

TROPICAL TUNAS SPECIES GROUP DISCUSSIONS

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SUMMARY

This document summarizes the discussions of the Tropical Tuna Species Group, which took place during the Species Group Meeting in Madrid Spain, September 24-26, 2014. This document was circulated to the tropical tuna rapporteurs, but was not formally reviewed or adopted by the working Group. Therefore, it represents the only the author's effort to summarize the discussion and is not a consensus report.

RÉSUMÉ

Le présent document récapitule les discussions tenues par le groupe d'espèces sur les thonidés tropicaux ayant eu lieu pendant la réunion des groupes d'espèces ayant eu lieu à Madrid (Espagne) du 24 au 26 septembre 2014. Ce document a été circulé aux rapporteurs du groupe d'espèces sur les thonidés tropicaux, mais n'a pas été révisé ou adopté formellement par le groupe. Par conséquent, le présent document ne représente que les efforts de l'auteur visant à récapituler la discussion et n'est pas un rapport consensuel.

RESUMEN

Este documento resume las discusiones del Grupo de especies de túnidos tropicales que se mantuvieron durante la reunión del Grupo celebrada en Madrid, España, el 24-26 de septiembre de 2014. Este documento se circuló a los relatores de túnidos tropicales pero no fue formalmente adoptado o revisado por el Grupo. Por lo tanto, solo representa un esfuerzo del autor para resumir la discusión y no es un informe consensuado.

KEYWORDS

Tropical Tunas, Yellowfin, Bigeye, Skipjack

1. Review of new scientific documents

The Group reviewed one document on skipjack tuna (SCRS/2014/160). The summary of that document is as follows: Fisheries are managed using biological information on fish stocks, historical catch data and complex numerical models. However, the availability of reliable and complete information of both biological characteristics and fisheries yield is often incomplete, inaccurate or unavailable. Therefore, there is a need for simple methods that allow the estimation of fish stock productivity using limited data. In this study we use a simple method to investigate the productivity and historical harvest rates applied to four stocks of Atlantic skipjack, a species exploited by several nations and a diversity of gears on the tropical waters of the Atlantic Ocean and managed by the International Commission for the Conservation of Atlantic Tunas (ICCAT). Our results suggest that the capacities of these stocks to replace the amount of biomass harvested have not been exceeded. However, we discuss that these results need to be supported by deeper studies and additional data due to the limitations of catch based methods.

The Group discussed that in the eastern Atlantic, the catches are very high compared to the estimates of MSY. Some suggested that as you approach the tail of the distribution, the probability is high that the catch will exceed MSY, and recommended that a probabilistic treatment of the results would be helpful. The Group also noted a strong relationship between r and K , suggesting that the model may have many possible solutions that are equally probable. However, the author noted that bounds on resilience may inform estimates of r and K . Furthermore, in the east, poorly estimates catches that lack contrast could complicate the analysis. In the west, catches are poorly known, but the general trends are downward. The Group also noted that some reviewers have suggested that this data limited approach (catch-free) has performed well in other applications. However, the Group also noted that we do possess information on effort, so a more data-rich approach is possible.

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The Secretariat noted that during the Tropical Tuna meeting in Senegal, there were many attempts to create standardized indices, all but one (Azores BB) are included in the appendix of that report. The final index should also be prepared and included in the report.

A scientist from Mauritania described a possible rationale for the increasing catches of skipjack off Mauritania. He proposed that a decrease in the catches of small pelagics has made prey more abundant and more available to skipjack. Subsequently, the increase in prey abundance has allowed an increase in skipjack populations.

The Group also noted that recently, there have been large increases in the catches of skipjack compared to the last ten years. It appears this is caused by a FAD fishery. The fish are also much larger than have been seen previously. Recently, the catches off Mauritania are larger than across the eastern ATL.

A document was presented (SCRS/2014/178) that documented the shrinkage of free school sets on skipjack, however the authors noted that the species composition has remained similar. Observations in the Indian Ocean show that skipjack have nearly disappeared from free school sets. In the Atlantic, there has been a large increase in natural logs and artificial FADs. The authors propose that skipjack are very attracted to logs and FADs, so they congregate there and are no longer found in the open waters (to be targeted in free school sets). Therefore, the author proposed that the increase in FADs has changed the behavior and ecology/biology of skipjack.

The Group noted that this same result could be caused by a change in targeting or fleet behavior. The author disagreed. He proposed that fleets would continue to target skipjack in free schools if they were abundant as the prices would support this fishing practice.

A document was presented (SCRS/2014/179) that described the statistics of the French purse seine fleet in the Atlantic. The Group asked whether the market for “faux poisson” in Ivory Coast is saturated, or whether there is room for growth. The authors believe there is room for growth since this a large market area for a broad region, and the market is very organized to maximize commerce. Also, prices in local markets are the same as canneries and getting higher, so the local markets compete with canneries. They believed there could be large increases in the future.

A document was presented (SCRS/2014/157) that described the species composition and size composition of Faux-Poisson sold in local markets in Dakar 2004-2013. The Group discussed that there is a large quantity of Faux-Poisson that is transferred from Dakar to other markets. They inquired whether these are sampled. The presenter responded that they are not due to insufficient staffing.

Document (SCRS/2014/156) described reproductive studies of YFT in the eastern Atlantic Ocean. Important traits, such as sex-ratio, spawning seasonality, fish condition and feeding strategy, were studied in yellowfin tuna (*Thunnus albacares*; YFT) in the Eastern Atlantic Ocean from January to August 2014. In total 1033 YFT individuals in a weekly-base sampling were collected at a cannery in Abidjan, Ivory Coast. Based on the macroscopic identification of the gonads, a high reproductive activity of females (76.4-166 cm FL) and males (72.8-170.9 cm FL) YFT during boreal winter was observed, being significantly active during December and January. Preliminary results of condition indices show a possible pattern in the energy allocation dynamics during the spawning season for female and male YFT being different the allocation pattern shown between genders. In addition, the bases for biochemical analysis and more precise histological analyses were developed to further study the energy allocation strategy during reproduction of these socio-economically important tuna species.

The Group discussed the need to better define the spawning season by area in order to better inform age-slicing procedures, which currently are confounded by the apparent broad spawning season. Rather than a single long spawning season, it appears likely that the spawning season is shorter, but takes place in different areas at different times. The author responded that the samples are generally from the panoply fleet which does not allow them access to the logbooks. Thus, they are unable to determine the area where fish were caught.

A presentation was made by Alain Fontainaeu that reported the sex-ratio at size through time for free schools. There are changes through time that may relate to change in stock status. The author noted that the result is interesting, but no conclusions were possible at that time. The Group discussed the importance of adequate sample sizes, as it appears that the early period has smaller sample sizes and more variability. This result could also be caused by a variety of factors (e.g. differential M, growth, etc.).

A second presentation was made (SCRS/2014/133) about managing the tropical PS fisheries through limitations on FADs. This paper includes an analysis and a discussion of the numbers of drifting fish aggregating devices (DFADs) active in the eastern Atlantic Ocean and of the potential interest to manage purse seine fisheries based on a limitation of FADs numbers. Potential risks linked with a massive use of FADs are first discussed. Based on

new information on the numbers of FADs released by the French fleet in the 2004-2014 period, this paper estimates the levels and trends of the total numbers of FADs deployed and active at-sea. It is estimated that the number of FADs numbers has been widely increasing during recent years, potentially reaching 2000 or more FADs today, and potentially resulting in an estimated 3 fold increase since 2004. A good knowledge of the total numbers of FADs is urgently needed to better estimate the fishing effort and capacity of FAD fisheries. Future limitations in the number of FADs could be a direct and efficient way to reduce FAD fishing effort. Following a precautionary approach, we suggest that ICCAT could consider setting a cap on the number of FADs drifting at-sea and this monitoring could be based on the year 2013. The objective would be to slow down the recent increasing trends observed in the overall fishing capacity on FADs, but consequences of the implementation of such measures should be carefully analyzed to ensure the sustainability of the fisheries concerned.

The Group discussed the increase in MSY/MSY_{2010} from the most recent YFT assessment. This was thought to result from the return of PS vessels from the Indian Ocean due to increased piracy there. It is also caused by changes in selectivity during the time series due changes in the ratio of LL/FAD/FS components and their inherent selectivity. In general the Group agreed that managing the number and use of FADs could be important. The Group also noted that the use of data on the number and characteristics of FADs could be used to improve the standardization of the CPUE series, and/or inform estimate of catchability (q). Previously, French FAD assumptions were applied to other fleets. The analysis could be improved by the use of fleet-specific information. Recommendation 4 was recently taken up by the IOTC. The Group had numerous discussion about the trends presented in the paper, and some disagreed with the results or found them speculative. However, it was clear that improved data about the number and characteristics of FADs is critical, and that these analyses are important to conduct.

Those familiar with the industry pointed out that the highest prices were quite transient, and the current prices are quite a bit lower. They also pointed out that a vessel can only service a limited number of FADs per day, no matter how many FADs are deployed.

Document (SCRS/2014/163) examines the Fish Aggregating Device National Management Plan undertaken by the Spanish General Secretariat of Maritime Fisheries (Ministry of the Environment, Marine and Rural Affairs), in collaboration with the Spanish Institute of Oceanography (Ministry of Economy and Competitiveness), and presents preliminary data obtained in 2013 on the number of FADs deployed by quarter, number of active FADs by quarter, FAD characteristics, types and materials used in its construction and activities on objects and geographical distribution of these activities. The paper also described the bycatch of the Spanish FAD fishery. Turtles were sometimes encountered, but nearly all were released alive. Other taxa (sharks, billfish) were more often killed. 55% of Spanish FADs are “non-entangling”. The authors note that it is not entirely clear or consistent what is considered a non-entangling FAD. For example, some covered surface structures use mixed tails that are partially composed of open netting. The Group discussed the importance of this preliminary work and suggested continuing the study of survival of bycatch species as a function of FAD type. The Group also deliberated how the condition of the FAD changes with time, and whether there is an increasing cryptic mortality.

Document (SCRS/2014/187) provides an initial assessment of the management plan of French DCP established in 2012 under the Recommendation [11-01] by ICCAT. After setting the various parameters specific to DCP (and in particular the presence of a tag buoy associated with the DCP), their advantages and disadvantages, the variables that quantify the use of FADs and the impact of such use, the plan management is briefly described in these three components: improving knowledge of the fishing on FADs, supervision of their use and minimize the potential impacts of FADs on sensitive species associated as turtles and sharks. In total, over 1,777 days at sea 1303 events in relation to the DCP have been documented by seiners on logbooks, including 1016 on rafts. Added to this are 544 events in relation to DCP carried by the supply ship (totaling 333 days at sea). These data provide a first estimate of the number of rafts deployed annually by each ship in the Atlantic Ocean. Meanwhile, tracking the number of tags buoys used (using annual purchases of armaments and enabling/disabling of the buoys furnished by the own providers of satellite buoys) clearly show that the number of tags buoys used by ships has continued to increase since 2007 and now reaches the maximum allowed by the management plan. Finally, possible improvements of the DCP management plan are proposed DCP.

The Group requested information about the electronic logbooks used. The authors responded that they are similar to, but not the official IRD system. The Group also inquired about the scope of this plan. It is a plan developed by the organization (IRD) with support at the national level. The type of non-entangling FAD was discussed. This program uses “chorizos” to avoid entangling turtles and sharks. In addition to IRD, the ISSF has also sponsored the testing of non-entangling FAD designs. The ISSF offered to share its information with the Group.

Document SCRS/2014/165 describes the objective of the European Research project “Catch, Effort, and ecosystem impacts of FAD fishing” (CECOFAD), which is to improve our understanding of the use of fish-aggregating devices (FAD) in tropical purse seine tuna fisheries on open-sea ecosystems. Due to the need for accurate indices of abundance derived from catch per unit of effort, the project will attempt to define a unit of fishing effort for FAD-fishing and to provide reliable estimates of abundance indices and accurate indicators on the impact of FAD-fishing on juveniles of bigeye and yellowfin tunas and on bycatch species. Because science-industry partnerships can improve the quality and availability of data and knowledge, the project research is fostering collaborative research between operators and scientists, without compromising the independence of the latter. CECOFAAD is co-funded by EU-DG Mare, 3 scientific institutes (IRD, IEO and AZTI) and 3 professional tuna owner company associations (ANABAC, OPAGAC and ORTHONGEL).

The Group inquired whether the acoustics work is exclusively related to tunas, or whether it could also be used to estimate bycatch species. The authors responded that they currently focus on characterizing the size composition of tunas. The Group also discussed the WP2 (standardization of CPUE), and problems related to the estimation of FAD fishing effort. There have been several efforts to characterize fishing effort in FADs. Unfortunately, there are no solutions that are appropriate for all species targeted in FAD operations.

The Group reviewed document SCRS/2014/192 which describes the estimation of the total catch (Task 1) and monthly spatially-aggregated catch, effort, and size data (Task 2) for the Ghana baitboat (BB) and purse seine (PS) tuna fisheries. Estimation has been difficult since the early 1990s because of the general lack of information available on fishing activities and some issues in sampling of landings at port. Until very recently, only information on total monthly landings was available for some major segments of the Ghana PS fleet which prevented the reallocation of catch and effort in space. In addition, there is a general absence of plans of the brine-freezing tanks, which describe where the catch is stored within a vessel, and problems characterizing the origin (date, location, fishing mode, set weight and composition) of the size-frequency samples collected in Tema (Ghana) and Abidjan (Ivory Coast). Finally, the frequent collaboration between Ghanaian BB and PS vessels that results in the sharing of the catch at sea was until very recently not entered in the MFRD database. This adds some complexity to the data collection and processing as it blurs the relationship between catch and landings at the scale of the vessel trip and it can affect the linkage between the samples collected at port and their set(s) of origin. The current collection and processing of European PS and BB fisheries data is based on tools and softwares that aim to control and manage the datasets collected from different sources so as to estimate the Tasks I and II required by ICCAT. The authors describe the main specificities and current limitations of the Ghanaian tuna industrial fisheries data that call for some adaptation of the tools used for processing and managing PS and BB data. To improve the monitoring of Ghanaian fisheries, the authors propose some computer developments that have 3 main objectives: (i) facilitating the description of fisheries data collected by MFRD through easy extraction and visualisation of raw data, including size samples, (ii) extending the criteria used for the post-stratification of size-frequency samples, and (iii) developing an export tool that facilitates the provision of Task I and II processed data to the ICCAT Secretariat.

The Group noted that this particular plan is currently under development, and that Ghanaian scientists have not yet approved the plan as written. In principle, the Group supports this activity and noted that ICCAT has previously endorsed it. The Group urges scientists from EU and Ghana to collaborate to develop a plan that is acceptable to both parties.

SCRS/2014/180 describes the electronic tagging of a whale shark encountered in the tropical tuna PS fleet. The tropical tuna purse seiners can involuntarily encircle the whale shark during free/FAD sets without observing the whale shark due to their associative behavior to tunas. The impact of purse seiner fishery on whale shark has been observed to be very low based on observer and logbook data with most of the encircled whale sharks being released alive to the sea. However, until now there have been no studies of post-release survivorship of whale sharks. This document presents a project, and preliminary results, to investigate the post-release survivorship of the encircled whale sharks in purse seiners operations based on electronic tagging. Incidentally an encircled female whale shark of about 8 meters was tagged and released alive to the sea following the best practice guidelines for the whale shark release. After 71 days the tag popped-up and, thus, the whale shark survives to the safe-release event from the Purse seiner.

The authors did not make strong conclusions, but recognized the value of the information on the vertical and horizontal movement of the whale shark, and noted that the animal survived. The Group noted that the tag was programmed to release at a depth that was shallower than the excursions of the animal, yet the tag did not release. Members of the Group noted that this was not particularly surprising since the release is mechanical and is not precise.

Revisions to Task 1

The Secretariat presented the most recent Task 1 information for tropical tunas. The Group reviewed recent submissions and identified missing data that requires carry-overs to ensure that the most reliable information be presented at the 2014 SCRS Plenary Session.

The Secretariat presented a revised version of Task 1 which included the changes that the Group had recommended.

2. Evaluate the Efficacy of the Area/Time Closure Referred to in Paragraph 20 for the Reduction of Catches of Juvenile Bigeye and Yellowfin Rec [11-01] Paragraphs 22

Alain Fonteneau made a presentation to the Group regarding the potential effects of the recent time/area closure [Rec 11-01]. He reminded the Group that this closure was approved by the Commission without a specific scientific recommendation from the SCRS. Maps of catches were presented illustrating the catches of tropical tunas by the Ghanaian and EU fleets operating in the Gulf of Guinea. The presenter also discussed the ideal characteristics of an effective closure, specifically a seasonal concentration of high catches of small BET, and noted that he did not believe such an area exists in the Eastern Atlantic. The presenter also illustrated that high catches of tropical tunas in the moratorium area during the first quarter have been large in certain years, probably a rationale for the decision to create a time-area closure in Jan-Feb.

Based on the available data, the presenter reported that there were no FAD catches by the EU PS fleet during the time-area closure, although there were large catches of skipjack off of Mauritania during the 3rd quarter of 2013. There were some catches by the Ghanaian PS within the time/area closure, most near the coast, and most of them declared as free-school catches. It was also noted that Ghanaian catches outside of the time/area closure occur increasingly close to the coast of Ghana. Despite the closure in 2013, the presenter noted that 2013 total FAD catches of tropical tunas were above catches in the three previous years.

Within the closure, the species composition suggests a nearly constant proportion of skipjack tuna across time and space. However, the proportion of yellowfin is higher north of the equator, while the proportion of bigeye is higher in the south. This distribution suggests that a more specific closure to protect either yellowfin tuna or bigeye is possible. According to the presenter, the maximum result of the moratorium could be a reduction of about 9000 t of tropical tunas. There were suggestions of some effect of the closure for the Ghanaian PS fleet. These catches averaged 6000-8000 t per month during 2006-2012, although in 2013 catches in Jan-Feb (closed period) were quite reduced and remained reduced through May before recovering to near average.

The author concluded that the moratorium could be effective to reduce catches of small yellowfin and bigeye, but is expected to reduce these catches by less than 10%. However, the effectiveness of any time/area closure is often reduced by effort shifting outside the closure area, by higher than average catches at the end of the closure (when the area reopens), and because of unreported fishing in the closed area.

The Group generally agreed with these conclusions, but noted that any effect of a time/area closure is likely to be mitigated by a shifting of effort, rather than a reduction. The Group also noted that these results are based on only one year of information, and the results are likely to vary annually. Finally, the Group concluded an aggregated analysis (Ghana + EU) would be more appropriate to present to the Commission. It could also be noted that the observer data collected during the moratorium were not available and not used by the working Group. The Group agreed that these observer data should be analyzed.

The Group asked about the effect of the moratorium on the species composition. It appears that the catches of yellowfin and bigeye tunas have been reduced while skipjack has increased. However, the presenter noted that this effect was due to the high 2013 catches of skipjack off Mauritania (outside the closure). The Group also asked about the fishing mode responsible for large catches of yellowfin to the west of the moratorium area, these were caught on pure yellowfin tuna free school. Finally, the Group discussed why free school fishing was observed but not significantly within the moratorium area, since the moratorium applies only to FADs. This result is allegedly due to the desire of the fishing fleet to operate both free school and FAD operations. It appears they may prefer to relocate their operations rather than fish on only free schools.

3. Review the Feasibility Study for the AOTTP

A presentation was made by Julian Million. The objectives of the AOTTP program and expected operational results were described.

- The minimum target of the program is 120,000 tuna.
- Tuna will be tagged by chartered (not commercial) pole and line vessels on both sides of the Atlantic Ocean. Tagging of neritic species will occur on an opportunistic basis. Other potential tagging platforms were identified including longliners, artisanal vessels, the U.S. recreational fleet and South African pole-and-line/handline vessels.
- The advantages and inconveniences of the AOTTP program were summarized for each fleet. As envisioned, the program will require a large investment in chartering fees, equipment and personnel and logistics.
- Bait resources were investigated and found to be sufficient for the project.
- The project will require several types of tags, including conventional, chemical, electronic, sonic, plastic SSD and PIT. The use of these various tags will allow the investigation of a variety of AOTTP objectives.
- Tags will be recovered during and after fishing operations, during transshipment, at canneries and markets, and by consumers (requires food-safe technologies).
- To achieve high reporting rates, the AOTTP program will require an extensive publicity and awareness campaign as well as rewards (~\$10 value, adapted by country) for tag returns.
- For the PS and pole-and-line associated catches, tag recovery teams employed by the AOTTP project will be deployed to Abidjan, Dakar and Tema. Other recovery locations are covered by existing sampling programs, or by local institutes. Recovery of data from PS must be linked to logbook data, and ICCAT will ensure access to the data with appropriate confidentiality.
- For longline associated catches, there is a need to develop a specific recovery program because longline tag recovery is often very low, which can bias results. There is likely a need to increase observer coverage on longliners to ensure adequate recovery and reporting of tags.
- Recovery from artisanal fisheries is difficult, and will require collaborations with local universities and institutions. The costs could be quite high and the reporting rates would likely be low. Thus, the cost/benefit of this activity would have to be carefully considered.
- Tag reporting rates must be estimated, and this estimation can be facilitated by tag seeding operations. The initial analyses would likely be conducted by contractors from AOTTP, with final analyses completed by the scientists from CPCs. Capacity building exercises will also be conducted to familiarize national scientists with tagging analyses and results.
- The risks of the project were summarized and include: insufficient bait, insufficient access to tuna, logistical problems related to tagging, poor recovery rates, inadequate data and analyses and insufficient budget.
- The proposed time table and budget was presented. The EU has expressed their intent to fund 80% of the program, however the presenter cautioned that in-kind contributions from CPCs are a necessary condition in order to obtain the EU funding. Other potential donors (e.g. AFD, GEF, ADB) are also being sought.

The Group requested additional information about in-kind contributions. For some CPCs it has become difficult to transfer money directly, but it may be possible to purchase equipment. The author responded that 10% of the money would have to pass through the Secretariat, but other portions of the in-kind contribution could include purchasing equipment or funding various programmatic operations.

The Group also discussed the advantages/disadvantages of chartering vessels, as opposed to the use of commercial and/or research vessels. The authored notes that previous experiences in the Indian Ocean indicate that commercial vessels are not appropriate because you cannot control the fishing operation or location.

Research vessels could be useful. The Group responded that observers on commercial longliners can be trained to deploy tags, but that this activity requires funds to purchase the fish in question. The author agreed that this is appropriate because it is not economically feasible to charter longline vessels.

The Group also discussed the various types of tags to be employed, and noted that electronic tags provide a great deal of information about movement and habitat use, but are very expensive. Conventional tags are inexpensive and also provide information about movement, although at a broader spatial scale. The Group also recalled that tagging models have been presented to the SCRS that could be used to estimate the appropriate blend of electronic vs. conventional tags.

Finally, the presenter urged national scientists to communicate the need for 20% co-funding which is a required stipulation to obtain the 80% contribution from the EU.

4. Update of the BET, SKJ and YFT Executive Summaries

David Die (BET Rapporteur) reviewed the draft Executive Summary for bigeye tuna. The Group accepted the Executive Summary with very minor changes, the most significant was a Group recommendation to include a comparison of the in Task 1 catches, during 2006-2013, before and after the revisions recommended in SCRS/2014/192. This comment will also appear on the skipjack and yellowfin executive Task I tables.

Daniel Gaertner (SKJ Rapporteur) presented the draft Executive Summary for skipjack tuna. The Group recommended, and the rapporteur agreed to make, several changes to the text.

Craig Brown (YFT Rapporteur) presented the draft Executive Summary for yellowfin tuna. The Group recommended, and the rapporteur agreed to make, several changes to the text.

The Group also agreed that the species Group rapporteurs should consider the response to the Commission regarding the moratorium analysis, and ensure that the related Executive Summary text is consistent with the response.