ASSESSMENT OF INCIDENTAL MORTALITY

Incidental Mortality in Longline Fisheries

8.1 The issue of seabird mortality associated with the longline fishery for *D. eleginoides* was discussed in detail at the Scientific Committee's 1990 meeting (SC-CAMLR-IX, paragraphs 7.3 to 7.14). These discussions led to the Commission adopting a conservation measure (Conservation Measure 26/IX) requiring the reporting of seabird entanglements and mortality in the longline fishery.

8.2 The Commission also adopted recommendations of the Scientific Committee on information needed from the fisheries which would help determine the best method of reducing the incidental mortality of seabirds and which required modifications of longline fishing techniques, based on those which, in other longline fisheries, have been successful in reducing incidental mortality (CCAMLR-IX, paragraph 5.4(iii)).

8.3 In 1990, it was proposed that these latter requirements and recommendations be put into effect through a conservation measure, but some Members felt that the technical detail of the methods needed further examination by national experts. The Commission agreed that the formal adoption of such a conservation measure would be considered at its 1992 meeting.

8.4 Dr G. Duhamel (France) has summarised a paper describing incidental mortality observed during an experimental longline fishery trip carried out in 1991 around the Kerguelen Islands, Division 58.5.1 (SC-CAMLR-X/BG/14). It was noted that three species of seabirds had been attracted by bait, caught on the hooks, and drowned (black-browed albatross, *Diomedea melanophris*; giant petrels, *Macronectes* spp.; and white-chinned petrel, *Procellaria aequinoctialis*).

8.5 Dr Duhamel stated his concern that this mortality was not limited to the Kerguelen Islands where a longline fishery has not been developed. It was noted that such mortality can be avoided very easily by modifying fishing gear and the method of its deployment. He emphasised that it was necessary to reduce or eliminate seabird mortality caused by longline fisheries in the Convention Area.

8.6 It was noted that the longline fishing vessels referred to in SC-CAMLR-X/BG/14, operating near Kerguelen, were also known to have worked in the South Georgia area.

8.7 The ASOC observer drew the Scientific Committee's attention to a report (CCAMLR-X/BG/18) which described three days of observations of the activities of two longlining vessels near Shag Rocks (in Subarea 48.3). Incidental mortality of one black-browed albatross, an unidentified albatross, and four smaller seabirds (perhaps white-chinned petrels) was observed during daylight operations of two longline vessels. This catch rate was similar to that reported in SC-CAMLR-X/BG/14. Tori poles and associated recommended precautions were not being used during these observations and it appears unlikely that they were in use at all.

8.8 A verbal report by Mr Brukhis on activities relating to incidental mortality associated with the Soviet longline fishery during the past year was presented. It was reported that incidental mortality does occur in the South Georgia longline fishery. A total of 12 seabirds was reported to have been caught during these operations.

8.9 However, this total did not include the observations reported in SC-CAMLR-X/BG/18, no information on the species involved was recorded (see CCAMLR-V, paragraph 42) nor were data on the incidence of mortality of birds entangled but not brought on board available.

8.10 The Soviet Delegation expressed its view that technical means to reduce incidental seabird mortality currently are not available. A variety of attempts (e.g. technical means as well as light and noise makers) had been made to reduce incidental mortality of seabirds but these methods had not been successful. There are plans to continue evaluations of other possible means of reducing incidental mortality.

8.11 The Soviet Delegation noted that the use of 'tori' poles was thought unlikely to be effective. Although tori poles work in temperate waters to frighten seabirds near longliners, thereby reducing incidental mortality, doubt was expressed that such devices would be effective within the Convention Area.

8.12 In response to a query concerning whether the invitation made last year (SC-CAMLR-IX, paragraph 7.11) to have observers work aboard the Soviet longline fishing vessels was still open, the Soviet Delegation confirmed that this invitation was still in effect.

8.13 The Scientific Committee welcomed the verbal report of the Soviet Delegation, and noted that it looks forward to receiving a written report on this topic prior to its 1992 meeting.

8.14 Dr Croxall expressed his delegation's deep concern over the incidental mortality of seabirds associated with the longline fishery in the Convention Area. He reviewed the information which now indicate that this mortality is a significant problem:

(i) bird bands, recovered from wandering albatrosses, *Diomedea exulans,* killed in the South Georgia longline fishery in both 1989/90 and 1990/91 and reported to the Russian bird banding office, demonstrate mortality is occurring. These data reveal previous statements, denying that incidental mortality was occurring (SC-CAMLR-IX, paragraph 7.7), to be incorrect;

(ii) the verbal comments of the Soviet Delegation (paragraph 8.8) at the present meeting confirm that seabird incidental mortality is a regular occurrence; and

(iii) independent direct observations of longline fishing activities and incidental seabird catch rates as described in CCAMLR-X/BG/18, indicate a substantial incidental mortality in Subarea 48.3. During the 1990/91 season, it is estimated that there were approximately 580 ship days of longline fishing. At the prevailing catch rate a total of 1 700 birds would have been killed (about 580 of which would be albatrosses; the remainder smaller petrels).

8.15 The Soviet Delegation expressed its doubts on the abovementioned calculations (paragraph 8.14), and attention was drawn to the lack of any reliable data for the conclusions contained in paragraphs 8.14(i) and (iii).

8.16 The United Kingdom Delegation noted that the data presented in paragraph 8.14(i) and CCAMLR-X/BG/18 are the only reliable quantitative data on this topic available for this fishery in Subarea 48.3.

8.17 Dr Croxall noted that such rates of mortality are comparable to those observed in the tuna longline fishery. This fishery had been the single most important known cause of mortality in wandering albatrosses (accounting for about half the annual adult mortality) and the major cause of the population decline of this species in the Convention Area in general and at South Georgia in particular (SC-CAMLR-X/BG/8).

8.18 That an additional cause of mortality, of potentially equal magnitude, is being allowed to occur immediately adjacent to the species' only breeding site in Subarea 48.3 (and thereby particularly affecting breeding birds with dependent offspring), is a matter of the gravest concern.

8.19 Furthermore, the existing decline of wandering albatross populations at South Georgia is currently irreversible in the next two to three decades if the causal factors continue operating. This places an obligation on the Commission, as indicated in Article II of the Convention, to take all measures possible to rectify this situation.

8.20 In response to assertions by the Soviet Union that the number of birds observed to be caught were few, Dr Kerry noted that although the catch rate of individual birds per number of hooks fished seems small, the total impact of the fishery is large because such a large number of hooks is deployed during the fishing season. The actual mortality that results for seabird populations is likely to be substantial.

8.21 Furthermore, typically in such fisheries, many birds are entangled and drowned without being brought aboard vessels. Reports of birds actually caught will therefore be substantial underestimates of actual mortality.

8.22 Dr Kerry expressed doubts about whether, and if so, how thoroughly, the use and effectiveness of tori poles in the Soviet longline fishery in Antarctic waters had been tested. He noted that the experience from similar areas outside but adjacent to the Convention Area strongly suggested that tori poles would be very effective in reducing seabird incidental mortality, since sea conditions and the avian species following the vessels would be the same.

8.23 The Scientific Committee noted that despite the Commission's request in 1990 that detailed information on longlining be provided, such data have not been provided. Furthermore, incidental mortality has been inaccurately reported in 1990/91 (a minimum underestimate of 33%) and no reports had been made in previous years in which mortality was known to have occurred. In addition, it was evident that at least three of the four agreed recommendations, specified by the Commission in 1990 to be followed until such time as the data required under (i) and (ii) of paragraph 5.4 (CCAMLR-IX) were made available, were not followed during the past year:

(i) longlines were deployed during daylight;
(ii) tori poles were apparently not used; and
(iii) baits were sinking very slowly.

Advice to the Commission

8.24 Most delegations recommended that last year's draft conservation measure (CCAMLR-IX, Annex 6) be implemented and that all other relevant recommendations should remain in force.

8.25 In addition, given the following circumstances, the Scientific Committee agreed that the Commission should take further steps to protect seabirds from incidental mortality from the longline fishery:

(i) there is significant seabird mortality occurring in association with the longline fishery in the Convention Area;

(ii) the degree to which it is possible to modify longlining gear or methods to reduce incidental mortality is uncertain;

(iii) the information specified by the Commission (CCAMLR-IX, paragraph 5.4(ii)) to assist in determining the best methods of reducing seabird incidental mortality has not been provided;

(iv) the modifications to longline fishing techniques recommended by the Commission (CCAMLR-IX, paragraph 5.4(iii)) were not followed; and

(v) reporting of incidental mortality has been misleading and inaccurate.

8.26 The Scientific Committee agreed that the only two realistic options (which are not mutually exclusive) for the Commission to consider in adopting additional measures to reduce seabird incidental mortality associated with longline fisheries in the Convention Area are:

(i) to require improved modifications of gear or fishing methods;
and/ or
(ii) to restrict the operation of the fishery through some combination of catch and/or effort limitation.

Incidental Mortality in Trawl Fisheries

8.27 During the Scientific Committee's 1990 meeting, the New Zealand Delegation called attention to instances of seabird mortality occurring in Soviet trawl fisheries in New Zealand waters. Members were reminded that a similar problem had been reported for the trawl fishery operating around the Kerguelen Islands, and were requested to investigate this matter further and to report to the 1991 meeting.

8.28 Dr Robertson summarised a paper describing the incidental catch of seabirds in the Soviet squid trawl fishery around the Auckland Island shelf (SC-CAMLR-X/BG/4). There is significant mortality with at least one species of seabird (white-capped albatross, *Diomedea cauta steadi*), and it is due to colliding with and becoming entangled in net monitor cables (electrical control cables).

8.29 Actual mortality is underestimated. This is because some birds, after becoming entangled with the cable, are then swept off between the sea surface and the net. These lost birds are obviously not counted by observers when the net is retrieved.

8.30 Although the observations described in the New Zealand paper were from outside of Antarctic waters, net monitor cables are used in the fishery on krill, *C. gunnari* and *E. carlsbergi* in the Convention Area. Therefore, it is reasonable to conclude that similar mortality is occurring.

8.31 Bird mortality associated with the use of the netsonde cable during the fishery for *C. gunnari* was also noted on the Kerguelen Shelf (SC-CAMLR-X/BG/14).

8.32 The rapid expansion of the *Electrona* fishery (tripled in the past year) highlights the importance of this issue. The fishery operating in the vicinity of Shag Rocks is very near the highest density of nesting albatrosses in the Convention Area.

8.33 WG-FSA addressed this problem (Annex 6, paragraphs 5.7 to 5.10) and agreed that wherever possible in commercial fisheries the use of netsonde cables should be phased out.

8.34 It is technically feasible to phase out netsonde monitor cables because new technology is available in which the netsounders operate by an acoustic link to the ship. French researchers reported that once the net monitor cables were removed from nets, mortality of seabirds ended (SC-CAMLR-X/BG/14).

Management Advice

8.35 The Scientific Committee recommends to the Commission that the use of net monitor cables be phased out as rapidly as possible. During this phase out period, interim measures should be encouraged to decrease seabird mortality (e.g. rig net monitor cables at the stern of the ship and out of the flight path of birds).

8.36 The Representative of the USSR noted that at present the USSR was not ready to suspend the use of net monitor cables. He stated that because various fish species are fished by different methods, different procedures should be used with different species to reduce incidental mortality.

8.37 The Scientific Committee emphasized that the recommendation to phase out net monitor cables does not apply to research vessels, as there have been no reports of incidental mortality associated with the use of these cables on research vessels.

8.38 Research on additional trawl gear modification to reduce incidental mortality should be undertaken during the phase-out period.

Impact of Bottom Trawling

8.39 The Australian Delegation presented a study concerning the effects of bottom trawling on benthic communities (SC-CAMLR-X/BG/19). A research trawl was used for 14, 30-minute hauls on a variety of different bottom habitats. The most common benthic catch except for fishes were sponges and ascidians. Catches of fish only exceeded 50 kg at two stations while the weight of sponges exceeded 50 kg at 50% of the stations.

8.40 Because the research trawls in this study were shorter in duration than commercial trawls and the action of the doors and ground gear was not examined, it is expected that commercial trawls would cause considerably more disturbance of benthic communities.

8.41 Given the potentially severe adverse impacts of repeated bottom trawling in certain areas, it was suggested that selected areas might be set aside or closed periodically to allow recovery of benthos in these areas.

8.42 Dr Shust commented that benthic communities at the 400 to 700 m depth range are usually stable, and affected by coastal currents. Furthermore, it is unknown whether commercially harvestable fish are found in such areas.

Marine Debris

8.43 Members' reports on the assessment and avoidance of incidental mortality in the Convention Area had been received from Australia (CCAMLR-X/BG/8), Brazil (CCAMLR-X/BG/13), Korea (CCAMLR-X/BG/19), the United Kingdom (CCAMLR-X/BG/5 and CCAMLR-X/BG/16), and the United States (CCAMLR-X/BG/7).

8.44 Dr Croxall drew the Scientific Committee's attention to CCAMLR-X/BG/5, which outlined the results of an annual survey of fur seal entanglement at Bird Island, South Georgia. He noted that the incidence of observed entanglement had declined by 30% over the previous year (with a 40% decline during the year before that). The observed rate of fur seal entanglement at Bird Island has dropped approximately 80% over the past two years, and this may reflect the Commission's efforts to stop dumping debris at sea.

8.45 The UK paper pertaining to beach litter surveys at Signy Island was introduced as a possible model for beach surveys conducted by other Members (SC-CAMLR-X/BG/16). Members were encouraged to consider whether the approach used in this paper would be appropriate for reporting the results of their surveys of marine debris.

8.46 Dr Kerry stated that Australian surveys of marine debris had resulted in finding floats, oil, and other debris (SC-CAMLR-X/BG/8). He noted that an over-wintering party at Heard Island intended to conduct surveys of entangled fur seals throughout the winter.

8.47 The Korean Delegation noted that Korean fishermen have been asked to report sightings and encounters with marine debris during the time that they are in the Convention Area. Annual surveys of marine debris will be continued in the future.

8.48 The US Delegation informed the Scientific Committee that the US and Chile were planning to undertake a cooperative census of pinnipeds and seabirds in the South Shetland Islands during the 1991/92 austral summer. During this survey, records will be kept of marine debris and entangled wildlife encountered. The results of this survey will be reported at the Scientific Committee's next meeting.

8.49 Dr Holt reviewed a paper describing the incidence of plastic in the diets of Antarctic birds (SC-CAMLR-X/BG/18). The occurrence of plastic in the diets of Antarctic seabirds is relatively low compared to other oceans. This suggests that there is relatively little plastic floating on the surface of ocean waters south of the Antarctic Convergence. Data were collected between 1976 and 1988, and included diet information for 1 200 seabirds of 23 species.

Driftnet Fisheries

8.50 It was recalled that at its 1990 meeting, the Commission adopted Resolution 7/IX, which declared there will be no expansion of large-scale pelagic driftnet fishing into the Convention Area (CCAMLR-IX, paragraph 5.15).

8.51 At the present meeting, Members reported that they were not aware of any information or plans regarding the future use of driftnets in the Convention Area.

General Matters

8.52 Recognising that issues pertaining to incidental mortality assessment and marine debris are considered under both the agenda of the Scientific Committee and the Commission, the Scientific Committee suggested that future discussions of these topics be structured as follows: the Scientific Committee should consider primarily evidence of impacts on biota, whereas the Commission should consider general issues concerning the incidence of debris, dumping, pollution, etc.