REPORT OF THE 2017 TROPICAL TUNAS SPECIES GROUP INTERSESSIONAL MEETING
(*Madrid, Spain, 4-8 September 2017)*

1. Opening, adoption of Agenda and meeting arrangements

The meeting was held at the ICCAT Secretariat in Madrid 4 to 8 September 2017. Dr. Shannon Cass-Calay (USA), the Species Group ("the Group") Coordinator and meeting Chairwoman, opened the meeting and welcomed participants. Dr. Justin Monin Amandé (Côte d'Ivoire), the Rapporteur for the eastern Atlantic skipjack stock, served as co-Chair. Dr. Miguel Neves dos Santos, the ICCAT Assistant Executive Secretary, highlighted the importance of the work to be developed by the Group during the meeting, namely regarding a number of replies to the Commission and the AOTTP programme. The Chair proceeded to review the Agenda, which was adopted with minor modifications (**Appendix 1**).

The List of Participants is included in **Appendix 2**. The List of Documents and Presentations presented at the meeting is attached as **Appendix 3**. The abstracts of all SCRS documents and presentations, as provided by the authors, are included in **Appendix 4**. The following participants served as rapporteurs:

Section	*Rapporteur*
Items 1, and 9	M. Neves dos Santos
Items 2.1 to 2.2	M. Ortiz, C. Palma
Item 2.3	D. Parker
Item 3	J. Lopez, P. De Bruyn
Item 4	D. Beare, C. Brown, S. Cass-Calay
Item 5	D. Die, G Merino
Item 6	S. Cass-Calay, D. Die, A. Parma
Items 7 and 8	S. Cass-Calay

2. Review of fishery statistics

The Secretariat presented to the Group, all the fisheries information available in the ICCAT database system (ICCAT-DB) for all three major tropical tuna species (BET: bigeye; YFT: yellowfin; SKJ: skipjack). This information includes all the new and revised data submitted by CPCs until 4 September 2017.

2.1 Task I (catches) data

The Task I nominal catches (T1NC) for the 2016 calendar year, has already the majority (except Brazil and Cabo Verde, for which preliminary estimations were obtained by the Group) of the catches included. The total catches for 2016 are 127,757 t for yellowfin tuna, 72,348 t for bigeye and 245,914 t for skipjack. The overall catches of the three tropical tuna species shows an overall increase of 7% in 2016 when compared with 2015, with reductions in bigeye (9%) and increases in skipjack (7%) and yellowfin (17%). The details of T1NC for bigeye, yellowfin and skipjack, are presented in **Tables 1-3, Figures 1-3**), respectively.

Document SCRS/2017/196 presented an analysis of the "*faux poisson*" catches 1991-2014 by species. In addition, it presents a proposal for updating the current Task I "faux poisson" estimations (obtained during 2014) and to create (for the EU and associated purse seine fleets) a corresponding Task II (catch and effort and size composition of the catches (catch-at-size) by flag, month and 1x1 and/or 5x5 degree squares stratification, which is missing at present in the ICCAT data base. The Group recommended that the methodology for splitting and estimating species composition be reviewed and approved by the methods Working Group and then proceed to implement the estimates of Task II "*faux poisson"* and store it in ICCAT data base. It was noted that the estimates of "*faux poison*" from the EU programme T3 consider only the three main species (skipjack, yellowfin and bigeye), and thus it doesn't estimate other by-catch species. The raw data of by-catch species is however collected under the EU observer programme.

The Secretariat noted that since 2006, the catches of tropical tunas under the NEI-ETRO category (baitboat and purse seine gears only) are now reported officially by the corresponding ICCAT CPC. In consequence, two fleet code nomenclatures exist to represent the same catch series (e.g. Curaçao catch series with the fleet code "NEI(ETRO-CUW)" before 2006, and "CUW-ETRO" after 2006). The "double nomenclature" of these catch series creates problems at the moment of identifying/using them in scientific studies. The Group agreed to reclassify (the Secretariat will inform on the updates the respective CPC) these catches in the ICCAT database for the historic NEI tropical catches (1991 to 2005) with the most recent fleet codes (with the suffix "ETRO", in all CPC based fleet codes, to easily identify and filter the fisheries monitored by the EU AVDTH/T3 framework). This reclassification to the catch series of ICCAT Contracting Parties will only be made with caution and sufficient time (but before the next bigeye stock assessment). The Non-contracting Parties will remain under the NEI-ETRO category. **Table 4** presents the reclassified series (some tagged for future reclassifications) for tropical NEI ETRO catches. The Secretariat will continue efforts to contact CPC scientist for those cases (Belize, Ghana, and Cabo Verde) where doubts exist on the identification of more than one fleet components (purse seine vessels monitored by the EU T3 system, and, purse seine vessels monitored by a different system).

The Secretariat reminded the Group that, current Task I catches do not separate the tropical purse seine catches by "fishing mode" (FAD, FSC). The current ST02-T1NC form used to report Task I to ICCAT, does not permit that either. And, any scientific study requiring the FAD/FSC separation at the overall catch level, uses the CATDIS estimations (Task I by trimester and 5x5 geographical grid) made by the Secretariat (updated once a year). This situation poses problems when there is a need to use the most recent T1NC. Once the Group adopts a proper definition of the FAD fishing operation mode, the form used to collect Task I catches (ST02-T1NC) should be properly adapted to include the catch discrimination by "fishing mode". With the help of national scientists, the Secretariat, should reclassify (based on the available T2CE and current CATDIS estimations) the existent purse seine tropical T1NC catches (starting in 1991) by "fishing mode".

2.2 Task II (catch-effort and size samples) data

The Secretariat presented the SCRS catalogues for tropical species by stock unit. These catalogues show the Task II data (T2CE: catch and effort; T2SZ: size samples; T2CS/CAS: catch-at-size) availability, of bigeye (**Table 5**), yellowfin (**Table 6**), and skipjack (**Table 7**) between 1995 and 2016. Only the major fisheries (~95% of the total catches) are shown, in descending order of importance (ranked by the Task I weights of the entire set of years shown). It was noted that in recent years T2SZ and CAS data is missing in particularly from main fleets in both the western and eastern Atlantic (Belize, Brazil, Cabo Verde, Ghana, and Venezuela). This represents a major obstacle for any future assessment evaluation in particular for the west skipjack tuna.

The tropical T2CE dataset with the separation of the catch by fishing mode, was also updated (1991 to 2016) and presented to the Group (summary in **Table 8**). The Secretariat called attention to some missing datasets not yet reported to ICCAT.

It was noted the need to split the T2CE and T2SZ (as already done in Task I several years ago) of the tropical fishery "FIS" (combined fishery: FRA+CIV+SEN) before 1991, and allocate them to the proper CPC fleet fisheries in ICCAT database. This recommendation has been raised in prior meetings. The Group recommendation is to consider this task in advance for the next assessment of a tropical tuna. A similar break-down is required for the T2CE and CAS of the tropical ETRO fisheries (mainly purse seine, which has all the fleet based information combined as NEI-ETRO) before 2006.

2.3 Improvements on ICCAT Task I and II data and resulting analyses (e.g. CPUE)

Document SCRS/2017/204 described the bigeye CPUE for the South African longline fleet for the period 2004-2016. The analysis used a GAMM with a Tweedie error distribution and attempted to explain targeting by clustering catch composition data. The CPUE exhibited high inter-annual variability and as a result no definitive trend could be inferred from the analysis.

The Group suggested the dataset be checked to ensure an acceptable balance in sample size among years and that a year-area interaction term be considered in future models as it may account for the inter-annual variability. Furthermore, the Group suggested that the observed variability may be a result of fish availability to the fleet, which is likely to be environmentally driven. Such environmental data should be

collected in the future. No information on the stock structure, spawning location and possible mixing of Atlantic and Indian Ocean bigeye stocks was available. It was noted that the area from which the data were derived represents the periphery of the South Atlantic bigeye fishery, and may not be representative of the entire Atlantic fishery. However, such peripheral fisheries can be beneficial in providing 'early warning' indications of stock decline.

Document SCRS/2017/206 provided a standardization of yellowfin CPUE for the South African baitboat fleet for the period 2003-2016 using a GAMM with a Tweedie error distribution. The CPUE exhibited high inter-annual variability but, overall, has maintained similar levels to those from the previous decade. The decline in CPUE from 2006-2009 is noteworthy and could not be explained by targeting, weather or effort shifts.

The Secretariat requested clarification on the categorization of gears in the South African baitboat fishery, and it was clarified that rod and reel gear fell under the commercial fishery, not the sport-fishery. Currently, South Africa does not collect catch data from the recreational (sport-fishery) sector. Again, the Group noted concerns that the area from which the data were derived represents the periphery of the South Atlantic yellowfin fishery, and may not be representative of the entire Atlantic fishery. This concern was compounded by the restricted spatial extent of the data, as the majority of yellowfin catches were made in a 1×1 degree area off the Cape peninsula. As such, the yellowfin CPUE time series is unlikely to meet the minimum spatial coverage criteria to be accepted for use in assessing yellowfin in the South Atlantic. The Group recommended further studies regarding stock structure be carried out.

Document SCRS/2017/195 provided a revised standardization of bigeye for the Japanese longline fishery in the main Atlantic fishing ground for the period 1961-2016. The revisions were made in response to recommendations from the 2015 bigeye tuna data preparatory meeting (Anon. 2016a) to solve over-parameterization, improve spatial resolution of catches and incorporate SST data. With the exception of the early period (1960s), the results were similar to those derived from the previous method. It was noted that since the last 2015 bigeye tuna stock assessment meeting (Anon. 2016b) BET CPUE has remained stable.

The Group discussed the suitability of the 'number of hooks between floats' as a proxy for targeting, specifically regarding the depth of fishing, and it was suggested that further information on targeting be collected directly from skippers if possible. There were concerns that the new area definitions disregarded historical areas of high bigeye catches and only focussed on current high catch areas. As such, there was potential for hyperstability in the CPUE indices. The Group suggested that the current model could be improved by finding alternative means of dealing with zero catch data records, as opposed to the constant (10%) applied in this analysis.

Document SCRS/2017/199 presented information from the EU-Spain fleet operating in the tropical Atlantic Ocean, including fishing areas, fishing strategies, catches of target species, effort, CPUE, coverage of sampling and distributions of species size classes.

The Group noted that data presented in this document indicated that 40% of sets occurred on objects as early as 1991, suggesting that important catches on objects occurred earlier than some have assumed. Other evidence suggests that fishing on artificial FADs began (in substantial numbers) in the late 1980s – early 1990s. According to CATDIS, FAD&FS as early as 1991. It is currently not possible to differentiate natural and artificial FADs, although IRD believes it could be done using logbooks. The Group also noted that there are some minor discrepancies between historical catches in this document, and official ICCAT statistics.

Document SCRS/2017/203 provided a summary of the fishing activities of the EU purse seine and baitboat fleets operating in the eastern Atlantic Ocean over the period 1991-2016. This included a description of annual changes in fleet technical characteristics (carrying capacity, size), fishing effort (fishing and searching days), species-specific catches and nominal CPUE, changes in spatio-temporal distribution of EU and assimilated purse seine catches in 2016 compared to previous years (2010-2015).

The Group acknowledged the importance of the effort information presented and it was suggested that tropical species working groups should refer to this document when describing EU purse-seine and baitboat fishing effort. The Group also recommended that estimates of fishing effort be improved by accounting for vessel carrying capacity weighted by fishing month and time spent fishing in the ICCAT region. This was updated during the meeting. An example was given for the EU-France fleet, whereby the number of vessels increased but actual effort is known to be decreasing.

The presentation SCRS/P/2017/037 described the monitoring programme for small tunas caught by the artisanal fisheries in Angola. The artisanal coastal traps caught 14,847 t in 2015, which decreased by approximately half (7,519 t) in 2016. This decrease was largely attributed to the unusually high presence of whales in the area, which break the artisanal traps. Number of catches, catch and size (and weight) and length-weight relationships were provided for two small tuna species: Judeu (*Auxis thazard*) and Merma (*Euthynnus alletteratus*).

It was noted, given this data, that the Angolan Task I and Task II data submitted to ICCAT needs to be reviewed and that the catch at size data presented must be translated into 1cm bins. It was also noted that the current monitoring programme covered a relatively small area, and the authors confirmed that there were plans to extend the monitoring programme to further north for better coverage of small tunas. Furthermore, the Secretariat expressed their interest in potentially collaborating with Angolan scientists to tag tuna caught by the artisanal traps as part of the AOTTP programme.

Document SCRS/2017/207 described the catches, and by-catch, of tuna species in the Mauritanian area. Approximately 62 tuna vessels worked in the Mauritanian zone during the year 2016, of which two vessels were Mauritanian longliners. The majority of catches were small tunas (particularly in the domestic artisanal and coastal fleets) and tropical tunas. A significant increase in catch by foreign vessels was observed in 2012-2013, which equated to approximately 123% increase in CPUE. The increase in skipjack catches in the last two years can be attributed to the recent introduction of FADs to the purse seine fishery.

It was noted by the Group that the catch at size of skipjack in Mauritania was significantly larger than that observed in the rest of the Atlantic. The Group recommended that research to quantify the effects of FAD directed fisheries on the baitboat fishery in Mauritania be conducted.

Document SCRS/2017/196 provided an analysis of the Abidjan landing data of the tunas sold as "*Faux Poissons*" (FP) by the EU and associated flag purse seiners during the period 2006-2014. The analysis used three data sources (FP monthly landings submitted to ICCAT, logbook data on EU purse seine fleet of all tuna landings in Abidjan, multispecies sampling by scientists/observers for all the EU purse seine landings in Abidjan) to improve Task I and Task II ICCAT statistics. FP related data has been poorly incorporated in data submitted to ICCAT in the past. The document reveals the complexities around flow of FP catches from the vessels to the various markets which may result in FP fish being sampled on more than one occasion, or after size sorting. This will result in inaccurate CAS data. Previously, FP data were focused on major tuna species, and data on minor tuna species were largely neglected. This study tries to re-evaluate the composition between major and minor species in the FP catches.

The Group agreed that the document is important in that it highlights a problem that exists with FP data, but the analyses presented must be considered preliminary. The Group recommended the document be sent to the ICCAT Methods Group for review. In addition, the Group recommended the development of short- and long-term recommendations to improve collection of catch, CAS and species composition data for FP species.

3. Review of new scientific documents for the species

Document SCRS/2017/200 provided aspects of modelling of the Oceanic habitats of silky shark (*Carcharhinus falciformis*), and implications for its conservation and management.

The Group noted the consistency of the areas with regards to silky shark abundance. It was discussed that this may be due to inclusion of spatial factors in the model, which were highly significant and therefore influential in the model results. It was suggested to include maps of the purse seine activity (catches/effort) for recent years to give these observations context.

Although the jack-knife procedure suggested that the model is stable, it was also suggested that cross-validation should be carried out to check the model prediction results. This would provide some insight as to whether the model is predictive or only descriptive. This cross validation could be done using a block sampling design, blocking out some portions of data, to validate the other available data. In addition, comparing model and prediction residuals will determine if the model is overfitted and give idea of predictive power of model.

This Group considered this work to be very interesting, especially if it is able to provide information on the variability within the hotspots, and would be good to extend to other species (target and by-catch) once some of the modelling issues have been resolved. The inclusion of tagging data would also be very beneficial to evaluate movement and identify preferred habitat.

Presentation SCRS/P/2017/039 provided a report on the fishing on floating objects (FOBs), namely on how tropical tuna purse seiners split fishing effort between GPS-monitored and unmonitored FOBs.

The Group welcomed this interesting study particularly as a tool to better understand the fishing strategy on floating objects in recent years. This is true for potentially standardizing CPUE, but also to estimate the total fishing effort on FOBs. It was queried whether there could be an improvement in the link between the location of objects fitted with geo-locating gear and/or echo-sounders and fishing activity around those FOBs. The study used logbook information to identify fishing activity, which may not be spatially of sufficient accuracy. This would highlight the importance of access or use of alternative data, such as observer information, FAD logbook records or VMS data.

It was also noted that it would be useful to determine whether monitored FOBs are producing higher catches per set than other fishing activity. In addition, correlating soak time with catch per set to see if this has an effect on catch rates would be useful to investigate the effects of FOBs on fishing activity and the fish behaviour. It was also explained that the low percentage of fishing on monitored FOBs was not that surprising due to the EU-France fleets preference for targeting free schools and the potential density of FOBs in the ocean. FOBs are used more opportunistically to increase catch but are not fundamental to the fleets fishing operations. It was also noted that many other factors may be affecting results and that they could be considered in the study, such as supply vessels available for the vessels (in future studies) or the number of buoys shared by vessels of the same company. Similar studies in other fleets were encouraged to better understand the potential diversity on the use of FOBs.

A suggested application of this type of information was for the estimation of instantaneous relative biomass abundance based on information from several FOBs being monitored simultaneously with echo-sounder buoys. It was also noted that as a preliminary step, obtaining the density of FOBs is crucial. Fishing companies should be encouraged to share this information, even if on a time delay of (for example) six months that would not compromise their commercial activity. It was also suggested that this work has implications for management actions that require preset (before a purse seine fishing set) information about associated schools.

Document SCRS/2017/185 summarized activities conducted by the International Seafood Sustainability Foundation (ISSF) in regard to by-catch mitigation and reduction of discards in tropical tuna purse seine fisheries operating in the Atlantic Ocean. These activities include desktop studies, skipper workshops and research at sea. Various measures to mitigate by-catch and reduce discards are proposed.

The Group agreed that several of the by-catch mitigation measures related to sharks and turtles proposed in the paper were reasonable, but it was noted that some of these measures are either already in place, have been recommended by other Working Groups (e.g. Sub-committee on Ecosystems and Sharks Species Group), or it should be these other Groups who set a recommendation, given their expertise. The Group should coordinate with these other Groups to guarantee that adequate recommendations are presented at the SCRS.

Document SCRS/2017/197 updated estimations of by-catch of the EU purse seine tropical tuna fishery in the Atlantic Ocean for the period 2010-2016 derived from observer data. By-catch was defined as the discard of target species (skipjack, yellowfin and bigeye tuna) plus the catch of non-target species, regardless of its fate.

The Group acknowledged the relevance of both presentations (SCRS/2017/185 and SCRS/2017/197) as the basis to draft a response to the Commission request in paragraph 53 of Rec. [16-01]. The Group noted the need to gather similar information for non-EU purse seine fisheries (at least on discard practices) and for the rest of tropical tuna fisheries.

With regards to small tuna species and bony fish, it was agreed a recommendation could be set by this Group advising on how to reduce by-catch and discards of these species (e.g. avoiding setting on small schools).

The Group discussed full tuna retention measures for target tropical tuna (i.e. skipjack, yellowfin, bigeye) of undesirable small sizes but fit for human consumption, similar to measures approved by all other RFMOs managing tropical tuna. It was noted that full retention measures have already been discussed by other Working Groups. Before taking this discussion further, the Group requested further information such as views from the skippers received during ISSF's skipper workshops, and an estimation of the percentage of the catch that those small-sized target tropical tuna represent.

4. Review of AOTTP data and programme activities

4.1 Review data collected

Document SCRS/2017/193 provided a detailed summary of activities conducted within AOTTP in 2016 and 2017.

The Group was informed that PSATs deployed off South Africa have had greater than average retention times. During discussion, it was noted that the South Africa team made some modest modifications to the protocols, including tag placement and handling, and were operating from small vessels. The Group considered whether this may have been a factor in improving retention. It was recommended that the AOTTP protocols be reviewed and consideration given to possible revision.

The Group discussed some examples of how the AOTTP results could be used to reduce the uncertainty in stock assessment. This includes improvements to the understanding of natural mortality, for instance in the bigeye tuna assessments, where a range of natural mortality vectors have been included. Also, these types of data could help in developing harvest control rules.

The Group discussed the lack of tagging and outreach activities (including to improve the recovery/reporting rates) in the northwestern Atlantic. It was explained that a response to the Call for Tenders was accepted that would have entailed tagging operations in Venezuelan waters. However, the political situation there has so far prevented those operations from taking place. The Group reiterated the importance of including the northwestern Atlantic in the AOTTP activities, not only to ensure Atlantic-wide coverage, but also to facilitate the critical component of outreach (including to the longline fleets) to improve recovery and reporting rates.

The Group noted the need to discuss the access to the data obtained through this programme. The goal ultimately is to make the data freely available. But the Group noted the importance of capacity building though including scientists from developing countries in all phases, including tagging, sampling, analyses and publication. Also, the participation of scientists with particular expertise and experience (e.g. in electronic tagging) may be contingent on the ability to publish. So, attaining an appropriate balance with respect to capacity building, data access and timing is important (see additional discussion in Section 4.3).

Document SCRS/2017/202 provided information on AOTTP tagging activities when *ca* 17,000 tropical tuna were tagged over the Sierra Leone Rise. The authors hypothesized that this area is a 'hub' for tuna, especially yellowfin. The area is also thought to be a 'nursery' area and an important place for yellowfin foraging. The author based the hub theory on the reported unusually high variability in both species composition and size-frequency of those species, compared to other areas, and that very few short-term recoveries were made. The Group discussed that conclusions regarding the hub hypothesis could be premature, and we will need to investigate the recoveries from the area and compare them with other tagging locations.

The Group discussed the 'La mancha' method of fishing. Accumulations of bigeye and skipjack are important for successful implementation of this method. The Group discussed how the hub hypothesis could be confirmed.

Document SCRS/2017/205 discussed the dialogue between knowledge backgrounds involved in tagging programmes, namely on the problems caused by the different knowledge backgrounds of scientists/managers and fishing skippers. There is a fundamental conflict: fishers want to maximize their catches, whereas scientists/managers generally want to spread samples (in this case tagged fish) as randomly and representatively as possible.

The Group generally sympathized with these problems and agreed with the recommendations articulated: that agreements with the vessels must be clearly negotiated; that negotiating trade-offs is essential; that permanent dialogue between fishers and skippers is important.

The Group also discussed the imposition of penalties which was considered a counter-productive idea (*i.e.* that those chartering boats for tagging activities should accept the risk inherent in fishing). Buying fish is a very good option if vessels are fishing commercially. The Group noted that this would work in 'local' areas. In situations where a boat moves into areas distant from its core fishing grounds then problems of fishing licenses etc., can emerge and dedicated 'chartering' is the best option. Ultimately tagging must be a 'win-win' for both skipper and crew. If crews earn much more from fishing why engage with scientific tagging work? There must be a way to balance or manage the risk. If too much is placed on the fishing skippers through penalties tenders won't be received and fish will not be tagged.

Presentation SCRS/P/2017/040 described the recovery activities of AOTTP in Abidjan, namely concerning problems due to the gaps between concept and reality. Tag-recovery activities are as essential component of any tagging project, and there is a budgetary trade-off between tagging-at-sea and tag-recovery activities. Abidjan is an important tropical tuna landing port and the AOTTP recovery team there has only six personnel, which is insufficient. In some cases, dockers have measured fish with ad hoc equipment (e.g. piece of string). Some vessels have refused access to tag-recovery teams. With regard to recovery rewards, T-shirts are perceived to be poor quality (or style) but a Call for Tender for t-shirt supply has just been launched and this is expected to improve. Fishers have noted a preference for polo style shirts, and that caps are not yet available despite being advertised on posters. There has also been an issue with the accuracy of French language on posters. Finally, the Tag Recovery Officers in Abidjan are finding it very difficult to obtain 1000 CFA denominated bank notes (reward is 6000 CFA). There is a need to learn and improve. A letter from ICCAT requesting permission to board vessels for tag-recovery activities is urgently needed in Abidjan.

The Group expressed concerns about the quality of length-measurements of recovered fish as it appears that about 20% of the recovered fish are measured with ad hoc equipment (e.g. string). The Group also acknowledged the importance of rewards and incentives and noted that AOTTP should carefully consider fisher feedback. Some suggested that AOTTP could place a deadline on the posters after which rewards will not be paid. The Group asked whether crew/stevedores/dockers have smartphones as there are measuring Apps available. Apparently many now have smartphones.

4.2 Review current assumptions regarding growth, mortality, stock structure etc., with regard to new information obtained from the AOTTP programme

Document SCRS/2017/194 reported on preliminary results regarding tropical tuna growth and migration rates, comparing AOTTP and ICCAT's historical tagging data. ICCAT/AOTTP already has substantial data. Preliminary numbers for growth, movement rate, tag-shedding, and tag-seeding were presented. The data were collected from tagging and recovery teams using smartphones allowing rapid feedback. Data were validated according to the scheme of Fonteneau and Hallier (2015).

The Group noted it needs more information on distribution of times at liberty, distance migrated. Tag-seeding work is very important and the Group requested more information on what has been done. The Group suggested that more sophistication in growth modeling is also needed.

It was noted that substantial gaps in tag releases around the Atlantic exist. To date, there are no awareness-raising activities in USA and Mexico (NW Atlantic), which is especially important enhance tag recovery from the longline fleets. There is also a need to tag fish in the North West Atlantic. Certain USA scientists indicated a willingness to help in tagging and awareness raising/tag-recovery activities. The Group stressed that low reporting rates were a standard problem in Oceanic tagging programmes. The eastern Gulf of Guinea, and Cape Lopez are real priorities for tag releases. Tag-seeding operations targeting landings in Tema (Ghana) were stressed as being important too. There are tag-recovery and awareness raising activities in more than ten countries so far around the Atlantic.

4.3 Feedback regarding AOTTP activities to date

What follows is list of comments regarding AOTTP activities to date:

1. URGENT: The Group recommended increasing the tag-seeding efforts, and noted that 4,500 tags were recommended by the AOTTP feasibility study for tag-seeding activities (e.g. 5-15 fish per trip). The Group recognized that it is desirable to determine the tag reporting rates for all major gear types, and by and landing port. The Group also noted that tags should have metallic barbs since plastic dart tags often fall out when applied to dead fish.

2. The Group would like additional information about the data being collected. For example, what are the fields in the database.

3. URGENT: The Group strongly recommended additional efforts to improve recovery rates of tagged fish in the longline fleets, in particular Brazil, Canada, Chinese-Taipei, EU, Japan, Mexico, and the United States. The Group recommends that AOTTP personnel contact national observer programme coordinators to increase awareness of the programme.

4. The Group emphasized that the AOTTP programme objectives can be best met if all recovered tags are returned, biological samples are taken for red tagged fish at a minimum and the gender of all recovered large fish (e.g. over 100 cm) determined to the extent possible. The Group noted that to achieve the latter recommendation, it would likely be necessary to purchase large fish at additional expense to the AOTTP programme.

5. The Group noted a data gap in the North West Atlantic. To best achieve sampling targets in the North West Atlantic, it is possible to charter sport fishing vessels, but at high cost. Another approach is to work with volunteer sport fishers, but there is a need to train and monitor crews to achieve correct and consistent implementation. Tagging can also be conducted by commercial longline vessels, but there is a likelihood that legal sized fish must be purchased. The Group discussed whether AOTTP objectives could best be met at reasonable cost by emphasizing the electronic tag deployment, and/or organizing conventional tagging in association with tournaments and fishing associations (e.g. Blue Water Tuna Association.) The Group also recommended that funding could be extended to different bidders on different components.

6. It was noted that to date, very few tunas have been tagging in the area east of the Greenwich meridian. Taking into account that tunas are heavily exploited in this area, the Group recommended that large scale tagging should be conducted in the areas of Sao Tomé & Principe, Gabon and Angola targeting major tunas (yellowfin, skipjack and bigeye) as well as *Euthynnus alletteratus*. Ideally, this tagging should endeavour to tag several tens of thousands of tunas in these areas.

7. AOTTP should make additional attempts to contact representatives of tagging programs in Belize, Bermuda, Canada, Mexico and the U.S. to determine how the tagging efforts occurring there can be leveraged to improve the potential to meet AOTTP programme objectives.

8. The Group expressed concern that stock structure and movement rates may be difficult to infer from data obtained from conventional or electronic tags unless considerable additional resources can be made available. Supplementary genetic analyses or otolith microchemistry could be useful to determine stock structure. The Group recommended that efforts be made to obtain samples for these examinations. It should be noted that these studies may require specialized sampling and preservation methods, and in the latter case, both otoliths must be taken and their data records linked. The Group also recommended the establishment of a collection of genetic samples (e.g. muscle tissue, fin clips collected at release). The Group noted that in genetic studies it is important to avoid cross-contamination, and that this can be difficult at sea.

9. The Group discussed the apparent high mortality rate (up to 80%) caused by the surgical procedure used to insert internal archival tags, and noted that if the mortality rates cannot be reduced, there is a diminished cost advantage to the internal tags over electronic pop-up tags. The Group also discussed the relatively high cost of electronic tags, and the research objectives that can be addressed using electronic tags (e.g. movement rates, habitat use). To better distribute remaining funds for hardware, the Group recommends that the data already obtained from the electronic tagging be reviewed to evaluate its utility, and that a cost-benefit analysis be conducted to determine the relative importance of electronic tags, or where the remaining electronic tags should be deployed to best meet AOTTP objectives.

10. The Group recommends that the tagging protocols be reviewed to improve retention and time at large of electronic tags in collaboration with scientists. The Group also requested additional review of the programming of the electronic tags, including depth and temperature bins, transmission intervals etc.

Data Dissemination and Publication Policy

With regard to the Data Dissemination and Publication Policy, the Group reviewed a draft based on the ICCAT GBYP programme policies and recommended the following:

The ICCAT Atlantic Ocean Tropical Tuna tagging Program (ICCAT AOTTP) is an international tagging and capacity building and research programme, initially co-funded by the European Union (80%), several ICCAT CPCs, and the Commission. It is important to note that ICCAT AOTTP was initiated following a specific the expression of interest by African Coastal Countries, and that a major objective of the programme is capacity building.

The publication of any form of results (e.g. data, scientific papers) during the ICCAT AOTTP programme must follow mandatory rules included in the contract between ICCAT and its funders. The acceptance of any ICCAT AOTTP contract will automatically imply acceptance of the "Publication Policy and Editorial rules" detailed below:

1. The Group recommended the following policy regarding data dissemination: Summarized data obtained through any activity funded by the programme (ICCAT AOTTP) will be made available to the public (in official ICCAT databases) following quality control and review (to be described elsewhere) by the Secretariat, and validation by the SCRS.

2. Ownership of the results of the programme (ICCAT AOTTP), including industrial and intellectual property rights, and of the reports and other documents relating to it shall be vested in ICCAT.

3. The results of all activities carried out within the programme (ICCAT AOTTP) and all the scientific results obtained shall be presented to the ICCAT SCRS at the first possible opportunity.

4. The scientific results of activities carried out within the ICCAT AOTTP may be published, entirely or in part, in either any scientific journal or in the ICCAT Collective Volume of Scientific Papers, providing they have first been presented to the ICCAT/SCRS.

5. Any researchers who wish to publish results in any media (websites, blogs, newspaper articles, scientific journals) shall require prior permission from the ICCAT Secretariat. ICCAT, however, will, actively encourage any prospective authors engaged in research activities within the ICCAT AOTTP programme to disseminate their results; particularly in peer-reviewed international scientific journals. The criteria for permission to publish must be determined.

    Note: The Group discussed publication of SCRS documents in the ICCAT Collective Volume of Scientific Papers. These do not require the permission of ICCAT. The Working Group requested additional information regarding the criteria applied to obtain permission for publication. In general, the requirement is that the author arrange to present this information to the SCRS prior to publication.

6. Any report or article describing results obtained by the ICCAT AOTTP programme must include the following sentence:

   "This work was carried out under the provision of the ICCAT Atlantic Ocean Tropical Tuna Tagging Programme (ICCAT AOTTP), funded by the European Union, ICCAT CPCs and Cooperators. The contents do not necessarily reflect the views of ICCAT nor of any of the other funders. This work does not in any way anticipate either ICCAT's or the European Union's future policy in this area."

7. All data collected during any ICCAT AOTTP activities shall be used for scientific purposes only, according to the ICCAT policies. Any other use of these data should be specifically authorized by ICCAT.

8. All ICCAT AOTTP reports are the property of ICCAT. No portion of text, figures, graphs or tables may be reproduced without prior authorization from ICCAT.

5. Management Strategy Evaluation (MSE)

5.1 Review existing operating models and provide feedback on potential tropical tuna MSE

The Rapporteur provided guidance on the Commission requests related to MSE contained in [Rec. 16-01]. This includes the review of performance indicators to be used on MSE as presented in Section 6 of this report. The SCRS Chair reminded the Group of the timeline and expectations from the Commission regarding MSE for tropical tunas, including the issue of whether the MSE should be developed for a single stock of tropical tunas (e.g. bigeye) or multiple stocks.

Document SCRS/2017/198 presented the development of a multi-specific model based on Management Strategy Evaluation (MSE) for tropical tuna fisheries on the Atlantic Ocean in order to evaluate the economical and biological impact of different management plans on a multi-specific fisheries context. Detail was offered only on the first steps towards the multi-specific MSE model: the conditioning of two single stock MSE model with FLBEIA (bio-economic impact assessment model), for bigeye and yellowfin tuna fisheries on the Atlantic Ocean based on their latest assessment. The results of the preliminary conditioning of the operating model (OM) for each stock were presented with an emphasis on the challenging issues that arose during such conditioning. So far operating models for each stock have been created independent of one another. The software package used by the authors has the capacity to describe bio-economic dynamics and can provide some simple bio-economics performance indicators.

The Group discussed that the MSE process requires a clear definition of management objectives, something that is not yet available for tropical tunas. The Group and the authors pointed out that the current conditioning was conducted with one single assessment model from all those considered in the last assessments of tropical tunas. The Group agreed that, ideally, conditioning should also include other alternative dynamics such as those described by all other assessment models used for each stock. The toolbox used for development of the operational model presented in SCRS/2017/198 does allow for the incorporation of a wide range of alternative dynamics apart from the one considered at present. The model presented in SCRS/2017/198, however, does not include spatial structure. It was acknowledged that although the SCRS has in the past highlighted the importance of socio-economic indicators, the Commission has yet to provide clear guidance on whether such indicators would align with any of the Commission management objectives.

A presentation (SCRS P/2017/038) was provided noting that Working Groups face major problems when missing data forces them to perform substitutions and/or to raise samples to total observations (e.g. in tagging catch, effort, size samples and biological datasets). This creates a source of uncertainty that is largely ignored. Carruthers *et al.* (in press) conducted a comprehensive analysis of uncertainty in the bigeye and yellowfin stock assessment and the effect of data processing and assumptions on estimates of stock status relative to reference points. Bayesian multiple imputation was used to fill in missing size data when raising catch-at-size data. Imputation involves drawing values from a posterior distribution, which reflects the uncertainty surrounding the parameters of the distribution that generated the data. It therefore simulates both the process generating the data and the uncertainty associated with the parameters. It was shown that data processing is important in determining management reference points. The analysis can also be used to select hypotheses and scenarios for developing operating models for use in MSE.

The Group noted that MSE models can be useful to evaluate the value of different streams of information in support to the stock assessment and management process. As an example, variability in growth rates over time or location can affect our perception of the age structure of catches. Thus, uncertainty about this variation can affect the results of a stock assessment based on VPA. MSE can be used to test the sensitivity of VPA assessment results to alternative hypotheses about this growth variability. Furthermore, MSE can be used to evaluate how this sensitivity of VPA results would affect the advice provided and the management performance.

5.2 Develop a programme to implement and fund MSE for tropical tunas for a minimum of three years

The Group discussed how the schedule for the development of MSE for tropical tunas, which calls for the MSE results to be first available in 2020, relates to the current schedule of assessments for tropical tunas (2018 bigeye, 2019 skipjack, 2021 yellowfin). The Group noted that MSE is a process that involves scientists, stakeholders and the Commission therefore the Group decided to develop a comprehensive programme for MSE development which included all of these Groups. The Group, however, only provided some technical details for the work to be done by the SCRS.

It was pointed out that conditioning of operating models benefits from having an up to date stock assessments. The Group also noted that past attempts of assessing more than one species in a year were very challenging and not particularly successful. Therefore, the Group acknowledges that the conditioning of the operating model of a multispecies MSE may have to be done with assessment models that represent stock status for different years. The Group also made the point that operating models for skipjack do not benefit from the same level of knowledge of stock dynamics as bigeye and yellowfin tuna, because skipjack assessments used for providing advice have not been age-structured. The Group acknowledged, however, that information on life history, and population biology of skipjack, can be used to develop an age-structured operating model. It was noted that in theory operating models for individual stocks may be tailored to the available information for each stock.

Given these considerations two possible options exist for the MSE tropical tuna program:

1. Modify development schedule. Delay first delivery of MSE to the Commission to 2021 after a new set of stock assessments have been completed. This would require conducting stock assessments of bigeye in 2018, skipjack in 2019 and yellowfin in 2020.

2. Keep the current schedule, including first delivery of MSE in 2020. Stock assessments would take place for bigeye in 2018, skipjack in 2019 and yellowfin in 2021.

3. The Group developed an initial schedule of activities to achieve option b) which is presented in **Table 11**. The Group agreed that the SCRS Chair, in consultation with those participating in the MSE subgroup at the meeting, and the species rapporteurs would develop a budget to implement the activities related to the SCRS and provide this as a draft to the SCRS plenary for discussion and possible adoption. The Group noted that there were many activities that could support this programme including, taking advantage of existing EU-funded project to develop an MSE simulation framework being conducted by AZTI, EU-funded MSE project to support capacity awarded to ICCAT, ABNJ-FAO project activities to increase capacity of developing countries to participate in MSE, AOTTP funds to develop population parameter estimates for tropical tunas. It was also noted of the benefits to coordinate this programme with other MSE programmes in ICCAT (albacore, bluefin, North swordfish), with the t-RFMO Working Group on MSE. It was recommended that the Group enhances intersessional work through video conferencing and the use of freely available collaborating software.

6. Responses to the Commission

6.1 Ghana's comprehensive and detailed capacity management plan on the level of catches. Rec. [16-01] paragraph 12c

According to Rec. 16-01, Ghana is permitted to change the number of its vessels by gear type within its capacity limits communicated to ICCAT in 2005, on the basis of two baitboats for one purse seine vessel subject to the assessment by the SCRS of the potential impact of that plan on the level of catches. According to the ICCAT List of vessels over 20m, 17 purse seiners, 20 baitboats and 2 carriers were operated by Ghana in 2016.

The Group considered whether it was possible to determine if the fishing capacity by vessel gear type (i.e. purse seine, baitboat) remains consistent with the intent of Rec. 16-01, paragraph 12. The Secretariat confirmed that the data sets required to conduct that analysis have been submitted by Ghana, but noted that additional work is required to combine the datasets into a single format that can be used to support the necessary analyses. This work could not be conducted in time to respond to the Commission in 2017. The Group recommended that the Secretariat compile the data needed to support the analysis of Ghanaian fishing capacity in time to conduct these analyses in 2018.

6.2 Evaluate the efficacy of the area/time closure referred to in paragraph 13 in relation with the protection of juveniles of tropical tunas, Rec. [16-01] paragraph 15

The current area/time closure was implemented for the first time in 2017. Although an analysis of preliminary 2017-Quarter 1 Task II data for the EU and associated fleets was presented to the Group, the Group noted that the official 2017 fisheries data are not required from CPCs until 31 July 2018. Therefore, the Group was not able to conduct analyses using the full dataset. Furthermore, additional years of data (beyond 2017) would be required to adequately assess the result of the closure, and those data will not be available until after the deadline provided by the Commission.

However, this year the SCRS reviewed historical data (2000-2012) to compare the catch from the area covered by the 2013 closure and the catch from the area covered by the current closure. The difference in FAD-associated bigeye catch between the two areas was minimal. In the SCRS response to the Commission in 2015 that addressed the efficacy of the 2013 closure, the Committee concluded it had not been effective in reducing the catch of juvenile bigeye and yellowfin to a measurable degree. As a result of the similarity in historical catch levels in the two areas, the analyses suggested that the 2017 closure would not be more effective than the 2013 closure.

Committee plans to conduct an evaluation of the effect of the moratorium on the mortality of juvenile tropical tunas in 2018. The work plan will include the elements listed below.

1. For addressing the request of the Commission on "alternative area/time closure of fishing activities on FADs to reduce the catch of small bigeye and yellowfin tuna on various levels" (Rec. 16-01 and 16-15), the Secretariat in collaboration with EU and Ghana scientists coordinate assembling the need data at the highest resolution possible, with information of catches, catch composition, size distribution, geographic (1x1) and monthly distributions of catch of tropical tunas from the main purse seine fleets. Additional data can be gather from the current AOTTP programme. The AOTTP Coordinator will collaborate with the SCRS Chair, and tropical species group leads to facilitate the inclusion of AOTTP data in the stock assessment of bigeye and the moratorium analyses to the extent possible.

2. Using data through 2016:

   a) Examine the catch, effort and size frequency (Task II) of yellowfin and bigeye tuna landed by surface fleets in the tropical Atlantic by 1x1 grid and month.

   b) Analysis of the historic surface fleet using purse seine fishery data in relation to the environmental parameters.

c) Evaluate time/area closures that could achieve certain percentage reductions (10% to 50%) in the annual catches of juvenile yellowfin and bigeye tuna.

d) Provide information on how these reductions will affect the projected stock status (i.e. SSB/SSB_{MSY} and F/F_{MSY}) and recovery schedule, and other measures as possible (e.g. YPR, SPR).

6.3 Review its 2016 recommendations on observer coverage and advise the Commission on appropriate coverage levels. Rec. [16-01] paragraph 42

The Group chose to combine this response with a related one. The text can be found in Section 6.7.

6.4 Address to the extent possible the Recommendations made by the FAD Working Group in 2016 (Annex 8) and for the remaining ones develop a work plan to be presented to the Commission at its 2017 Annual meeting. Rec [16-01] paragraph 49 (a)

The Group evaluated the recommendations made by the *Second FADs Working Group meeting in 2016* (Annex 8) (Anon. 2017a) and developed a work plan to make further progress on these recommendations. The Group will develop a final response during the ICCAT species group meetings, and will adopt a final version at the 2017 SCRS plenary sessions.

6.5 Provide performance indicators for skipjack, bigeye and yellowfin tuna as specified in Annex 9 of the FAD Working Group meeting in 2016, with the perspective to develop management strategy evaluations for tropical tunas. Rec [16-01] paragraph 49 (b)

After reviewing the indicators developed by ICCAT and those developed by other tRFMOs, the Group agreed that performance indicators developed for North albacore (see *Report of the Second Intersessional meeting of Panel 2*, Anon. 2017b) can be used as an initial list for tropical tunas and that the future of MSE simulation framework should be able to calculate all of them.

The Group noted that the summary advice to the Commission should use only one indicator for each of the main categories, as was the case for northern albacore. These four specific indicators selected for tropical tunas are likely to be different than those used for albacore because there is at least one stock (bigeye) that needs rebuilding. It is therefore important to select one indicator that helps evaluate the success of rebuilding. These summary indicators can be different for different stocks.

The Group agreed that it would be better if indicators that reflect recruitment overfishing and growth overfishing were also incorporated to the list as has been proposed by the SCRS for swordfish. This relates to the fact that, in the past, the Commission has expressed that they are concerned about the sizes of fish that are caught and how these sizes affect maximum sustainable yield.

Although the Group agreed that it would be ideal to have some performance indicators relating to multispecies considerations it would need guidance from the Commission on what multispecies objective(s) the Commission has, if any. These indicators would need to be derived in a way that takes care of fishery, interactions between stocks and possibly biological interactions. Alternatively, the Commission will have to consider tradeoffs by examining species specific objectives for all stocks at the same time, for example if a single species control rule triggers an action, the action will affect all stocks. In their reports to the Commission the SCRS will provide summaries for each stock and all four indicators, and for each indicator for all stocks.

6.6 Develop a table for consideration by the Commission that quantifies the expected impact on MSY, B_{MSY}, and relative stock status for both bigeye and yellowfin resulting from reductions of the individual proportional contributions of longline, FAD purse seine, free school purse seine, and baitboat fisheries to the total catch. Rec [16-01] paragraph 49 (c)

The Group plans to conduct an analysis that will directly respond to this request in 2018 (see the work plan).

The Group also noted that the most recent stock assessments of bigeye and yellowfin tunas demonstrate that current MSY may be below what was achieved in past decades because overall selectivity has shifted to smaller fish (**Figure 4 and 5**). In addition, the assessment of bigeye also indicated that as the potential MSY has decreased over time the spawning stock biomass required to produce this MSY has increased (**Figure 4**). Similar results were reported for analyses conducted on bigeye in the Pacific Ocean (WCPFC-2013–WGTT/10).

6.7 Evaluate the contribution of by-catches and discards to the overall catches in ICCAT tropical tuna fisheries, on a fishery by fishery basis. Rec [16-01] paragraph 53

In the SCRS response to the Commission in 2016 on observer coverage it was noted that several studies (Lennert-Cody, 2001; Babcock *et al*., 2003; Sánchez *et al*., 2007; Amandè *et al*., 2012) suggest that sampling coverages of, at least, 20% would be necessary to provide reasonable estimates of total by-catch and the by-catch of common species. In the case of rare species, this percentage would need to be much higher at least 50% (Babcock *et al*., 2003). Thus, the SCRS continues to conclude that current required level of scientific observers (5%) seems to be inappropriate to provide reasonable estimates of total by-catch and recommends increasing the minimum level to 20%. Ideally analysis of by-catch rates should be fisheries specific and done by CPC scientists responsible for the observer programmes as recommended by the Sub-Committee on Ecosystems.

The SCRS reiterates also its recommendation from 2016 on Electronic Monitoring Systems (EMS) which are already being used by some tropical tuna purse seine vessels. Noting that EMS can complement physical observer programmes and also collect other data that would be useful to the SCRS, the Committee considers that it would be useful to ensure that the different systems available conform to harmonized installation, data collection and reporting protocols, so as to ensure compatibility. The Committee recommends that tropical tuna purse seine fleets or CPCs wishing to voluntarily implement EMS follow the guidelines described in Ruiz *et al.* 2017. This source of information would help improve current coverage of observer data in tropical tuna fisheries.

Information relevant for the preparation of this response was only made available for the tropical tuna purse seine fishery which currently has the highest observer coverage amongst ICCAT fleets. As a result, this response is limited to this fishery. It is noted, however, that longline fisheries also target tropical tunas and may have high by-catch rates but this information was not made available to the Working Group. Baitboat fisheries also target tropical tunas, although by-catch is generally thought to be small, but this information comes from landings, not observers. Artisanal fisheries including gillnets/troll and handline also catch tropical tunas while fishing for other species, but by-catch information for these fisheries are extremely limited and come only from landings. Some of the more general points in this response, such as on reducing tuna discards, can also be applicable to these fisheries.

- evaluate the contribution of by-catches and discards to the overall catches in ICCAT tropical tuna fisheries, on a fishery by fishery basis

Following the ICCAT Glossary the Group consider by-catch to imply species that are not targeted, and discards as all species/sizes that are not retained. In this report, it is assumed that the target of the purse seine fishery are skipjack, yellowfin and bigeye that are landed. For the purpose of this response we are considering this to be the catch of BET+YFT+SKJ that are discarded at sea, plus the catch of all other species (by-catch), whether discarded or not.

According to one recent study on EU purse seine by-catch and discards for 2010-2016, in average, overall by-catch in the purse seine fishery is 113.8 tons and 26.3 tons per every 1,000t of bigeye, yellowfin and skipjack landed in FOB and FSC sets, respectively. An average, 13% of the by-catch results from FSC sets and 87% from FOB sets. The majority of the by-catch consists of tunas: BET+YFT+SKJ that are discarded at sea (21% and 22% in FOB and FSC sets, respectively), and other tuna species that are either retained or discarded (56% and 40% in FOB and FSC sets, respectively) (**Table 9**). While overall by-catch is higher in floating object sets than it is in free school sets, this is not always the case for different species groups. For instance, by-catches of billfishes, sharks and rays are of similar magnitude in FOB and FSC sets (**Table 10**).

In total 10,184 number of sets were observed during the time period. There were 163 whale shark interactions that were released alive, almost always before the retrieval of the net. 202 cetacean interactions (13 dolphins, 189 whales) were reported by observers during the whole studied period the majority (177) of which were in Free School Sets. All of them were released alive, almost always before the retrieval of the net. There were 1,228 sea turtle interactions with 11 being discarded dead and 1,217 discarded alive, with more of these encounters occurring in FOB sets.

The SCRS has used the species composition for target species from the EU purse seine as a proxy for other purse seine fleets. This has not been done for by-catch previously but it seems reasonable to assume that the by-catch species composition may also be very similar between purse seine fleets. Discarding practices and handling practices may, however, differ significantly and so cannot be extrapolated from EU purse seine information.

- advise the Commission on possible measures allowing to reduce discards and to mitigate onboard post-harvest losses and by-catch in ICCAT tropical tuna fisheries

One way to reduce discards is to prohibit them. IATTC, IOTC and WCPFC have adopted management measures that prohibit the discarding of bigeye, yellowfin and skipjack in the purse seine fishery, except if the fish are unfit for human consumption or in case of insufficient well space during the last set in a trip. The Commission could consider adopting a similar measure for ICCAT PS fisheries which could improve catch statistics and may also have socio-economic benefits (e.g., for food security). It has been shown that there are local markets with high demand for these discards from tuna purse seiners in the main landing ports in West Africa i.e. Abidjan, Tema and Dakar (Amandè *et al*., 2016a, Amandè *et al*., 2016b). Therefore, retaining these discards probably offers more shared benefits from a social and economic point of view than the reverse. Prohibiting discards of other species is also an option, although its implementation may be more difficult due to considerations of well space and species sorting onboard For other fisheries, information such as estimates of total dead and live discards by fleet and gear type, is required to quantify the levels and nature of discarding before clear advice can be provided on discard reduction.

CPCs could also consider other measures, e.g. market incentives, to increase utilization and reduce discards for all tropical tuna fisheries. Utilization already takes place in West Africa. Socio-economic studies of these markets could lead to the identification of mechanisms to enhance them or to implement them in other ports where purse seiners land their catches. Workshops that involve PS skippers have proven to be useful in providing direct feedback on possible discard reductions and incentives for retaining all catches.

Since discards and the catch of certain by-catch species is generally higher in FOB sets, the limitation of FADs fishing effort such as the measures defined in Rec. [16-01] is an indirect way to reduce discards and mitigate by-catch. Studies of the volume of non-tuna species aggregated under FADs suggest that it largely independent of the amount of tuna species present (Dagorn *et al*., 2012). Thus, avoiding sets with low aggregated biomass will result in relatively higher tuna catches and lower bycatches. However, this may be difficult to regulate in practice. Finally, research is underway to develop acoustic means to discriminate species and sizes of fish aggregated under FADs. Once developed, this technology could be used in echosounder buoys to help fishing masters decide on fishing strategies that reduce unwanted catch.

Various measures to mitigate by-catch of vulnerable species (e.g. elasmobranchs, marine turtles) have been effectively tested and implemented at-sea. These include, the use of non-entangling FADs, release of sharks and turtles from deck, release of sharks from the net before hauling, use of acoustic technology information to help skippers identify the proportion of bigeye and yellowfin tunas compared to skipjack tuna at FADs (Restrepo *et al.,* 2016). The aforementioned methods have proven to be successful in reducing by-catch and/or associated mortality. The Commission should consider some combination of these measures in order to mitigate by-catch. In some cases it is noted that recommendations already exist that include a variety of these measures.

For longline fisheries, the SCRS notes the 2017 recommendation from the Sub-committee on Ecosystems which states that large circle hooks are proven to be effective in reducing sea turtles bycatch and might also increase post-release survival. It is also acknowledged that circle hooks have different impacts on both target and by-catch species. While they decrease marlin by-catch and swordfish catch rates, they increase tropical tuna and sharks catch rates.

Taking into consideration the above scientific information, and that most sea turtle by-catch occurs on shallow longline sets, the Sub-committee recommended the Commission to consider adopting for longline fisheries targeting swordfish and sharks at least one of the following mitigation measures:

1. Use of large circle hooks
2. Use of finfish bait
3. Other measures considered effective by the SCRS

The use of circle hooks have also been advocated and adopted for some billfish species (e.g. Rec. 16-11 for sailfish).

Safe handling of sea turtles on longliners is already advocated in Rec. [13-11]. Recs [11-08], [10-08] and [09-07] for silky, hammerhead and thresher sharks respectively require CPC vessels flying their flag to promptly release these sharks unharmed, either when they come alongside the vessel, or in some cases at the latest before putting the catch into the fish holds, giving due consideration to the safety of crew members. The use of monofilament instead of steel traces or leaders are also known to be effective to reduce shark by-catch in longliner fisheries.

For other fisheries, information such as by-catch rates by species and mitigation studies by fleet and gear type, is required to quantify the levels and nature of by-catch before clear advice can be provided on by-catch mitigation.

6.8 Advise the Commission on possible measures allowing to reduce discards and to mitigate onboard post-harvest losses and by-catch in ICCAT tropical tuna fisheries. Rec [16-01] paragraph 53

The Group chose to combine this response with a related one. The text can be found in Section 6.7.

7. Recommendations

1. The Group recommends that, the combined historical "FIS" fishery (FRA+CIV+SEN, before 1991) be split in Task II (T2CE and T2SZ/CAS) and allocated to the respective CPC in the line of what was made in Task I catches in the past. The same break down is required (T2CE and CAS) for the combined tropical ETRO fisheries (NEI-ETRO combined fleet) affecting mainly PS before 2006. This task should be achieved before the next assessment of a tropical tuna.

2. The Group recommended that the methodology for splitting and estimating species composition be reviewed and approved by the methods working group and then proceed to implement the estimates of Task II "*faux-poisson*" and store it in ICCAT database.

3. Bearing in mind that there is funding available to improve the Ghanaian statistics, the Group reiterates the need for scientists from EU and Ghana to collaborate to adapt the T3 software and engage in capacity building to facilitate its use.

4. The Group noted the limited and incomplete data for skipjack landed in the West Atlantic since 2010, and strongly recommends that efforts be taken to improve that information.

5. The Group made several recommendations regarding the AOTTP programme (Section 4.3). The Group recommends that these be considered by the AOTTP Steering Committee as they consider the expenditure of remaining resources.

6. The Group made several recommendations regarding the implementation of an MSE for tropical tunas. These can be found in Section 5 and 6.5.

7. The Group made several recommendations regarding required activities related to the *Second FADs Working Group meeting in 2016* (Annex 8) (Anon. 2017a). These can be found in Section 6.4.

8. Other matters

8.1 Work plan

The 2018 work plan will include several important activities, including the stock assessment of bigeye tuna, and activities related to Management Strategy Evaluation, and evaluation of time/area closures and the effect of fleet allocation on management metrics. Given the complexity of scheduling these activities to best facilitate our progress toward meeting our objectives, the work plan will be prepared by the Species Group Chairs, the Tropical Tuna Coordinator and the SCRS Chair, and presented to the Group by correspondence prior to the SCRS plenary session.

8.2 Update species Executive Summaries

Due to the ambitious and lengthy agenda, the Group did not have sufficient time to revise and review the Executive Summaries. The Group also noted that no Species Group meeting was scheduled for late September this year, despite a request from the Group Coordinator. The Group emphasized that Executive Summaries are typically developed and reviewed at the Species Group meeting, and that moving this activity to the Agenda of the intersessional meeting severely limited the time for other important activities (i.e. work requested by the Commission). Faced with the reality that we did not have time to compete all Agenda items, the Group chose to focus on responses to the Commission, and prepare the Executive Summaries by correspondence prior to the SCRS plenary session.

The Group discussed that the catches of yellowfin and bigeye tuna have exceeded the TAC and that this has implications for management advice. Also, new research was made available in SCRS documents presented to the Group, new and updated indices have been made available, and there are updated statistics for the purse seine and baitboat vessels from EU and associated fleets operating in the Atlantic Ocean (SCRS/2017/203). These changes should be reflected in the updated Executive Summaries.

9. Adoption of the report and closure

The report was adopted by the Group and the meeting was adjourned.

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Table 1. Estimated catches (t) of bigeye tuna (*Thunnus obesus*) by stock/area, gear and flag, between 1987 and 2016 (as of 6 September 2017).

				1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
TOTAL				57416	66410	78720	85264	97197	100117	113862	134936	128018	120751	110261	107804	121643	103680	91201	75726	87702	90534	67964	58875	75070	67720	80447	80521	82954	75934	73207	78039	79861	72348
Landings	A+M		Bait boat	13458	9710	12672	18280	17740	16248	16467	20361	25576	18300	21276	18999	22301	12365	14540	8523	11450	20812	13058	10636	11833	7761	13476	9506	14267	12648	11403	9959	10007	6928
			Longline	35570	47766	58389	56537	61556	62403	62871	78898	74852	74930	68310	71856	76527	71193	55265	46438	54466	48396	38035	34182	46232	41063	43985	42925	38204	35005	32037	37008	39792	35398
			Other surf.	626	474	644	293	437	607	652	980	567	357	536	434	1377	1226	1628	1134	1336	1290	717	552	448	220	257	461	977	678	1140	1971	1942	1970
			Purse seine	7148	7859	6371	9407	15524	19223	31582	32665	25355	26624	19147	15525	20254	17533	19511	19418	19582	19016	15128	12962	15865	17904	21648	26636	28229	26766	27996	28492	28082	28051
Landings(FP)	A+M		Purse seine	613	600	644	747	1941	1636	2290	2032	1667	540	993	989	1184	1363	257	214	867	1019	1026	542	692	772	1082	994	1277	823	632	609	0	
Discards	A+M		Longline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14	0	0	2	0
			Purse seine	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	36	
Landings	A+M	CP	Angola	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	476	75	0	0	0	452	410	320	394	375	372	0	
			Barbados	0	0	0	0	0	0	0	0	0	0	24	17	18	18	6	11	16	19	27	18	14	14	7	12	7	15	11	26	30	19
			Belize	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	60	70	234	249	1218	1242	1336	1502	1877	1764
			Brazil	756	946	512	591	350	790	1256	601	1935	1707	1237	644	2024	2768	2659	2582	2455	1496	1081	1479	1593	958	1189	1151	1799	1400	1433	3475	3561	2823
			Canada	144	95	31	10	26	67	124	111	148	144	166	120	263	327	241	279	182	143	187	196	144	130	111	103	137	166	197	218	257	171
			Cape Verde	60	117	100	52	151	305	319	385	271	299	228	140	9	2	0	1	1	1	1077	1406	1247	444	545	554	1037	713	1333	2271	2764	1679
			China PR	0	0	0	0	0	0	70	428	476	520	427	1503	7347	6564	7210	5840	7890	6555	6200	7200	7399	5686	4973	5489	3720	3231	2371	2232	4942	5852
			Curaçao	0	0	0	0	0	0	0	0	0	1893	2890	2919	4016	3098	3757	2221	3203	3526	27	416	252	1721	2348	2688	3441	2890	1964	2315	2573	3598
			Côte d'Ivoire	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	790	576	47	507	635	441	12	544
			EU.España	9702	8475	8263	10355	14705	14656	16782	22096	17849	15393	12513	7110	13739	11250	10133	10572	11120	8365	7618	7454	6675	7494	11966	11272	13100	10914	10082	10736	10058	11469
			EU.France	3435	4024	3261	5023	5576	6888	12719	12263	8363	9171	5980	5624	5529	5949	4948	4293	3940	2926	2816	2984	1629	1130	2313	3329	3507	3756	3222	3549	2548	4566
			EU.Ireland	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0	0	0	33	0	0	0	0	0	0	0	0	0	0	
			EU.Poland	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			EU.Portugal	5036	2818	5295	6233	5718	5796	5616	3099	9662	5810	5437	6334	3314	1498	1605	2590	1655	3204	4146	5071	5505	3422	5605	3682	6920	6128	5345	3869	3135	2187
			EU.United Kingdom	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	32	0	0	0	0	0	0	
			El Salvador	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	992	1450
			FR.St Pierre et Miquelon	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	21	0	28	6	0	2	3	0	2	0	0	0	0	0	
			Gabon	0	0	0	0	0	0	1	87	10	0	0	0	184	150	121	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			Ghana	1178	1214	2158	5031	4090	2866	3577	4738	5517	4751	10165	10155	10416	5269	9214	5611	8646	17744	8860	2041	8119	7727	8186	10455	9850	9477	10992	9974	11902	4813
			Guatemala	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	736	831	998	949	836	998	913	1011	282	262	163	993	340	1103
			Guinea Ecuatorial	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	50	0	58	0	3	10	17	
			Guinée Rep.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	328	322	1516	1429	902	0	
			Honduras	0	0	0	0	0	44	0	0	61	28	59	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			Iceland	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			Japan	18961	32064	39540	35231	30356	34722	35053	38503	35477	33171	26490	24330	21833	24605	18087	15306	19572	18509	14026	15735	17993	16684	16395	15205	12306	15390	13397	13464	12170	10426
			Korea Rep.	4438	4919	7896	2690	802	866	377	386	423	1250	796	163	124	43	1	87	143	629	770	2067	2136	2599	2134	2646	2762	1908	1151	1039	675	562
			Liberia	0	0	206	16	13	42	65	53	57	57	57	57	57	57	57	57	57	0	0	0	0	0	0	0	0	0	0	0	0	
			Libya	0	0	0	0	0	508	1085	500	400	400	400	400	400	400	31	593	593	0	0	4	0	0	0	0	0	0	0	0	0	
			Maroc	8	0	0	0	0	0	0	0	0	0	0	0	700	770	857	913	889	929	786	929	700	802	795	276	300	300	308	300	309	350
			Mexico	0	0	0	0	0	0	1	4	0	2	6	8	6	2	2	7	4	5	4	3	3	1	1	3	1	1	2	1	2	2
			Namibia	0	0	0	0	0	0	0	715	29	7	46	16	423	589	640	274	215	177	307	283	41	146	108	181	289	376	135	240	465	359
			Nigeria	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1	0	0	0	0	
			Norway	0	60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			Panama	5616	3847	3157	5258	7446	9991	10138	13234	9927	4777	2098	1252	580	952	562	211	0	1521	2310	2415	2922	2263	2405	3047	3462	1694	2774	2315	1289	2022
			Philippines	0	0	0	0	0	0	0	0	0	0	0	1154	2113	975	377	837	855	1854	1743	1816	2368	1874	1880	1399	1267	532	1323	1964	0	
			Russian Federation	0	0	0	0	0	5	0	0	0	13	38	4	8	91	0	0	0	0	1	1	26	73	43	0	0	0	0	0	0	
			S. Tomé e Príncipe	0	5	8	6	3	4	4	3	6	4	5	6	5	4	4	4	4	11	6	4	0	92	94	97	100	103	107	110	633	421
			Senegal	470	137	0	0	10	5	9	126	237	138	258	730	1473	1131	1308	565	541	574	721	1267	805	926	1042	858	239	230	646	371	1031	1500
			Sierra Leone	0	0	0	0	0	0	0	0	0	0	0	0	0	6	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			South Africa	200	561	367	296	72	43	88	79	27	7	10	53	55	249	239	341	113	270	221	84	171	226	159	145	153	47	435	332	193	121
			St. Vincent and Grenadines	0	0	0	0	0	1	3	0	0	75	127	198	877	1782	721	130	103	18	0	114	567	171	292	396	38	25	16	30	496	622
			Trinidad and Tobago	0	1	19	57	263	0	3	29	27	37	36	24	19	5	11	30	6	5	9	12	27	69	56	40	33	33	37	59	77	37
			U.S.A.	1074	1127	847	623	975	813	1090	1402	1209	882	1138	929	1263	574	1085	601	482	416	484	991	527	508	515	571	722	867	881	859	831	533
			U.S.S.R.	1887	1077	424	95	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			UK.Bermuda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	
			UK.Sta Helena	5	1	1	3	3	10	6	6	10	10	12	17	6	8	5	5	0	0	0	25	18	28	17	11	190	51	19	17	44	77
			UK.Turks and Caicos	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	2	0	
			Uruguay	204	120	55	38	20	56	48	37	80	124	69	59	28	25	51	67	59	40	62	83	22	27	201	23	15	2	30	0	0	
			Vanuatu	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	104	109	52	132	91	34	42	39	23	9	4	0	
			Venezuela	349	332	115	161	476	270	809	457	457	189	274	222	140	221	708	629	516	1060	243	261	318	122	229	85	264	98	94	169	132	156
		NCC	Chinese Taipei	1488	1469	940	5755	13850	11546	13426	19680	18023	21850	19242	16314	16837	16795	16429	18483	21563	17717	11984	2965	12116	10418	13252	13189	13732	10805	10316	13272	16453	13115
			Guyana	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	
		NCO	Argentina	72	50	17	78	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			Benin	6	7	8	10	10	7	8	9	9	9	30	13	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			Cambodia	0	0	0	0	0	0	0	0	0	0	0	0	32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			Congo	10	10	14	15	12	12	14	9	9	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			Cuba	190	151	87	62	34	56	36	7	7	5	0	0	0	0	0	16	16	0	0	0	0	0	0	0	0	0	0	0	0	
			Dominica	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			Faroe Islands	0	0	0	0	0	0	0	0	0	0	0	0	11	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			Grenada	0	0	0	0	65	25	20	10	10	0	1	0	0	0	0	0	0	0	0	0	10	31	0	0	0	0	0	0	0	
			Mixed flags (FR+ES)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			NEI (ETRO)	85	20	93	959	1221	1938	4360	4858	4932	5585	2403	1350	2539	979	1857	1790	1256	360	0	0	0	0	0	0	0	0	0	0	0	
			NEI (Flag related)	1406	2155	4650	5856	8982	6146	4378	8964	10697	11862	16569	24896	24060	15092	7997	383	0	0	0	0	0	0	0	0	0	0	0	0	0	
			Saint Kitts and Nevis	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
			Seychelles	0	0	0	0	0	0	0	0	0	0	0	0	0	58	0	162	0	0	0	0	0	0	0	0	0	0	0	0	0	
			Sta. Lucia	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	2	2	0	2	0	0	0	0	0	0	0	0	0	6	
			Togo	22	7	12	12	6	2	86	23	6	33	33	33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Landings(FP)	A+M	CP	Belize	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	46	42	16	41	23	0
			Cape Verde	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	75	28	37	38	61	102	40	22	45	97	0
			Curaçao	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	25	20	13	117	59	46	60	34	42	0
			Côte d'Ivoire	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	95	45	0	0	
			EU.España	355	204	192	242	625	571	764	605	371	58	255	328	487	474	0	0	223	244	143	88	49	190	250	211	216	98	80	143	0	
			EU.France	154	233	281	352	653	686	1032	970	713	314	437	467	553	607	229	205	446	397	222	79	26	51	150	122	394	192	56	54	0	
			Guatemala	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	56	28	15	26	9	18	6	11	5	15	0	
			Guinée Rep.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	72	0	60	20	22	74	203	288	245	209	0	
			Panama	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	151	106	135	97	85	38	70	41	80	27	0	
			St. Vincent and Grenadines	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	
		NCO	Mixed flags (EU tropical)	103	164	172	153	663	379	494	457	582	169	301	193	143	281	28	8	198	378	294	189	348	337	375	324	257	0	0	0	0	
Discards	A+M	CP	Canada	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			EU.France	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	36	
			Korea Rep.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
			South Africa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	A+M	NCC	Chinese Taipei	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14	0	0	0	

Table 2. Estimated catches (t) of yellowfin tuna (*Thunnus albacares*) by stock/area, gear and flag, between 1985 and 2016 (as of 6 September 2017).

				1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
TOTAL				156617	146608	145351	136237	162392	193604	167523	163770	163451	173744	154588	149152	137375	144496	136325	132154	153455	134427	122448	119445	101745	104659	95963	106716	113438	108981	102783	104528	97269	96988	108934	127757
	ATE			113801	108774	113370	101642	125489	160873	130626	126058	124706	125530	119314	116096	105034	113576	105615	96531	113132	104767	97467	88207	75677	76388	71795	88593	94661	88187	85105	84678	77790	82109	93858	109162
	ATW			42815	37834	31982	34594	36902	32731	36897	37712	38745	48215	35274	33056	32341	30919	30710	35623	40323	29660	24982	31238	26068	28272	24167	18123	18777	20794	17678	19851	19479	14879	15076	18595
Landings	ATE		Bait boat	16120	15301	16750	16020	12168	19648	17693	15095	18471	15652	13496	11365	12695	14265	16729	10022	14034	11145	9967	14639	9725	12490	7044	7253	7424	6879	9118	6297	4731	6176	5913	9751
			Longline	9520	5779	6624	8956	7566	10253	9082	6518	8537	14638	13723	14236	10483	13872	13561	11369	7570	5869	9183	11537	7317	7234	13437	8562	7385	5544	6602	5510	5659	5283	4339	4863
			Other surf.	1516	2296	2932	2646	2586	2175	3748	2450	2122	2030	1989	2065	2136	1674	1580	2424	2074	1624	2309	2699	2152	2988	2534	1693	3012	1890	1397	1964	2941	1450	1508	329
			Purse seine	86576	85325	86141	73117	102200	127673	97182	99532	92130	90151	87597	87616	78225	82278	71964	70664	89068	85808	74702	57797	55429	52928	47944	70077	75417	72006	64966	69034	63126	67798	81961	94219
	ATW		Bait boat	5478	2421	5468	5822	4834	4718	5359	6276	6383	7094	5297	4560	4275	5511	5364	6753	5315	6009	3764	4868	3867	2695	2304	886	1331	1436	2311	1108	1403	493	743	1152
			Longline	10755	19148	14324	19329	17473	18963	14100	17336	12129	11790	11185	11882	11554	11671	13326	15760	14872	11921	10166	16019	14449	14249	13557	13192	12782	13038	10677	12558	12308	8384	7347	7647
			Other surf.	5588	6443	5524	3409	2948	2250	3024	2741	4152	9719	12454	5830	4801	4581	5330	5241	7027	3763	6445	7134	5118	6880	5959	1973	3285	3590	2425	2885	2130	3418	4651	4640
			Purse seine	20994	9822	6665	6034	11647	6800	14414	11359	16081	19612	6338	10784	11710	9157	6523	7870	13108	7966	4607	3217	2634	4442	2341	2067	1370	2722	2256	3292	3635	2581	2332	5153
Landings(FP)	ATE		Purse seine	70	73	923	904	969	1124	2921	2463	3447	3059	2509	813	1495	1488	1781	2051	387	321	1305	1534	1054	747	836	1008	1423	1869	3021	1872	1332	1401	0	
			Longline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	
			Purse seine	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	137	
	ATW		Longline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	167	0	0	0	0	0	0	5	6	5	9	8	9	7	3	3	3	3
			Other surf.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Landings	ATE	CP	Angola	350	59	51	246	67	292	510	441	211	137	216	78	70	115	170	35	34	34	34	34	111	0	405	98	701	520	485	191	0	541	0	
			Belize	0	0	0	0	0	0	0	0	0	0	1	0	3	0	0	5	0	0	0	0	0	0	0	0	405	1794	3172	5861	5207	7036	7132	3497
			Canada	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			Cape Verde	1901	3326	2675	2468	2870	2136	1932	1527	1612	1943	1908	1518	1783	1421	1663	1851	1684	1802	1868	3236	6019	5648	4568	7905	4638	5856	6002	4603	7513	4507	7823	4933
			China PR	0	0	0	0	0	0	0	0	139	156	200	124	84	71	1535	1652	586	262	1033	1030	1112	1056	1000	365	214	169	220	170	130	20	78	286
			Curaçao	0	0	0	0	0	0	0	0	0	0	0	3183	6082	6110	4039	5646	4945	4619	6667	4747	24	1939	1368	7351	6293	5302	4413	6792	3727	5152	6140	8012
			Côte d'Ivoire	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	673	213	99	302	565	175	482	216	626	90	470	385	1481	2077	324	251	315
			EU.España	66874	61878	66093	50167	61649	68603	53464	49902	40403	40612	38278	34879	24550	31337	19947	24681	31105	31469	24884	21414	11795	11606	13584	24409	32793	25560	21026	18854	11878	14225	21094	19266
			EU.Estonia	0	0	0	0	0	0	234	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			EU.France	10323	16553	16610	20230	30602	45572	34788	33964	36064	35468	29567	33819	29966	30739	31246	29789	32211	32753	32429	23949	22672	18940	11330	16115	18923	20280	22037	18506	20291	21087	19443	26229
			EU.Ireland	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			EU.Latvia	0	0	0	0	0	0	255	54	16	0	55	151	223	97	25	36	72	334	334	334	334	334	0	0	0	200	143	15	0	0	23	
			EU.Lithuania	0	0	0	0	0	0	332	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			EU.Malta	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	
			EU.Poland	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			EU.Portugal	36	295	278	188	182	179	328	195	128	126	231	288	176	267	177	194	4	6	4	5	16	274	865	300	990	537	452	355	335	69	76	112
			EU.United Kingdom	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23	21	22	1	0	0	
			El Salvador	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2750	8252
			Gabon	0	0	0	0	0	0	0	0	12	88	218	225	225	295	225	162	270	245	44	44	44	44	0	0	0	0	0	0	0	0	0	
			Ghana	12550	11821	10830	8555	7035	11988	9254	9331	13283	9984	9268	8182	15080	13222	20815	12304	23392	18100	15002	14044	13019	12897	11115	11502	11037	10457	8676	9591	8786	11652	13282	18970
			Guatemala	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2207	1588	2906	5265	3461	3736	2603	3124	2803	2949	4023	3754	5200	2720
			Guinea Ecuatorial	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	892	892	199	0	2	11	9	
			Guinée Rep.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	298	292	1559	1484	823	0	
			Honduras	0	0	0	0	0	0	0	2	0	0	4	3	4	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			Japan	5765	3634	4521	5808	5882	5887	4467	2961	2627	4194	4770	4246	2733	4092	2101	2286	1550	1534	1999	5066	3088	4206	8496	5266	3563	3041	3348	3637	3843	3358	2853	2917
			Korea Rep.	1668	965	1221	1248	1480	324	259	174	169	436	453	297	101	23	94	142	3	8	209	984	95	4	303	983	381	324	20	26	97	77	36	356
			Libya	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	208	73	73	0	0	0	0	0	0	0	0	0	0	0	0	
			Maroc	2270	2266	1529	0	0	0	0	0	0	0	0	0	0	0	0	0	0	79	108	95	1940	222	102	110	110	44	272	55	137	107	72	115
			Namibia	0	0	0	0	0	0	0	0	0	35	14	72	69	3	147	59	165	89	139	85	135	59	28	11	1	9	90	0	6	15	42	53
			Nigeria	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	3	1	0	0	0	
			Norway	0	813	418	493	1787	1790	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			Panama	3100	1944	1858	1239	901	1498	7976	8338	10973	12066	13442	7713	4293	2111	1315	1103	626	1112	0	1887	6170	8557	9363	6175	5982	5048	4358	5004	3899	4587	3202	4331
			Philippines	0	0	0	0	0	0	0	0	0	0	0	0	0	126	173	86	0	50	9	68	13	30	88	53	152	89	134	5	56	0	0	
			Russian Federation	0	0	0	0	0	0	3200	1862	2160	1503	2936	2696	4275	4931	4359	737	0	0	0	0	4	42	211	42	33	0	0	0	0	0	0	
			S. Tomé e Príncipe	180	180	178	298	299	164	187	170	181	125	135	120	109	124	114	122	122	122	122	134	145	137	0	160	165	169	173	177	182	186	301	301
			Senegal	1981	1203	881	1093	207	202	105	40	19	6	20	41	208	251	834	252	295	447	279	681	1301	1262	819	588	1279	1212	1050	1683	1247	612	1883	6850
			South Africa	382	55	68	137	671	624	52	69	266	486	183	157	116	240	320	191	342	152	298	402	1156	1187	1063	351	303	235	673	174	440	1512	925	706
			St. Vincent and Grenadines	0	0	0	0	0	0	0	0	0	0	0	12	129	28	255	126	75	194	56	14	0	101	209	83	74	28	0	0	0	0	0	
			U.S.A.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			U.S.S.R.	3768	1851	1275	3207	4246	3615	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			UK.British Virgin Islands	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	
			UK.Sta Helena	72	82	93	98	100	92	100	166	171	150	181	151	109	181	116	136	72	9	0	0	0	344	177	97	104	65	163	149	53	152	178	181
			Vanuatu	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24	145	483	450	331	23	10	124	21	0	0	
			Venezuela	634	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		NCC	Chinese Taipei	146	254	193	207	96	2244	2163	1554	1301	3851	2681	3985	2993	3643	3389	4014	2787	3363	4946	4145	2327	860	1707	807	1180	537	1463	818	1023	902	927	762
		NCO	Benin	60	19	3	2	7	1	1	1	1	1	1	1	3	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			Cambodia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			Cayman Islands	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			Congo	11	20	15	15	21	22	17	18	17	14	13	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			Cuba	1585	1332	1295	1694	703	798	658	653	541	238	212	257	269	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			Faroe Islands	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			Gambia	0	0	0	0	0	2	16	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			Georgia	0	0	0	0	0	0	25	22	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			Mixed flags (FR+ES)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			NEI (ETRO)	0	0	2077	3140	5436	12601	4856	10820	9800	8327	8844	9485	6514	7193	5086	5117	9942	7436	2649	2120	0	0	0	0	0	0	0	0	0	0	0	
			NEI (Flag related)	76	150	285	206	280	1115	2310	1315	1157	2524	2975	3588	3368	5464	5679	3072	2038	43	466	0	0	0	0	0	0	0	0	0	0	0	0	
			Seychelles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	11	0	0	0	0	0	0	0	0	0	0	0	0	0	
			Ukraine	0	0	0	0	0	0	215	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	ATW	CP	Barbados	57	39	57	236	62	89	108	179	161	156	255	160	149	150	155	155	142	115	178	211	292	197	154	156	79	129	131	195	188	218	262	324
			Belize	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	143	1164	1160	940	264	42	41	38	33	0	2163
			Brazil	2947	1837	2266	2512	2533	1758	1838	4228	5131	4169	4021	2767	2705	2514	4127	6145	6239	6172	3503	6985	7223	3790	5468	2749	3313	3617	3499	2836	3316	2866	4896	3693
			Canada	0	2	40	30	7	7	29	25	71	52	174	155	100	57	22	105	125	70	73	304	240	293	276	168	53	166	50	93	74	34	59	19
			Cape Verde	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	43	
			China PR	0	0	0	0	0	0	0	0	0	0	0	0	0	628	655	22	470	435	17	275	74	29	124	284	248	258	126	94	81	73	91	182
			Curaçao	150	150	160	170	170	170	150	160	170	155	140	130	130	130	130	130	0	0	0	0	0	0	0	0	0	0	0	0	0	0	127	
			EU.España	1000	0	0	1	3	2	1462	1314	989	7	4	36	34	46	30	171	0	0	0	0	0	1	84	81	69	27	33	32	138	155	105	360
			EU.France	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	122	456	712	412	358	647	632	372
			EU.Netherlands	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	
			EU.Portugal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	151	60	88	179	260	115	127	92	4	2	0	15
			El Salvador	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	31	381
			FR.St Pierre et Miquelon	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			Japan	2169	2103	1647	2395	3178	1734	1698	1591	469	589	457	1004	806	1081	1304	1775	1141	571	755	1194	1159	437	541	986	1431	1539	1106	1024	734	465	613	466
			Korea Rep.	1655	853	236	120	1055	484	1	45	11	0	0	84	156	0	0	0	0	0	0	0	580	279	270	10	52	56	470	472	115	39	11	12
			Mexico	562	658	33	283	345	112	433	742	855	1093	1126	771	826	788	1283	1390	1084	1133	1313	1208	1050	938	890	956	1211	916	1174	1414	1004	1045	968	1279
			Panama	0	5278	3289	2192	1595	2651	2249	2297	0	0	0	0	0	0	5	0	20	28	0	0	0	2804	227	153	119	2134	0	0	1995	902	210	
			Philippines	0	0	0	0	0	0	0	0	0	0	0	0	0	36	106	78	12	79	145	299	230	234	151	167	0	0	0	30	72	76	0	
			St. Vincent and Grenadines	0	0	0	0	1	40	48	22	65	16	43	37	35	48	38	1989	1365	1160	568	4251	0	2680	2989	2547	2274	854	963	551	352	505	153	434
			Trinidad and Tobago	0	0	0	1	11	304	543	4	4	120	79	183	223	213	163	112	122	125	186	224	295	459	615	520	629	788	799	931	1128	1141	1179	1057
			U.S.A.	9735	9938	9661	11064	8462	5666	6914	6938	6283	8298	8131	7745	7674	5621	7567	7051	6703	5710	7695	6516	5568	7091	5529	2473	2788	2510	3010	4100	2332	2630	2074	3274
			UK.Bermuda	42	44	25	23	22	15	17	42	58	44	44	67	55	53	59	31	37	48	47	82	61	31	30	15	41	37	100	66	36	12	10	
			UK.British Virgin Islands	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	3	10	5	
			UK.Turks and Caicos	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	6	2	0	
			Uruguay	354	270	109	177	64	18	62	74	20	59	53	171	53	88	45	45	90	91	95	204	644	218	35	66	76	122	24	6	7	0	0	
			Vanuatu	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	681	689	661	555	873	816	720	330	207	124	17	0	
			Venezuela	20535	11755	11137	10949	15567	10556	16503	13773	16663	24789	9714	13772	14671	13995	11187	11663	18651	11421	7411	5774	5097	6514	3911	3272	3198	4783	4419	4837	5050	3772	3122	4198
		NCC	Chinese Taipei	780	1156	709	1641	762	5221	2009	2974	2895	2809	2017	2668	1473	1685	1022	1647	2018	1296	1540	1679	1269	400	240	315	211	287	305	252	236	139	293	180
			Guyana	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14	
			Suriname	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1943	1829	0	0	
		NCO	Argentina	44	23	18	66	33	23	34	1	0	0	0	0	0	0	0	0	0	0	0	327	327	0	0	0	5	0	0	0	0	0	0	
			Colombia	180	211	258	206	136	237	92	95	2404	3418	7172	238	46	46	46	46	46	46	46	46	46	46	0	0	0	0	0	0	0	0	0	
			Cuba	1906	2081	1062	98	91	53	18	11	1	14	54	40	40	15	15	0	0	65	65	65	65	65	0	0	0	0	0	0	0	0	0	
			Dominica	0	0	0	0	0	18	12	23	30	31	9	0	0	0	80	78	120	169	119	81	119	65	103	124	102	110	132	119	120	0	0	179
			Dominican Republic	0	0	0	0	0	0	0	0	0	0	0	0	0	89	220	226	226	226	226	226	226	226	0	0	0	0	0	0	0	0	0	
			Grenada	170	506	186	215	235	530	620	595	858	385	410	523	302	484	430	403	759	593	749	460	492	502	633	756	630	673	0	0	0	0	0	
			Jamaica	0	0	0	0	0	0	0	0	0	0	0	21	21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			NEI (ETRO)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			NEI (Flag related)	450	806	1012	2118	2500	2985	2008	2521	1514	1880	1227	2374	2732	2875	1730	2197	773	14	112	0	0	0	0	0	0	0	0	0	0	0	0	
			Saint Kitts and Nevis	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	5
			Seychelles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			Sta. Lucia	79	125	76	97	70	58	49	58	92	130	144	110	110	276	123	134	145	94	139	147	172	103	82	106	97	223	114	98	136	93	175	
Landings(FP)	ATE	CP	Belize	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	19	50	71	27	109	35	0	
			Cape Verde	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	77	28	39	40	103	152	58	35	82	256	0	
			Curaçao	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15	25	22	16	176	95	89	114	86	78	0	
			Côte d'Ivoire	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	267	116	24	0	
			EU.España	36	51	535	307	288	364	940	859	1149	910	559	87	384	494	733	714	0	0	335	368	142	154	67	270	279	352	358	140	146	353	0	
			EU.France	4	11	232	350	422	530	982	1033	1554	1461	1074	472	658	703	832	914	344	309	672	597	244	128	33	52	203	181	344	347	129	115	0	
			Guatemala	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	57	35	17	32	9	34	8	12	13	19	0	
			Guinée Rep.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	72	0	66	20	67	95	389	876	487	461	0	
			Panama	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	155	125	177	114	99	54	101	54	163	59	0	
			St. Vincent and Grenadines	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	
		NCO	Mixed flags (EU tropical)	30	11	156	247	259	230	998	571	744	688	876	254	452	291	216	423	42	13	298	570	292	251	416	464	467	857	1601	0	0	0	0	
Discards	ATE	CP	EU.France	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	137	
			Korea Rep.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			South Africa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		NCC	Chinese Taipei	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	
	ATW	CP	Canada	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			Korea Rep.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			Mexico	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	6	5	9	8	9	7	3	3	3	3
			U.S.A.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	167	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			UK.British Virgin Islands	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		NCC	Chinese Taipei	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

Table 3. Estimated catches (t) of skipjack (*Katsuwonus pelamis*) by stock/area, gear and flag, between 1985 and 2016 (as of 6 September 2017).

				1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
TOTAL				119074	122550	119352	144822	121320	145019	223469	171204	209807	191381	174529	157116	148955	161452	180687	155671	163620	122524	155483	181705	172082	139731	152580	146633	164760	193125	223500	253191	255730	231174	229211	245914
	ATE			78801	90399	95188	121086	94937	118909	190065	141050	176587	161432	152669	129554	117243	132365	153331	126477	132169	100924	130734	154243	143566	113279	127137	124611	138985	170125	191117	220334	220693	204446	209082	217521
	ATW			40272	32151	24164	23736	26382	26110	33404	30155	33221	29949	21860	27562	31712	29087	27356	29193	31451	21600	24749	27461	28517	26453	25443	22022	25774	23000	32383	32857	35037	26727	20130	28392
Landings	ATE		Bait boat	29868	30009	38803	48015	41000	36922	41302	35660	31656	37817	33691	35872	37314	46784	44762	33909	56689	31076	34445	54602	48185	44711	35418	33019	34549	39175	38566	44893	30294	27152	25041	28633
			Longline	6	19	6	4	9	0	5	3	2	10	3	7	47	85	42	48	53	59	83	67	83	204	428	199	59	46	35	58	79	66	21	540
			Other surf.	219	1640	1040	1506	1643	1357	2067	1602	1225	501	488	510	308	1099	470	2513	841	534	385	1008	2351	5270	3432	3794	6361	5098	5822	6708	7126	2109	2423	967
			Purse seine	48348	58353	50553	66875	47260	74802	131545	91016	125831	107244	105478	88949	71824	76680	98821	79373	72582	67589	89053	90610	87659	59913	82633	81804	89546	117601	137298	161766	176901	168201	180966	187381
	ATW		Bait boat	28490	25278	18675	21057	23292	22246	23972	20852	19697	22645	17744	23741	26797	24724	23881	25641	25142	18737	21990	24082	26028	23749	22865	20617	22770	19923	29468	30693	32397	24814	17538	25267
			Longline	72	19	19	19	39	27	42	37	21	16	34	21	12	21	58	22	60	349	95	206	207	286	52	49	20	30	41	107	1194	462	35	83
			Other surf.	519	1646	505	345	586	596	863	756	709	1577	2023	450	556	516	481	467	951	398	367	404	316	372	1317	455	950	1104	1014	475	538	369	297	270
			Purse seine	11191	5208	4964	2315	2466	3241	8527	8509	12794	5712	2059	3349	4347	3826	2936	3063	5297	2116	2296	2769	1967	2045	1209	901	2035	1943	1859	1582	908	1081	2259	2772
Landings(FP)	ATE		Purse seine	360	378	4786	4686	5025	5828	15145	12769	17873	15860	13010	4217	7749	7716	9237	10634	2004	1666	6769	7956	5288	3181	5226	5796	8471	8205	9395	6909	6293	6918	0	
Discards	ATE		Longline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			Purse seine	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	631	
	ATW		Longline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Landings	ATE	CP	Algerie	0	0	0	0	0	0	0	0	0	0	0	0	0	171	43	89	77	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			Angola	131	56	80	30	85	69	66	41	13	7	3	15	52	2	32	14	14	14	14	10	0	0	0	0	50	636	44	91	514	12	1	1
			Belize	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1373	2714	7429	15554	6218	10779	12599	7730
			Canada	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			Cape Verde	2030	877	2076	1456	971	806	1333	1257	1138	1176	1585	581	858	1245	1040	789	794	398	343	1097	7157	4754	5453	4682	4909	5155	7883	5535	16016	15254	17600	9425
			China PR	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			Curaçao	0	0	0	0	0	0	0	0	0	0	0	7096	8444	8553	10045	11056	15450	7246	12084	10225	101	3042	1587	6436	9143	9179	11939	12779	17792	18086	19621	22280
			Côte d'Ivoire	1094	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1173	259	292	143	559	1259	1565	1817	2328	2840	2840	5968	10923	8063	2365	254	675
			EU.Bulgaria	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			EU.España	35100	41992	33076	47643	35300	47834	79908	53319	63660	50538	51594	38538	38513	36008	44520	37226	30954	25466	44837	38751	28178	22292	23723	35124	36722	41235	56908	67040	66911	51628	46085	52110
			EU.Estonia	0	0	0	0	0	0	102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			EU.France	9065	11318	15206	14761	14584	16996	32928	21890	33735	32779	25188	23107	17023	18382	20344	18183	16593	16637	19899	21879	14850	7034	4168	4439	7789	14749	13067	13139	16242	17406	20563	19435
			EU.Germany	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			EU.Greece	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	102	99	99	0	0	0	0	0	0	0	0	0	0	
			EU.Ireland	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14	14	14	0	0	8	6	0	0	0	0	0	
			EU.Italy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	29	34	17	0	0	0	0	0	0	0	0	0	0	47
			EU.Latvia	0	0	0	0	0	0	92	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			EU.Lithuania	0	0	0	0	0	0	221	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	95	0	
			EU.Malta	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			EU.Netherlands	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			EU.Portugal	2409	5446	8420	14257	7725	3987	8059	7477	5651	7528	4996	8297	4399	4544	1810	1302	2167	2958	4315	8504	4735	11158	8995	6057	1084	12974	4143	2794	4049	1712	1347	708
			EU.Rumania	0	3	0	0	59	142	349	73	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			El Salvador	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6970	16949
			Gabon	0	0	0	0	0	0	0	0	1	11	51	26	0	59	76	21	101	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			Ghana	19082	22268	24347	26597	22751	24251	25052	18967	20225	21258	18607	24205	26364	41840	52024	34980	55475	37570	32977	46030	54209	33612	46638	39561	45072	52051	48871	56134	45236	49261	61061	51334
			Guatemala	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2120	4808	6389	4959	5546	6319	4036	2951	2829	3631	4907	5811	7078	7397
			Guinea Ecuatorial	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1224	1224	1010	0	1	1	3	
			Guinée Rep.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1500	1473	7942	7363	5484	0	
			Japan	2098	2031	1982	3200	2243	2566	4792	2378	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1	1	1	4	5	2	4	1
			Korea Rep.	153	5	6	3	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
			Maroc	1015	1222	1041	428	295	1197	254	559	312	248	5024	684	4513	2486	858	1199	268	281	524	809	4666	4032	1592	1309	2580	2343	2151	2267	2045	1068	576	258
			Namibia	0	0	0	0	0	0	0	0	0	2	15	0	1	0	0	0	8	0	0	0	0	0	0	0	71	2	2	15	1	0	0	1
			Nigeria	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	45	12	4	0	0	0	
			Norway	0	0	581	738	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			Panama	0	0	0	0	0	0	8312	8719	13027	12978	14853	5855	1300	572	1308	1559	281	342	0	7126	11490	13468	18821	8253	8518	9590	12509	10927	14558	14165	8372	11576
			Russian Federation	0	0	0	0	0	0	1175	1110	540	1471	1450	381	1146	2086	1426	374	0	0	0	0	0	392	1130	313	260	0	20	0	0	2	1	1
			S. Tomé e Príncipe	20	20	20	195	196	204	201	178	212	190	180	187	178	169	181	179	179	179	179	117	166	143	0	229	235	241	247	254	260	266	360	380
			Senegal	3486	1727	1908	1743	674	237	686	260	95	59	18	163	455	1963	1631	1506	1271	1060	733	1395	4874	3534	2278	3661	4573	2447	4823	4339	4183	4091	5943	17082
			South Africa	66	101	88	157	96	17	15	7	6	4	4	1	6	2	1	7	1	1	2	2	1	0	0	4	4	2	6	8	2	5	2	2
			St. Vincent and Grenadines	0	0	0	0	0	0	0	0	0	0	0	50	236	447	1025	835	363	524	42	0	0	1	0	0	0	0	0	0	0	0	0	
			Syria	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	38	36	0	0	0	15	17	0	0	
			U.S.A.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			U.S.S.R.	1404	1688	547	1822	1915	3635	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			UK.Sta Helena	62	139	139	158	397	171	24	16	65	55	115	86	294	298	13	64	205	63	63	63	63	88	110	45	15	25	371	29	7	26	6	127
			Venezuela	358	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		NCC	Chinese Taipei	4	0	0	1	3	0	5	3	2	10	3	5	47	73	39	41	24	23	26	16	10	9	14	19	6	11	15	2	12	9	4	2
		NCO	Benin	20	11	5	3	7	2	2	2	2	2	2	2	7	3	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			Cayman Islands	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			Congo	8	8	8	8	11	12	9	9	10	7	7	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			Cuba	246	569	81	206	331	86	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			Mixed flags (FR+ES)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			NEI (ETRO)	590	540	791	2994	2263	10869	11335	12016	20012	17248	15964	16050	5658	5741	7675	5245	5679	6202	5533	4750	0	0	0	0	0	0	0	0	0	0	0	
	ATW	CP	Barbados	36	33	21	3	9	11	14	5	6	6	6	5	5	10	3	3	0	0	0	0	0	0	0	0	0	0	1	2	0	1	1	1
			Belize	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2	0	0	164
			Brazil	25101	23155	16286	17316	20750	20130	20548	18535	17771	20588	16560	22528	26564	23789	23188	25164	24146	18338	20416	23037	26388	23270	24191	20846	23307	20590	30563	30872	32602	24873	17584	25020
			Canada	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			Curaçao	40	40	40	40	40	40	40	40	45	40	35	30	30	30	30	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	40	
			EU.España	500	0	0	0	0	0	1592	1120	397	0	0	0	0	0	1	1	0	0	0	0	0	0	5	11	0	0	0	0	0	0	0	641
			EU.France	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17	10	0	0	0	0	25
			EU.Netherlands	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	9	0	0	23	0	0	0	0	
			EU.Portugal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	1	0	3	3	5	21	11	0	6	0	8	0	0	0	0	
			El Salvador	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	85	35
			Japan	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	1	0	0
			Korea Rep.	20	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			Mexico	48	11	13	10	14	4	9	8	1	1	0	2	3	6	51	13	54	71	75	9	7	10	7	8	9	7	9	8	5	5	7	10
			Panama	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	543	410	161	
			St. Vincent and Grenadines	0	0	0	17	28	29	27	20	66	56	53	37	42	57	37	68	97	357	92	251	251	355	90	83	54	46	50	0	36	39	47	
			Trinidad and Tobago	1	0	0	1	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			U.S.A.	1814	1115	734	57	73	304	858	560	367	99	82	85	84	106	152	44	70	88	79	103	30	61	66	67	119	54	87	112	117	76	78	134
			UK.Bermuda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1	0	0	0	0	0	0	
			Venezuela	10712	5690	5750	4509	3723	3813	8146	7834	11172	6697	2387	3574	3834	4114	2981	2890	6870	2554	3247	3270	1093	2008	921	757	2250	2119	1473	1742	1002	1179	2019	2317
		NCC	Chinese Taipei	3	1	2	7	19	0	32	26	9	7	2	10	1	2	1	0	1	16	14	27	28	29	2	8	0	2	1	11	1	2	21	17
			Suriname	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	552	0	0	
		NCO	Argentina	101	138	90	7	111	106	272	123	50	1	0	1	0	2	0	1	0	0	0	30	0	0	0	0	3	12	0	0	0	0	0	
			Colombia	0	0	0	0	0	0	0	0	2074	789	1583	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			Cuba	1632	1277	1101	1631	1449	1443	1596	1638	1017	1268	886	1000	1000	651	651	651	0	0	624	545	514	536	0	0	0	0	0	0	0	0	0	
			Dominica	0	0	0	0	0	60	38	41	24	43	33	33	33	33	85	86	45	55	51	30	20	28	32	45	25	0	13	0	4	0	0	27
			Dominican Republic	204	600	62	63	117	110	156	135	143	257	146	146	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			Grenada	7	9	5	22	11	23	25	30	25	11	12	11	15	23	23	23	15	14	16	21	22	15	26	20	0	0	0	0	0	0	0	
			Jamaica	0	0	0	0	0	0	0	0	0	0	0	62	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			Saint Kitts and Nevis	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
			Sta. Lucia	53	76	60	53	38	37	51	39	53	86	72	38	100	263	153	216	151	106	132	137	159	120	89	168	0	153	143	109	171	139	87	
Landings(FP)	ATE	CP	Belize	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	114	395	368	179	636	301	0	
			Cape Verde	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	419	131	162	276	603	726	411	230	428	1362	0	
			Curaçao	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	88	171	116	105	917	415	441	545	520	351	0	
			Côte d'Ivoire	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	42	562	544	202	0	
			EU.España	185	262	2773	1590	1495	1888	4876	4455	5959	4719	2899	453	1990	2562	3802	3700	0	0	1738	1907	713	437	366	1158	1994	1394	1842	983	998	1623	0	
			EU.France	22	59	1205	1817	2189	2749	5094	5355	8055	7573	5568	2447	3414	3647	4316	4740	1786	1601	3484	3096	918	346	206	287	1120	743	1480	1646	463	440	0	
			Guatemala	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	260	69	66	162	59	136	51	102	72	93	0	
			Guinée Rep.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	387	0	330	118	359	614	1778	2379	1670	2146	0	
			Panama	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	796	548	977	693	680	354	609	284	962	400	0	
		NCO	Mixed flags (EU tropical)	153	56	807	1279	1341	1192	5176	2959	3858	3568	4543	1316	2345	1508	1119	2194	218	65	1547	2953	1708	1478	3003	2998	2624	3427	2372	0	0	0	0	
Discards	ATE	CP	Côte d'Ivoire	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	
			EU.France	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	631	
			Korea Rep.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		NCC	Chinese Taipei	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	ATW	CP	Mexico	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		NCC	Chinese Taipei	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

Table 4. Task I catches (t) of flag "NEI (ETRO)" on the tropical fisheries (BB and PS with the associated "NE.001-*" fleets, where "*" represents a country code) requiring a flag/fleet reclassification (not NEI catches anymore, once its majority was recognized/acknowledged by those ICCAT CPCs) of into the respective flag/fleet codes. This reclassification process (CURRENT to NEW) should be made by the Secretariat in both Task I and Task II, informing the respective CPC. The non-contracting parties should be left (for now) under the "NEI (ETRO)" flag.

	NEW		CURRENT																					
Species	Flag	FleetCode	Flag	Fleet	GearCode	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
BET	Cape Verde	CPV	Cape Verde	CPV	BB	64	3		53	2	100	4	1											
		CPV-CV-ETRO	NEI (ETRO)	NEI.001-CPV	BB		200	234	176	205	182	218	139	8										
	Curaçao	CUW-CW-ETRO	NEI (ETRO)	NEI.001-CUW	BB									588	740	955	342	445	183	27				
	St. Vincent and Grenadines	VCT-VC-ETRO	NEI (ETRO)	NEI.001-VCT	BB						71	125	196	876	566	215	116							
SKJ	Cape Verde	CPV	Cape Verde	CPV	BB	1309	727	625	804	1215	313	517	609	945	770	444		178	57	57		168	67	43
		CPV-CV-ETRO	NEI (ETRO)	NEI.001-CPV	BB		393	278	169	271	111	267	561	78										
	Curaçao	CUW-CW-ETRO	NEI (ETRO)	NEI.001-CUW	BB									114	1048	2080	1819	1992	1517	101				
	St. Vincent and Grenadines	VCT-VC-ETRO	NEI (ETRO)	NEI.001-VCT	BB						50	236	447	1025	835	363	523	42						
YFT	Cape Verde	CPV-CV-ETRO	Cape Verde	CPV-CV-ETRO	BB		101	76	216	127	70	62	3											
		CPV	Cape Verde	CPV	BB	660	224	191	167	419	159	422	273	478	457	298		3	1379	1		3	2	
	Curaçao	CUW-CW-ETRO	Curaçao	CUW-CW-ETRO	BB									77	205	152	585	483	586	24				
	St. Vincent and Grenadines	VCT-VC-ETRO	St. Vincent and Grenadines	VCT-VC-ETRO	BB						12	129	28	255	126	75	189	56						
BET	Mauritius	no change	NEI (ETRO)	NEI.001-MUS	PS					518														
	Malaysia	no change	NEI (ETRO)	NEI.001-MYS	PS							7												
	Belize	BLZ-ETRO	Belize	BLZ-ETRO	PS																			174
		BLZ-ETRO	NEI (ETRO)	NEI.001-BLZ	PS								195		87	96								
	El Salvador	SLV-SV-ETRO	NEI (ETRO)	NEI.001-SLV	PS											3								
	EU.Italy	no change	NEI (ETRO)	NEI.001-ITA	PS		19																	
	EU.Malta	no change	NEI (ETRO)	NEI.001-MLT	PS	357	345	42																
	Ghana	GHA	Ghana	GHA	PS						1328	2961	2646	5360	3105	4972	4738	4915	6057					
		GHA-ETRO-A	Ghana	GHA-ETRO-A	PS															5444	1175	4403	1936	4457
		GHA-ETRO-P	Ghana	GHA-ETRO-P	PS																613	1520	4026	742
		GHA.ETRO	NEI (ETRO)	NEI.001-GHA	PS							9	492	1288	363	650	869	415	144					
	Guatemala	GTM.ETRO	Guatemala	GTM.ETRO	PS															998	949	836	998	913
		GTM.ETRO	NEI (ETRO)	NEI.001-GTM	PS													736	831					
	Guine Rep.	GIN-GN-ETRO	NEI (ETRO)	NEI.001-GIN	PS					334	2394	885												
	Liberia	no change	NEI (ETRO)	NEI.001-LBR	PS				356	398														
	Maroc	MAR	Maroc	MAR	PS																42			
		MAR-MA-ETRO	NEI (ETRO)	NEI.001-MAR	PS	206	81	774	977	553	654	255	336	744	390	324	241	510	216	267				
	Norway	no change	NEI (ETRO)	NEI.001-NOR	PS	35																		
	Seychelles	SYC-SY-ETRO	NEI (ETRO)	NEI.001-SYC	PS											362	68							
	St. Vincent and Grenadines	VCT-VC-ETRO	NEI (ETRO)	NEI.001-VCT	PS	154	817	1737	812	519	521	418	327	193	139	422								
	Vanuatu	VUT-VT-ETRO	NEI (ETRO)	NEI.001-VUT	PS	470	676	1807	2713	2610	2016	828		314										
	Venezuela	VEN-VE-ETRO	NEI (ETRO)	NEI.001-VEN	PS												612	331						
		VEN	Venezuela	VEN	PS	321	169	326	140	140	131	205	214	75	181	513	444	359	611	92	211	220	102	122
SKJ	Mauritius	no change	NEI (ETRO)	NEI.001-MUS	PS					1612														
	Malaysia	no change	NEI (ETRO)	NEI.001-MYS	PS							27												
	Belize	BLZ-ETRO	Belize	BLZ-ETRO	PS																			1373
		BLZ-ETRO	NEI (ETRO)	NEI.001-BLZ	PS								720		229	278								
	Colombia	COL	Colombia	COL	PS			2074																
	EU.Greece	EU.GRC	EU.Greece	EU.GRC	PS													102	99	99				
	EU.Italy	no change	NEI (ETRO)	NEI.001-ITA	PS		91																	
	EU.Malta	no change	NEI (ETRO)	NEI.001-MLT	PS	2682	1739	133																
	Ghana	GHA	Ghana	GHA	PS						4090	6049	15945	20890	12061	11011	19054	14883	11879					
		GHA-ETRO-A	Ghana	GHA-ETRO-A	PS															28167	8590	14474	11920	21950
		GHA-ETRO-P	Ghana	GHA-ETRO-P	PS																4090	14969	13209	3941
		GHA.ETRO	NEI (ETRO)	NEI.001-GHA	PS							16	1772	2064	1537	2065	2624	1458	1716					
	Guatemala	GTM.ETRO	Guatemala	GTM.ETRO	PS															6389	4959	5546	6319	4036
		GTM.ETRO	NEI (ETRO)	NEI.001-GTM	PS													2120	4808					
	Guine Rep.	GIN-GN-ETRO	NEI (ETRO)	NEI.001-GIN	PS					975	6432	2408												
	Liberia	no change	NEI (ETRO)	NEI.001-LBR	PS				744	1191														
	Maroc	MAR	Maroc	MAR	PS	204	277	297	172	4878	553	4449	1861	715	180	99	126	410	442	888	536	131	108	654
		MAR-MA-ETRO	NEI (ETRO)	NEI.001-MAR	PS	1541	321	3340	3424	1862	2175	1019	2255	3318	2892	1469	1022	2879	3034	2772				
	Norway	no change	NEI (ETRO)	NEI.001-NOR	PS	370																		
	Seychelles	SYC-SY-ETRO	NEI (ETRO)	NEI.001-SYC	PS											760	148							
	St. Vincent and Grenadines	VCT-VC-ETRO	NEI (ETRO)	NEI.001-VCT	PS	1460	4397	5731	2184	1847	1451	955	994	1102	587	1072								
	Syria	SYR	Syria	SYR	PS																	19	15	
	Vanuatu	VUT-VT-ETRO	NEI (ETRO)	NEI.001-VUT	PS	5281	5468	10808	10896	8477	5992	1233		1192										
	Venezuela	VEN-VE-ETRO	NEI (ETRO)	NEI.001-VEN	PS											35	2407	1197						
		VEN	Venezuela	VEN	PS	6186	6893	10049	5692	2059	3348	3604	3607	2696	2590	5189	2000	2296	2769	848	1806	806	688	1808
YFT	Mauritius	no change	NEI (ETRO)	NEI.001-MUS	PS					470														
	Malaysia	no change	NEI (ETRO)	NEI.001-MYS	PS							148												
	Belize	BLZ-ETRO	Belize	BLZ-ETRO	PS																			357
		BLZ-ETRO	NEI (ETRO)	NEI.001-BLZ	PS								963		321	406								
	El Salvador	SLV-SV-ETRO	NEI (ETRO)	NEI.001-SLV	PS											933								
	EU.Italy	no change	NEI (ETRO)	NEI.001-ITA	PS		600																	
	EU.Malta	no change	NEI (ETRO)	NEI.001-MLT	PS	1636	1759	388																
	Ghana	GHA	Ghana	GHA	PS						2542	5621	4083	9005	4853	11787	10674	8291	4101	6364				
		GHA-ETRO-A	Ghana	GHA-ETRO-A	PS																2613	3335	3360	5475
		GHA-ETRO-P	Ghana	GHA-ETRO-P	PS																1028	3023	2792	761
		GHA.ETRO	NEI (ETRO)	NEI.001-GHA	PS							7	628	635	369	453	446	837	1400					
	Guatemala	GTM.ETRO	Guatemala	GTM.ETRO	PS															2906	5265	3461	3736	2603
		GTM.ETRO	NEI (ETRO)	NEI.001-GTM	PS													2207	1588					
	Guine Rep.	GIN-GN-ETRO	NEI (ETRO)	NEI.001-GIN	PS					208	1956	820												
	Liberia	no change	NEI (ETRO)	NEI.001-LBR	PS				477	1377														
	Maroc	MAR	Maroc	MAR	PS																127			
		MAR-MA-ETRO	NEI (ETRO)	NEI.001-MAR	PS	1799	2653	2396	3017	2290	3430	1947	2276	2307	2441	3000	2032	1567	719	1757				
	Norway	no change	NEI (ETRO)	NEI.001-NOR	PS	43																		
	Seychelles	SYC-SY-ETRO	NEI (ETRO)	NEI.001-SYC	PS											1510	1345							
	St. Vincent and Grenadines	VCT-VC-ETRO	NEI (ETRO)	NEI.001-VCT	PS	510	4936	5391	2476	2142	2969	3017	3327	1916	1987	3640								
	Vanuatu	VUT-VT-ETRO	NEI (ETRO)	NEI.001-VUT	PS	869	872	1624	2357	2357	1130	576		228										
	Venezuela	VEN-VE-ETRO	NEI (ETRO)	NEI.001-VEN	PS											36	3612	245						
		VEN	Venezuela	VEN	PS	11967	9693	12659	19587	6338	10777	11653	9157	6523	7572	13064	7961	4607	3185	2634	4439	2341	2067	1363

Table 5. Standard SCRS catalogues on statistics (Task-I and Task-II) of bigeye tuna (BET) by major fishery (flag/gear combinations ranked by order of importance) and year (1995 to 2016). Only the most important fisheries (representing ~95% of Task-I total catch) are shown. For each data series, Task I (DSet= "t1", in tonnes) is visualised against its equivalent Task II availability (DSet= "t2") scheme. The Task-II colour scheme, has a concatenation of characters ("a"= T2CE exists; "b"= T2SZ exists; "c"= CAS exists) that represents the Task-II data availability.

					T1 Total	128018	120751	110261	107804	121643	103680	91201	75726	87702	90534	67964	58875	75070	67720	80447	80521	82954	75934	73207	78039	79861	72348			
Speci	Sto	Stat	FlagName	GearG	DS	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Rank	%	%cum
BET	A+M	CP	Japan	LL	t1	35477	33171	26490	24330	21833	24605	18087	15306	19572	18509	14026	15735	17993	16684	16395	15205	12306	15390	13397	13464	12170	10426	1	21.3%	21%
BET	A+M	CP	Japan	LL	t2	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	ab	ab	1		
BET	A+M	NCC	Chinese Taipei	LL	t1	18023	21850	19242	16314	16837	16795	16429	18483	21563	17717	11984	2965	12116	10418	13252	13189	13732	10819	10316	13272	16453	13115	2	16.8%	38%
BET	A+M	NCC	Chinese Taipei	LL	t2	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	2		
BET	A+M	CP	EU.España	PS	t1	9971	8970	6240	4863	5508	6901	5923	7038	6595	4187	3155	3416	3359	5456	8019	7910	8050	7485	6849	6464	5574	6808	3	7.2%	45%
BET	A+M	CP	EU.España	PS	t2	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	ac	ac	3		
BET	A+M	CP	Ghana	PS	t1		1328	2961	2646	5360	3105	4972	4738	4915	6057	5444	1788	5923	5962	5199	7797	7491	6796	8378	7901	9258	4489	4	5.8%	51%
BET	A+M	CP	Ghana	PS	t2		ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	abc	ab	abc	abc	ac	a	a	a	a	a	a	4		
BET	A+M	NCO	NEI (Flag related)	LL	t1	10697	11862	16569	24896	24060	15092	7997	383															5	5.8%	57%
BET	A+M	NCO	NEI (Flag related)	LL	t2	-1	-1	-1	-1	-1	-1	-1	-1															5		
BET	A+M	CP	China PR	LL	t1	476	520	427	1503	7347	6564	7210	5840	7890	6555	6200	7200	7399	5686	4973	5489	3720	3231	2371	2232	4942	5852	6	5.4%	62%
BET	A+M	CP	China PR	LL	t2	b	b		-1	a	a	a		ab	ab		ab	ab		a	ab	ab	ab	ab	ab	abc	ab	abc	6		
BET	A+M	CP	EU.España	BB	t1	8073	6248	6260	2165	8563	4084	3897	3164	4158	3838	4417	3783	3007	1959	3868	2819	4506	2913	2389	3463	3508	3835	7	4.7%	67%
BET	A+M	CP	EU.España	BB	t2	ac	ac		abc	ac	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	7		
BET	A+M	CP	EU.Portugal	BB	t1	9629	5810	5437	6334	3314	1498	1605	2420	1572	3161	3721	4626	4872	2738	5121	2872	6470	5986	5240	3737	3012	1677	8	4.7%	72%
BET	A+M	CP	EU.Portugal	BB	t2	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	8		
BET	A+M	CP	EU.France	PS	t1	7076	7128	4671	4149	4056	4620	3584	3668	3628	2736	2135	2481	1157	1039	2193	3294	3663	3766	3253	3528	2531	4184	9	4.1%	76%
BET	A+M	CP	EU.France	PS	t2	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	9		
BET	A+M	CP	Ghana	BB	t1	5517	3423	7204	7509	5056	2164	4242	873	3731	11687	3416	253	2196	1766	2986	2658	2358	2681	2615	2073	2643	324	10	4.0%	80%
BET	A+M	CP	Ghana	BB	t2	abc	abc	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	a	a	a	a	a	a	a	10		
BET	A+M	CP	Curaçao	PS	t1		1893	2890	2919	3428	2359	2803	1879	2758	3343	13	441	272	1734	2465	2747	3488	2950	1998	2357	2573	3598	11	2.5%	82%
BET	A+M	CP	Curaçao	PS	t2		ab	ab	ab	a	ab	ab	ab	ab	ab	b	ab	abc	abc	abc	abc	abc	abc	abc	abc	a	abc	11		
BET	A+M	CP	Panama	PS	t1	4304	1934	431	175	319	378	89	63		1521	2461	2521	3057	2360	2490	3085	3531	1736	2853	2341	1289	2022	12	2.0%	84%
BET	A+M	CP	Panama	PS	t2	ab	ab	ab	ab	a	ab	ab	ab		ab	ab	ab	abc	abc	abc	abc	abc	abc	abc	abc	a	abc	12		
BET	A+M	CP	Brazil	LL	t1	1935	1707	1237	644	2024	2762	2534	2582	2374	1379	1014	1423	927	785	1009	1049	1436	846	795	1966	2250	1670	13	1.8%	86%
BET	A+M	CP	Brazil	LL	t2	ab	a	a	a	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	a	a	a	-1	13		
BET	A+M	CP	Philippines	LL	t1				1154	2113	975	377	837	855	1854	1743	1816	2368	1874	1880	1399	1267	532	1323	1964			14	1.3%	87%
BET	A+M	CP	Philippines	LL	t2				a	a	a	-1	-1	a	a	a	a	a	a	ab	ab	abc	abc	abc	abc			14		
BET	A+M	CP	Korea Rep.	LL	t1	423	1250	796	163	124	43	1	87	143	629	770	2067	2136	2599	2134	2646	2762	1908	1151	1039	677	562	15	1.2%	89%
BET	A+M	CP	Korea Rep.	LL	t2	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	ab	b	abc	abc	abc	abc	abc	15		
BET	A+M	NCO	NEI (ETRO)	PS	t1	4932	5585	2403	1350	2539	979	1857	1790	1256	360													16	1.2%	90%
BET	A+M	NCO	NEI (ETRO)	PS	t2	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	bc	bc	bc	b	b	b	b	b	b	b			16		
BET	A+M	CP	EU.France	BB	t1	2000	2357	1746	1942	1998	1921	1593	786	758	587	597	571	261	141	269	156	238	175	25	74	51	135	17	1.0%	91%
BET	A+M	CP	EU.France	BB	t2	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	ac	17		
BET	A+M	CP	Cape Verde	PS	t1											1151	1433	1283	482	605	655	1076	734	1377	2361	2757	1679	18	0.8%	92%
BET	A+M	CP	Cape Verde	PS	t2											a	ab	abc	abc	ac	ac	ac	ac	ac	ac	ac	a	18		
BET	A+M	CP	Senegal	BB	t1	60	84	204	676	1473	1131	1308	565	541	574	721	1267	804	926	1041	843	215	226	639	361	501	577	19	0.8%	92%
BET	A+M	CP	Senegal	BB	t2	a	ac	a	a	a	a	a	a	a	a	ac	ac	ac	ac	ac	ac	ac	ac	ac	ac	ac	ac	19		
BET	A+M	CP	Panama	LL	t1	5623	2843	1667	1077		484	473	148															20	0.6%	93%
BET	A+M	CP	Panama	LL	t2	-1	-1	-1	-1		a	-1	-1															20		
BET	A+M	CP	U.S.A.	LL	t1	982	713	795	696	930	532	682	536	284	310	312	521	381	428	430	443	603	582	509	584	574	395	21	0.6%	94%
BET	A+M	CP	U.S.A.	LL	t2	ab	ab	ab	ab	ab	ab	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	21		
BET	A+M	CP	Guatemala	PS	t1									736	831	1054	977	851	1024	922	1029	288	273	168	1007	340	1103	22	0.5%	94%
BET	A+M	CP	Guatemala	PS	t2									ab	ab	ab	ab	abc	abc	abc	abc	abc	abc	abc	abc	ac	ac	22		
BET	A+M	CP	EU.España	LL	t1	176	233	268	385	116	598	211	333	427	417	104	337	346	268	327	751	700	585	865	928	868	604	23	0.5%	95%
BET	A+M	CP	EU.España	LL	t2	ab	ab		-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	b	b	-1	23		

Table 6. Standard SCRS catalogues on statistics (Task-I and Task-II) of yellow fin tuna (YFT) by stock/area (upper table YFT-E, lower table YFT-W), major fishery (flag/gear combinations ranked by order of importance) and year (1995 to 2016). Only the most important fisheries (representing ~95% of Task-I total catch) are shown. For each data series, Task I (DSet= "t1", in tonnes) is visualised against its equivalent Task II availability (DSet= "t2") scheme. The Task-II colour scheme, has a concatenation of characters ("a"= T2CE exists; "b"= T2SZ exists; "c"= CAS exists) that represents the Task-II data availability.

						T1 Total	119314	116096	105034	113576	105615	96531	113132	104767	97467	88207	75677	76388	71795	88593	94661	88187	85105	84678	77790	82109	93858	109162			
Speci	Sto	Stat	FlagName	GearG	DS		1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Rank	%	%cum
YFT	ATE	CP	EU.France	PS	t1		28877	32633	29737	31123	31010	30287	31871	31600	32344	23961	22319	18480	10934	15981	18748	20093	21772	18590	20390	20878	19239	25797	1	25.7%	26%
YFT	ATE	CP	EU.France	PS	t2		abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	1		
YFT	ATE	CP	EU.España	PS	t1		37707	31866	23901	28282	19332	24764	30433	30343	23665	20454	11121	10607	12833	23557	32140	24191	18238	17898	11336	13463	19918	17802	2	23.2%	49%
YFT	ATE	CP	EU.España	PS	t2		abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	ac	ac	2		
YFT	ATE	CP	Ghana	PS	t1			2542	5621	4083	9005	4853	11787	10674	8291	4101	6364	3641	6358	6151	6236	6855	4821	6357	6450	8885	10332	12524	3	7.0%	56%
YFT	ATE	CP	Ghana	PS	t2			ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	abc	ab	abc	abc	abc	abc	abc	abc	abc	a	a	3		
YFT	ATE	CP	Ghana	BB	t1		9268	5640	9459	9139	11810	7451	11605	7426	6711	9943	6655	9256	4757	5351	4801	3602	3855	3233	2336	2766	2950	6447	4	6.9%	63%
YFT	ATE	CP	Ghana	BB	t2		abc	abc	ab	ab	ab	ab	ab	ab	ab	ab	ab	abc	ab	abc	abc	abc	abc	abc	abc	abc	a	a	4		
YFT	ATE	CP	Curaçao	PS	t1			3183	6082	6110	3962	5441	4793	4035	6185	4161	15	1964	1390	7367	6469	5397	4501	6906	3813	5230	6140	8012	5	4.8%	68%
YFT	ATE	CP	Curaçao	PS	t2			ab	ab	ab	a	ab	ab	ab	ab	ab	b	ab	abc	abc	abc	abc	abc	abc	abc	abc	a	abc	5		
YFT	ATE	CP	Panama	PS	t1		10854	5759	3137	1753	775	1087	574	1022		1887	6325	8682	9539	6289	5911	5102	4459	5058	4062	4646	3202	4331	6	4.5%	72%
YFT	ATE	CP	Panama	PS	t2		ab	ab	ab	ab	a	ab	ab	ab		ab	ab	ab	abc	abc	abc	abc	abc	abc	abc	abc	a	abc	6		
YFT	ATE	CP	Japan	LL	t1		4770	4246	2733	4092	2101	2286	1550	1534	1999	5066	3088	4206	8496	5266	3563	3041	3348	3637	3843	3358	2853	2917	7	3.7%	76%
YFT	ATE	CP	Japan	LL	t2		abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	ab	ab	7		
YFT	ATE	NCO	NEI (ETRO)	PS	t1		8844	9485	6514	7193	5086	5117	9942	7436	2649	2120													8	3.1%	79%
YFT	ATE	NCO	NEI (ETRO)	PS	t2		abc	ac	ac	ac	ac	ac	abc	abc	abc	ac	c	c	c										8		
YFT	ATE	CP	Cape Verde	PS	t1						0	6	12	884	246	356	5110	4443	3556	7295	3620	4954	5260	3469	6424	3591	6651	4933	9	2.9%	82%
YFT	ATE	CP	Cape Verde	PS	t2						a	a	a	a	a	ab	ab	ab	abc	abc	abc	abc	abc	abc	abc	abc	ac	a	9		
YFT	ATE	NCC	Chinese Taipei	LL	t1		2681	3985	2993	3643	3389	4014	2787	3363	4946	4145	2327	860	1707	807	1180	537	1463	819	1023	902	927	762	10	2.4%	84%
YFT	ATE	NCC	Chinese Taipei	LL	t2		ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	10		
YFT	ATE	CP	Guatemala	PS	t1										2207	1588	2963	5300	3478	3768	2612	3158	2811	2961	4036	3773	5200	2720	11	2.2%	86%
YFT	ATE	CP	Guatemala	PS	t2										ab	ab	ab	ab	abc	abc	abc	abc	abc	abc	abc	abc	ac	ac	11		
YFT	ATE	CP	Belize	PS	t1																377	1820	3154	5888	5295	7070	7125	3497	12	1.6%	88%
YFT	ATE	CP	Belize	PS	t2							b	b		b						abc	ab	ab	ab	ab	ab	a	a	12		
YFT	ATE	CP	EU.España	BB	t1		1101	3069	996	3509	1311	601	504	917	1379	1292	798	928	769	1055	874	1561	3010	973	593	1043	1068	1393	13	1.4%	89%
YFT	ATE	CP	EU.España	BB	t2		ac	ac	ac	ac	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	ac	ac	13		
YFT	ATE	NCO	NEI (Flag related)	LL	t1		2975	3588	3368	5464	5679	3072	2038	43	466														14	1.3%	91%
YFT	ATE	NCO	NEI (Flag related)	LL	t2		-1	-1	-1	-1	-1	-1	-1	-1	-1														14		
YFT	ATE	CP	Cape Verde	HL	t1		1362	1289	1299	1145	1185	1388	1374	918	1617	1501	985	1218	1048	648	1121	1054	800	1164	1164	1164	1164		15	1.2%	92%
YFT	ATE	CP	Cape Verde	HL	t2		ab	ab	ab	ab	ab	ab	ab	a	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	-1		15		
YFT	ATE	CP	Russian Federation	PS	t1		2936	2696	4275	4931	4359	737						42	211	42	33								16	1.0%	93%
YFT	ATE	CP	Russian Federation	PS	t2		b	-1	b	b	-1	-1						-1	abc	-1	a								16		
YFT	ATE	CP	Senegal	BB	t1		20	41	208	251	834	252	295	447	279	668	1301	1262	816	550	1157	1168	1014	1647	1218	500	583	692	17	0.7%	94%
YFT	ATE	CP	Senegal	BB	t2		a	ac	a	a	a	a	a	a	a	a	ac	ac	ac	ac	ac	ac	ac	ac	ac	ac	ac	ac	17		
YFT	ATE	CP	EU.France	BB	t1		1764	1658	887	319	1068	416	684	1444	757	585	596	588	430	186	378	360	609	258	29	322	340	432	18	0.7%	94%
YFT	ATE	CP	EU.France	BB	t2		abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	ac	18		
YFT	ATE	CP	China PR	LL	t1		200	124	84	71	1535	1652	586	262	1033	1030	1112	1056	1000	365	214	169	220	170	130	20	78	286	19	0.5%	95%
YFT	ATE	CP	China PR	LL	t2		-1	-1	-1	a	a	a	a	a	a	a	a	a	a	ab	ab	ab	ab	ab	ab	a	a	abc	19		

Table 6. (continued)

						T1 Total	35274	33056	32341	30919	30710	35623	40323	29660	24982	31238	26068	28272	24167	18123	18777	20794	17678	19851	19479	14879	15076	18595			
Speci	Sto	Stat	FlagName	GearG	DS	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Rank	%	%cum
YFT	ATW	CP	Venezuela	PS	t1	6338	10777	11653	9157	6523	7572	13064	7961	4607	3185	2634	4439	2341	2067	1363	2722	2253	3291	3635	2581	1920	2367	1	19.9%	20%
YFT	ATW	CP	Venezuela	PS	t2	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	1		
YFT	ATW	CP	U.S.A.	RR	t1	4053	4032	3569	2927	3967	3862	4185	2887	5328	3759	3657	4908	2966	1033	1011	1231	1498	1727	687	1067	936	1911	2	10.8%	31%
YFT	ATW	CP	U.S.A.	RR	t2	ab	ab	ab	ab	ab	abc	ab	abc	ab	ab	ab	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	2		
YFT	ATW	CP	U.S.A.	LL	t1	3645	3320	3773	2449	3541	2901	2200	2573	2164	2492	1746	2010	2395	1394	1686	1218	1462	2270	1544	1446	1041	1301	3	8.6%	39%
YFT	ATW	CP	U.S.A.	LL	t2	ab	ab	ab	ab	ab	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	3		
YFT	ATW	CP	Venezuela	BB	t1	2684	2604	2632	4267	4152	3660	4039	3166	2475	2030	1631	1481	951	489	929	809	1068	788	673	395	428	771	4	7.4%	47%
YFT	ATW	CP	Venezuela	BB	t2	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	4		
YFT	ATW	CP	Brazil	LL	t1	1312	734	849	1014	2930	2754	4883	3323	1941	1968	4695	1329	1552	1744	1039	1145	1794	1815	1584	703	1186	1158	5	7.3%	54%
YFT	ATW	CP	Brazil	LL	t2	a	a	a	a	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	a	a	a	-1	5		
YFT	ATW	CP	Brazil	BB	t1	2613	1956	1643	1229	1197	3093	1276	2843	1289	2838	2236	1214	1353	397	402	627	1243	320	730	98	315	381	6	5.2%	59%
YFT	ATW	CP	Brazil	BB	t2	a	a	a	a	a	-1	a	a	a	a	a	a	ab	a	a	a	a	a	a	a	a	-1	6		
YFT	ATW	CP	Mexico	LL	t1	1126	771	826	788	1283	1390	1084	1133	1313	1208	1050	943	896	961	1220	924	1183	1421	1006	1048	971	1282	7	4.2%	63%
YFT	ATW	CP	Mexico	LL	t2	a	a	a	a	a	a	c	-1	a	ab	a	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	7		
YFT	ATW	CP	St. Vincent and Grenadines	LL	t1						1956	1341	1147	543	4227		2633	2972	2532	2230	819	927	551	325	481	124	434	8	4.1%	68%
YFT	ATW	CP	St. Vincent and Grenadines	LL	t2						-1	-1	a	a	a		a	a	a	a	a	a	a	a	a	a	a	8		
YFT	ATW	NCC	Chinese Taipei	LL	t1	2017	2668	1473	1685	1022	1647	2018	1296	1540	1679	1269	400	240	315	211	287	305	252	236	139	293	180	9	3.7%	71%
YFT	ATW	NCC	Chinese Taipei	LL	t2	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	9		
YFT	ATW	CP	Japan	LL	t1	457	1004	806	1081	1304	1775	1141	571	755	1194	1159	437	541	986	1431	1539	1106	1024	734	465	613	466	10	3.6%	75%
YFT	ATW	CP	Japan	LL	t2	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	ab	ab	10		
YFT	ATW	CP	Venezuela	LL	t1	687	383	381	560	504	421	451	266	323	559	828	593	613	712	898	1249	1090	736	738	790	773	1060	11	2.6%	77%
YFT	ATW	CP	Venezuela	LL	t2	a	a	ab	ab	ab	a	-1	-1	a	a	a	a	a	a	a	a	a	a	a	a	a	a	11		
YFT	ATW	NCO	NEI (Flag related)	LL	t1	1227	2374	2732	2875	1730	2197	773	14	112														12	2.5%	80%
YFT	ATW	NCO	NEI (Flag related)	LL	t2	-1	-1	-1	-1	-1	-1	-1	-1	-1														12		
YFT	ATW	CP	Brazil	UN	t1	66			271			71			2147	292	1213	2541	581	1868	1845	160	317					13	2.0%	82%
YFT	ATW	CP	Brazil	UN	t2	-1			-1			-1			-1	-1	b	-1	-1	-1	-1	-1	-1					13		
YFT	ATW	CP	Trinidad and Tobago	LL	t1	79	183	223	213	163	112	122	125	186	224	295	459	615	520	629	788	798	930	1128	1141	1179	1057	14	2.0%	84%
YFT	ATW	CP	Trinidad and Tobago	LL	t2	-1	-1	-1	-1	-1	-1	-1	-1	a	a	a	a	a	a	a	a	a	a	a	a	ab	ab	14		
YFT	ATW	CP	Brazil	HL	t1	18	69	156						272			30	22	25	2		299	384	1002	2065	3395	2154	15	1.7%	86%
YFT	ATW	CP	Brazil	HL	t2	-1	-1	-1						-1			-1	-1	-1	-1	a	-1	-1	-1	a	-1	-1	15		
YFT	ATW	CP	Panama	LL	t1					5		20	28				2804	227	153	119	2134			1995	902			16	1.5%	87%
YFT	ATW	CP	Panama	LL	t2					-1	a	-1	-1				a	a	a	a	-1			a	a			16		
YFT	ATW	NCO	Colombia	UN	t1	7172	238	46	46	46	46	46	46	46	46	46	46											17	1.4%	89%
YFT	ATW	NCO	Colombia	UN	t2	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1											17		
YFT	ATW	NCO	Grenada	LL	t1	409							593	749	460	492	502	633	756	630	673							18	1.0%	90%
YFT	ATW	NCO	Grenada	LL	t2	-1							-1	a	a	a	a	a	a	-1	-1							18		
YFT	ATW	CP	Vanuatu	LL	t1										681	689	661	555	873	816	720	330	207	124	17			19	1.0%	91%
YFT	ATW	CP	Vanuatu	LL	t2									a	a	a	-1	-1	-1	a	ab	ab	a	a				19		
YFT	ATW	CP	China PR	LL	t1					628	655	22	470	435	17	275	74	29	124	284	248	258	126	94	81	73	91	182	20	0.7%	91%
YFT	ATW	CP	China PR	LL	t2				a	a	a	a	a	a	a	a	ab	a	ab	ab	ab	ab	ab	ab	abc	ab	abc	20		
YFT	ATW	CP	Belize	LL	t1												143	1164	1160	940	264	42	41	38	33		39	21	0.7%	92%
YFT	ATW	CP	Belize	LL	t2												a	a	a	ab	ab	ab	ab	ab	ab	ab	a	21		
YFT	ATW	NCC	Suriname	LL	t1																		1943	1829				22	0.7%	93%
YFT	ATW	NCC	Suriname	LL	t2																		-1	-1				22		
YFT	ATW	CP	EU.France	LL	t1															122	456	712	412	358	647	632		23	0.6%	93%
YFT	ATW	CP	EU.France	LL	t2															-1	-1	-1	-1	-1	-1	-1		23		
YFT	ATW	CP	Barbados	LL	t1				149	150	155	155	142	115	146	181	243	160	133	135	60	86	103	145	175	194	258	316	24	0.6%	94%
YFT	ATW	CP	Barbados	LL	t2				-1	-1	-1	b	-1	-1	-1	-1	-1	-1	-1	-1	abc	ab	ab	ab	ab	ab	ab	ab	24		
YFT	ATW	NCO	Grenada	UN	t1			523	302	484	430	403	759															25	0.5%	94%
YFT	ATW	NCO	Grenada	UN	t2			-1	-1	-1	-1	-1	-1															25		
YFT	ATW	CP	U.S.A.	HL	t1	91	82	91	65	219	284	300	244	200	249	160	164	148	42	84	48	44	86	67	58	67	38	26	0.5%	95%
YFT	ATW	CP	U.S.A.	HL	t2	b	b	b	b	b	bc	bc	bc	bc	bc	bc	bc	bc	bc	bc	bc	bc	bc	bc	bc	bc	bc	26		

Table 7. Standard SCRS catalogues on statistics (Task-I and Task-II) of skipjack tuna (SKJ), by stock/area (upper table SKJ-E, lower table SKJ-W), major fishery (flag/gear combinations ranked by order of importance) and year (1995 to 2016). Only the most important fisheries (representing ~95% of Task-I total catch) are shown. For each data series, Task I (DSet= "t1", in tonnes) is visualised against its equivalent Task II availability (DSet= "t2") scheme. The Task-II colour scheme, has a concatenation of characters ("a"= T2CE exists; "b"= T2SZ exists; "c"= CAS exists) that represents the Task-II data availability.

						T1 Total	152669	129554	117243	132365	153331	126477	132169	100924	130734	154243	143566	113279	127137	124611	138985	170125	191117	220334	220693	204446	209082	217521			
Speci	Sto	Stat	FlagName	GearG	DS	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Rank	%	%cum
SKJ	ATE	CP	EU.España	PS	t1	48733	33947	33428	29976	42714	37145	27798	21596	39396	33421	18718	14975	17675	27918	30041	34175	46823	48185	57594	43139	38754	41085	1	22.5%	22%
SKJ	ATE	CP	EU.España	PS	t2	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	ac	ac	1		
SKJ	ATE	CP	Ghana	PS	t1		4090	6049	15945	20890	12061	11011	19054	14883	11879	28167	12680	29443	25128	25891	37455	31759	39181	33936	37868	47500	38284	2	14.8%	37%
SKJ	ATE	CP	Ghana	PS	t2		ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	abc	abc	abc	abc	ac	ac	ac	a	a	a	a	2		
SKJ	ATE	CP	Ghana	BB	t1	18607	20115	20315	25895	31134	22919	44464	18516	18094	34151	26042	20932	17195	14433	19182	14596	17112	16953	11300	11393	13562	13051	3	13.2%	50%
SKJ	ATE	CP	Ghana	BB	t2	abc	abc	ab	ab	ab	ab	ab	ab	ab	ab	ab	abc	abc	abc	abc	ac	ac	ac	a	a	a	a	3		
SKJ	ATE	CP	EU.France	PS	t1	28059	23856	16736	17850	22317	21426	15829	15899	21505	23224	13523	5770	3580	3948	7722	14582	13569	13395	16022	17085	20253	18164	4	10.4%	61%
SKJ	ATE	CP	EU.France	PS	t2	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	4		
SKJ	ATE	CP	Curaçao	PS	t1		7096	8444	8553	9932	10008	13370	5427	10092	8708	88	3213	1703	6541	10060	9594	12380	13324	18312	18437	19621	22280	5	6.4%	67%
SKJ	ATE	CP	Curaçao	PS	t2		ab	ab	ab	a	ab	ab	ab	ab	ab	b	ab	abc	abc	abc	abc	abc	abc	abc	abc	a	abc	5		
SKJ	ATE	CP	Panama	PS	t1	14853	5855	1300	572	1117	1374	281	342		7126	12286	14016	19798	8946	9199	9944	13119	11211	15520	14565	8372	11576	6	5.3%	73%
SKJ	ATE	CP	Panama	PS	t2	ab	ab	ab	ab	a	ab	ab	ab		ab	ab	ab	abc	abc	abc	abc	abc	abc	abc	abc	a	abc	6		
SKJ	ATE	CP	EU.España	BB	t1	5760	5044	7075	8593	5607	3780	3156	3836	7174	7207	10119	7633	6378	8345	8647	8405	11674	19445	10185	9951	7269	10994	7	5.2%	78%
SKJ	ATE	CP	EU.España	BB	t2	ac	ac	abc	ac	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	ac	ac	7		
SKJ	ATE	CP	Cape Verde	PS	t1		8	18	21	1		300	366	54	1040	7498	4862	5434	4872	5387	5823	8277	5680	16135	16307	17292	9425	8	3.2%	81%
SKJ	ATE	CP	Cape Verde	PS	t2		a	a	a	a		a	a	a	ab	ab	ab	abc	abc	abc	abc	abc	ac	ac	ac	ac	a	8		
SKJ	ATE	CP	EU.Portugal	BB	t1	4986	8276	4395	4519	1800	1285	2135	2940	4276	8459	4687	11001	8604	5734	904	12859	4078	2758	4039	1703	1296	695	9	3.0%	84%
SKJ	ATE	CP	EU.Portugal	BB	t2	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	9		
SKJ	ATE	NCO	NEI (ETRO)	PS	t1	15964	16050	5658	5741	7675	5245	5679	6202	5533	4750													10	2.3%	86%
SKJ	ATE	NCO	NEI (ETRO)	PS	t2	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	bc	bc	bc	b	b	b	b	b	b	b	b		10		
SKJ	ATE	CP	Guatemala	PS	t1									2120	4808	6649	5028	5612	6481	4095	3087	2880	3732	4979	5904	7078	7397	11	2.0%	88%
SKJ	ATE	CP	Guatemala	PS	t2									ab	ab	ab	ab	abc	abc	abc	abc	abc	abc	abc	abc	ac	ac	11		
SKJ	ATE	CP	Belize	PS	t1															1488	3109	7797	15733	6854	11080	12599	7730	12	1.9%	90%
SKJ	ATE	CP	Belize	PS	t2															ac	a	a	a	a	a	a	a	12		
SKJ	ATE	CP	Senegal	BB	t1	18	163	455	1679	1479	1506	1271	1060	733	1385	4874	3534	2278	3661	4513	2411	4765	4276	4014	3252	1895	2495	13	1.5%	92%
SKJ	ATE	CP	Senegal	BB	t2	a	ac	a	a	a	a	a	a	a	ac	ac	ac	ac	ac	ac	ac	ac	ac	ac	ac	ac	ac	13		
SKJ	ATE	CP	EU.France	BB	t1	2697	1698	3701	4179	2343	1497	2550	2305	1878	1752	2240	1610	795	778	1186	904	932	1382	682	750	939	1270	14	1.1%	93%
SKJ	ATE	CP	EU.France	BB	t2	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	ac	14		
SKJ	ATE	NCO	Mixed flags (EU tropical)	PS	t1	4543	1316	2345	1508	1119	2194	218	65	1547	2953	1708	1478	3003	2998	2624	3427	2372						15	1.0%	94%
SKJ	ATE	NCO	Mixed flags (EU tropical)	PS	t2	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1						15		
SKJ	ATE	CP	Guinée Rep.	PS	t1											387		330	118	359	2114	3252	10321	9033	7629			16	1.0%	95%
SKJ	ATE	CP	Guinée Rep.	PS	t2											-1		-1	-1	-1	-1	a	ac	ac	ac			16		

						T1 Total	21860	27562	31712	29087	27356	29193	31451	21600	24749	27461	28517	26453	25443	22022	25774	23000	32383	32857	35037	26727	20130	28392			
Speci	Sto	Stat	FlagName	GearG	DS	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Rank	%	%cum
SKJ	ATW	CP	Brazil	BB	t1	16530	22517	25573	23567	22948	24691	24038	18185	20416	23036	25269	23012	22750	20547	22329	19747	29322	30569	32337	24787	17499	24874	1	85.9%	86%
SKJ	ATW	CP	Brazil	BB	t2	ab	a	ab	a	a	-1	a	a	ab	ab	ab	ab	ab	ab	ab	a	a	a	a	a	a	-1	1		
SKJ	ATW	CP	Venezuela	PS	t1	2059	3348	3604	3607	2696	2590	5189	2000	2296	2769	848	1806	806	688	1808	1931	1308	1573	908	1081	1974	1912	2	7.8%	94%
SKJ	ATW	CP	Venezuela	PS	t2	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	2		
SKJ	ATW	NCO	Cuba	BB	t1	886	1000	1000	651	651	651			624	545	514	536											3	1.2%	95%
SKJ	ATW	NCO	Cuba	BB	t2	-1	-1	-1	-1	-1	-1		b	-1	-1	-1	-1											3		
SKJ	ATW	CP	Venezuela	BB	t1	328	224	224	506	282	299	1104	552	950	501	245	201	115	69	441	177	146	124	60	27	39	393	4	1.2%	96%
SKJ	ATW	CP	Venezuela	BB	t2	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	4		

Table 8. Catalogue of T2CE series (1991-2016, catches (kg) by fishing mode) of the PS tropical fishery available in ICCAT database. Shaded cells in yellow indicate missing datasets (possible gaps).

Flag	FleetCode	Catch (kg)	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Belize	BLZ-ETRO	FAD																			1728210			13582008				7070640
		FSC																			200560			0				2068150
Cape Verde	CPV-CV-ETRO	FAD															7988380	9430940					10202170	6332580	9865780		21945890	13255350
		FSC															5192580	5124370					2999710	2245600	3760520		5163930	3235930
Curaçao	CUW-CW-ETRO	FAD						9936560	12322760	11258400	14076340	14067310	18860450	8694950	13458370	21514900		4301710	1798330	9938480	13526640	14830140	17574450	17564370	19292310	16051660	24331900	29154130
		FSC						2715850	5590890	6758720	3382730	3972890	2892440	2924500	6089550	4577060		1245440	1159360	6054450	4642850	3282810	2457400	5159490	4672270	2555840	5320920	5873930
EU.España	EU.ESP-ES-ETRO	FAD	71400060	51835030	51076800	44741250	48991820	44243270	25986820	17376140	23016510	31851220	29875050	27178870	29309980	24054090	20321360	16367980	20801160	35586470	37927790	42893480	56905440	56534170	63033340	52544810	48642480	52830900
		FSC	62821630	52921190	60937820	52356410	44225410	30944860	35615820	43164260	42267690	29173560	34909750	32227850	38833450	31977070	11822100	11966580	12827990	20303380	30874030	22445770	17146730	17519450	12736890	9666430	17653980	16714920
EU.France	EU.FRA-FR-ETRO	FAD	23444250	26132910	37531360	39827330	29086280	27599240	16540250	16256850	19640380	18348020	14317620	16113610	17256310	20409730	13569170	5101450	4522490	3051500	7582510	15751600	13305010	16644630	16989220	20558430	22924620	21884490
		FSC	41952920	30689320	38866780	33149590	27833990	33159380	30271010	32236370	32100120	31877720	34668330	33046650	35839050	25607090	23548320	21432800	13833410	17577720	19777630	21374700	23684640	17369150	22355920	20510310	19302000	26741740
Ghana	GHA-ETRO-P	FAD																5604997.99		19996271.01	4634000.04	19724128.49	18921900.01	24754499.98	28579000.06	35963000.69		
		FSC																126000		30000	810000	50000	3000	1511000	2368000	2328000		
	GHA-ETRO-A	FAD																10019499.8		15796999.72	27312000.13	28668000.19	22849499.84	23159499.88	16320999.85	15212000.43		
		FSC																2358000		1418000	4570000	3664500	2298000	2910000	1496000	1151000		
Guatemala	GTM.ETRO	FAD													3236260	5654320	7517330	6483050	7211090	7570370	5304580	3910710	3198510	4871310	5447390	6688910	10462760	8392690
		FSC													1826740	1573090	2776160	4729720	2729970	3557300	2327800	2805320	2375700	2771150	3259170	3894010	1701930	3021750
Guinée Rep.	GIN-GN-ETRO	FAD																						12882500	9415240	6680440		
		FSC																						0	0	763960		
Panama	PAN-PAN-ETRO	FAD	7908660	12302770	17615000	21672290	22640590	8675120	1922420	777210	1270770	1748400	242000	220880		9978630	15897710	18389230	25716270	13314380	12672510	13926990	19211920	13215120	18050800	18035010	11257080	16257630
		FSC	8295810	6161080	7567790	5651690	7710600	5135000	3036610	1725860	954390	1090590	702370	1205770		949450	5064420	7021090	6756890	3788370	4502200	3431980	1456360	4884570	3686880	3936820	2377290	3028790
Côte d'Ivoire	CIV-CI-ETRO	FAD																								2705050		
		FSC																								1990		
El Salvador	SLV-ETRO	FAD																									10826000	23556040
		FSC																									437000	2542480
Senegal	SEN-SN-ETRO	FAD																									4568010	
		FSC																									897000	
Maroc	MAR-MA-ETRO	FAD															2400810	292170										
		FSC															2568680	129720										
NEI (ETRO)	NEI.001-BLZ	FAD								1007830		489880	475970															
		FSC								902530		261770	392080															
	NEI.001-GHA	FAD							0	2424200	2826390	1384330	2641100	3708170	1352380	998870												
		FSC							31400	500820	1382650	1001240	565850	261360	1409250	2264100												
	NEI.001-GIN	FAD					1497270	10559800	4063560																			
		FSC					18800	229110	49130																			
	NEI.001-ITA	FAD		159970																								
		FSC		549990																								
	NEI.001-LBR	FAD				1259240	1811300																					
		FSC				339770	1163800																					
	NEI.001-MAR	FAD	1915030	389090	4001120	4517210	2658560	3097120	1358240	1171190	2695370	1784730	1501490	1389000	2521750	1948920												
		FSC	1639980	2758030	2617570	2992720	2132640	3335960	1970550	3877670	3943910	3985160	3359890	2071390	2486650	2174720												
	NEI.001-MLT	FAD	3245010	2299940	197040																							
		FSC	1430000	1570980	366460																							
	NEI.001-MUS	FAD					2573440																					
		FSC					34060																					
	NEI.001-MYS	FAD							35390																			
		FSC							146600																			
	NEI.001-NOR	FAD	263740																									
		FSC	183890																									
	NEI.001-SLV	FAD											0															
		FSC											935210															
	NEI.001-SYC	FAD											1318340	114500														
		FSC											1313610	1446880														
	NEI.001-VCT	FAD	964690	3464740	6826930	3298250	2620300	2010280	1428770	1621730	694540	595610	1718120															
		FSC	1159560	6690810	6032010	2203570	1917470	2972020	2978300	3113650	2515540	2117540	3635450															
	NEI.001-VEN	FAD											0	3334170	1773760													
		FSC											71000	3300430	0													
	NEI.001-VUT	FAD	1681410	1764330	1818140	2195690	7415130	9033730	1915810		1733990																	
		FSC	4937670	5252240	12421220	13770170	6029450	103540	721020		0																	

Since 2005 T1CE started to be reported by Flag (ETRO fleets suffix)
NOT NEI related information since then. As for T1NC these serries should be reallocated to the respective flag/fleet.

Table 9. By-catch tones per 1,000 t of production (BET + YFT + SKJ landed) by species group and fishing mode for the period 2010-2016. Convert to average over period 2010-2016. [1]

	2010	2011	2012	2013	2014	2015	2016	Average
FOB								
Billfishes	2.82	1.93	2.53	1.62	1.89	1.95	2.03	2.11
Other bony fishes	13.26	15.08	27.06	18.55	16.85	26.08	29.77	20.95
Rays	0.12	0.15	0.94	0.85	0.28	0.16	0.47	0.42
Sharks	1.97	2.78	1.18	4.48	5.14	5.09	5.69	3.76
Target tunas	13.78	22.08	57.17	25.55	32.93	18.65	12.61	26.11
Other tunas	92.89	30.95	71.15	47.26	51.29	57.19	70.93	60.24
Turtles	0.46	0.10	0.42	0.23	0.25	0.14	0.37	0.28
FSC								
Billfishes	2.03	1.56	2.23	1.23	0.82	0.83	0.78	1.35
Other bony fishes	1.79	0.52	2.96	0.30	0.16	0.33	0.37	0.92
Rays	0.58	0.22	0.27	0.56	0.14	0.26	0.56	0.37
Sharks	2.81	1.06	0.07	5.55	3.28	10.73	11.43	4.99
Target tunas	1.12	33.58	1.64	1.23	1.62	9.49	4.00	7.53
Other tunas	26.36	0.54	14.27	2.63	4.68	20.99	7.30	10.97
Turtles	0.27	0.18	0.37	0.14	0.15	0.11	0.14	0.19

Table 10. Estimated contribution of each taxonomic group to the total by-catch (percentage) by fishing mode for the period 2010-2016 The contribution of each fishing mode to the total by-catch is also presented in the column headers.

	2010	2011	2012	2013	2014	2015	2016	Average
FOB	83%	80%	92%	94%	95%	81%	86%	87%
Billfishes	2%	2%	2%	2%	2%	2%	2%	2%
Other bony fishes	8%	18%	16%	15%	15%	24%	26%	17%
Rays	0%	0%	0%	1%	0%	0%	0%	0%
Sharks	1%	4%	1%	4%	4%	5%	5%	3%
Target Tunas	9%	23%	27%	27%	34%	16%	11%	21%
Other Tunas	80%	54%	54%	51%	45%	54%	56%	56%
Turtles	0%	0%	0%	0%	0%	0%	0%	0%
FOB	17%	20%	8%	6%	5%	19%	14%	13%
Billfishes	6%	6%	8%	12%	7%	2%	3%	6%
Other bony fishes	5%	2%	29%	2%	2%	1%	1%	6%
Rays	2%	1%	1%	5%	1%	1%	2%	2%
Sharks	8%	3%	0%	43%	33%	26%	47%	23%
Target Tunas	3%	86%	5%	9%	13%	21%	16%	22%
Other Tunas	76%	2%	53%	27%	42%	50%	29%	40%
Turtles	1%	1%	3%	1%	1%	0%	1%	1%

[1] "The group "Other tunas" consider all tuna species other than SKJ, YFT and BET."

Table 11. Schedule for development of an MSE for tropical tunas.

Year	SCRS	Commission and stakeholders
2018	Start development of MSE framework	Continue activities with managers and stakeholders to improve capacity to participate in the MSE process
	WG conducts BET stock assessment	Meeting of Panel 1 to identify: Define management objectives (especially important to include a definition of a time frame required for rebuilding BET) Develop initial candidates for HCRs Review of performance indicators[2]
	WG conducts a specific activity with the support of the AOTTP for developing information to support the development of OM for SKJ, BET and YFT.	Meeting of FAD WG (if active) Consider which aspects of MSE have to be adapted to consider issues related to FAD management
	Condition OM. Assessments results to support development will be 2014 SKJ, 2016 YFT and 2018 BET.	
2019	Continue developing MSE simulation framework. Incorporate initial HCRs developed by Commission and develop new possible HCRs. Develop initial candidate Management Procedures and implement them in simulation framework	Continue activities with managers and stakeholders to improve capacity to participate in the MSE process
	WG conducts SKJ stock assessment	Meeting of Panel 1 to: Review advancement of SCRS work on MSE and uncertainties considered in OM Finalize list of HCR and MPs to be evaluated Review and finalize list of performance indicators
2020	WG conducts YFT stock assessment	Review advancement of SCRS work on MSE and uncertainties considered in OM
2021	Finalize simulations to evaluate MPs and prepare report for Commission	Continue activities with managers and stakeholders to improve capacity to participate in the MSE process
		Meeting of Panel 1 considers report of SCRS on MSE

[2] HCR for tropical tunas may be very different than those considered by the Commission for ALBN. If that is the case reference points and performance indicators will need to be re-aligned to be consistent with these types of HCRs.

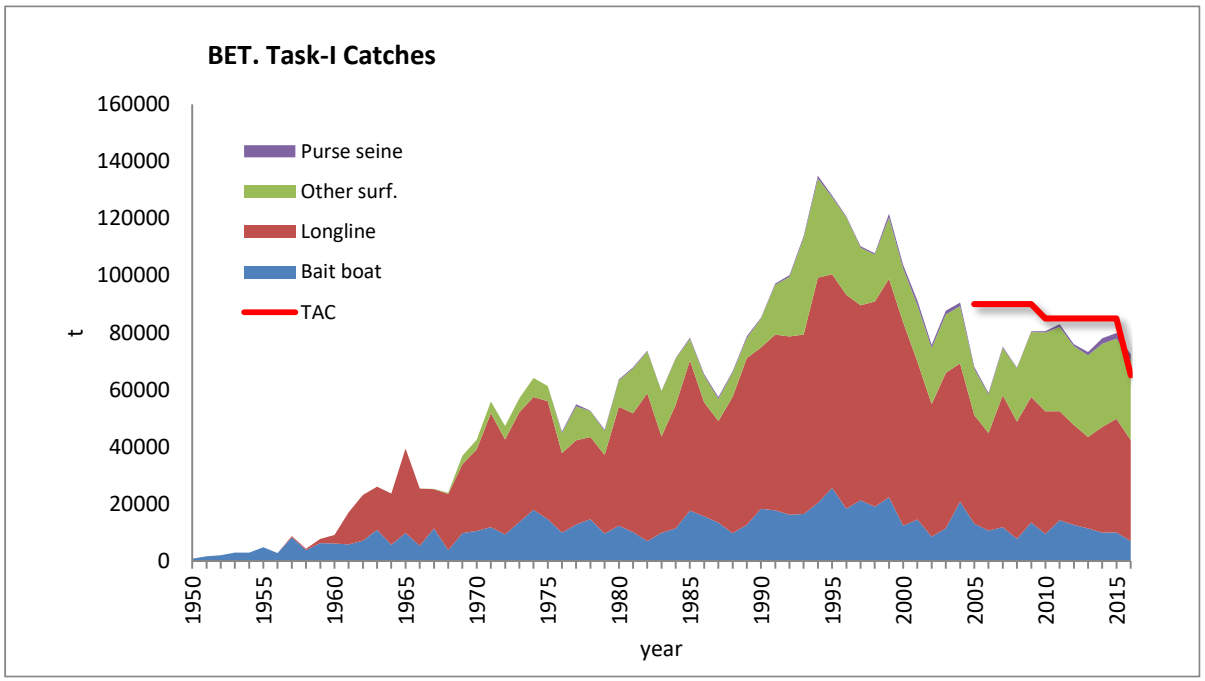

Figure 1. Estimated catches (t) of bigeye tuna (*Thunnus obesus*) by stock/area and gear, between 1987 and 2016 (as of 6 September 2017).

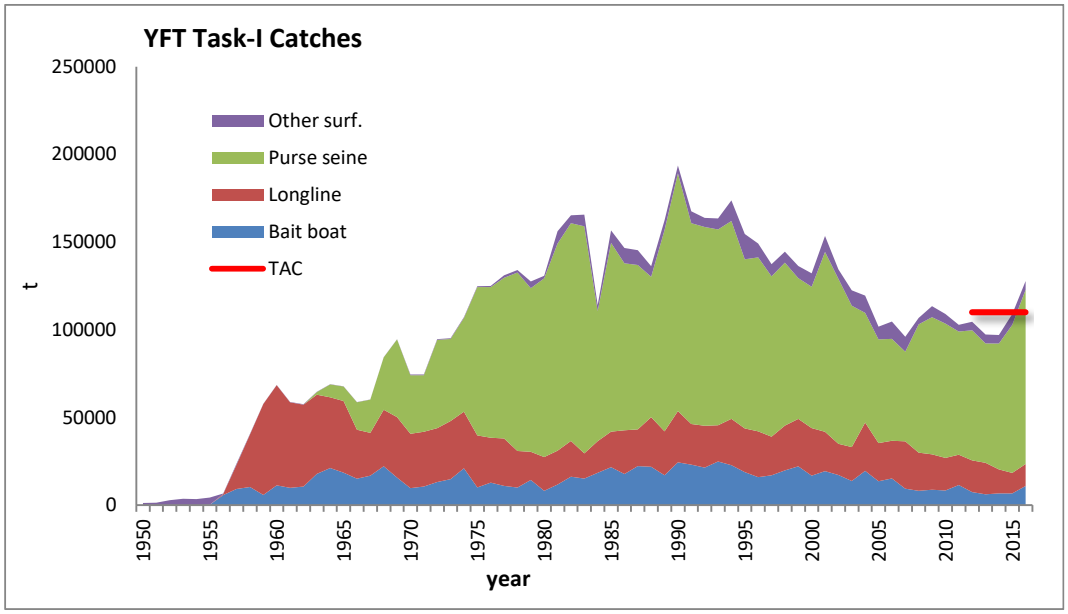

Figure 2. Estimated catches (t) of yellowfin tuna (*Thunnus albacares*) by stock/area and gear, between 1985 and 2016 (as of 6 September 2017).

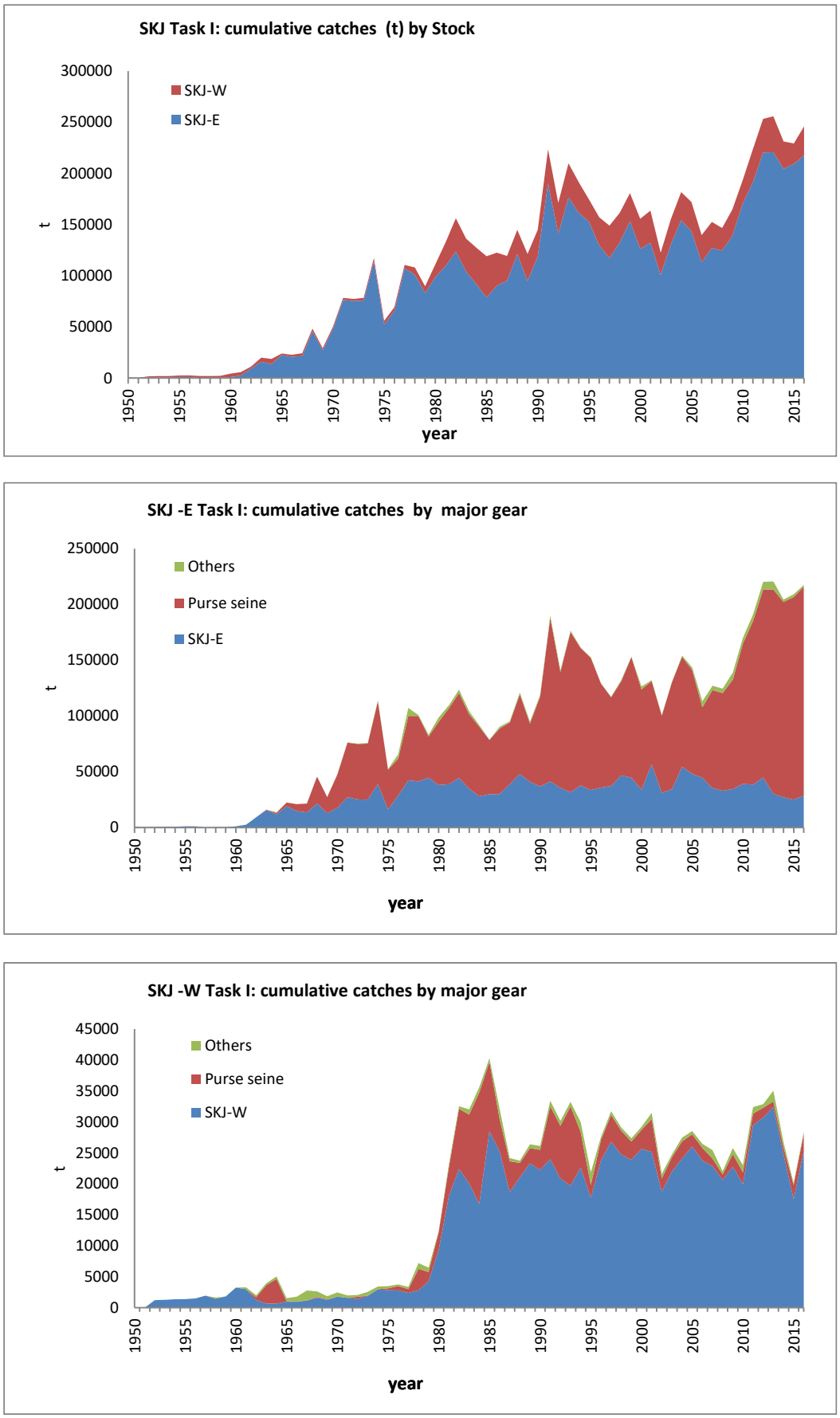

Figure 3. Estimated catches (t) of skipjack (*Katsuwonus pelamis*) by stock/area and gear, between 1985 and 2016 (as of 6 September 2017).

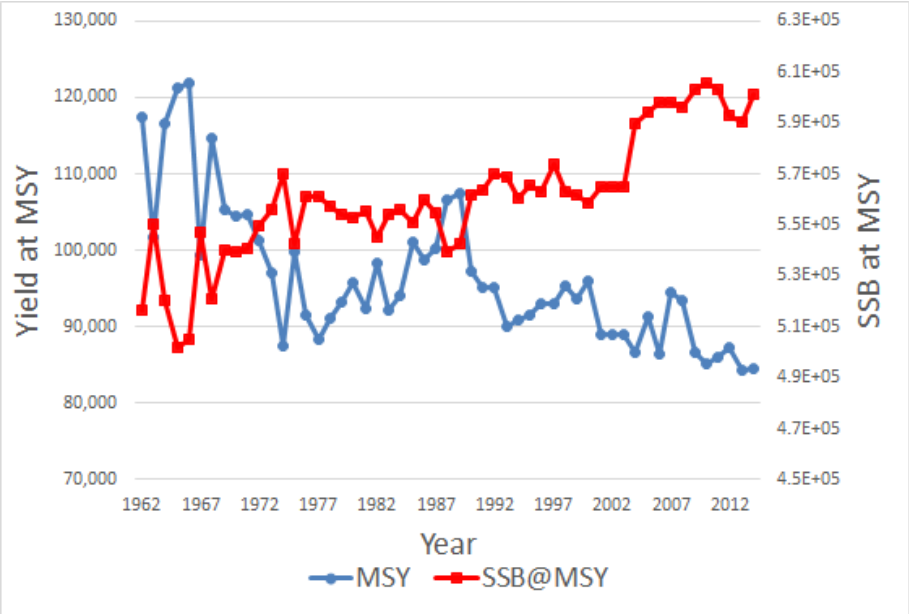

Figure 4. Year/selectivity specific maximum sustainable yield (MSY) and spawning stock biomass (SSB) required to produce that maximum sustainable yield for bigeye tuna.

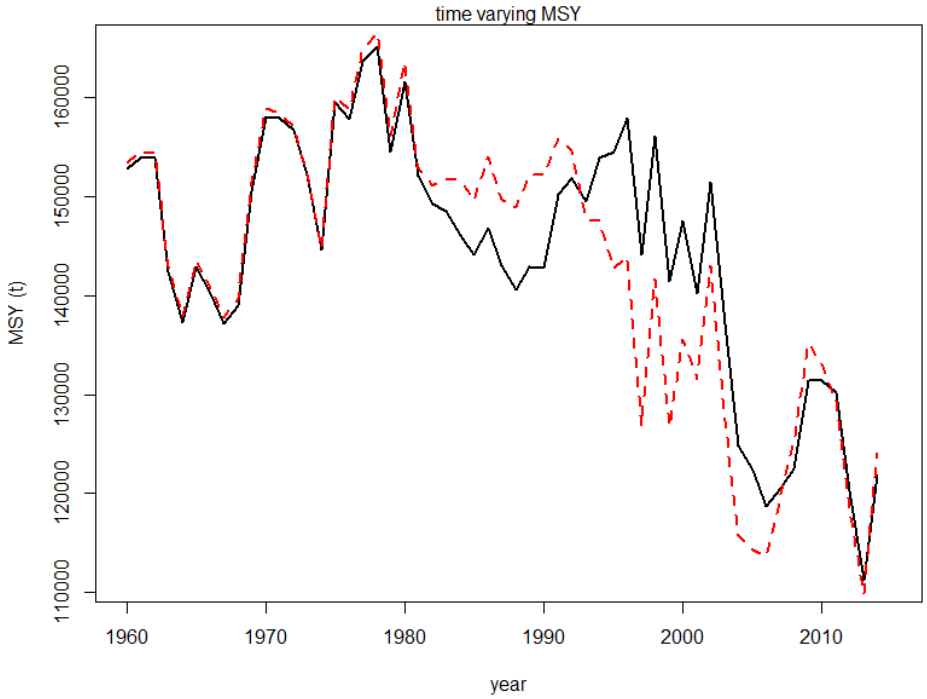

Figure 5. MSY for yellowfin tuna estimated annually from an age structured stock assessment (SS) using cluster 1 and 2 indices.

Appendix 1

Agenda

1. Opening, adoption of Agenda and meeting arrangements
2. Review of fishery statistics
   2.1 Task I (catches) data
   2.2 Task II (catch-effort and size samples) data
   2.3 Improvement on ICCAT Task I and II data (including Ghanaian statistics and *faux poisson*)
3. Review of new scientific documents for the species
4. Review of AOTTP data and programme activities
   4.1 Review data collected and provide feedback
   4.2 Review current assumptions regarding growth, mortality, stock structure etc. with regard to new information obtained from the AOTTP programme
5. Management Strategy Evaluation (MSE)
   5.1 Review existing operating models and provide feedback on potential tropical tuna MSE
   5.2 Develop a programme to implement and fund MSE for tropical tunas for a minimum of three years
6. Responses to the Commission
7. Recommendations
8. Other matters
   8.1 Workplan
   8.2 Update species Executive Summaries
9. Adoption of the report and closure

Appendix 2

List of Participants

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Appendix 3

List of Documents and Presentations

Reference	Title	Authors
SCRS/2017/183	Datos estadísticos de la pesquería de túnidos de las Islas Canarias durante el periodo 1975 a 2016	Delgado-de-Molina R.
SCRS/2017/185	ISSF bycatch mitigation efforts for tropical tuna purse seine fisheries in the Atlantic Ocean	Restrepo, V., Murua J., Moreno G., and Justel-Rubio A.
SCRS/2017/193	Summary of activities conducted within AOTTP in 2016 and 2017	Beare D., Guemes P., Garcia J., and Kebe S.
SCRS/2017/194	Tropical tuna growth and migration rates: AOTTP and ICCAT's historical tagging data	Guemes P., Garcia J., and Beare D.
SCRS/2017/195	Standardization of bigeye tuna CPUE in the main fishing ground of Atlantic ocean by the Japanese longline fishery using revised method	Matsumoto T.
SCRS/2017/196	On the Faux Poisson tuna landings in Abidjan: analysis of recent data and proposal to create a task2 file of faux poissons tuna catches for major and minor tunas	Fonteneau A, Dewals P., Pascual-Alayón P., Floch L., Amande M.J.
SCRS/2017/197	Bycatch of the European purse-seine tuna fishery in the Atlantic Ocean for the period 2010-2016	Jon Ruiz Gondra, Jon Lopez, Francisco J. Abascal Crespo, Pedro J. Pascual Alayon, Monin J. Amandè, Pascal Bach, Pascal Cauquil, Hilario Murua, Maria L. Ramos Alonzo, Philippe S. Sabarros
SCRS/2017/198	First steps for the conditioning of a multispecies MSE model for tropical tuna fisheries	Agurtzane Urtizberea, Gorka Merino, Hilario Murua
SCRS/2017/199	Estadística de las pesquerías españolas atuneras, en el océano atlántico tropical, período 1990 a 2016	P. Pascual-Alayón, H. Amatcha, F.N'Sow, Mª L Ramos, F. J. Abascal1, V. rojo
SCRS/2017/200	Modelling the oceanic habitats of Silky shark (Carcharhinus falciformis), implications for conservation and management	Jon Lopez, Diego Alvarez-Berastegui, Maria Soto, Hilario Murua
SCRS/2017/202	First massive tagging of tropical tunas around the Sierra Leone rise	Nicolas Goñi, Isidor Diatta, Kouadio Justin Konan, Ebenezer Addi, Alexander Salgado, Marina Chifflet, Iñigo Onandia, Igor Arregui
SCRS/2017/203	Statistics of the European and associated purse seine and baitboat fleets, in the Atlantic Ocean (1991-2016)	P. Pascual-Alayón, L. Floch, P Dewals, D Irié, AH Amatcha, M-J Amandè, F.N'Gom
SCRS/2017/204	Standardization of the catch per unit effort for bigeye tuna (*Thunnus obesus*) for the South African longline fishery	Parker D., Winker H., West W., Sven Kerwath S.
SCRS/2017/205	On the dialogue between knowledge backgrounds involved in tagging programs	Iñigo Onandia, Nicolas Goñi, Josu Santiago, Lola Godoy, João Ferreira, Alexander Salgado, Marina Chifflet, Igor Arregui

SCRS/2017/206	Standardization of the catch per unit effort for yellowfin tuna (*Thunnus albacares*) for the South African tuna pole and line (baitboat) fleet for the time series 2003-2016	Parker D., Winker H., West W., Sven Kerwath S.
SCRS/2017/207	Importance des captures accessoires des espèces des divers thons en Mauritanie : quelles hypothèses sur la dynamique de ces ressources	Braham C.B.
SCRS/P/2017/037	An overview of tropical tuna fishery of Angola	Delicado F.
SCRS/P/2017/038	Integrating uncertainty from data processing into population assessment	Carruthers T., Kell L., Palma C.
SCRS/P/2017/039	Fishing on floating objects (FOBs): How tropical tuna purse seiners split fishing effort between GPS-monitored and unmonitored FOBs	Julia Snouck-Hurgronje, Kaplan D., Chassot E., Maufroy A., Gaertner D.
SCRS/P/2017/040	Tentative solutions of problems induced by the gaps between concept and reality	Amandé J., Diaha C., Konan T.

Appendix 4

SCRS Document Abstracts as provided by the authors

SCRS/2017/183 – SCRS/P/2017/040 - This document presents a summary of the development and current composition of the Canary Islands baitboat fleet and the catches made between 1975 and 2016. This paper also presents size histograms of the different species caught in 2016 and the average between 2011 and 2015. An estimate of fishing effort was made, differentiating between vessels lesser than and greater than 50 GRT, taking into account that the former (vessels less than 50 GRT) carry out daily trips, with an average of 9 hours at sea, whereas the latter carry out trips lasting more than a day.

SCRS/2017/185 – This paper summarizes ISSF activities relevant to quantifying and mitigating bycatch-related issues in tropical tuna purse seine fisheries in the Atlantic Ocean. Total target (SKJ+YFT+BET) and non-target catch for 2011-2015 in purse seine fisheries is presented. On average, bycatch is 7.69% of the catch in object sets, 2.12% in free-swimming school sets and 5.26% overall; which are relatively high rates mostly due to a large proportion of bycatch consisting on minor tunas in the Atlantic PS fisheries. ISSF scientists collaborate with industry to better understand, mitigate and manage bycatch both through research activities conducted at sea and by holding skipper workshops, which have reached a very large proportion of the Atlantic tropical tuna PS fishery. The objectives of the workshops are to inform fishers of the latest advances in bycatch reduction practices and collect their feedback on new mitigation ideas that can be later tested by scientists during ISSF research cruises. Three research cruises have been conducted so far in the Atlantic Ocean to test bycatch mitigation measures, mostly of shark species and undesirable sizes of yellowfin and bigeye. Considering the high rate of small size major tunas, minor tunas and other bony fishes present in PS bycatch in Atlantic Ocean tropical tuna fisheries, which are often targeted and play an important role in food security in the region, a tuna retention measure would have a positive socioeconomic impact on the region.

SCRS/2017/193 – The purpose of this working document is to summarise progress on AOTTP since we last reported to the SCRS Tropical Species Group in 2016. Specifically activities leading to the development of the tag and release database will be described, and the contents of that database summarised. Since AOTTP began tagging off the Azores in June 2016 more than 500 days at sea have been spent on more than 50 tagging cruises throughout the Atlantic. Nearly 60,000 fish have been tagged with conventional tags in the EEZs of 15 different countries in addition to the High Seas. More than 8,000 fish have been double-tagged allowing tag-shedding rates to be estimated, while around 4500 have been marked chemically to improve subsequent ageing of recovered fish. More than 300 electronic tags (pop-ups and internals) have been deployed, providing information on tuna migrations and habitat preferences. Tag-recovery and awareness raising infrastructures have been set up in ten countries, and more than 10,000 conventional tags have been recovered (ca 20% recovery rate) for which rewards have been paid. More than 100 tag-seeding experiments have been done. Posters, t-shirts, and caps, as rewards to incentivise tag-recovery, have been designed in four languages. More than 200 fish have been purchased and samples taken for determination of age, sex and state of sexual maturity. Relational databases and smartphone applications for populating them have been designed, developed and implemented. More than 60 colleagues from developing countries have been trained in all aspects of tagging at sea, tag-recovery, and data transmission methodologies. AOTTP coordination is working with ICCAT SCRS to build scientific capacity among ICCAT CPCs to make effective use of the tagging data for improving the tropical tuna stock assessments. A proposal for capacity building into the future will be elucidated with input from the SCRS.

SCRS/2017/194 – In this working document we describe the mark-recapture information that AOTTP has now available for estimating the important parameters of growth and migration of tropical tuna in the Atlantic Ocean. The AOTTP data are then compared with the historical tag-recapture data available to ICCAT. We show that growth and migrations of each species of tropical tuna are broadly comparable with those observed in the past. We demonstrate that AOTTP data could already be used to inform growth and migration models/simulations and studies.

SCRS/2017/195 – Bigeye tuna CPUE for 1961-2016 by Japanese longline in the main fishing ground of Atlantic Ocean, standardized by GLM applying log-normal error assumption was created using revised methods from the previous studies. Only annual CPUEs in number were calculated to examine difference of CPUE based on the methods. As for environmental factor, sea surface temperature (SST) was applied. Standardized CPUE decreased after early 1990s and became the lowest in 2011, increased until 2013, and

slightly decreased after that. Standardized CPUE based on the new method was similar to that by the previous method except for early period. Alternative area definition of main fishing ground was made based on the amount of catch and species composition. Standardized CPUE in the alternative area was similar to that in the original area except for a part of the period during 1970s.

SCRS/ 2017/196 - This paper is making an analysis of the Abidjan landing data of the tunas sold as "Faux Poissons"6 by the EU and associated flag purse seiners during the 2006-2014 period. The comparison of the multispecies and basic sampling would indicate that the species composition of faux poissons catches should be corrected. A method allowing to estimate TASK2 file of monthly catches by 1° square for major and minor tunas is proposed. A comparative analysis of catch at size estimated in the basic fishery and in the faux poissons market allows to conclude that the faux poissons CAS should not be added to the basic CAS, as a large part of the faux poissons catches was already included in the today CAS. This analysis also shows various major deficiencies in the minor tunas statistics of the EU&al fleet, for instance scientific data allowing to estimate that an average 6000 tons of minor tunas were sold yearly as faux Poissons by French and Spanish purse seiners between 1990 and 2005 (while only 540 tons of minor tunas were declared yearly to ICCAT) and that subsequently the TASKI catches of major tunas in the period have been widely overestimated. These questions would need further in depth statistical studies of the faux poissons and the basic fishery data.

SCRS/2017/197 – This paper presents an update for the period 2010-2016 of the bycatch estimations for the European tuna purse seine fishery operating in the Atlantic Ocean. Bycatch data were collected by observers onboard. Observer coverage increased progressively from 15 trips in 2010, to 114 and 107 trips in 2015 and 2016 respectively. Bycatch data, as collected by the observers, were stratified by quarter and fishing mode (free school and floating object sets). The ratio of total to observed catches of the target species (skipjack, bigeye and yellowfin tunas) in each stratum was then used as raising factor. The average of the annual total bycatch estimated for the studied period was 9,515 t. Tunas (neritic tunas and small size tunas) represent the major part of the bycatch, followed by fin fish, sharks, billfishes, rays and turtles.

SCRS/2017/198 – ICCAT's management objective is to maintain the populations at a level that permits their maximum sustainable catch and therefore, assure a long-term biological and economical sustainability of the fisheries. However, the last assessment of Atlantic bigeye tuna suggests that the stock is overexploited and overfished, while yellowfin tuna is also overexploited but without being overexploited. The objective of this work is the development of a multi-specific model based on Management Strategy Evaluation (MSE) for tropical tuna fisheries on the Atlantic Ocean in order to evaluate the economical and biological impact of different management plans on a multi-specific fisheries context. The MSE model will be built with FLBEIA, a bio-economic impact assessment model based on MSE approach. FLBEIA has been applied in many case studies and thus many of the utilities of the model has been validated. But here we only present the first steps towards the multi-specific MSE model; the conditioning of two single stock MSE model, for bigeye and yellowfin tuna fisheries on the Atlantic Ocean based on their latest assessment.

SCRS/2017/199 – En este documento se presentan datos de la flota española, estrategias de pesca, zonas de pesca, capturas de las especies objetivo, esfuerzos, rendimientos (CPUEs), coberturas de muestreos y distribuciones de talla de las especies objetivo y accesoria de la flota atunera de cerco y de la flota de cañeros de cebo vivo que faena en el Océano Atlántico Tropical. El número de barcos de cerco que operó durante este último año disminuyó en 2 unidades, aunque la captura total aumentó ligeramente durante 2016. En éste último año, se realizaron dos veces más lances a objeto que a banco libre. En términos de porcentaje el 68 % correspondió a Objetos y el 32 % a Banco Libre. Los pesos medios de los ejemplares capturados han sido: para rabil 8,5 kg (4,1 kg objeto y 25,5 kg banco libre); para el listado 1,97 kg (1,9 kg objeto y 2,67 kg banco libre) y para patudo 3,8 kg (3,3 kg objeto y 24,3 kg banco libre). El rabil (YFT) talla modal de captura 42 cm a Objeto (OB) y cuatro tallas modales de 42 cm, 58 cm, 106 cm y 138 cm para las capturas a Banco libre (FS) en 2016. El listado (SKJ) una talla modal de captura, 64 cm para Objeto (OB) y dos tallas modales de 64 cm y 72 cm para Banco libre (FS) en 2016. El patudo (BET) una única talla modal de captura 40 cm para Objeto (OB) y dos tallas modales de 42 cm y 94 cm para Banco libre (FS) en 2016.

SCRS/2017/200 – Investigating the relationship between abundance and environmental conditions is of primary importance for the correct management of marine species, especially highly migratory large pelagic species like silky sharks (Carcharhinus falciformis), a species that is currently ranked by the IUCN as near threatened or vulnerable, depending on the region. Tropical tuna purse seine vessels annually catch millions of tons of tuna worldwide. However, fishing may have implications on certain sensitive by-catch species,

along with other potential impacts on the ecosystem. This work aims to provide the first insights into the environmental preferences of silky sharks by modelling their abundance from observer data with a set of biotic and abiotic oceanographic factors, spatial-temporal terms and fishing operation variables. This work considers Spanish observer data (IEO and AZTI database) from 2003 to 2015, and comprising ~7500 fishing sets for the Atlantic Ocean. Oceanographic data (SST, SST gradient, salinity, SSH, CHL, CHL gradient, oxygen, and current information such as speed, direction and kinetic energy) were downloaded and processed for the study period and area from the MyOcean-Copernicus EU consortium. Results provide information on the dynamics and hotspots of silky shark abundances as well as the most significant habitat preferences of the species. Models detected a significant relationship between seasonal upwelling events, mesoscale features and shark abundance and suggested strong interaction between productive systems and the spatial-temporal dynamics of sharks. The model also highlighted certain persistent areas of shark occurrence. This information could be used to assist t-RFMOs in the conservation and management of this vulnerable non-target species.

SCRS/2017/201 – Not provided by the authors

SCRS/2017/202 – In the framework of the ICCAT/AOTTP Phase 1 tagging activities, an important amount of tags was deployed around the seamounts of the Sierra Leone Rise (latitudes 6º to 9º30N, longitudes 20 to 24ºW), with a total of 17675 fish tagged from October 27th to November 16th 2016, and from February 19th to March 18th 2017. It was the first massive tuna tagging done in that region. This document describes the activities done in that region and shows some features of different seamounts in terms of species and size distributions of the tunas tagged.

SCRS/2017/203 – The document presents an overall summary of the fishing activities of the European and assimilated purse seine and baitboat fleets operating in the eastern Atlantic Ocean over the period 1991-2016. We describe the annual changes in fleet technical characteristics (carrying capacity, size), fishing effort (fishing and searching days), extent of fishing grounds, catches and nominal Catch per Unit Effort by species, as well as the average individual weight by species. Maps are also presented indicating the fishing effort distribution in the Atlantic, as well as the spatio-temporal distribution of European and assimilated purse seine catches in 2016 compared to previous years (2010-2015).

SCRS/2017/204 – Bigeye tuna, *Thunnus obesus* is frequently caught by the South African pelagic longline fleet operating along the west and east coast of South Africa. A standardization of the Catch Per Unit Effort (CPUE) of the South African domestic longline fleet for the time series 2004-2016 was carried out with a Generalized Additive Mixed Model (GAMM) with a Tweedie distributed error. Explanatory variables of the final model included Year, Month, Geographic location (Lat, Long) and a Targeting factor with two levels, derived by clustering of Principle Compo-nent Analysis (PCA) scores of the root-root transformed, normalized catch composition. Vessel was included as a random effect. Bigeye tuna CPUE had a definitive seasonal trend, with catch rates higher in winter (June - October) and lower in summer (December - April). The standardised CPUE analysis is highly variable amongst years and no definitive trend was ob-served for bigeye tuna in this fishery.

SCRS/2017/205 – This document, based on our observations done during the ICCAT/GBYP and the ICCAT/AOTTP tagging programs, aims at analyzing the different knowledge backgrounds involved in tagging programs. After describing these different knowledge backgrounds and their implications, we analyze the interactions – both in terms of conflicts or synergies – that can exist between captains and scientists during tagging programs, and finally provide recommendations regarding agreements with vessels, trade-offs regarding tagging strategies and dialogue with the captains.

SCRS/2017/206 – Yellowfin tuna, Thunnus albacares, is the second most caught species in the South African tuna pole-line (baitboat) fleet operating along the west and south west coast of South Africa, after albacore (Thunnus alalunga). The average annual landings of yellowfin tuna for the period 2003-2016 was 529 tons. A standardization of the CPUE of the South African baitboat fleet was carried out with a Generalized Additive Mixed-Model (GAMM) with a Tweedie distributed error. Explanatory variables of the final model included year, month, geographic position, vessel power, included as a random effect. Cluster analysis of catch composition data suggested that nominal CPUE of yellowfin was dependent on fishing tactic, with negligible yellowfin caught when baitboats were targeting albacore. As such, the CPUE data used for standardization were subset to exclude albacore directed trips. Standardized CPUE peaked in 2006, declined to the lowest estimate in 2012 and has subsequently increased to levels similar to those estimated pre-2006. The

analyses indicate that the CPUE of the South African baitboat fishery for yellowfin tuna exhibits high inter-annual variability but, overall, has maintained similar levels to those from the previous decade.

SCRS/2017/207 – Ce travail décrit l'évolution des prises accessoires des bateaux pélagiques industrielles pêchés dans la zone Mauritanienne. L'importance des espèces de thons hauturiers qui font l'objet d'exploitation, exclusivement par des flottilles étrangères a été présenté. Le listao domine largement dans les prises suivi de loin par l'albacore. Très fortes variations interannuelles des captures sont enregistrées suivant la disponibilité de ces ressources et l'intérêt manifesté pour leur pêche. En fin ce travail, avance des hypothèses sur l'amélioration des rendements et de la pêche des thons tropicaux dans la zone Mauritanienne durant les dernières années.

SCRS/P/2017/037 – Not provided by the authors.

SCRS/P/2017/038 – Not provided by the authors.

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