

REPORT OF THE SUB-COMMITTEE ON ECOSYSTEMS

(Madrid, Spain – September 27-30, 2011)

The Meeting was held at the ICCAT Secretariat on September 27 to September 30, 2011. Mr. Cleo Small (BirdLife International) and Mr. Anton Wolfaardt (ACAP) volunteered to serve as rapporteurs.

1. Review of new scientific information

The Sub-Committee discussed and made recommendation regarding these documents. This discussion can be found in SCRS/2011/204.

Document SCRS/2011/150 provided an updated review of seabird by-catch mitigation measures for pelagic longline fisheries, undertaken by the Seabird By-catch Working Group of the Agreement on the Conservation of Albatrosses and Petrels (ACAP) in August 2011. The review includes the scientific evidence in support of the effectiveness of each mitigation measure, recommendations on appropriate combinations of measures, along with recommended technical specifications, monitoring requirements, and research needs.

Document SCRS/2011/151 presented a summary of the ACAP best practice advice for mitigating seabird by-catch in pelagic longline fisheries. Currently, no single mitigation measure can reliably prevent incidental mortality. The most effective approach is to use simultaneously weighted branchlines, night setting and bird scaring lines. It is recommended that these three measures should be applied in high risk areas such as the high latitudes of southern hemisphere oceans, and lower to mid-latitude fisheries of both the northern and south east Pacific, to reduce the incidental mortality to the lowest possible levels. Other factors such as safety, practicality and the characteristics of the fishery should also be recognised. ACAP best practice advice on bird scaring lines is that vessels >35m use two bird scaring lines, one on each side of the longline. For vessels <35 m, a single bird-scaring line, using either long and short streamers or short streamers only, has been found effective.

Current recommended minimum standard for branchline weighting configurations are:

- Greater than 45 g attached within 1 m of the hook or;
- Greater than 60 g attached within 3.5 m of the hook or;
- Greater than 98 g weight attached within 4 m of the hook.

On the basis of the evidence currently available, ACAP does not currently recommend the following as seabird by-catch mitigation options: line shooters, olfactory deterrents, hook size and design, side-setting, the use of blue-dyed bait and bait thaw status.

Document SCRS/2011/187 assessed the impact of the Uruguayan pelagic longline fishery on populations of albatrosses and petrels. The paper applied Productivity and Susceptibility Analysis (PSA) and the concept of "Potential Biological Removal" (PBR). This two-step approach allowed an estimate of the relative impact of the Uruguayan pelagic longline fleet for most of the populations or species of albatross and petrel that have high association with this fishery. Of 15 species addressed, 11 were fully evaluated, and a ranking of risk was obtained. The concept of PBR was applied to the eight most at risk species. The assessment found that the impact of fishing on populations could not be straightforwardly presumed from their by-catch rates. The results indicate that great albatrosses (*Diomedea* spp) and Atlantic yellow-nosed albatross *Thalassarche chlororhynchos* were more affected than the species caught in highest numbers by the fishery (i.e. black-browed albatross *Thalassarche melanophrys* and white-chinned petrel *Procellaria aequinoctialis*). Wandering albatross *Diomedea exulans* from South Georgia would be the population most affected by the Uruguayan fleet. This work should be seen as a case study of the fisheries operating in the southwestern Atlantic, particularly over part of the Brazil Malvinas Confluence (BMC). Considering the fishing effort that several pelagic longline fleets expend over the region of the BMC, this paper highlights that some populations of albatross and petrel are likely to be seriously affected.

Document SCRS/2011/198 presented seabird distribution maps based on seabird tracking data, interaction maps between longline fishery effort and seabird distribution, and data on the distribution of by-catch CPUE of seabird species in the South Atlantic, based on Japanese by-catch data, to identify by-catch hotspots. Tracking data indicate highest concentrations of the seabird breeding distribution in the area between 5-10W, 35-40S, and 35-

40S, 10W-15E, and also 35-60S, 55-65W during non-breeding. The available by-catch data confirm the distributions shown by the tracking data but there are exceptions in each species and degree of concentration of seabird distribution did not necessarily agree with the degree of CPUE in each species. The degree of interaction data was low level for the latitude 40-45S while CPUE of by-catch data was quite high. Interaction data showed concentration for latitudes 25-40S longitudes 55-40W, where there is no by-catch data. It was suggested that three methods should be integrated to define the hotspot. Distribution of by-catch CPUE in albatrosses was high especially off South African waters and in the south-eastern Indian Ocean. Thus, there two area and the SW Atlantic would be considered as risk area for seabird by-catch, and it is necessary to introduce appropriate mitigation measure there.

Document SCRS/2011/201 reported the results of a study to estimate seabird by-catch by Taiwanese vessels in the Atlantic. Sixty one trips with 6,181 observed sets on Taiwanese longline vessels in the Atlantic Ocean from March 2004 to February 2008 were used to record the interaction between seabirds and longline fisheries. At least twenty eight species of seabirds were sighted, including two species in the north, fifteen species in the tropics and thirteen species in the South Atlantic. Eight species were albatrosses, the group of greatest conservation concern. 198 seabirds of eight major species were caught and 23 were live-released. The major by-catch species included yellow-nosed albatross, black-browed albatross, wandering albatross, spectacled petrel and southern giant petrel in the southern Atlantic Ocean. Major by-catch areas were 20°~40°S, 10°W~15°E and 35°~45°S, 45°~55°W. The nominal by-catch per thousand hooks ranged from 0 in the North Atlantic Ocean to 0.064 in the Southeast Atlantic Ocean. The observer coverage rate was too low for an accurate estimate of seabird by-catch in the northern Atlantic Ocean. In the tropical area, the level of observer coverage was high and indicated the seabird by-catch rate was low with low risks for seabirds. As for the South Atlantic Ocean, by-catch rates were influenced by the number of birds sighted and location using generalized additive models (GAMs). Total ICCAT pelagic longline effort was used in the final GAM to predict total by-catch in the South Atlantic Ocean. The predicted annual by-catch number with the bootstrapped 95% confidence interval was from 3,446 to 6,083 per year by pelagic longline fleets from 2004 to 2008. The study highlights the need for all pelagic longline vessels operating south of 20S to use bird scaring lines and other mitigation measures in order to reduce seabird by-catch. Continued collection of those data could provide information on the effectiveness of the current conservation measures. For future research and conservation, more international cooperation on research and data sharing is critical to ensure the sustainability of marine ecosystems and fisheries.

Document SCRS/2011/206 presented a proposal by Japan for the application of seabird by-catch mitigation measures in the South Atlantic. This paper is thoroughly described in the document SCRS/2001/204. Unfortunately, the Sub-Committee could not properly evaluate this paper because it dealt with policy issues, rather than a scientific evaluation.

2. Tuna RFMO Joint By-catch Technical Working Group

The Sub-Committee discussed the outcomes of the first meeting of the Joint By-catch Technical Working Group (JBTWG), which was a one-day meeting held on 11 July 2011 during the KOBE 3 Meeting. The Sub-Committee reviewed the general recommendation for the standardization and harmonization of data collection and the list of research priorities and discussed their relevancy to ICCAT. The Sub-Committee also produced a list of research recommendations of high importance in the ICCAT fisheries. This discussion and is summarized in SCRS/2011/204.

3. Ecosystem considerations

A National Scientist from the United States presented progress made in describing the Oxygen Minimum Zone in the tropical Atlantic Ocean. This feature has expanded since the 1960s resulting in a reduced proportion of the Atlantic Ocean possessing sufficient dissolved oxygen for high-oxygen demand species such and yellowfin tuna and blue marlin. The expansion of this feature (both in depth and surface area) has implications for stock since it may alter catchability and/or carrying capacity as the fish become compressed in the surface waters where the dissolved oxygen remains sufficient.

4. Recommendations

Given current ICCAT requirements of a minimum of 5% observer coverage, and the need to collect and report data for a number of by-catch species, the SC-ECO recommends the development and implementation of capacity building programmes to improve sampling protocols, observer training and species identification (e.g. through identification guides or sending photos and samples to experts).