FISH RESOURCES

3.1   The Report of the Working Group, which had met at CCAMLR Headquarters, Hobart from 12 to 20 October 1988, was presented by the Convener, Dr K.-H. Kock (Federal Republic of Germany) and appended at Annex 5. The Committee noted that the new organisation of the Group, which had worked in small sub-groups for the first week followed by the plenary session, had been successful, although shortage of time in the second week had prevented more than a brief examination of the possible effects of alternative long-term management strategies. This success was greatly helped by the support given by the Secretariat before and during the meeting, especially in data compilation and analysis.

3.2   The Committee noted that summary statements of the results of the stock assessments, modified from the format of similar summaries used by the International Council for the Exploration of the Sea for the northeast Atlantic, had been provided for most stocks in Subarea 48.3, and that it was planned to extend these summaries to the other stocks in 1989. It is hoped that the Commission will find these summaries useful.

3.3   The Working Group had noted that with the expansion of the Commission data base, more scientists were wishing to have access to the data contained therein. Where this access was for preparing studies to be submitted to future meetings of the Working Group, the data requested should be supplied, and the originators of the data informed. When data are required for other purposes, then the Secretariat will, in response to a detailed request, supply the data only after permission has been given by the originators of the data.

3.4   Progress was reported on a number of scientific topics. Studies on the use of micro-increments (daily rings) and weight of otoliths had shown promise, and this technique could help resolve the doubts arising in the use of conventional methods of age-determination. Related progress in the CCAMLR program of scale/otolith/bones exchange was also reported. A full report on this program will be presented next year.

3.5   A technique for sampling larval and post-larval fish with small-meshed samplers attached to bottom trawls had been developed by Polish scientists. This technique could be very useful in carrying out sampling of fish in their early life stages in the course of routine trawl surveys. The value of such sampling would be increased if the sampler could be equipped with an opening and closing device so that the fish caught close to the bottom could be separated from those in mid-water.

3.6   Results of mesh selectivity experiments were reported by Poland and Spain, to meet the request of the Commission made at its 1987 Meeting for mesh selectivity studies (CCAMLR-VI, paragraph 85). There were big differences noted in selectivity parameters between experiments. 50% length and selection factors were, however, determined for a number of species, though it was stressed that these only applied under conditions of moderate to low catch rates, and might be lower under commercial conditions of high catches. Also, no experiments had been conducted outside Area 48.

3.7   The Working Group had been able to make assessments of a number of stocks in Areas 48 and 58, and the results of these assessments are set out in its report (see paragraphs 17 to 113 of Annex 5). The Committee congratulated the Working Group on the progress made, and on the increased number of stocks for which it had been possible to make assessments. It noted that many of these assessments had been based on one or another form of Virtual Population Analysis (VPA). In view of the number of ways in which the VPA technique can be applied, and the differences that can arise from using different forms of the technique (e.g. different ways of fitting to observed biomass) and from using different sets of input parameters, the Committee welcomed the progress being made by the Working Group in documenting more precisely the methods and input parameters used, and in examining the effect of using different parameters, e.g. different values of natural mortality. This progress needs to be continued.

3.8   The Delegation of Argentina repeated its concern first raised in the 1985 Meeting that in Subarea 48.3 (South Georgia) the species *N. gibberifrons* is heavily affected by being taken as by-catch (paragraphs 48 and 50 of Annex 5) and this was supported by Australia pointing out also that *N. rossii* continues to remain at a very low level.

3.9   Other delegations shared this concern over stocks that were mainly taken as by-catches, incidentally in fisheries directed at other species, but which were showing signs of being severely affected by fishing. In this connection, it was felt that in paragraph 65 of the Working Group's Report (Annex 5) the parts referring to possible options for the Commission were open to misinterpretation. The views of the Committee on this matter are set out in paragraph 3.16 below. With this exception, the Committee <u>endorsed</u> the Working Group's Report.

Scientific Research Exemption Provision

3.10   The Committee noted that some research vessels that might operate under research permits exempting them from the management regulations, were capable of taking large catches. So that the Committee could be in a position to advise on whether any catches taken might be

large enough to be detrimental to the objectives of the regulations, detailed information was needed regarding the capacities of research vessels. It welcomed the tabulation of information set out in CCAMLR-VII/BG/5, but believed that some improvements were needed. In particular, it was very desirable to make a distinction between fishing capacity and processing and storage capacity. For most assessment surveys, a vessel capable of operating a standard commercial trawl was necessary, but the total volume of the catch could be very small. There was also a need to ensure that the relevant information e.g. on storage capacity, was expressed in a standard form.

3.11   In cases where a research exemption had been granted, it was important that the Scientific Committee should be informed about the results of the research carried out, especially where it was likely that these results were relevant to the management policies. The Committee urged that such reports should be made as soon as possible.

Data Requirements

3.12   The Committee noted that the Working Group had identified a number of items of information and data that were needed to improve their assessments. These are set out in Annex 6.

3.13   The Working Group had also (see paragraphs 114 to 119 of Annex 5) made a number of proposals for changes in the details in which biological data and information from the commercial fisheries should be collected and reported to CCAMLR. The Committee endorsed these proposals. In doing so it emphasised the importance of providing length samples from the commercial vessels, as well as from research of scouting vessels.

Advice to the Commission

3.14   The main substance of the Committee's advice to the Commission in the assessments of the current state of the fish stocks, and of the effects of alternative measures, is set out in paragraphs 27 to 58 (as concerns Subarea 48.3); paragraphs 59 to 64 (as concerns Subareas 48.1 and 48.2); and paragraphs 66 to 113 (as concerns Area 58), Annex 5. The conclusions of the Committee regarding the by-catch problem referred to in paragraph 65 of Appendix 4 to Annex 5 are set out in paragraph 3.19 below. For Subarea 48.3 summaries of the assessments for the main species are set out in Appendix 4 to Annex 5, but it must be stressed that these summaries should be read in conjunction with the main body of the report.

3.15   In addition to providing this general advice, the Committee noted that the Commission had made specific requests, in respect of *C. gunnari* and other species, regarding mesh size, closed areas/seasons, TAC's to achieve low values of fishing mortality, and an evaluation of the total finfish replacement yield on an area basis (CCAMLR-VI, paragraph 84). For the first three of these, answers can be provided in respect of Subarea 48.3:

- to achieve the target size of first capture of 32 cm for *C. gunnari* would require, under conditions of low catch rates, a 107 mm mesh. If selectivity of the net is less under commercial conditions of large catches, a correspondingly larger mesh would be required to achieve the desired results (see paragraph 31 of Annex 5);

- the Working Group had no new data concerning the effect of closed seasons and/or areas which would suggest alterations to the present closed area and closed seasons in Subarea 48.3 (see paragraph 41 of Annex 5);

- the TAC's to achieve target values of fishing mortality are:

	$F_{0.1}$	F_{max}	Reference in Annex 5
for *C. gunnari*	10 194	18 586	(paragraph 38)
N. gibberifrons			
if $M = 0.25$	256	450	(paragraph 53)
if $M = 0.125$	443	720	
P. georgianus	1 800		(paragraph 56)
C. aceratus	1 100		(paragraph 58)

for *P. br. guntheri* no TAC could be calculated, but an alternative policy of limiting catches to around the level of recent years was suggested (paragraph 45 of Annex 5).

3.16   No calculation of total replacement yield was attempted by the Working Group. The Committee noted that *C. gunnari* was now the most important commercial species in most areas, and was subject to very large fluctuations in recruitment. Thus the growth in total population biomass in the absence of fishing (i.e. the replacement yield) varies greatly from year to year, being greatest when a strong year class is entering the stock. Calculation of a replacement yield for a particular year is difficult, and may not be a useful management target.

3.17   The Committee noted that recent catches of *N. gibberifrons* from Subarea 48.3 have been greatly in excess of the TACs set out above. Though this species is apparently mainly taken as a by-catch, there have been occasions when *N. gibberifrons* has been the target of a directed fishery; it would probably be necessary, if the TAC's set out above are to be achieved, that there

should be no directed fishing for this species. The size of the by-catch for a given size of the fishery on other species may be reduced by modifications to fishing practice, e.g. by the replacement of bottom trawling with mid-water trawling. However, without additional restrictions on the directed fishery, it may not be possible to keep the *N. gibberifrons* catches below the TAC.

3.18   If the TAC for *N. gibberifrons* in Subarea 48.3, based on $F_{0.1}$ were set, it would allow recovery of the exploited part of the stock in two to three decades (paragraph 51 of Annex 5). Catch levels in excess of the $F_{0.1}$ derived TAC for *N. gibberifrons* may not allow this part of the stock to recover within this time. The catch of *N. gibberifrons* would be expected to greatly exceed the designated TAC of this species if the TAC of *C. gunnari* is taken, and the proportion of by-catch remains at recent levels (Table 2 of Annex 5). There is a conflict between achieving the *C. gunnari* TAC and rebuilding the stock of *N. gibberifrons*.

3.19   The Scientific Committee draws the attention of the Commission to this issue of by-catch, pointing out that the Commission has to choose between full exploitation of one species and rebuilding another species within the time frame specified in Article II. In the absence of guidance from the Commission on the balance between these conflicting objectives, the Committee could not advise on the choice that should be made.

3.20   The Committee noted that the TAC's set out above had been based on a strategy of maintaining the fishing mortality at $F_{0.1}$. It stressed that this was only one of a number of alternative strategies, some of which might better achieve the objectives of the Commission than a constant $F_{0.1}$. It noted that the Working Group had started work on considering the long-term implications of alternative strategies (see paragraph 39 of Annex 5). When these studies have been further advanced the Committee will ben in a better position to advise the Commission regarding alternative strategies.