

ECOSYSTEM MONITORING AND MANAGEMENT

5.1 Dr K. Kerry (Australia), Convener, presented his report (SC-CAMLR-VIII/11) and the Report of the Third Meeting of the Working Group for the CCAMLR Ecosystem Monitoring Program (CEMP), held at Mar del Plata, Argentina, 23 to 30 August 1989 (Annex 7). Tables 3, 7 and 8 in this Annex provide a detailed summary of Members' CEMP activities and related research.

5.2 The Scientific Committee noted that the Working Group had made excellent progress in responding to the extensive program of work developed at last year's meeting of the Scientific Committee (SC-CAMLR-VII, paragraphs 5.28 to 5.44). The Scientific Committee reviewed the WG-CEMP report, noting the current state of progress and the implications and requirements for future work.

Approved Predator Monitoring Parameters

Sites and Species

5.3 WG-CEMP had reviewed and revised sites and species in the light of comments from Members and specialist groups. The new list of these is at Annex 7, paragraph 7 to 19, Tables 1 and 2. Subsequently, it had been established (after actions specified in Annex 7, paragraph 16) that monitoring black-browed albatrosses at Kerguelen was inappropriate.

5.4 The Scientific Committee approved these changes and confirmed that the revised listings of species and sites are desirable and appropriate for CEMP monitoring activities in Integrated Study Regions and complementary network areas.

5.5 The Scientific Committee noted and supported the strong recommendation of the WG-CEMP (Annex 7, paragraphs 20 and 21) for registration and protection of the land-based sites at which CCAMLR's long-term predator monitoring work is being carried out (see paragraph 5.43).

Methods

5.6 The contents of the CCAMLR Booklet ‘Standard Methods for Monitoring Parameters of Predator Species’ were reviewed in detail (Annex 7, paragraphs 23 to 56) in the light of:

- (a) Members’ experiences of using them in the field; and
- (b) sensitivity analyses conducted in accordance with the advice given in SC-CAMLR-VII, paragraphs 5.26 (a) and (b) and further elaborated by the Secretariat (WG-CEMP-89/13).

5.7 The Scientific Committee approved the recommendation of the WG-CEMP that investigators attempt sampling at their sites, designed to detect at least a 10% change in the measured parameter at a 90% confidence level.

5.8 WG-CEMP established a subgroup to prepare a revision of the Standard Methods booklet taking into account the information mentioned under paragraph 5.6 and other comments from Members. Additional information on sexing penguins by numerical methods was prepared by Dr D. Vergani (Argentina) and submitted for consideration at the next meeting of WG-CEMP.

Data Collection

5.9 The subgroup had completed revision of this section of all existing standard methods sheets and had developed these for the black-browed albatross as requested in Annex 7, paragraph 30. This material will now be circulated to all Commission Members and relevant SCAR specialist groups by 1 December for final comments before being adopted at the WG-CEMP’s next meeting as the new standard field methods.

Data Processing and Analysis

5.10 The revision of the methods of data collection, and discussions arising from the conduct of sensitivity analyses, necessitated preparation of instructions for processing and analysing data. The Secretariat, in consultation with appropriate specialists, was asked to prepare the sections on data processing and analysis for the revised Standard Methods booklet. These methods will be circulated to all Members in preparation for discussion at the

intersessional meeting of the Working Group. To facilitate these discussions it was proposed that the CCAMLR Data Manager should attend this meeting.

Data Reporting

- 5.11 (a) Changes to the method of data collection, processing and analysis require modifications (some quite extensive) to the existing versions of the draft data reporting forms (SC-CAMLR-VII/BG/8). The Secretariat, in consultation with the Convener of WG-CEMP, is asked to revise these as soon as possible and circulate them to all Commission Members for review and comment (Annex 7, paragraph 114), so that reporting formats (including submission of data in computer compatible media) can be discussed and revised as needed and approved at the next meeting of WG-CEMP;
- (b) Procedures for checking and logical validation of data need developing and the CCAMLR Data Manager should investigate these procedures as outlined in Annex 7, paragraphs 113 and 115 and prepare a proposal for consideration at the next meeting of WG-CEMP; and
- (c) As soon as the data submission and access procedures are agreed (paragraphs 13.1 and 13.7) and the reporting forms are approved, the summarised data should be submitted, annually by 30 September, by all Members who have indicated that they are monitoring approved parameters using standard methods at approved sites. Retrospective submission of data should also be requested.

Parameter Evaluation

5.12 Further work is needed to permit a critical evaluation of the limitations of presently approved parameters (Annex 7, paragraph 55). Members were urged to prepare for this before the next meeting of WG-CEMP.

Directed Research on Predators

5.13 The Scientific Committee noted the considerable amount of research:

- (a) investigating additional parameters which may have potential for monitoring (Annex 7, paragraph 64 to 66, Table 7); and
- (b) collecting data providing essential background information for interpreting changes in monitored predator parameters (Annex 7, paragraphs 68 and 69, Table 8).

Environmental Data for Predator Monitoring

5.14 The main environmental features that have a direct influence on predators and which need to be recorded at land-based monitoring sites were reviewed (Annex 7, paragraphs 61 and 62, Table 6). The Secretariat, in consultation with the Convener of WG-CEMP, is requested to prepare and circulate before the next meeting of WG-CEMP, draft standard instructions for recording these parameters.

5.15 Environmental features that influence predators indirectly through their effects on distribution and abundance of prey were considered in relation to the requirements of prey monitoring (see paragraph 5.20).

Prey Monitoring

5.16 In reviewing prey monitoring the WG-CEMP had in mind the comments of the Scientific Committee last year (SC-CAMLR-VII, paragraph 5.40) regarding the high priority accorded this item and had available the reports from the WG-Krill and the WS-KCPUE meetings and an analysis of the fine-scale catch data of krill (WG-CEMP-89/9).

Survey Design

5.17 WG-CEMP noted the inability of WG-Krill to start providing specifications for prey monitoring surveys as they relate to interpreting predator parameters being monitored. It remedied this by providing a detailed summary of the appropriate characteristics of predators both in general terms and for each of the Integrated Study Regions (Annex 7, paragraphs 58 to 60, Tables 4 and 5). It also noted the desirability of data on a slightly larger spatial scale and in advance of the critical time period (Annex 7, paragraph 87).

Survey Methods

5.18 WG-CEMP noted that although WG-Krill had identified acoustic and net sampling as the best methods currently available for estimating krill distribution and abundance, it had not yet been able to provide any standard method protocols.

5.19 Dr R. Holt (USA) took over as WG-CEMP coordinator of studies of net sampling efficiency and will liaise with the Convener of WG-Krill regarding studies of this topic.

Environmental Data for Prey Monitoring

5.20 WG-CEMP understood that the comprehensive list of environmental data requirements (SC-CAMLR-VI, Annex 4, Table 6) was being reviewed by WG-Krill.

General

5.21 In considering the whole topic of prey monitoring, the Scientific Committee noted that this issue was complex and felt that recent progress had been disappointing. It recommended, as a matter of high priority, that the WG-Krill, in consultation with WG-CEMP as necessary:

- (a) develop appropriate designs for prey monitoring surveys for the Integrated Study Regions and their vicinities;
- (b) prepare standard methods for the technical aspects of such prey surveys;
- (c) review the relevant environmental data required in the context (i.e. in terms of the spatial and temporal scales involved) of CEMP's requirements for prey monitoring. The offer from the Delegation of the USA to investigate the availability of relevant satellite data and to report to the next meeting of the Scientific Committee on its relevance to CEMP and methods of accessing, processing and analysing it, was gratefully accepted; and
- (d) develop operational plans for collaborative and cooperative integrated surveys, with particular emphasis on the Integrated Study Regions.

5.22 In undertaking these tasks, the Scientific Committee drew the attention of WG-Krill to the following documents made available at the present meeting: SC-CAMLR-VIII/BG/4, 5, 8, 9, 10, 28, 29, 30, 31 32 and 49.

5.23 The Scientific Committee emphasised the importance of integrating research undertaken on predators, prey and environmental features. In particular, it was recognised that cooperative research among nations linking investigations of krill, its predators and the environment would be valuable. Fostering close contact between the WG-Krill and WG-CEMP represents one of the effective means of achieving this goal.

Implications of Fine-Scale Analysis of Krill Data

5.24 WG-CEMP noted that analysis of the fine-scale data for Subareas 48.1, 48.2 and 48.3 is important in assessing the status of krill in the Integrated Study Regions and adjacent areas. This analysis has also provided the first unequivocal indication that a substantial proportion of recent krill harvesting had regularly occurred within the foraging ranges of breeding predators being monitored by CCAMLR, particularly so within the Antarctic Peninsula and South Georgia Integrated Study Regions (Annex 7, paragraphs 83, 84 and 90).

5.25 Recognising the importance to the CEMP of fine-scale krill catch data, the Scientific Committee reiterated its recommendation that the requirements for reporting fine-scale data of krill catches should be altered to include the entire Subareas 48.1, 48.2 and 48.3 (see paragraphs 2.42 and 2.47).

5.26 In preparation for the studies foreshadowed above in paragraph 5.21, WG-CEMP:

- (a) recommended continued collection of data on a haul-by-haul basis; and
- (b) asked Members to synthesise data on predator population size, diet and energy budgets in order to provide estimates of krill requirements of predators in Integrated Study Regions, at least during their breeding seasons (Annex 7, paragraphs 91 and 92).

5.27 The Scientific Committee endorsed these recommendations. However, it noted that estimating energy requirements (and thereby krill consumption) of predators needs careful evaluation of the appropriate parameter values to be used in many parts of the necessary models. Previous attempts to produce similar, but more general, models (e.g. for South

Georgia in SC-CAMLR-VIII/BG/12 and 15) provide a useful starting point. The extensive recent data on activity-specific energy budgets (e.g. SC-CAMLR-VIII/BG/13 and 14) and foraging patterns and ranges of seals and penguins (WG-CEMP-89/22) will, however, need critical evaluation to provide for standardisation (e.g. between Integrated Study Regions and between species within regions).

5.28 The Scientific Committee requested that the Convener of WG-CEMP discuss with Members and other appropriate specialists and specialist groups how best to proceed towards this important goal. Specific proposals should be made to the next meeting of WG-CEMP.

General

Relevance of CEMP to CCAMLR Management Strategies

5.29 WG-CEMP had responded briefly to requests from:

- (a) the Scientific Committee on how information from CEMP might be used in the management of fisheries in the Convention Area (SC-CAMLR-VII, paragraph 5.44); and
- (b) WG-DAC via the Scientific Committee on the ability of the CEMP to detect changes in ecological relationships and to recognise the effects of simple dependencies between species, including distinguishing between natural fluctuations and those induced by fisheries (CAMLR-VII, paragraph 141).

5.30 WG-CEMP noted that:

- (a) its work in defining the accuracy and precision of the predator parameter estimates provided essential first steps to answering these questions;
- (b) it is actively considering various key questions about relationships between predator indices and prey abundance/availability. However, all of these, and especially the last part of the question from WG-DAC, are complex issues which require considerable further study;
- (c) some Members had already produced papers addressing these strategic issues. Further discussion would take place at the next meeting of WG-CEMP; and

- (d) predator indices as derived from the CEMP are not expected to provide a useful index of total prey stock abundance, but would provide a useful index of the level of prey availability to predators (Annex 7, paragraph 103).

5.31 The Scientific Committee agreed to discuss these responses under agenda item 7.

Analysis of Interdependencies between Monitoring Predators and Prey

5.32 Last year the Scientific Committee recommended that WG-CEMP investigate various aspects of this issue (SC-CAMLR-VII, paragraphs 5.22 and 5.23). Members had not responded to the request for explicit suggestions and information (SC-CAMLR-VII, paragraph 5.43). The WG-CEMP believed that this was because of difficulties in doing so until there was a clearer understanding of the type of data to be collected in monitoring operations.

5.33 The Scientific Committee endorsed the WG-CEMP request that Members should respond to the original questions so that these issues can be considered at the next meeting of WG-CEMP.

CCAMLR/IWC Workshop on the Feeding Ecology of Southern Baleen Whales

5.34 This Workshop is intended to permit a functional evaluation of the minke whale as a potential indicator of changes likely to result from harvesting of krill.

5.35 The Workshop was due to be held in San Diego, USA in September 1989. The Report (SC-CAMLR-VIII/8) of the CCAMLR Co-Conveners (Dr J. Bengtson, USA and Mr D. Miller, South Africa) shows that IWC asked to postpone the meeting until 1991, on advice from its Convener (Dr J. Harwood, UK), because of prior and higher-priority commitments of potential IWC Workshop contributors to the IWC Comprehensive Assessment (scheduled to be completed in 1990).

5.36 The Scientific Committee reaffirmed its commitment to this Workshop and asked the Co-Conveners to request Dr Harwood to let CCAMLR know when the analyses requested from IWC contributors are sufficiently advanced to let the Workshop be re-scheduled.

Awareness of the CEMP

5.37 WG-CEMP commended the Secretariat for producing a review of the origins, aims and development of the CEMP. It had been suggested that this might usefully be distributed outside CCAMLR to promote awareness of the CEMP in other countries (Annex 7, paragraphs 124 and 125).

5.38 The Scientific Committee agreed that the review of the CEMP (SC-CAMLR-VIII/BG/51) was useful and that the Secretariat should update it before each meeting of WG-CEMP. It was felt inappropriate to distribute to an external audience, a document primarily intended for internal use. Instead, the Secretariat was asked to prepare, for wide dissemination, a brief article on the CEMP Program and to circulate a draft of this for comments before the next meeting of WG-CEMP.

Next Meeting

5.39 WG-CEMP had emphasised the need to maintain strong links with WG-Krill, especially to ensure that the needs of the CEMP program for prey monitoring were being met.

5.40 It was noted that there were a number of substantive issues requiring discussion and action as soon as possible in order to move ahead with the work of the WG-CEMP. There was widespread approval in Scientific Committee for a meeting of WG-CEMP in 1990 and unanimous support that it should meet in conjunction with WG-Krill, ideally at the same location.

5.41 The Scientific Committee gratefully accepted the invitation extended by the Delegation of the Soviet Union to host a 1990 intersessional meeting of WG-CEMP scheduled to be held adjacent to the meeting of WG-Krill.

5.42 The Delegation of the United Kingdom felt that if a joint meeting was not possible, a separate meeting of WG-CEMP at a different time and place (which would then principally involve predator-related matters), could not be justified on the basis of the agreed priority tasks in hand (SC-CAMLR-VIII/11, paragraph 35). In these circumstances they would prefer to see the next WG-CEMP meeting postponed until 1991 (and held then in conjunction with WG-Krill). In the meantime the single really urgent matter (revision of the Standard Methods booklet), would be dealt with by correspondence in the Scientific Committee intersessional period.

Convener

5.43 Dr Kerry had informed WG-CEMP that he wished to retire as Convener. The Scientific Committee thanked him for his role in guiding CEMP through its first six years, during which great progress had been made. Dr J. Bengtson (USA) was proposed and unanimously supported as the new Convener.

Advice to the Commission

5.44 The Scientific Committee advised the Commission of the urgent need to accord some form of protection to CEMP land-based sites. It drew the Commission's attention to the reasons set out in Annex 7, paragraphs 20 and 21.

5.45 The Scientific Committee drew the attention of the Commission to the recommendation (paragraph 5.11 (a)) that, once data submission protocols are agreed, Members monitoring approved parameters of selected species at nominated sites using approved standard methods should submit these data to the Secretariat annually by 30 September. Where retrospective data, conforming to the same criteria, exist, these should also be submitted as soon as possible.

5.46 The Scientific Committee recommended that WG-CEMP should meet in 1990 in association with the meeting of WG-Krill.