FISHERIES MANAGEMENT AND CONSERVATION UNDER CONDITIONS OF UNCERTAINTY

Estimation of IUU catches

7.1 The Scientific Committee noted the advice of WG-FSA (Annex 5, paragraphs 8.3 to 8.8) on trends in IUU fishing in the 2007/08 fishing season. The Working Group reported that fewer IUU vessels had been observed in 2007/8, and that the estimated losses to IUU had also declined from 3 615 tonnes in 2006/07 to 1 169 tonnes in 2007/08 (Annex 5, Tables 2 and 3).

7.2 The Scientific Committee noted with concern that the IUU fleet is increasingly dominated by gillnet vessels (Annex 5, paragraph 8.4), and that for these vessels the configuration and dimensions of the gear used, the catch rates of toothfish, by-catch of fish and birds and impact on benthos are virtually unknown. In consequence, there were very high levels of uncertainty about the estimate of IUU catch for 2007/08 and WG-IMAF had been unable to make an estimate of seabird by-catch in the IUU fishery. Notwithstanding this uncertainty, the Scientific Committee noted that gillnets are a relatively destructive fishing method, are likely to be more efficient at catching fish than longlines, and that the vessels do not require bait and are operated with fewer crew than longline vessels.

7.3 The Scientific Committee agreed that, given the available evidence, it could not conclude that IUU fishing, and its effects, particularly its by-catch of fish, benthos and birds, had significantly declined in the Convention Area. Furthermore, Prof. Duhamel noted that IUU fishing was still occurring in Divisions 58.4.1, 58.4.3b and 58.5.1 and had reoccurred within Subareas 58.6 and 88.1 after a number of years in which there had been no IUU fishing in these subareas.

7.4 The Scientific Committee endorsed WG-FSA's call for Members to increase their efforts to document IUU gillnet activities in the Convention Area and, where feasible, to recover operational IUU gillnets or board IUU gillnet vessels to examine the vessel's catches and logbooks to gain an understanding of this IUU fishing method.

7.5 Prof. Moreno informed the Scientific Committee that information acquired from industry sources suggested that the gillnets used in IUU fishing in the Convention Area were up to 6 n miles in length and 80 m in height. Dr R. Leslie (South Africa) reminded the Scientific Committee that South Africa had presented information on the operation of IUU gillnet vessels to the Commission last year (CCAMLR-XXVI/BG/30 and BG/33). Dr Welsford suggested that information from comparisons of longline and gillnet catch rates in legitimate fisheries north of the Convention Area may assist in understanding the likely differences between these gears in the Convention Area, but that direct observations of gillnet activities in the Convention Area would still be required to fully understand their impact.

7.6 The Scientific Committee noted that while gillnets may be efficient at catching fish and by-catch, their interaction with birds would be quite different from that of longlines. For instance, for flighted birds this could involve the accidental catch of birds attracted to discarded offal rather than the direct catch of birds taking bait on hooks. It would also be expected that gillnets would have a greater impact with penguins in surface waters than do longlines.

7.7 The IUCN representative drew attention to a new report by TRAFFIC and WWF (CCAMLR-XXVII/BG/38) which presented a trade-based assessment of toothfish catches. These data could be used to provide improved estimates of IUU catch in the Convention Area.

7.8 Dr Barrera-Oro provided additional information on the catch of *D. eleginoides* in the Patagonian sector of the Argentine EEZ (Area 41). The catch limit for 2007/08 was the same as for the two previous seasons (2 500 tonnes), but only 1 800 tonnes were taken. The stock is increasing due to the management strategies implemented mainly in 2003. Since 2006/07, 2 020 fish have been tagged, 10 of which have been recovered. It is expected that the recovery rate will increase over the next few years, due to the good cooperation between the tagging program, the fishing fleet and scientific observers placed on vessels.

7.9 Dr Welsford noted that it would be useful if information on the Argentine tagging program, and details of tags released in waters adjacent to the Convention Area, could be provided to the Secretariat.

Climate change

7.10 Dr Trathan introduced two UK papers on climate change (SC-CAMLR-XXVII/7 Rev. 1 and BG/13). The papers highlighted four major areas where climate change could lead to impacts on marine ecosystems that would be of concern to CCAMLR.

7.11 The Scientific Committee thanked the UK for preparing these ideas on how the Committee could systematically consider the potential effects of climate change on the Antarctic marine ecosystem.

7.12 The Scientific Committee advised the Commission that the following consequences of climate change may carry significant risks to Antarctic marine ecosystems: increasing sea temperatures, increasing sea height, changes to global ocean thermo-haline circulation, increasing ocean acidification, the introduction of alien species and increasing accessibility in areas previously restricted by sea-ice to fishing, tourism and commercial transport.

7.13 The Scientific Committee agreed with the UK that there are four major areas of impact that will merit consideration by CCAMLR:

- the potential effects of climate change on invertebrates, including both pelagic and benthic communities;
- the potential effects of climate change on higher-trophic levels, particularly those that are likely to suffer from decreasing temporal and spatial coincidence with essential ecosystem functions;
- the potential effects of climate change on CCAMLR-managed fisheries, particularly the likely disruption of current population and recruitment dynamics;
- the special effects of increased accessibility associated with the increase in ice-free areas of high-Antarctic seas.

7.14 The Scientific Committee agreed that there were three key areas of work which would be required for it to provide specific advice to the Commission on what would be appropriate management responses to climate change, taking into account the issues in paragraph 7.13, that would ensure the objectives of the Convention are met; these are:

(i) To examine the robustness of the scientific advice provided by the Scientific Committee and the stock assessments prepared by its working groups in the face of increasing uncertainty accompanying climate change, particularly in relation to predictions of future population responses and recruitment levels.

(ii) To examine the need for, and implement as appropriate, improvements to current monitoring programs of harvested species and dependent and related species so as to provide robust and timely indicators of climate change impacts.

(iii) To determine whether CCAMLR's management objectives and performance indicators require modification to remain appropriate in the face of climate change uncertainty.

7.15 The Scientific Committee asked its working groups (WG-SAM, WG-EMM, WG-IMAF and WG-FSA) to consider the issues raised in paragraph 7.14 at their meetings in 2009.

7.16 Dr Constable informed the Scientific Committee that a workshop to address important issues in measuring, assessing and providing early-warning detection of climate change impacts on Southern Ocean ecosystems and biodiversity will be held in Hobart, Australia, from 20 to 24 April 2009 at CCAMLR Headquarters. The workshop (www.aad.gov.au/default.asp?casid=35088) Monitoring Climate Change Impacts: Establishing a Southern Ocean Sentinel Program, is sponsored by the Australian Antarctic Division, the Antarctic Climate and Ecosystems Cooperative Research Centre and WWF.

Fishery Management Plans

7.17 The Scientific Committee recalled that last year the Commission had agreed that the ad hoc group on the development of Fishery Management Plans (FMPs) should continue developing the concept and details of a generic CCAMLR fisheries management checklist, and outline the potential role of FMPs in the context of CCAMLR's established management approach (CCAMLR-XXVI, paragraph 5.7).

7.18 The coordinator of the ad hoc group advised the Scientific Committee that the group had not developed the fisheries management checklist any further during the intersessional period because of the realisation that the Performance Review Panel would be considering similar, and in many cases identical, issues. The group therefore decided to await consideration of the panel's report and prioritisation of its recommendations by the Commission before continuing its work.