

ICCAT EFFORT ON RESEARCH ON SHARK INCIDENTAL-CATCHES OF TUNA FISHING FLEETS

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SUMMARY

ICCAT started its collection of statistics on shark by-catch of tuna fishing fleets in the Atlantic in 1995. The species included in the incidental-catch of various tuna fisheries were identified, a reporting format was established, data have since been collected, a data base has been established, and efforts have also been made to estimate historical catches. Work is also in progress to estimate abundance indices and study biological parameters, with a view to assessing stocks and stock structure. Given that much information on catch, effort, biology, tagging and genetic studies are available, although scattered, ICCAT is offering to become a vehicle to synthesize all the data on pelagic sharks in the Atlantic Ocean. Once a comprehensive data base is developed, ICCAT will evaluate these data for the possibility of carrying out stock assessments on one or two selected species in the near future.

RÉSUMÉ

L'ICCAT a entrepris en 1995 la collecte de statistiques sur les prises accessoires de requins par les flottilles de pêche thonière de l'Atlantique. Les espèces comprises dans la prise accidentelles de diverses pêcheries thonières ont été identifiées, un formulaire a été dressé pour la transmission de l'information, les données ont ensuite été rassemblées, une base de données a été créée et des tentatives ont également été faites d'estimer les prises historiques. Des travaux sont aussi en cours pour estimer les indices d'abondance et pour étudier les paramètres biologiques, dans le but d'évaluer les stocks et leur structure. Etant donné que l'on dispose d'un volume important, bien qu'éparpillé, d'informations sur la capture, l'effort, la biologie, le marquage et la génétique, l'ICCAT s'offre à assumer la synthèse de toutes les données sur les requins pélagiques dans l'océan Atlantique. Une fois créée une base exhaustive de données, l'ICCAT évaluera ces données pour étudier la possibilité d'effectuer dans un proche avenir l'évaluation des stocks d'une ou deux espèces choisies.

RESUMEN

ICCAT comenzó a recopilar estadísticas sobre capturas fortuitas de tiburones de las flotas atuneras en el Atlántico en 1995. Se identificaron las especies incluidas en la captura accesoria de diversas pesquerías de túnidos, se estableció un formato de comunicación, se han recopilado datos desde entonces, se ha establecido una base de datos y también se han realizado esfuerzos para estimar las capturas históricas. Además, se está trabajando en la estimación de los índices de abundancia y en el estudio de parámetros biológicos con vistas a la evaluación de stocks y estructura de stock. Dado que existe gran cantidad de información disponible, aunque dispersa, sobre captura, esfuerzo, biología, marcado y estudios genéticos, ICCAT está ofreciendo convertirse en un vehículo que sirva para sintetizar todos los datos sobre tiburones pelágicos en el Océano Atlántico. Una vez desarrollada una amplia base de datos, ICCAT evaluará estos datos y considerará la posibilidad de llevar a cabo, en un futuro cercano, evaluaciones de stock sobre una o dos especies seleccionadas.

1. ATLANTIC PELAGIC SHARK DATA

At the Ninth Meeting of the Conference of the Parties to the Convention on International Trade on Endangered Species of Wild Fauna and Flora (CITES), a resolution on "Status of International Trade in Shark Species" (Conf.9.17) was passed. The International Commission for the Conservation

of Atlantic Tunas (ICCAT) took this Resolution very seriously, as shark species comprise a major part of the by-catch of many tuna fisheries.

ICCAT took steps to: 1) establish Working Group and Sub-Committee to study incidental catches to tuna fisheries; 2) identify which species are taken incidentally; 3) select the species for which catches (including discards dead and/or live) must be reported; 4) establish procedures and criteria for reporting catches; establish a data base for the relevant shark species; 5) try to work retrospectively (get estimates for historical catches); 6) evaluate whether there were sufficient data to warrant carrying out assessments; and 7) where feasible, conduct assessments for a limited number of species. At the same time, ICCAT requested all other Regional Fisheries Agencies to give their full consideration to this issue and to collaborate in assembling the most complete shark data possible.

ICCAT completed the steps from 1) through 4) and is currently working on 5) and eventually towards steps 6) and 7). The data are quite complete from 1995 onwards, when the project started and the estimation of historical catch data is well advanced for the major species (blue sharks and shortfin mako sharks). Since most pelagic shark catches are those incidental to tuna fisheries, or target catches by tuna fishing fleets, for which ICCAT is collecting data, the ICCAT data base can be considered to cover most, if not all, Atlantic pelagic sharks.

The data base includes total annual catches by species, countries and general areas, catches by 5x5 areas and quarter for selected fisheries, various conversion factors used (between different types of weights and length, and length weight relation), biological measurements (length and weight), and tag release-recovery data.

The comparisons of ICCAT annual catch data with FAO annual landing statistics for the Atlantic indicated that many of FAO figures are reported at a level of aggregation of many species, while ICCAT data are more often separated at species level. Also FAO data do not request reporting of discards (live or dead), while ICCAT data include dead discards separately from retained catches. Therefore, even though ICCAT data cover only those taken incidentally, it is more useful for stock assessments.

ICCAT catch and effort (hence CPUE) data in finer time-area strata are limited to a few tuna fisheries and a few pelagic shark species but across the Atlantic. Despite some difficulties in standardizing effort of incidental catches, series of CPUE provide valuable information on abundance indices for selected pelagic shark species. Further studies are being carried out to expand such estimates for historical period.

Biological data are very abundant, particularly those relating to habitat, various parameters such as growth, life history and reproductive behaviour. These data are the result of the accumulated effort of scientists not necessarily ICCAT associated) over the past few decades. Unfortunately, much information is dispersed through various publications and institutes, or held by individual scientists. At present, the most important task is to collect and synthesize all the information into one base, including tag release and recovery data. ICCAT tag files were originally developed for tuna and tuna-like species, and shark database is a by-product. It is far from complete. The intention is to gather shark tag release and recovery information, which appear to be very abundant for the Atlantic area.

The above procedure for the integration of all information available for Atlantic pelagic sharks will take one to two years, even with the full collaboration of scientists concerned. ICCAT is willing to offer itself as the vehicle to achieve this, as most of the pelagic shark catches are made by tuna fleets. ICCAT is the only Regional Agency covering the entire Atlantic Ocean, and has expertise in dealing with highly migratory species.

2. ICCAT MANAGEMENT POLICY

History of ICCAT research on pelagic sharks

Responding to the Resolution (Conf. 9.17) of CITES, ICCAT studied the issue of whether or not the mandate of the Commission includes shark resources. After reviewing Article IV of the International Convention for the Conservation of Atlantic Tunas, it was concluded that "*ICCAT has responsibility for collecting information on catches of sharks and other fishes which are coincidental to fishing effort directed toward tuna and tuna-like species. (SCRS Report)*"

The ICCAT studied, at its 1995 meeting, the Resolution on sharks by CITES adopted at the Ninth Conference of the Parties, and adopted the "ICCAT Resolution on Cooperation with FAO with regard to Study on the Status of Stocks and By-Catch of Shark Species". In essence, it was recognized that FAO should be the focal point for data collection of shark catches and that all the other regional agencies should collaborate with FAO.

Other decisions taken by the Commission included the following:

"That a Sub-Committee on By-catch be established;

"that as a responsible first step, the Secretariat incorporate into the ICCAT statistical data base, information on catches of the by-catch fish species... [and] to improve the reliability of by-catch estimates for the full range of fisheries directing effort at Atlantic tuna and tuna-like fishes";

"that should sufficient data become available to support shark stock assessments in the future, ICCAT should focus attention on the pelagic shark species (e.g. blue, mako, thresher, silky, etc.), but...noted that further collaboration and cooperation with other fisheries organizations...as well as a range of non-member nations would be required to develop sufficient data sets for stock assessment purposes".

The ICCAT established a Working Group (later upgraded to a Sub-Committee) and a work plan for the collection and incorporation of shark incidental-catch statistics into the ICCAT statistical database. The criteria for developing such procedures were agreed upon and a new reporting format was developed. This form is currently being sent to over 80 Atlantic tuna-fishing nations, with a request that this information be reported annually to ICCAT. Currently over 20 countries, entities and fishing entities are reporting these requested data. Furthermore, in 1996, the Commission recommended the implementation of national observer programs for longliners, purse seiners, and baitboats, which became binding for ICCAT Contracting Parties in 1997. By October 1997, observer programs had been implemented by Brazil, Canada, France, Italy, Japan, Spain, United Kingdom, United States, Venezuela, Chinese Taipei and Mexico, although the level of coverage varies from one fishery to another.

During 1998, FAO developed Plans of Action on Fishing Capacity, Incidental catches of Seabirds in Longline Fishery, and Sharks. Many ICCAT scientists, including the author of this report, participated actively in the process of developing these Plans of Action (Technical Working Groups, Preliminary Consultation, Technical Consultation and COFI session). After reviewing the Plans of Action, ICCAT considered that the actions taken by the Commission on shark data were correct and should be continued, as the Plan had envisaged an important role for regional agencies as well as for FAO. In fact, since the opinions of many ICCAT scientists were reflected in the FAO IPOA on management of sharks, ICCAT had already implemented a major component of IPOA in relation to the international collaboration, even before the IPOA was adopted by COFI.

At the time of writing this report, several studies on CPUE and standardized CPUE were presented to ICCAT, particularly on blue and shortfin mako shark. Scientists also held several special

working group sessions and reviewed the available information on CPUE, biological data, input parameters (natural mortality rates, reproduction biology, growth) for assessment models and fishery information, to try to evaluate stock conditions for some selected pelagic shark species. At the same time, some attempts were made to estimate historical catches of various species by examining recent incidental-catch rates. This methods extrapolated the rate to past years, based on catches of target species as well as total by-catch weight, by area and time. This type of study was extended to the trend of CPUE of mako and blue sharks for the historical longline fishery series as well as to these of the Mediterranean fisheries, recreational fishery and tropical purse seine fishery, using observer data.

Major problems in studies

Sharks being studied by ICCAT are mostly incidental-catches to tuna fisheries. Therefore, the fishermen often report their catches as sharks, without any identification of species. Government log-sheets developed for tuna fisheries generally do not request reporting sharks by species but only in combined total. Recently, many ICCAT Contracting Party governments revised logbook forms to include incidental-catch species as well as discards. However, it is doubtful whether all fishermen are reporting them accordingly. For this reason, the records by observers (regardless of whether they are for surveillance or biological purposes) are very important and have been utilized. As the observer coverage is increasing, it could become more important as a source of data in future.

The problem inherent in data collected by governmental statistical offices is that it is relatively difficult to change traditional systems. On the other hand, the data collected by scientists for scientific purposes are much more flexible and readily adaptable to any new data requirements. Fortunately, ICCAT data sources are from scientific estimates and hence more flexible.

Trade data are also very useful for cross checking catch information. However, shark-fin products, which are subject to world-wide trade, make the estimation of catches particularly difficult, as sometimes only shark-fins are taken and the rest of the fish is discarded, and at other times the meat is sold in a different market to that of the shark-fins, leading to problems of double-reporting. The trade of shark fins is also complicated due to the fact that the imported products are very often re-exported.

ICCAT scientists have developed keys for identifications of pelagic sharks, as well as keys for species identification, using only fins. It is hoped that those identification sheets are widely distributed and utilized by scientists as well as fishermen and traders for recoding data correctly by species.

Future prospects

Regarding the studies of pelagic sharks, the Commission has decided to do what they can within the given mandate, i.e. proceed to carry out stock assessments when sufficient data become available, and can offer its expertise in assessments on long-lived large pelagic animals, gained through experience in tuna and tuna-like fish.

Since 1995, ICCAT has been collaborating very closely with the ICES Shark Study Group with regard to research on sharks. Both organizations have agreed to exchange data and biological information on sharks. We have proposed on many occasions (at the Coordinating Working Party on Fishery Statistics (CWP), Meeting of Regional Agencies, and meeting of Inter-regional Tuna Agencies), the importance of collection of by-catch data. We are pleased to note that many agencies are now treating the collection of such data more seriously. Recently, there have been discussions regarding the inclusion of many shark species in the reporting forms of FAO, NAFO, ICES and EU. As discussed earlier, it is not easy to change the current official data collection system or to obtain information by species. However, it would be very productive if all the agencies took the approach that scientists' best estimates, including observer data, are the basic data to be utilized.

While maintaining such close collaborations with other regional agencies, ICCAT still offers itself as a vehicle to integrate all information on Atlantic pelagic sharks. At its forthcoming meeting, the Sub-Committee will review the data collection policy, evaluate the adequacy of the data, and intend to complete the integration of all available data. This requires the full collaborations of other regional fisheries agencies (e.g. NAFO and ICES), as well as individual scientists. However, if this were successfully achieved, ICCAT would propose an international workshop to assess some of the Atlantic pelagic sharks (e.g. blue shark), either organized solely by ICCAT or co-organized with other inter-governmental agencies. The earliest expected time for such a meeting will be about 2 years from now (2002).