensions of scholarships due to covid constraints, resulted in seven active scholarships progressing during the 2023 calendar year. The Scientific Committee also agreed to continue supporting research on CCAMLR Ecosystem Monitoring Program (CEMP) indicator species and monitoring sites, and to fund participation by scientists in a number of workshops in 2023 through the General Science Capacity Fund. The Secretariat has also implemented a new international internship to build CCAMLR capacity through funding provided by China.

*Strategic planning*

The Scientific Committee held a special two-session informal symposium in February 2022 to review and develop a five-year strategic plan. The Chair’s report from this workshop was reviewed by all SC-CAMLR working groups and SC-CAMLR and adopted a new workplan and updated terms of reference for all the working groups.

The Scientific Committee identified eight high priority issues relating to how advice is provided to the Commission on conserving AMLR, and five cross-cutting scientific topics (Table 1).

Table 1: High-priority scientific issues for the Scientific Committee to progress 2023–2027.

|  |  |
| --- | --- |
| Providing the scientific advice that underpins an integrated, ecosystem-based approach to fisheries | 1. Develop the new krill management approach for all subareas in Area 48 |
| 2. Review krill and finfish management approaches and decision rules to ensure they are consistent with Article II |
| 3. Develop data collection plans to inform and support refined management approaches |
| 4. Develop research to inform and support more robust assessment approaches for lower information fisheries |
| 5. Develop methods to detect ecosystem changes and provide advice on adaptive management (e.g. through CEMP and WG-IMAF) |
| 6. Develop scientific approaches for conservation of Antarctic marine ecosystems, including spatial management |
| 7. Ensure the effects of fishing on by-catch, dependent, or related species are consistent with Article II |
| 8. Provide scientific advice on CCAMLR’s regulatory framework for fisheries. |
| Addressing cross-cutting scientific topics | 1. Develop a process to objectively address differences in scientific interpretation |
| 2. Improve integrated approaches to fund and build science capacity within CCAMLR, including linkages with external organisations |
| 3. Develop policies to communicate the science generated by CCAMLR to the wider scientific community |
| 4. Review performance of CEMP and SISO data collection programs relative to the strategic plan |
| 5. Collaborate with other organisations (e.g. CEP, SCAR) to provide a synthesis of the state and trajectory of Antarctic marine living resources. |

SC-CAMLR has reported on five issues of common interest to the CEP and SC-CAMLR since 2010, following the endorsement by both the CEP and SC-CAMLR of the recommendations of the Joint SC-CAMLR/CEP Workshop held in Baltimore in 2009. In 2022, CEP and SC-CAMLR agreed to include a summary of CCAMLR’s marine debris monitoring programme into the report (ATCM44\_rp12 paragraph 227, SC-CAMLR-41 paragraph 5.48), creating a sixth category.

Noting the progress both CEP and SC-CAMLR has made since the last joint workshop, it is timely to establish a process to review issues of common interest between the two bodies in the near future.

a. Climate change and the Antarctic marine environment

The Scientific Committee noted that a proposal for a joint CEP-CCAMLR climate change workshop was being developed and considered that given the evidence of how climate change is currently impacting Antarctic marine ecosystems, a more immediate Scientific Committee workshop on climate change in 2023 could provide its outcomes to the joint workshop. This hybrid workshop is currently being planned for September 2023 (CCAMLR-41 paragraph, 6.8).

SCAR presented the Antarctic Climate Change and the Environment report to the Commission, reinforcing that climate change is already having effects in the Convention Area, and highlighting that these effects will have global implications as also recognised by COP26 and the ATCM. The Commission noted that the Scientific Committee has incorporated climate change into its advice (SC-CAMLR-41, paragraph 7.8) and through discussions at the SC-Symposium (SC-CAMLR-41, Annex 11) has also added climate change to the work plans and terms of reference of its working groups (SC-CAMLR-41, paragraph 7.14)

The Commission discussed a proposal to establish time-limited special areas for scientific study in newly exposed areas following ice-shelf retreat or collapse, but some Members considered that a more comprehensive plan for addressing ice-shelf collapse in other areas should be developed which may include developing research and monitoring plans, as well as reporting requirements for each of the areas of concern.

The Commission adopted [Resolution 36/41](https://cm.ccamlr.org/resolution-36/41-2022) on climate change, adding to its earlier resolution on climate change [Resolution 30/XXVII](https://cm.ccamlr.org/resolution-30/xxviii-2009).

b. Biodiversity and non-native species in the Antarctic marine environment

The Scientific Committee considered a range of issues pertaining to biodiversity within the spatial marine management and protected areas agenda item. The CEP remains the lead body on the issue of non-native species.

c. Antarctic species requiring special protection

The Scientific Committee and the Commission did not discuss Antarctic species requiring special protection at CCAMLR-41.

d. Spatial marine management and protected areas

The Commission celebrated the five-year anniversary of the Ross Sea region MPA and completion of the five-year reports on the research and monitoring. Reported research to date comprised 460 projects related to all 11 MPA objectives, carried out collaboratively (20 CCAMLR Members, 2 Acceding States and 7 Cooperating Parties), with information accessible through the CCAMLR MPA Information Repository (CMIR) (SC-CAMLR-41/BG/36, WG-EMM-2022/37).

The Commission discussed the proposal to merge the management plans for Antarctic Specially Protected 31 Area (ASPA) No. 152 Western Bransfield Strait and ASPA No. 153 Eastern Dallmann Bay (SC-CAMLR-41, paragraphs 6.30 to 6.39), but did not reach consensus as some Members considered that the proposal was a major change and was not able to be evaluated with the information provided (CAMLR-41 Paragraphs 5.1–5.5). However, the Commission did endorse the revised management plan proposal for ASPA No. 145 (CAMLR-41, paragraph 5.9).

The Scientific Committee and the Commission discussed progress with the Domain 1 MPA (D1MPA) proposal (Antarctic Peninsula), the Weddell Sea Phase 1 and 2 proposals, and monitoring activities within the Ross Sea region MPA. No agreements on MPA proposals were reached at CCAMLR-41. An extraordinary meeting of the Commission was agreed to develop a roadmap to progress discussions on MPA design, designation, implementation, and the establishment of research and monitoring plans consistent with the Convention and based on the best scientific evidence available (CCAMLR-41, paragraphs 5.54 to 5.59). The meeting will be held in Santiago, Chile from 19 to 23 June 2023.

e. Ecosystem and environmental monitoring

The Scientific Committee welcomed significant progress in developing a risk-based management framework for the krill fishery. The Scientific Committee agreed on updated biomass estimates for a number of survey strata in Subarea 48.1, as well as an updated model-based precautionary exploitation rate for krill. These resulted in proposed precautionary catch limits by area in Subarea 48.1 (SC-CAMLR-41, paragraphs 3.43 to 3.47). However, the Scientific Committee also noted the high degree of uncertainty in the estimates and potential impacts of new catch limits on krill-dependent predators, especially given the impacts of climate change and did not provide consensus advice on the use of these new catch limits.

The Commission noted that further consideration was needed regarding:

(i) the monitoring of catch limits at smaller spatial scales (SC-CAMLR-41, paragraph 3.51)

(ii) the harmonisation and/or integration of different spatial management initiatives within Subarea 48.1, including the ARK voluntary restricted zones and the D1MPA proposal (SC-CAMLR-41, paragraph 3.65)

(iii) future monitoring of krill biomass and other components of the ecosystem, including fish by-catch, krill dependent predator species, especially in data-limited areas such as the Gerlache Strait, and the assessment of the potential impacts of the increased fishery on the ecosystem (SC-CAMLR-41, paragraph 3.49).

The Scientific Committee endorsed a proposal to enhance the CCAMLR Ecosystem Monitoring Programme (CEMP) to provide monitoring information needed to implement the spatial overlap analysis for the krill fishery and suggested a staged approach, with a focus day discussion to be held during WG-EMM-2023, followed by a number of virtual workshops for 2024.

The Commission developed a workplan to progress a holistic approach to management in Subarea 48.1, including with the D1MPA proposal and the organisation of a collaborative CCAMLR symposium integrating science, policy and industry (CCAMLR-41, paragraph 4.18). In the meantime, the Commission agreed to carry CM 51-04 and CM 51-07 forward to 2022/23.

CCAMLR has increased bycatch and ecosystem monitoring in the Ross Sea through a new medium-term research plan. Information from this data collection effort on fishing vessels will also inform the Research and Monitoring Plan for the Ross Sea region Marine Protected Area.

Several topics were progressed related to monitoring the ecosystem effects of fishing:

1. The extrapolated number of seabird mortalities from provisional data resulting from CCAMLR longline fishing in 2022 was the lowest total on record.
2. The trial of mitigation devices for krill fishing vessels who use a net monitoring cable was extended for an additional year.
3. CCAMLR and the International Whaling Commission established an intersessional group on whale entanglement in the krill fishery, for developing a data collection template and accompanying instructions for vessels to report standardised data in the event of a whale by-catch event and encouraged the further development of technologies and mitigation measures to minimise the risk of entanglement and by-catch of marine mammals.
4. The Commission endorsed the addition of eight new vulnerable marine ecosystems (VMEs) in Subarea 48.1 to be included in the CCAMLR VME registry.
5. The Scientific Committee and Commission welcomed the discovery of an extensive nesting area of notothenioid icefish and recommended two mechanisms that could be established to protect fish nesting areas, however, consensus was not reached pending additional work to develop the mechanism (CCAMLR-41, paragraphs 4.89 and 9.14).

**f. Marine debris**

CCAMLR established the Marine Debris Monitoring Program in 1986, with the aim of monitoring the potential impacts of fishing debris on the marine environment. In addition, CCAMLR holds data on gear lost from fishing vessels, and marine debris noted by CCAMLR Scheme of International Scientific Observation (SISO) observers in logbooks and cruise reports.

The CCAMLR program uses three sources of data on marine debris from several sources:

1. Data reported Member national research programs as well as through Antarctic tour operators such as the International Association of Antarctica Tour Operators (IAATO);
2. Debris reported by observers onboard longline and trawl vessels within the Convention Area; and,
3. Lost fishing gear reported by vessels from longline fishing activities in the Convention Area.

The data reported as part of the CCAMLR Marine Debris Program should be independent of data reported via other mechanisms associated with national programmes or via SCAR, however CCAMLR would welcome efforts to coordinate, verify and integrate data collected across programs to ensure a comprehensive view of marine debris in the Convention Area can be developed.

*Monitoring by national programs*

Marine debris from beach surveys and from bird colonies have been reported by eight CCAMLR Members from 15 different sites (many of which align with [CEMP sites](https://gis.ccamlr.org/) also monitored by national programs, [WG-EMM-2022/38 Rev.2)](https://meetings.ccamlr.org/en/wg-emm-2022/38-rev-2) since 1989 (Figure 1). Of the surveys reporting debris, the most common debris items include fishing line/hooks, pieces of netting, string, rope and various plastics including bags and wrappers. Opportunistic reports included observations of *plastics,* *fishing* *gear*, *wood*, *glass* and *other* (or unspecified) items. There were two entanglements of sub-adult Antarctic fur seals (*Arctocephalus gazella*) reported at Bird Island in 2022, with both caused by fishing nets and with only one of these able to be removed.

At some monitoring sites, levels of debris have been increasing through time, with researchers reporting that a single annual or monthly beach survey, and subsequent beach clean-up, is insufficient. Various reports have also described fragments of plastic (likely matching micro-plastic criteria), with some noting a high degree of degradation.

Gráfico, Gráfico radial

Descripción generada automáticamente

Figure 1. Map of CCAMLR Ecosystem Monitoring Program (CEMP) site locations (orange circles) across the CAMLR Convention Area. More detailed spatial information can be accessed here: <https://gis.ccamlr.org/>.

*Miscellaneous debris reported by CCAMLR scientific observers*

Observers onboard both longline and trawl vessels complete an observer cruise report, which includes three separate sections to record debris lost at-sea while fishing or sighted/collected while onboard. During the 2022 season, observers onboard longline vessels predominantly reported line and hooks lost, while those on trawl vessels generally reported loss of floats, ropes, plastic buoys, and small pieces of nets (including gillnets), and in some cases packaging materials.

*Lost gear reported by longline vessels*

A total of 330 975 hooks were reported lost attached to sections of longline in 2022, equating to 512 km of line, the lowest in the time series to date (Figure 2). The spatial distribution of total length of line lost varied due to fishing effort (which is influenced by the catch limits in those areas), and the different areas or habitats (e.g., effects of sea ice and bottom roughness, ignoring any differences in longline gear-configuration related loss rates; Figure 3).

Gráfico, Gráfico de líneas

Descripción generada automáticamente

Figure 2. Total line lost (km) and proportion of bottom longline gear deployed that was subsequently lost (%) between 2008 and 2022.

While the reasons for higher levels of gear loss are not always clear, it can be a consequence of fishing floats being trapped and dragged away by moving sea ice, or a result of strong currents over steep and rocky habitats. Therefore, both spatial and temporal patterns may reflect variation in seasonal ice conditions in some locations. On a global scale, this level of gear loss appears to be very low (<10%), with a study by Richardson et al. (2019) estimating that 29% of lines set around the world are lost every year. Continued monitoring and mitigation of gear loss resulting from CCAMLR fishery operations is an important part of ecosystem-based fishery management, particularly in relation to quantifying levels and sources of marine debris and impacts on the ecosystem.

Diagrama

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Figure 3. The spatial distribution of lost gear reported by longline fishing vessels in the Convention Area summarised as the total kilometres of line lost per 5 000 km2 cell, 2008 – 2022.