

## 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 8.1 to 8.7) on IUU fishing trends in the 2008/09 fishing season. It also noted that the estimated IUU catches had declined from 1 168 tonnes in 2007/08 to 938 tonnes in 2008/09 (Annex 5, Tables 2 and 3).

7.2 The Scientific Committee noted that information on IUU activities had been received for six vessels fishing in the Convention Area, and the vessels were assumed to be fishing using gillnets (Annex 5, paragraph 8.3).

7.3 The Scientific Committee noted that new information had been submitted by inspectors for gillnet vessels in the Convention Area (Annex 5, paragraph 8.4). The Scientific Committee thanked Australia for undertaking this work as it was very important for allowing preliminary gillnet catch rates to be estimated. Consequently, the Working Group used this information to refine the estimated IUU catches in Division 58.4.3b. For other divisions where IUU was detected (Divisions 58.4.1 and 58.4.2), mean daily catch rates from licensed longline vessels were applied.

7.4 The Scientific Committee agreed that the information provided was an improvement over information used to calculate estimates in past years. However, it recognised that estimates made using this information were highly conservative and, in reality, gillnet IUU catches are likely to be much greater. In consequence, there were very high levels of uncertainty about the estimate of IUU catch for 2008/09. Further, gillnets are less selective, the by-catch of fish and birds and impact on benthos are virtually unknown. Nets continue to fish if abandoned or lost. The Scientific Committee agreed that gillnets are a destructive fishing method. Every effort should be made to end gillnet IUU activity in the Convention Area.

7.5 The Scientific Committee endorsed the Secretariat's method for estimating IUU catches using the available information on gillnets, again noting that catches from gillnets may be greatly underestimated. The Scientific Committee noted the reduction in the number of IUU fishing vessels sighted in recent seasons, and agreed that this may have been due to several factors. However, it reiterated concerns over the number of uncertainties in the process of developing IUU estimates.

7.6 The Scientific Committee agreed that it would be useful, where possible, for the Secretariat to provide an estimate of the catch allocation between *D. eleginoides* and *D. mawsoni* based on the known location of sightings of IUU activities.

7.7 The Scientific Committee agreed that estimates of IUU fishing (Annex 5, Table 3) made during the last few years, when gillnets were known to be utilised in the Convention Area, should be recalculated using data on catch rates, net fishing duration etc., acquired this year, and updated in the future as new data become available.

7.8 Dr Pshenichnov noted that WG-FSA-09/5 Rev. 1 indicated that in the high seas of Indian Ocean sector (Divisions 58.4.1 and 58.4.2), IUU fishing vessels have been observed

until the beginning of February only. He considered that the principal reason of the absence of data with respect to IUU vessels from these areas was that there has been an absence of licensed vessels due to early completion of fishing as a result of low catch limits in these SSRUs. During this time, fishing vessels were absent in closed SSRUs, which represents a greater part of areas of these divisions.

7.9 Dr Pshenichnov believed that most companies that manage IUU vessels are familiar with CCAMLR conservation measures (for example, through the CCAMLR website), which provide explicit details of in which areas of the Southern Ocean it would be possible to encounter licensed ships in the upcoming year, and in which areas it would be unlikely to encounter them.

7.10 Dr Pshenichnov also believed that the use by IUU vessels of technologies that allow for distant detection would allow them to observe the position of legal vessels in the area. One such method is the use of powerful radars for distant surface searching. Another method would be the use of radar in passive mode.

#### Climate change

7.11 The Scientific Committee endorsed the conclusions of WG-EMM that:

- (i) climate change has the potential to induce rapid change within ecosystems and may impact on how indices generated by CEMP might be used to detect fisheries impacts (Annex 4, paragraph 3.99);
- (ii) the detection of climate impacts is likely to benefit from data that are not currently collected under CEMP, and aligning CEMP with a broader suite of parameters collected under multiple programs would allow integrated datasets to be analysed and may be useful for management purposes (Annex 4, paragraph 3.101);
- (iii) identifying parameters that would be most relevant for distinguishing fisheries impacts from climate impacts is important for future work, and that it would be desirable if such parameters were broadly relevant to a larger scientific and management community (Annex 4, paragraph 3.102).

7.12 The Scientific Committee also endorsed the conclusions in Annex 4, paragraph 3.103, which specifies that detection and attribution of climate change impacts at established monitoring sites remains problematic and may require reference (control) sites, noting that:

- (i) the data currently reported to CEMP are often a component part of research by individual Members, and procuring resources for additional data collection, particularly if new CEMP sites are required, will pose challenges for national programs;
- (ii) for new CEMP and reference sites, a number of years of monitoring will be needed for establishing baselines that are suitable for comparison with data from current monitoring sites;

- (iii) there is uncertainty as to how the fishery will respond to climate change (Annex 4, paragraph 3.106), and information on how the fishery might respond to different scenarios of climate change would be helpful to identify potential fishery impacts on krill-dependent predators in the future.

7.13 The Scientific Committee advised that reviewing CEMP, including the requirements for reference sites for the purposes of monitoring the effects of the krill fishery in an era of rapid climate change, is now a priority issue (Annex 4, paragraph 3.104). Such a review would provide a useful Focus Topic for WG-EMM and would be timely given forthcoming meetings such as the United Nations Climate Change Conference and the Antarctic Treaty Meeting of Experts (ATME) on Climate Change.

7.14 The Scientific Committee noted that SC-CAMLR-XXVIII/BG/17 summarised the outcomes of a workshop on the Southern Ocean Sentinel program. That workshop recognised that reference areas will be critical for monitoring changes in the Antarctic marine ecosystem and for attributing which of these changes are climate change impacts. The workshop also recognised that the chances of successfully measuring climate change impacts on marine ecosystems are high in the Southern Ocean, where rapid changes with substantial climate change impacts are likely to occur and where there is a long tradition of international collaborative research. The Scientific Committee noted that this program would be of benefit to CCAMLR and encouraged Members to help facilitate this work through ICED and SOOS.

7.15 The Scientific Committee endorsed advice on climate change provided by the Joint SC-CAMLR–CEP Workshop (SC-CAMLR-XXVIII/6, paragraphs 4.3 to 4.6).

#### Fishing outside the Convention Area

7.16 The Scientific Committee noted catches of *D. eleginoides* from fisheries outside the Convention Area, which are summarised in Annex 6, Table 4. The total CDS-reported catch from outside the Convention Area for 2008/09 to October 2009 was 10 065 tonnes. The Scientific Committee noted that most of the catch of *D. eleginoides* taken outside the Convention Area was from Areas 41 and 87. Further information on catches outside the Convention Area is provided in paragraphs 4.138 and 4.139.

7.17 The Scientific Committee agreed that WG-FSA should continue to consider catches outside the Convention Area within the work required by its regular agenda. Information provided by Members who regularly collect data or conduct assessments for stocks that are of interest to the Commission but outside the Convention Area can be useful to WG-FSA, and those Members were encouraged to submit such information for consideration by the Working Group. The Scientific Committee also encouraged these Members to have their scientists participate in the work of WG-FSA.