INTER-AMERICAN TROPICAL TUNA COMMISSION

1st WORKSHOP ON IMPROVEMENTS IN DATA COLLECTION AND PROVISION: INDUSTRIAL LONGLINE FISHERY

(*by videoconference*)
09-11 January 2023

WORKSHOP REPORT

The 1st Workshop on "Improvements in Data Collection and Provision: Industrial Longline Fishery" was held by videoconference, utilizing the Zoom platform, on 9–10 January 2023. The workshop ended a day early after meeting the workshop objectives. A list of participants is provided in Appendix A.

1. OPENING OF THE MEETING

The meeting was opened by Dr. Alexandre Aires-da-Silva, IATTC Coordinator or Scientific Research, who welcomed the participants, introduced the scope of the workshop, and invited Dr. Carolina Minte-Vera, of the IATTC Stock Assessment Program, to chair the meeting.

It was recalled that in 2021, the staff prepared a background document SAC-12-09 "Improving species and catch data reporting (Resolution C-03-05)" to highlight the need for updating Resolution C-03-05. This document was presented at the 12th meeting of the SAC in May 2021 (by videoconference). While supporting a staff recommendation, the SAC made a recommendation on general data provision (see IATTC-97-01, section 3.1) which called for holding a series of workshops to discuss how to improve data collection and submission with the goal to revise Resolution C-03-05. This workshop consisted of the first of the series and focused on the industrial longline fleets.

The goals of the workshop were to:

- Provide case studies to illustrate the impact of data quality and potential benefits of improved data reporting for target and bycatch species,
- Discuss the staff's recommendations for updating Resolution C-03-05,
- Discuss the staff's initial proposed data fields,
- Provide the staff's recommendations on a data reporting process for both new and historical data).

The agenda for the workshop can be found in Appendix B. The Chair explained that the agenda differs slightly from the agenda in the meeting notice, but changes to the content were not made and simply involved improving the flow. The agenda was adopted without changes. It was explained by the staff that the workshop was an opportunity for the members to provide input on the draft text of the recommendations that the staff is planning to present at the 14th meeting of the Scientific Advisory Committee in May 2023.

Participants were invited to comment on the background presentations and the draft recommendations by means of oral interventions. The discussions are summarized here using Chatham House Rules, i.e., comments are not attributed to any CPC, individual, or other affiliation, unless explicitly requested by the speaker. The staff's comments are also noted.

2. BACKGROUND PRESENTATIONS

The first day of the meeting was dedicated to the background presentations. The first three presentations showed different aspects of the document WSDAT-01-01. The last presentation was given by an invited speaker.

WSDAT-01-01: Overview and rationale for revising the data provision Resolution (C-03-05) (Leanne Fuller)

Leanne Fuller introduced background information on WSDAT-01-01 for industrial longline fleets, including a reminder of the text in the Resolution on data provision C-03-05 and its corresponding memorandum of technical aspects for submitting data that is communicated by the Director annually. Ms. Fuller described the types of catch and effort data currently defined in the memorandum (e.g., TASK I gross annual removals and number of fishing vessels and TASK II catch and effort data, aggregated by month and typically a 5°x5° latitude and longitude grid cell). A timeline of the main events leading to the workshop was also provided with emphasis on species caught as bycatch; details on the timeline for tunas were to be provided in Dr. Carolina Minte-Vera's presentation (see next summary). A brief introduction to SAC-12-09, the background document detailing the staff's evaluation of Resolution C-03-05 and the need for its revision, for all gear types, based on the expansion of the staff's tasks under the Antigua Convention and IATTC's Strategic Science Plan, including scientific, political and other drivers, was given. Rationale for modernizing Resolution C-03-05 and improving data provision for target species, non-target species and biological data concerns (e.g., outdated or non-existent length-weight relationships) as well as a policy example (e.g., eco-labeling) was presented. Current data gaps identified by the staff for TASK I and TASK II data were mentioned. These gaps included the following: (1) little to no data on gear configuration and no vessel identifiers are provided; (2) a combination of data types (e.g., reporting of individuals in either numbers or weights or both) with no indication of methods for converting numbers to weights and vice versa are provided; and (3) the option for providing catch data raised to fleet totals or raw data is mentioned in the annual memorandum, but often no indication of whether the data were raised and what methodology was used is provided. These data are essential for many of the tasks expected of the staff (e.g., stock, vulnerability and ecosystem assessments). Although longline observer data are available, analyses of the current longline observer coverage (mandated at 5% per Resolution C-19-08) have shown that data are not representative of the spatial and/or temporal dynamics of the fleets for most CPCs for yellowfin and bigeye tuna (BYC-10 INF-D), and thus, these data are not suitable for estimating catches for bycatch species for which less data are available. Even as observer data and potentially electronic monitoring data become available, logbook data will still be needed to represent past trends and to complement these additional data sources as a means for error checking.

No questions or comments were raised by participants.

WSDAT-01-01: Rationale for revising C-03-05 for target species and benefits of improved large-scale longline data for IATTC stock assessments (Carolina Minte-Vera)

Recent challenges with assessing the stock status of target species were highlighted. The 2018 BET and 2019 YFT assessments were considered unreliable to produce management advice. Improvements were made for the 2020 assessments (SAC-11-06, SAC-11-07) and a risk analysis was introduced (SAC-11-08), which included better indices of abundance resulting in part from the collaboration with longline CPCs. Better data are needed on a continuous basis to further improve the assessments for both species, and for other tunas, billfishes and sharks, facing similar data limitations.

Data from longline fleets are important because this is the primary data source for developing indices of abundance and characterizing the size composition of the adults in the population for species such as bigeye tuna, billfishes and sharks. Assessment results are sensitive to these data. Detailed operational-

level data are received from the purse-seine fleet (Table 1), while data for the industrial longline fleet are mostly received in a spatially and temporally aggregated form.

Table 1. Availability of data by type of fishery.

Fishery	Catches	Indices of abundance	Size/species composition
Purse-seine	*Staff collection and Member submission* Best scientific estimate considers data from: Unloadings, port-sampling, observers, logbooks	*Staff collection and Member submission* YFT: large individuals, adult index from observer data (100% coverage for Class-6 vessels) SKJ: index based on echosounder buoy data	*Staff collection* Port sampling Observer data in size classes (small, medium, large) In general, smaller fish are observed in the purse-seine fleet, except for yellowfin in sets associated with dolphins
Longline	*Member submission* Resolution C-03-05: Task I (total catches) and Task II data (with spatial information raised to total fleet catch or unraised)	*Member submission* Resolution C-03-05: Task II data, aggregated (with hooks-between-floats (HBF) information for the Japanese fleet), BET, YFT, SKJ, SWO: adult index Observer data (5% coverage) For Japan and Korea, the aggregated data on a 1by1, by HBF and by vessel were made available through MoUs[1] since 2019.	*Member submission* Resolution C-03-05: Observer data (5% coverage). In general targets larger fish, the largest BET, SKJ, YFT are found in these fisheries

The IATTC staff noted shortcomings with the Task I annual catch data, such as lack of indication of (1) how catch was estimated; (2) the original units of the catch data (e.g., in numbers of individuals or in weight); (3) whether a conversion was used; and (4) if so, details on the conversion methodology. To adequately address concerns with the stock assessments, Task II operational-level data—with information on catchability (e.g., gear configuration), spanning the spatial and temporal domains of the assessments, and associated with size composition data—are needed to better formulate CPUE standardization. The indices of abundance for yellowfin and bigeye tuna are primarily derived from the standardization of the Japanese fleet's CPUE. However, the magnitude and spatial distribution of effort by this fleet has contracted in the EPO, while fleets from other CPCs are expanding. New indices may include a combination of data from different fleets. Collaborative projects with CPCs have proven invaluable for improving the indices of abundance. The IATTC staff believes that an update of the data provision Resolution C-03-05 should include the mandatory submission of logbook data for the staff to fulfill their tasks related to assessing the stock status of tuna and tuna-like species in the EPO.

Improved data for the industrial longline fleet are needed to:

- analyze current and historical trends of tuna and tuna-like stocks in the EPO,
- assess shifts in target species and the potential effects of factors related to catchability, and
- combine data from different fleets to produce better indices of abundance.

[1] Memorandum of Understanding

Other documents cited in the presentation: SAR 07-07, SAC-04-05b, SAC-07-03d, SAC-11-Inf-K, SAC-11-Inf-L, SAC-13-Inf-M, OTM-30.

Discussion

- The IATTC staff welcomed the chance to hear about any difficulties the CPCs might have with providing improved longline information and to learn about potential opportunities for improving longline data.
- A participant noted that data on skipjack from the Japanese fleet must be used with care as it is a bycatch in the longline fishery and almost all skipjack are discarded or. consumed on the vessel. The participant asked why longline-caught skipjack would be used in the assessment. The IATTC staff clarified that, similar to what is done in the WCPO assessment, it is the only dataset that can provide an index of abundance for the adult fish in the population. Until there is another reliable index (e.g., from tagging data or echo sounder buoy data with associated species and size composition), the information from the longline fleet will continue to be important and the staff would like to learn about any potential problems with the data (e.g., why there are no fish below 60 cm).
- The IATTC staff commented that, in addition to the collection of high-quality data, it is important that the data be accessible to the staff on a continuous basis, so there is enough time to improve the assessments and conduct important research.

Benefits of improved large-scale longline data for bycatch species (Shane Griffiths)

Many t-RFMOs face the challenge of assessing the sustainability of bycatch species that lack sufficient catch data to undertake conventional stock assessments. As an alternative, ecological risk assessment approaches are often used as a prioritization tool to identify the most vulnerable species that can then be subjected to monitoring, further assessment/research or immediate management intervention, if required. The IATTC staff developed the new prioritization approach EASI-Fish (Ecological Assessment of the Sustainable Impacts of Fisheries) to quantitatively assess the cumulative impacts of multiple fisheries on data-poor species. The method requires the development of a species distribution model (SDM)—generally developed using fishery-dependent presence records—upon which spatially-explicit fishing effort data are overlayed and considering gear selectivity and assumptions on post-release survival, to estimate a proxy for fishing mortality. The proxy for fishing mortality rate is then compared to conventional biological reference points to determine the vulnerability status of the species (e.g., “most vulnerable”, “least vulnerable”).

In the workshop, two examples were presented from the recent east Pacific leatherback turtle EASI-Fish assessment to demonstrate how improved data quality can change vulnerability status, and subsequent scientific management advice. The first example demonstrated how improved spatially-explicit catch and effort (in this case artisanal longline) data allowed for the development of a high resolution SDM and a more precise estimate of the areal overlap of fisheries with the species, which significantly reduced the vulnerability status. The second example highlighted how a change from simple knife-edge gear selectivity for the industrial longline fleet, which was required based on the available information at that time (the size of the smallest turtle recorded to be captured), to a logistic selectivity ogive, based on high quality length frequency data, significantly reduced the fishing mortality estimates for small size classes. This change made the vulnerability status assigned by the analysis to go from “most vulnerable” to “least vulnerable”. The examples showed how improved data quality can significantly change the vulnerability status of a stock assigned by the EASI-Fish analysis, which can have important implications for management and research.

Discussion

- A participant expressed concern about the speculative nature of EASI-Fish. EASI-Fish has been used to assess the blue shark but produced unrealistic results compared to the ISC stock assessment. The IATTC staff responded that EASI-Fish is not meant to replace stock assessments; it is a tool to prioritize species that should become the focus of further monitoring, research, or immediate management, if required. Species that are subject to stock assessments should not be considered for EASI-Fish, because EASI-Fish is a prioritizing tool to provide vulnerability status for data-poor species and is not a tool for assessing stock status. The same participant commented that collecting length data for leatherback sea turtles on longline vessels is difficult because they are large and heavy to measure; bringing these turtles onboard may reduce their post-release survival. The IATTC staff understands the difficulty of measuring the length of some species and indicated that providing estimated length or even categorized length is still helpful to improve selectivity assumptions, for example the knife-edge selectivity used for the leatherback turtle.
- The IATTC staff stated that EASI-Fish is used when limited data are available and conducting conventional stock assessments is unfeasible. For example, a silky shark assessment was requested by the Commission. The IATTC staff held several workshops to collect information and knowledge for the stock assessment. However, an assessment is still impractical because the information for silky shark is insufficient, specifically there is lack of reliable time series of catch for the coastal artisanal fisheries and a longline index of abundance. Alternative methods such as EASI-Fish can be used to assess the vulnerability of the species with the information available.
- The IATTC staff added that the EASI-Fish assessments can be improved with more artisanal fishery data; for example, effort data for artisanal longline and gillnet fisheries were provided to the IAC by Chile and Peru for the leatherback turtle project. The addition of artisanal data greatly impacted the results of the leatherback turtle as seen in the presentation. The current Memorandum of Understanding (MoU) limits the data use to that specific project. A broader data sharing provision would improve the staff's ability to assess fishing impacts regionally on other species. Length data are also important for informing the selectivity pattern, the assumption of which can have a large impact on estimated status.

Experiences working with longline data: catch-effort and associated datasets (Simon Hoyle)

CPUE-based indices of abundance are usually the most influential component of a stock assessment. Good practice for deriving indices of abundance includes extensive exploratory data analysis of operational-level data. Issues that may influence the quality of the index include misreporting, data aggregation, multispecies targets, and availability of density and catchability covariates. Indices obtained from aggregated CPUE data are more biased and uncertain, and have less appropriate model structure, which reduces assessment reliability and increases risk.

Joint analyses of CPUE data from multiple fleets have been carried out for IOTC and ICCAT assessments by combining datasets during short meetings and producing indices with better spatial and temporal coverage than indices from individual datasets. However, the limited time to complete the analysis may lead to errors and hinder the use of models that require long run times. In WCPFC, combined analyses are conducted using national datasets held on a secure server at SPC, with access restricted to some scientists but with more time for analyses. Operational-level CPUE data can provide significantly better understanding of fishery dynamics, substantially improve indices, and reduce assessment uncertainty. Joint CPUE analyses across multiple datasets have many advantages. Indices are too influential and the analyses too important to be done in a rush. Best results would come from long-term collaboration and data sharing.

Tunas and other species show variation in size over time and space that is not well described or understood. These size patterns affect stock assessment results, and it is important to understand what causes them. Improved assessments require both time series of representative size data and a better understanding through research using detailed operational logbook and observer size data and focused biological studies.

Discussion

- The IATTC staff asked how to undertake time-consuming analyses that require a lot of computer resources. Is IATTC in a different position than the other RFMOs in this respect? Simon Hoyle replied that having access to the data for a longer time period would be a question for the data providers, but there are potential solutions such as virtual meetings where the data could be shared to facilitate more long-term analyses and improve efficiency without changing the nature of the approaches. Trust is important in this process.
- A participant added that input by national scientists in the CPUE standardization process and data confidentiality is important when drafting MoUs to consider data sharing.
- Another participant added that trust is important, but legal issues also need to be considered.
- The IATTC staff reiterated that longline data are the most important dataset that can be used to improve stock assessments. The staff thanked the participants for their comments—which were helpful for understanding the challenges faced by each CPC—and encouraged participants to engage in the discussion to help the staff learn from the CPCs to improve the documents for the next meeting of the Scientific Advisory Committee (SAC).

3. DISCUSSION OF STAFF RECOMMENDATIONS

The second day of the workshop started with a short summary of the process the staff conducted in preparation for this workshop (e.g., the staff contacted colleagues from the other t-RFMOs to learn about their data provision requirements and reporting mechanisms). The staff presented a comparison table (summarized from Table 2, WSDAT-01-01) showing the different data types and descriptions of data submitted to each t-RFMO.

The staff highlighted the following aspects from the summarized table:

1. Regarding TASK I data, all t-RFMOs collect similar data (i.e., annual catches and the number of fishing vessels), but the list of mandatory species for reporting catch data varies.
2. Regarding TASK II data, all t-RFMOs collect 5°x5° data by month and species, with the list of species varying for each t-RFMO as mentioned above.
3. Scientific data to be provided to the WCPFC includes TASK II operational-level data for individual longline sets, while the other t-RFMOs have been granted access to these data for dedicated projects but for restricted time.

Discussion

- A participant supported the list of mandatory species and noted the importance of IATTC getting operational data to improve assessments and bycatch estimations. The data can also be used to evaluate ecological impacts of longline fisheries and should include additional species (e.g., albacore and swordfish) for assessment purposes. The participant fully supported this initiative and mentioned other CPCs also need to provide these data.

- Another participant commented on the WCPFC Task II data presented in the summarized Table 2, which shows that it is mandatory to submit set-by-set catch and effort data and supplemented this information. In Table 2, IATTC cites attachment G to the WCPFC13 summary report, which is correct, but in that same document it is recognized that some Members have domestic legal constraints on submitting this data. The participant also commented that there is an option in the interim to collaborate using MoUs to make the data available for stock assessments, and this can be a solution to overcome legal constraints.
- A participant suggested that we can separate science from legalities for this workshop, since all scientists agree that operational data are important for stock assessments and producing indices of abundance. Legal constraints may need to be considered on a case-by-case basis.
- A participant expressed similar concerns for reporting operational data. The participant mentioned that logbook data are recorded by crew members and improvements are needed on the collection for these data as well as the database system that archives it. In the short term, submitting operational logbook data is difficult because of confidentiality and further discussion should be considered for future meetings.

Summary of Table 2 (WSDAT-01-01). *Pursuant to annual IATTC Memo Ref.: 0123-410, dated April 4, 2022, and Resolution C-03-05. Links to data requirements for each t-RFMO are provided in the column headers.

Type of data	Description of statistical data	IATTC*	WCPFC	IOTC	ICCAT
TASK I ANNUAL CATCHES	Annual catches	Gross annual removals by species, by year, gear and disposition (retained or discarded)	Estimates of annual catches by gear type for bigeye, skipjack, yellowfin, blue marlin, black marlin, albacore, striped marlin, swordfish, Pacific bluefin, blue shark, silky shark, oceanic whitetip shark, mako sharks, thresher sharks, porbeagle shark, hammerhead sharks (winghead, scalloped, great, and smooth), and whale shark	Estimates of total annual retained catches by species and type of fishery (obligatory for IOTC spp. and Sharks; voluntary for other spp).	Nominal annual catch of tuna, tuna-like spp and sharks by region, gear, flag and species
TASK I EFFORT	Annual effort statistics	The number of fishing vessels, by gear, operating in the Antigua Convention Area in each calendar year	The number of vessels active in the WCPFC Statistical Area during each calendar year	Total annual number of fishing crafts operated by type of fishery, type of craft and craft size	Number of fishing vessels by size classes, gear and flag
TASK II CATCH & EFFORT	Aggregated data	TASK II level 2: 1°x1°-month aggregated data TASK II level 3: 5°x5°-month aggregated data	Longline catch and effort data shall be aggregated by 5°x5°-month.	Catch and effort in number of hooks set by 5° grid area and month (obligatory for IOTC spp. & Sharks; voluntary for other bycatch)	Catch and effort statistics by area, gear, flag, species and by month (longline: 5°x5° or higher resolution)
TASK II CATCH & EFFORT	Operational level (logbook) catch and effort data	Level 1 data are not provided. Access to operational-level data provided through MoUs with individual CPCs and with limited access to the data	Individual set-by-set data by longliners. Information on operations by longliners includes: Activity; Date/Time start of set; Set position, Number of hooks per set; Number of branch lines between floats, Number of fish caught per set. Also see Attachment K, Annex 1 for tables describing data fields (https://meetings.wcpfc.int/node/16231)	Only available for specific projects (e.g., CPUE analysis for deriving indices of abundance)	Only available to specific scientists for particular projects, or for species groups in a specific condition

3.1. Staff recommendation 1. TASK I – Reporting of annual data

Report TASK I effort*, catch and disposition (retained or discarded) for tunas, billfishes and sharks (Table 3a) and expand it to include, to the highest taxonomic resolution possible, where available, other relevant taxa (Table 3b).

*Where catch is defined as gross annual removals in metric tons and effort is the number of active fishing vessels in the Antigua Convention area and total number of hooks

Table 3a. Principal tunas, billfishes, and sharks for which data should be provided.

Taxonomic Group	Common name	Scientific or family name	ASFIS code
Tunas	Albacore tuna	*Thunnus alalunga*	ALB
	Bigeye tuna	*Thunnus obesus*	BET
	Pacific bluefin tuna	*Thunnus orientalis*	PBF
	Skipjack tuna	*Katsuwonus pelamis*	SKJ
	Yellowfin tuna	*Thunnus albacares*	YFT
	Unidentified tunas nei	Scombridae nei	TUN
	Eastern Pacific bonito	*Sarda chiliensis*	BEP
	Striped bonito	*Sarda orientalis*	BIP
	Unidentified bonitos	*Sarda* spp.	BZX
	Black skipjack tuna	*Euthynnus lineatus*	BKJ
Billfishes	Black marlin	*Istiompax indixa*	BLM
	Blue marlin	*Makaira nigricans*	BUM
	Striped marlin	*Kajikia audax*	MLS
	Sailfish	*Istiophorus platypterus*	SFA
	Shortbill spearfish	*Tetrapturus angustirostris*	SSP
	Unidentified billfishes, but not including swordfish[8]	Istiophoridae nei	BIL
	Swordfish	*Xiphias gladius*	SWO
Sharks[&]	Blue shark	*Prionace glauca*	BSH
	Silky shark	*Carcharhinus falciformis*	FAL
	Oceanic whitetip shark	*Carcharhinus longimanus*	OCS
	Shortfin mako	*Isurus oxyrinchus*	SMA
	Longfin mako	*Isurus paucus*	LMA
	Mako sharks nei[8]	*Isurus* spp. nei	MAK
	Bigeye thresher shark	*Alopias superciliosus*	BTH
	Pelagic thresher shark	*Alopias pelagicus*	PTH
	Common thresher shark	*Alopias vulpinus*	ALV
	Thresher sharks nei[8]	*Alopias* spp. nei	THR
	Great hammerhead shark	*Sphyrna mokarran*	SPK
	Scalloped hammerhead shark	*Sphyrna lewini*	SPL
	Smooth hammerhead shark	*Sphyrna zygaena*	SPZ
	Scalloped bonnethead shark	*Sphyrna corona*	SSN
	Scoophead shark	*Sphyrna media*	SPE
	Bonnethead shark	*Sphyrna tiburo*	SPJ
	Hammerhead sharks nei[8]	Sphyrnidae nei	SPY
	Porbeagle shark	*Lamna nasus*	POR
	Whale shark	*Rhincodon typus*	RHN

& And other sharks (as listed in WSDAT-01-01, Table 3b), where available

[8] not elsewhere identified

Table 3b. Selected principal taxa of interest known to be caught by vessels and gears fishing for species under the purview of the Commission in the Antigua Convention Area. Catches of species not shown on this list should be reported using the common name, and the scientific name if known, as well as the ASFIS 3-alpha code if available. Note that codes have not been assigned for all species. Resolutions pertaining to certain taxa and general data provision are provided in Annex B of the IATTC Annual Memo (IATTC Memo Ref: 0123-410, dated April 4, 2022), which includes guidelines for data provision and corresponds to C-03-05. This table may be modified as needed.

Taxonomic Group	Common name	Scientific or family name	ASFIS code
Sharks	Salmon shark	*Lamna ditropis*	LMD
	Tiger shark	*Galeocerdo cuvier*	TIG
	Great white shark	*Carcharodon carcharias*	WSH
	Sand tiger shark	*Carcharias taurus*	CCT
	Blacktip shark	*Carcharhinus limbatus*	CCL
	Spottail shark	*Carcharhinus sorrah*	CCQ
	Silvertip shark	*Carcharhinus albimarginatus*	ALS
	Bull shark	*Carcharhinus leucas*	CCE
	Copper shark	*Carcharhinus brachyurus*	BRO
	Dusky shark	*Carcharhinus obscurus*	DUS
	Galapagos shark	*Carcharhinus galapagensis*	CCG
	Sandbar shark	*Carcharhinus plumbeus*	CCP
	Carcharhinus sharks nei	*Carcharhinus* spp.	CWZ
	Requiem sharks nei	Carcharhinidae	RSK
	Crocodile shark	*Pseudocarcharias kamoharai*	PSK
	Longnose velvet dogfish	*Centroscymnus crepidater*	CYP
	Velvet dogfish	*Scymnodon squamulosus*	SSQ
	Cookie cutter shark	*Isistius brasiliensis*	ISB
	Bigeye sand tiger shark	*Odontaspis noronhai*	ODH
	Nurse shark	*Ginglymostoma cirratum*	GNC
	Sicklefin smooth-hound	*Mustelus lunulatus*	MUU
	Speckled guitarfish	*Rhinobatos glaucostigma*	RBL
	Tope shark	*Galeorhinus galeus*	GAG
	Whitenose shark	*Nasolamia velox*	CNX
	Kitefin shark	*Dalatias licha*	SCK
	Sharks nei	Elasmobranchii	SKX
Rays	Pelagic stingray	*Pteroplatytrygon violacea*	PLS
	Stingrays nei	*Dasyatis* spp.	STI
	Alfred manta	*Mobula alfredi*	RMA
	Giant manta	*Mobula birostris*	RMB
	Devil fish	*Mobula mobular*	RMM
	Munk's devil ray	*Mobula munkiana*	RMU
	Chilean devil ray	*Mobula tarapacana*	RMT
	Smoothtail manta	*Mobula thurstoni*	RMO
	Manta rays nei	*Mobula* spp.	RMV
Turtles	Olive Ridley turtle	*Lepidochelys olivacea*	LKV
	Green turtle	*Chelonia mydas*	TUG
	Loggerhead turtles	*Caretta caretta*	TTL
	Hawksbill turtle	*Eretmochelys imbricata*	TTH
	Leatherback turtle	*Dermochelys coriacea*	DKK
Seabirds	Albatrosses nei	Diomedeidae	ALZ
	Petrels nei	*Procellaria* spp.	PTZ
	Shearwaters nei	*Puffinus* spp.	PQW
	Seagulls nei	*Larus* spp.	LHX
	Boobies and gannets nei	Sulidae spp.	SZV
Marine Mammals	Pantropical spotted dolphin	*Stenella attenuata*	DPN
	Spinner dolphin	*Stenella longirostris*	DSI
	Striped dolphin	*Stenella coeruleoalba*	DST
	Rough-toothed dolphin	*Steno bredanensis*	RTD
	Common dolphin	*Delphinus delphis*	DCO
	Long-beaked common dolphin	*Delphinus* sp.	
	Bottlenose dolphin	*Tursiops truncatus*	DBO

Taxonomic Group	Common name	Scientific or family name	ASFIS code
	Risso's dolphin	*Grampus griseus*	DRR
	Pacific white-sided dolphin	*Lagenorhynchus obliquidens*	DWP
	False killer whale	*Pseudorca crassidens*	FAW
	Melon-headed whale	*Peponocephala electra*	MEW
	Dolphins nei	Delphinidae	DLP
	Pilot whales nei	*Globicephala* spp.	GLO
Fishes	Common dolphinfish	*Coryphaena hippurus*	DOL
	Pompano dolphinfish	*Coryphaena equiselis*	CFW
	Dolphinfishes nei	Coryphaenidae	DOX
	Wahoo	*Acanthocybium solandri*	WAH
	Jacks, crevalles nei	*Caranx* spp.	TRE
	Rainbow runner	*Elagatis bipinnulata*	RRU
	Yellowtail amberjack	*Seriola lalandi*	YTC
	Longfin yellowtail	*Seriola rivoliana*	YTL
	Greater amberjack	*Seriola dumerili*	AMB
	Samson fish	*Seriola hippos*	RLH
	Amberjacks nei	*Seriola* spp.	AMX
	Sunfish	*Mola* spp.	MOP
	Barracudas nei	Sphyraenidae	BAZ
	Opah	*Lampris guttatus*	LAG
	Opahs nei	*Lampris* spp.	LAP
	Escolar	*Lepidocybium flavobrunneum*	LEC
	Oilfish	*Ruvettus pretiosus*	OIL
	Luvar	*Luvaris imperialis*	LVM
	Snake mackerel	*Gempylus serpens*	GES
	Snake mackerels, escolars nei	Gempylidae	GEP
	Long snouted lancetfish	*Alepisaurus ferox*	ALX
	Short snouted lancetfish	*Alepisaurus brevirostris*	ALO
	Lancetfishes nei	*Alepisaurus* spp.	ALI
	Sickle pomfret	*Taractichthys steindachneri*	TST
	Dagger pomfret	*Taractes rubescens*	TCR
	Big-scale pomfret	*Taractichthys longipinnis*	TAL
	Rough pomfret	*Taractes asper*	TAS
	Pomfrets, ocean breams nei	Bramidae	BRZ

Discussion

- A participant expressed concern that the species list is extensive, and fishers will have difficulty identifying sharks to the species level. This identification issue may vary by country making it challenging to harmonize data collection and reporting with all countries. This participant asked if recording at a broader taxonomic resolution is possible when species identification is not realistic.
- The IATTC staff mentioned the approach is to request data to the highest taxonomic resolution possible. If there are certain species groups for which fishers have problems with species-specific identification, such as requiem sharks, then they might be assigned a broader taxonomic resolution (e.g., by family "Carcharhinidae"). However, some groups of species (e.g., hammerhead sharks) are so diverse biologically, that aggregating them makes assessments and other research unfeasible. Species-specific data is imperative for assessments. Many of the species proposed to be reported are already required to be submitted to WCPFC and extending the same requirement to the IATTC will improve the data, as the observer data has low coverage (5% or less) and are not representative of the fleets. Therefore, these data are considered unusable at this time. Observer coverage needs to be at least 20% to be useful[2] (BYC-10 INF-D).
- The IATTC staff indicated that an option may include providing training materials to fishers so they can adequately identify species. Training workshops have been conducted for purse-seine captains and species manuals are available. Additionally, third-party Apps are available in multiple languages which could be adapted to be used in the longline fisheries. Or perhaps observer data will help us know species composition and it is possible that, in some categories, reporting of aggregated categories remains the most viable option.
- A participant noted that many bycatch species are discarded and asked how the staff deals with this situation. The staff responded that the request includes catch and disposition (i.e., retained or discarded) data and that at least estimates on discarded catches are reported.
- A participant noted that comparison of logbook and observer data for species composition is problematic. The two data sources show differences in species identification. Therefore, logbook data needs to be improved for species composition and overall accuracy. Providing data for all the species listed in Table 3a is complicated; the list is extensive and should be reduced to focus on particular species.
- Another participant commented that the phrasing of the recommendation is problematic because catch is defined as total removals. Tuna and billfish are not a problem, because they are landed, but there might be an issue with sharks since they are part of 'removals' that require estimation through statistical expertise. Many CPCs establish catch as landings, so catch and removals are different. Accordingly, the participant suggested the recommendation be rephrased.

3.2. Staff Recommendation 2 – NATIONAL REGULATIONS

The staff recommend that the Commission:

2. Ensure that the relevant national laws and regulations recognize the IATTC Secretariat as a custodian of confidential operational-level longline data needed for scientific research pursuant to the objective, rules, and relevant provisions of the Antigua Convention and measures adopted by the IATTC.

[2] Several studies of sampling coverage for other longline fisheries have shown that 20% coverage is considered the minimum level required for estimating total catch of bycatch species. Both the staff and the SAC have recommended that this level of coverage be adopted for longline vessels over 20 m LOA (SAC-10 INF-H, BYC-10 INF-D).

Discussion

- Two participants commented that their CPCs already share operational-level data with the IATTC staff for scientific purposes, under the confidentiality rules of the Antigua Convention. This recommendation strengthens those rules in case some delegations need something more specific so that all CPCs can provide operational-level data for fisheries science.
- Another participant commented that if a resolution states that the operational-level data are required to be submitted to the IATTC, then the national rules will conform to the resolution.
- A participant commented that more specific arrangements, such as MoUs, could help overcome any issues with confidentiality and can offer some options to the SAC and the Commission to overcome the difficulties to make progress on data provision. This participant further stated that the collaborative nature of the MoUs includes the involvement of national scientists in the analysis, which helps to accurately interpret the data.
- A participant suggested that the proposed staff recommendation be revised to convey that the Commission establishes a resolution for the submission of the data, with a qualifying statement that some data may be submitted under other instruments.

3.3. Staff Recommendation 3.1: TASK II – Reporting of operational-level logbook data

3.1 Mandate the reporting of TASK II, level 1, operational-level logbook data—for current and historical data, when available—using the data fields in Table 4, or at a minimum the fields in Tables 1a[3] and 1b, to be used in scientific research pursuant to the objective, rules, and relevant provisions of the Antigua Convention and measures adopted by the IATTC.

Discussion

- A participant noted that some of the fields in the minimum list (Table 1a, WSDAT-01-01) are not mandatory fields reported to the WCPFC, as not all CPCs are collecting those data. Another participant agreed with harmonizing with WCPFC but noted additional fields may create challenges.
- Regarding submission of historical data, a participant stated cooperation with WCPFC occurs under a bilateral MoU for supplying historical logbook data.
- Another participant supported the IATTC staff's effort but stated the national companies may not wish to provide operational data. This participant prefers to provide data through MoUs.
- Another participant did not object to providing operational data to IATTC but stated more discussion is need for certain aspects.
- Another participant indicated that standardizing the data to be supplied and providing guidance is important, for example by requesting that non-effective sets (i.e., sets with zero catch) also be reported.
- A participant asked why transshipment activities are not included in the list of data fields. The IATTC staff clarified that transshipment is currently not in the compulsory list of data fields to reduce the burden of data provision[4].

[3] Fields reported to the WCPFC

[4] Transshipment information is already collected under the regional program of observers for transshipments (SAC-13 INF-B)

- The IATTC staff suggested that CPCs could share a blank copy of their logbook forms to help the staff understand the types of information collected.

Table 4. Staff recommended template of data fields (vessel and gear characteristics and operational-level logbook) for industrial longline vessels proposed to be collected and submitted by individual CPCs to IATTC to facilitate stock assessments of target species and vulnerability assessments of species caught as bycatch. Fields in orange are listed in the WCPFC longline logbook e-reporting data fields and field descriptions as provided in WCPFC14 Summary Report Attachment T: Standards, Specifications, and Procedures (Ssps) for Electronic Reporting in the Western and Central Pacific Fisheries Commission and Table 1a in WSDAT-01-01. Fields in yellow are additional fields that should be in the minimum list of fields to be submitted to the IATTC (Table 1b in WSDAT-01-01).

Type of field	**IATTC proposed logbook fields**
Vessel and gear characteristics	Flag (Vessel flag abbreviation)
	Unique Vessel Identifiers:
	Length over all (Length of the vessel (meters))
	Gross tonnage (Vessel Gross Registered Tonnage) per C-18-06
	Vessel electronics:
	Refrigeration type:
	Mainline material
	Branch line material(s)
Trip characteristics	Departure Date
	Departure Port
	Arrival Date
	Arrival Port
	Was an observer onboard (Y/N)
Set-by-set information	Target species of target type or target species groups
	DateTime beginning of daily fishing activities: UTC and vessel operational time (to be able to do time conversions)
	DateTime of set start
	DateTime of set end
	DateTime of haul start
	DateTime of haul end
	Haul direction
	Latitude at start of set
	Longitude at start of set
	Latitude at end of set
	Longitude at end of set
	Latitude at haul start
	Longitude at haul start
	Latitude at haul end
	Longitude at haul end
	Wire trace
	Use of shark line
	Number of hooks in the set
	Number of floats
	Number of hooks between floats
	Float line length
	Branch line length
	Was a shooter used? (Y/N)
	If yes, Line shooter speed (Line shooter speed (meters/second))
	Vessel speed
	Hook type
	Line shooter speed
	Hook size
	Bait type
	Blue dyed bait used
	Number of light sticks
	Maximum depth of the fishing gear
Catch data	Species
	Catch number
	Catch weight
	Discarded/Released number
	Size information for individual fish

3.4. Staff Recommendation 3.2: TASK II – Reporting of aggregated logbook data

3.2. Until the coverage of the operational-level logbook data provided to the Commission is 100%, report TASK II catch and effort data at the finest spatial and temporal resolution possible, as a minimum by month and 5°x5°, raised to represent the total catch and effort, and indicating the statistical methods used to estimate total catches[5]. For data previously submitted, indicate whether it was raised and describe the methodology.

Discussion

- There were no comments regarding this recommendation.

3.5. STAFF RECOMMENDATION 4 – SIZE COMPOSITION DATA

4. Mandate the reporting of size composition data in the originally measured type* and unit for tunas, billfishes and sharks (Table 3a), and, if available, other relevant species (Table 3b), that are representative of catches by the fisheries at the finest possible spatial and temporal resolution, revising where feasible, previously submitted data.

*Indicating the measurement type (e.g., whole weight or dressed weight; fork length for tunas, lower-jaw fork length for billfish, total length for sharks) and unit (e.g., kg, cm).

Discussion

- The IATTC staff asked why different size measurements are provided to different RFMOs (e.g., the Japanese size data is mainly provided as length in the EPO and weight in the WCPO). A participant stated size composition data are from observers. Previously, fishers measured fish length and body weight, but now observers in the EPO measure length. There is a regional port sampling program in the WCPO, which is different from the EPO, and therefore different size measurements are available for each region.
- A participant mentioned that size data on sharks is difficult to collect, because the line is cut when sharks are caught. The IATTC staff asked if it might be possible for fishers to estimate size categories for some shark species (e.g., visual categories like “small”, “medium” and “large”) and if logbooks have a ‘size’ field. No comments were provided by participants. A participant responded that shark sampling is possible, but not easy. This participant offered to share their experiences at a later time. Another participant agreed that shark size is difficult to measure and perhaps limiting length measurements to a few shark species might be possible for those that are landed (i.e., brought onboard). Some shark species are too large to handle and measure. This participant expressed preference to limit the provision of size data to target species.
- A participant suggested that the staff presents standardized methodologies for data collection to SAC.

4. ADJOURNMENT

The meeting was adjourned by the IATTC Coordinator of Scientific Research and by the Chair on January 10th, 2022.

[5] Following WCPFC (see Table 2 Estimation methods), provide the coverage rates for each type of data (e.g., operational catch and effort data, records of unloadings, species composition sampling data) that is used to estimate the catches and add the conversion factors (and references) that are used to convert the processed weight to whole weight. Also, provide information about the methods used to raise the data to the fleet totals.

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Appendix B.

AGENDA

1. Opening of the workshop (Alexandre Aires-da-Silva)
2. Background presentations
    a. WSDAT-01-01:
        i. Overview of data Provision Resolution (C-03-05) and rationale for updating it (Leanne Fuller)
        ii. Rationale for revising C-03-05 for target species and benefits of improved large-scale longline data for IATTC stock assessments (Carolina Minte-Vera)
        iii. Benefits of improved large-scale longline data for bycatch species (Shane Griffiths)
    b. Experiences working with longline data: catch-effort and associated datasets (Simon Hoyle)
3. Discussions of recommendations for updating C-03-05 pertaining to large longline vessels
    a. Task I (annual data)
        i. Species tables
    b. Task II (spatially-explicit data):
        i. Catch and effort data: proposed data fields for submission
        ii. Size composition data
    c. Reporting mechanisms
4. Adjournment