REPORT FROM THE WPBON THE DATA SITUATION FOR BILLFISH

NOMINAL CATCH (NC) DATA

The first catches of billfish recorded in the IOTC nominal catches (NC) database were made in 1970, by longline gear. Although catches of these species did occur before that year, they were reported aggregated as billfish NEI. Other key issues affecting the quality of billfish data, which are important to bear in mind, are:

- **Mislabelling**: Billfish are almost always a bycatch and are usually aggregated with other species as Marlins NEI, Billfish NEI or Other tuna and tuna-like species NEI. In the last case, catches are not even listed as billfish.
- **Underreporting:** Billfish, especially the smaller sizes, are sometimes discarded. Logbooks statistics seldom or never include discards.
- **Non-reporting:** Catches of sport fishing boats that usually target billfish are almost never reported.

Therefore, although most of the data stored in the IOTC databases are considered accurate and reliable, the databases are far from complete. Longline and gillnet fisheries are responsible for most of the catches of these species, while low catches have also been reported by handline, troll line and, to a lesser extent, hook-and-line fisheries.

REVIEW OF LONGLINE DATA

Other longline fleets for which important swordfish catches are assumed, especially over the last 15 years, are those whose catches have been estimated by the Secretariat. These fleets include two types of vessels: a) Small longliners (<100 GRT) targeting fresh tunas for the sashimi market and b) Large deep-freezing longliners (>100 GRT) flying flags of non-reporting countries: As most of the boats were assumed to be owned from Taiwan and operating in the same manner as the Taiwanese fleet, the estimated catches include important catches of billfish. Nevertheless, more information is needed regarding this fleet to make a better estimate of its catches, especially for the years before 1998.

Marlins are caught primarily by longlines. The Indo-Pacific blue marlin is the species more often caught, followed by striped and black marlins. While the longlines catches of the three main longline fishing countries (Taiwan, Japan, Indonesia) have been more or less stable this is not the case with gillnets which reported important catches of, especially blue and black marlins, from 1987 to 1994. The decrease in the catches after that year is not a real decrease but comes from Sri Lanka aggregating the catches of these species as billfish.

Almost no catches of short-billed spearfish have been reported to IOTC (only for the last three years). This species is caught by longlines and gillnets, but is either discarded or recorded as Indo-Pacific sailfish due to its low value. Both species are only marketed locally.

REVIEW OF GILLNET DATA

Although there does not seem to be any artisanal fishery specifically targeting billfish, billfish catches with gillnets have been increasing constantly. The gillnet fishery of Sri Lanka, after years of continuous development, is currently taking most of the reported billfish catches.

Catches of Indo-Pacific sailfish have been increasing constantly, especially since the early nineties (a fivefold increase in the last ten years), most of which is attributable to the gillnet fishery in Sri Lanka and to a lesser extent to Iran, Oman and Pakistan gillnet fisheries. Catches of longlines and artisanal gears, however, remained stable over the time.

REVIEW OF OTHER GEARS

Billfish catches reported under other gears such as handline and troll line have never been high (Figure 2). Small catches, in particular by troll lines, are reported from countries such as France (Réunion), Comoros, Seychelles, Mauritius and South Africa, and are expected to occur in Madagascar, Kenya, Tanzania and other coastal countries.

CATCH AND EFFORT (CE) DATA

Catch-and-effort data are more or less complete for the large longline fleets (Japan, Korea and Taiwan) or those targeting swordfish, such as Taiwan (some boats), France, Spain and Seychelles. These statistics are not available for the South African, Indonesian (initially Taiwanese), Portuguese and NEI fleets. Catch-and-effort data for gill nets and line are scarce and incomplete.

SIZE FREQUENCY (SF) DATA

The situation for size-frequency statistics of these species is the same or even worse. For the Taiwanese longline fleet, only data from 1985 to 1988 were reported. Almost no size-frequency statistics exist for any other fisheries.

Length-frequency data for swordfish have not been reported in a standard form from different fisheries and cannot be readily compared. For example, in Réunion and in the Seychelles, lengths have been reported as pectoral to anal fin lengths (PAL), whereas other countries (e.g. Australia and Japan) often report eye to caudal fork length (EFL). Réunion

has a conversion factor for PAL to EFL; however, these conversions are not necessarily simple linear conversions. The Working Party recommends that lengths be measured in a single form (e.g. EFL).

ISTIOPHORID BILLFISHES

Sailfish is the main Istiophorid caught, with an estimated annual total of 13,000 t reported. However, in 1998, an estimated total of 20,000 t of 'unspecified' billfish (or billfish NEI) highlights problems with the species composition in the catch data. Two issues contribute to this situation:

Difficulties in identification of Istiophorids are common. This may be due to:

a) *Problems arising from the literal translations from Japanese:* The Japanese name for blue marlin is *kurokajiki*, meaning black marlin and for black marlin is *shirokajiki*, meaning white marlin. The latter is not so important since the true white marlin, *Tetrapturus albidus*, does not occur in the Indian Ocean. However, the designation of blue marlin as black marlin is thought to seriously compromise the veracity of the catch records.

b) The problem of identification of carcasses that have had the head and fins removed.

Other relevant factors regarding Istiophorids in data collections include:

- Nearly all sailfish are caught by coastal gillnets (and are important to those fisheries).
- Almost all sailfish and shortbill spearfish caught by longline in the Indian Ocean are discarded and not reported.
- Sport fishery catches of billfish are very poorly reported in statistics.

In the discussion it was established that, because little or no billfish is imported into Japan from other countries, the NEI component of billfish could not be divided into the constituent species from import records. It is not clear if import data from Taiwan exist.

GENERAL DISCUSSION ON THE DATA SITUATION

Regarding the overall data situation for billfish, the findings and conclusions of the working group could be summarized as follows:

- The most complete data sets in terms of spatial and temporal coverage come from the Taiwanese and Japanese fleets, covering the whole Indian Ocean for more than 30 years. Given the importance of Taiwanese catches of billfish, the Working Party encourages the active participation of scientists from China(Taiwan) in its meetings.
- The most important catches are those of Taiwan, Japan and Sri Lanka. The Taiwanese fleet targets swordfish, while the Japanese fleet targets other species, with swordfish as a bycatch. The Sri Lankan catches are from gillnets which do not target any particular species.
- A large percentage of the longline fleet has not been reporting. Catch estimates are based on the number of operating vessels, and partial vessel registry information is only available from 1998. Efforts to reconstruct historical catch data based on alternative sources of information, such as market data, customs declarations, and/or processing plant records should continue.
- The quality of the size-frequency data that exists is good in general, however, the coverage is not good across the Indian Ocean fisheries. It is important to obtain size data from the Taiwanese fleet, and the Working Party recommended that efforts continue to make such data available to IOTC
- To perform effective stock assessment based on age-structured models, information about sex ratios and length-frequency by sex is essential.
- It is encouraging to see that there is an effort to obtain reliable logbook data for the Spanish and French swordfish fisheries.
- To attempt to rectify the situation regarding aggregation of all Istiophorid species in Sri Lankan records, it was recommended that IOTC request that individual species be identified and recorded in this fishery.
- It is important to obtain better data from the sport fisheries that target billfish. This might be achieved by contacting and liasing with key personnel in clubs and in the charter industries in the main countries involved in sport fishing. Historic club, tournament and charter log information has proven to be very useful in other areas, and routine monitoring of organized events is not difficult.
- An attempt should be made to obtain estimates of Istiophorid bycatch of purse seine fisheries by exploring all possible sources of data, possibly using as reference methods used in the Pacific.
- It seems evident that performing good stock assessments for the species would be difficult due to gaps and uncertainties of currently available data.
- The possibility of obtaining historical market information to be used to validate and fill the gaps in the species composition of the catches was discussed. It seems that this may be possible for the Japanese fleet, and a portion of the Taiwanese fleet for which the catches go to sashimi markets.