REPORT OF THE 18TH SESSION OF THE IOTC WORKING PARTY ON DATA COLLECTION AND STATISTICS

Virtual meeting, 28 November – 2 December 2022

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ACRONYMS

ABNJ	Areas Beyond National Jurisdiction
AIS	Automatic Identification System
ALDFG	Abandoned, Lost or otherwise Discarded Fishing Gear
ALB	Albacore
BET	Bigeye tuna
BLM	Black marlin
BLT	Bullet tuna
BUM	Blue marlin
CCSBT	Commission for the Conservation of Southern Bluefin Tuna
CECOFAD	Catch, Effort, and eCOsystem impacts of FAD-fishing
CMM	Conservation and Management Measure (of the IOTC; Resolutions and Recommendations)
COM	Narrow-barred Spanish mackerel
CPCs	Contracting parties and cooperating non-contracting parties of the IOTC
CPUE	Catch Per Unit of Effort
CWP	Coordinating Working Party on Fishery Statistics
DGCF	Directorate General of Capture Fisheries (Indonesia)
DFAD	Drifting FAD
DFAR	Department of Fisheries and Aquatic Resources (Sri Lanka)
DOI	Digital Object Identifier
EEZ	Exclusive Economic Zone
EM	Electronic Monitoring
EMS	Electronic Monitoring System
ERA	Ecological Risk Assessment
ETP	Endangered, Threatened, and Protected species
EU	European Union
FAD	Fish aggregating device
FAO	Food and Agriculture Organization of the UN
FIRMS	Fisheries and Resources Monitoring System
FOB	Floating OBject
FRI	Frigate tuna
GEF	Global Environmental Facility
GUT	Indo-Pacific king mackerel
GTA	FIRMS Global Tuna Atlas
IATTC	Inter-American Tropical Tuna Commission
ICCAT	International Commission for the Conservation of Atlantic Tunas
IEO	Instituto Español de Oceanografía (EU,Spain)
IFREMER	Institut Francais de Recherche pour l'Exploitation de la Mer (EU,France)
IOC	Indian Ocean Commission
IOTC	Indian Ocean Tuna Commission
IRD	Institut de Recherche pour le Développement (EU,France)
I.R. Iran	Islamic Republic of Iran
ISSF	International Seafood Sustainability Foundation
KAW	Kawakawa
LOT	Longtail tuna
MLS	Striped marlin
MMAF	Ministry of Marine Affairs and Fisheries (Indonesia)
NARA	National Aquatic Resources Research and Development Agency (Sri Lanka)
OFCF	Overseas Fishery Cooperation Foundation (Japan)
OPAGAC	Organización de Productores de Atún Congelado (EU,Spain)
RAV	IOTC Record of Authorised Vessels
RFMO	Regional Fisheries Management Organization

ROS	Regional Observer Scheme
SC	IOTC Scientific Committee
SFA	Seychelles Fishing Authority (Seychelles)
SFA (fish)	Indo-Pacific sailfish
SSI	Species of Special Interest
SWO	Swordfish
Taiwan,China	Taiwan Province of China
USTA	Unité Statistique Thonière d'Antsiranana (Madagascar)
VMS	Vessel Monitoring System
WPB	Working Party on Billfish of the IOTC
WPDCS	Working Party on Data Collection and Statistics of the IOTC
WPEB	Working Party on Ecosystems and Bycatch of the IOTC
WPTmT	Working Party on Temperate Tunas of the IOTC
WPNT	Working Party on Neritic Tunas of the IOTC
WPTT	Working Party on Tropical Tunas of the IOTC
WGFAD	Ad hoc Working Group on FADs
WGEMS	Ad hoc Working Group on the development of Electronic Monitoring programme Standards
WCPFC	Western and Central Pacific Fisheries Commission
WWF	World Wide Fund for nature
YFT	Yellowfin tuna

STANDARDISATION OF IOTC WORKING PARTY AND SCIENTIFIC COMMITTEE REPORT TERMINOLOGY

SC16.07 (para. 23) The SC **ADOPTED** the reporting terminology contained in Appendix IV and **RECOMMENDED** that the Commission considers adopting the standardised IOTC Report terminology, to further improve the clarity of information sharing from, and among its subsidiary bodies.

How to interpret terminology contained in this report

Level 1: From a subsidiary body of the Commission to the next level in the structure of the Commission:

RECOMMENDED, RECOMMENDATION: Any conclusion or request for an action to be undertaken, from a subsidiary body of the Commission (Committee or Working Party), which is to be formally provided to the next level in the structure of the Commission for its consideration/endorsement (e.g. from a Working Party to the Scientific Committee; from a Committee to the Commission). The intention is that the higher body will consider the recommended action for endorsement under its own mandate, if the subsidiary body does not already have the required mandate. Ideally this should be task specific and contain a timeframe for completion.

Level 2: From a subsidiary body of the Commission to a CPC, the IOTC Secretariat, or other body (not the Commission) to carry out a specified task:

REQUESTED: This term should only be used by a subsidiary body of the Commission if it does not wish to have the request formally adopted/endorsed by the next level in the structure of the Commission. For example, if a Committee wishes to seek additional input from a CPC on a particular topic, but does not wish to formalise the request beyond the mandate of the Committee, it may request that a set action be undertaken. Ideally this should be task specific and contain a timeframe for the completion.

Level 3: General terms to be used for consistency:

AGREED: Any point of discussion from a meeting which the IOTC body considers to be an agreed course of action covered by its mandate, which has not already been dealt with under Level 1 or level 2 above; a general point of agreement among delegations/participants of a meeting which does not need to be considered/adopted by the next level in the Commission's structure.

NOTED/NOTING: Any point of discussion from a meeting which the IOTC body considers to be important enough to record in a meeting report for future reference.

Any other term: Any other term may be used in addition to the Level 3 terms to highlight to the readers of IOTC reports the importance of the relevant paragraph. However, other terms used are considered for explanatory/informational purposes only and shall have no higher rating within the reporting terminology hierarchy than Level 3, described above (e.g. **CONSIDERED**; **URGED**; **ACKNOWLEDGED**).

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EXECUTIVE SUMMARY

The 18th Session of the Indian Ocean Tuna Commission's (IOTC) Working Party on Data Collection and Statistics (WPDCS) was held remotely, from the 28th November to the 2nd December 2022. A total of 117 participants attended the Session.
The following are a subset of the complete recommendations and decisions from the WPDCS18 to the Scientific Committee, which are provided at Appendix VI.

Data reporting (to the IOTC Secretariat)
Rec. WPDCS18.01 (para 37): The WPDCS **ENDORSED** the proposed approach for a more rigorous characterization of the fisheries of relevance to the IOTC, and **RECOMMENDED** that the approach and its outcomes are **CONSIDERED** for **ENDORSEMENT** by the SC, so that the new fishery codes may be progressively included in a) the IOTC data reporting forms for the submission of statistical data, b) all publicly disseminated IOTC datasets and reference manuals / guidelines, c) the IOTC databases and supporting applications.

Rec. WPDCS18.02 (para 45): The WPDCS **ENDORSED** a) the proposal of replacing of Forms 3-AR and 3-CE with the updated version of form 3-CE to rationalise and simplify the submissions of geo-referenced catch and effort data; b) that catch and effort and size-frequency fishery statistics be submitted with the versions of form 3-CE and 4-SF that support the provision of records for multiple fisheries and species at the same time, and c) that at the next revision of Res. 15/02 the requirement of submitting fishing craft statistics be changed from voluntary to mandatory, and **RECOMMENDED** the SC to consider for **ENDORSEMENT** the changes proposed in a)-c).

Rec. WPDCS18.03 (para 46): The WPDCS **AGREED** on the new electronic forms for the reporting of fisheries statistics and **RECOMMENDED** that the SC **ENDORSE** them, **NOTING** that they will greatly assist data management tasks by the Secretariat, as well as ensuring that all data are reported to the IOTC in a consistent manner.

Rec. WPDCS18.04 (para 47): The WPDCS **AGREED** that, once that the Commission has adopted data requirements, it should be the role of the SC to adopt mandatory forms to facilitate reporting by the CPC. The WPDCS therefore **RECOMMENDED** that the SC brings this proposed process to the attention of the 2023 Commission for **ENDORSEMENT**.

Overview of data processing procedures and proposed revisions of historical data
Rec. WPDCS18.05 (para 103): The WPDCS **REQUESTED** that Indonesia continue – in collaboration with the IOTC Secretariat – to reassess their official catches and **RECOMMENDED** that the Scientific Committee ENDORSE this activity.

1. Opening of the meeting

1. The 18th Session of the Indian Ocean Tuna Commission's (IOTC) Working Party on Data Collection and Statistics (WPDCS18) was held virtually (through the Zoom collaborative platform) from the 28th of November to the 2nd of December 2022. A total of 117 participants (94 in 2021, 76 in 2020, 41 in 2019, 55 in 2018) attended the Session. The list of participants is provided at Appendix I. The meeting was opened on 28th of November 2022 by the Chairperson, Dr. Julien Barde (EU,France), who welcomed participants to the meeting and proceeded with the arrangements for the session.

2. Adoption of the agenda and arrangements for the session

2. The WPDCS **ADOPTED** the Agenda provided at Appendix II. The documents presented to the WPDCS18 are listed in Appendix III.

3. The IOTC Process: outcomes, updates and progress

3.1. Outcomes of the 24th Session of the Scientific Committee and of the 26th Session of the Commission

3. The WPDCS **NOTED** paper IOTC-2022-WPDCS18-03 which outlined the main outcomes of the 24th Session of the Scientific Committee (SC24) specifically related to the work of the WPDCS.

4. The WPDCS **NOTED** that in 2021 the SC made a number of requests in relation to the WPDCS17 and other IOTC Working Parties' reports. Some of those requests and the associated responses from the WPDCS18 are provided below for reference.

Report of the Secretariat – Activities in support of the IOTC science process in 2020

- (*Para. 12) The SC NOTED although all meetings had been successfully held virtually in 2021, they were shortened to facilitate the virtual platform. The SC AGREED that in the future virtual meetings may still be conducted for certain meetings (such as Data preparatory meetings) in order to reduce the expenses travel imposes on CPCs as well as the IOTC MPF, but for those meetings requiring closer collaborations in person, physical meetings will be continued as required.*

Response: The WPDCS **RECALLED** the importance of Data preparatory meetings for the stocks to be assessed as the comprehensive review of the input data (e.g., biological parameters and abundance indices derived from CPUE standardisation) as well as models' configurations (sensitivity runs and grid) require a large amount of time which is not available during the Working Parties.

- *(Para. 15) The SC NOTED paper IOTC–2021–SC24–INF11 which provided an overview of the development of a sampling scheme to support the collection of biological samples and their analysis to provide improved estimates of age, growth and reproduction of tropical tunas, swordfish and blue sharks for the IOTC.*

Response: The WPDCS **RECALLED** the need for a good and efficient collaboration between CPCs to plan and optimise the representative collection of biological samples across the extended habitat of the stocks of oceanic tunas, billfish, and sharks.

- *(Para. 16) The SC SUPPORTED a key recommendation from the study that proposed the development of a database and tissue bank for the biological information and samples collected during the study, to be added to and increased as additional studies are conducted in the future. The SC further REQUESTED that the project collaborators with assistance from the Secretariat and other interested CPC scientists and institutions provide a cost estimation for this activity so that the Commission could consider its viability.*

Response: The WPDCS **NOTED** that a database is under development by the Secretariat to manage the biological data sets collated from the CPCs at regional scale and the impossibility for the Secretariat to manage

fish samples (fresh or frozen) due to limited resources, **ENCOURAGING** interested CPCs to interact with the Secretariat to move forward with the cost estimation in early 2023.

Report of the 11th Session of the Working Party on Neritic Tunas (WPNT11)

- *(Para. 35) The SC **NOTED** that the main outcomes from the 11th Session of the Working Party on Neritic Tunas highlight the level of non-reporting or partial reporting of nominal catch, catch-and-effort and size data for many fisheries, and consequently the lack of reliable data to conduct the assessments of neritic species.*
- *(Para. 36) The SC RECALLED the need for all concerned CPCs to ensure that the catch, effort and size data for these fisheries are systematically reported to the Secretariat in accordance with Resolution 15/02.*

Response: The WPDCS **REITERATED** the major quality issues associated with the fisheries data available for neritic tunas and Spanish mackerels, although the general quality has improved over the last decade (see document IOTC-2022-WPDCS18-07_Rev2 and Appendix IV of the report for further details)

Report of the 19th Session of the Working Party on Billfish (WPB19)

- *(Para. 44) The SC ACKNOWLEDGED the potential interest of considering size limits (e.g., approximated by size at maturity) as a complementary management measure for billfish species but NOTED that this was not discussed at the WPB. As such, the SC REQUESTED the WPB to review the available information on size at its next session to be held in 2022, further NOTING that information on post-release mortality would be required for assessing the efficacy of such measures.*
- *(Para. 57) The SC further NOTED the major uncertainties associated with the catches of gillnet fisheries, which catch in particular black marlin, striped marlin and Indo-Pacific sailfish, and RECALLED the need for all concerned CPCs to ensure that the catch, effort and size data for these fisheries are systematically reported to the Secretariat in accordance with Resolution 15/02.*

Response: The WPDCS **RECALLED** the major issues in the quality of the data sets available for billfish and the particular low quality of geo-referenced catch, effort, and size-frequency data despite some improvements in reporting in recent years (see document IOTC-2022-WPDCS18-07_Rev2).

Report of the 23rd Session of the Working Party on Tropical Tunas (WPTT23)

- *(Para. 87) The SC REQUESTED that the Secretariat, with the assistance of the CPCs, provide a preliminary examination of the level and trend in fishing effort of the fishing fleets that captured YFT over the last 10 years. This analysis should look to utilise the best indicator of fishing effort for each fleet, including where actual fishing effort data is not available, proxy information such as the number of fishing vessels, their dimensions in length and tonnage or other information that can help estimate deployed fishing effort.*
- *(Para. 88) The Secretariat is also REQUESTED to identify the possible gaps in the reporting of the required information and to propose solutions to fill the most relevant gaps.*

Response: The WPDCS **RECALLED** some of the major issues associated with the time series of nominal fishing effort available at the Secretariat, including (i) the paucity of effort for most coastal fisheries that represent a substantial component of the catch of yellowfin tuna in particular, (ii) the changes in unit of effort over time, and (iii) the interannual changes in reporting coverage for geo-referenced catch and effort data despite the obligation to raise them in the case of surface and longline fisheries as per IOTC Resolution 15/02.

Report of the 17th Session of the Working Party on Data Collection and Statistics (WPDCS17)

- *(Para. 129) NOTING that the quality of data available for artisanal fisheries in the Indian Ocean still needs to be improved, and that statistical information (nominal catches, catch-and-effort, size-frequency) is particularly lacking or incomplete for neritic and billfish species, the SC reiterated its REQUEST that the WPDCS continue assisting CPCs in improving the implementation of data collection and sampling activities for small-scale fisheries in particular.*

Response: The WPDCS **NOTED** that data compliance missions were limited by travel restrictions in recent years but that several actions were taken by the Secretariat in 2022 to support the implementation of data collection and sampling activities in 2022 (see document IOTC-2022-WPDCS18-08_Rev1), with the situation expected to improve in 2023 with the reduction of the impact of the COVID19 pandemic. The WPDCS further **NOTED** the ongoing work of the Secretariat to facilitate the reporting of data and the implementation of new forms and reporting guidelines in early 2023 (see documents IOTC-2022-WPDCS18-13_Rev3 and IOTC-2022-WPDCS18-14_Rev2).

- *(Para. 130) The SC CONGRATULATED Indonesia's progress adopting novel approaches to data collection and analysis at national level, ACKNOWLEDGED that the implementation of initiatives such as the e-logbook and streamlining of procedures for the collection and validation of data are expected to lead to long-term improvements in the quality of Indonesia's official fisheries statistics and ENDORSED the request that the IOTC Secretariat collaborate with Indonesia to reassess their official data and ensure consistency and coherence in the longer-term catch series for management and stock assessment purposes.*

Response: The WPDCS **NOTED** the ongoing collaboration between the Secretariat and Indonesia and the progress made since the last SC as presented in document IOTC-2022-WPDCS18-27.

- *(Para. 135) In accordance with Para 25 of Res 21/01 which requires the IOTC Secretariat to be advised by the SC on the table of allocated catch limits for yellowfin tuna, the SC ENDORSED the 2022 allocated catch limits and attached them to this report as Appendix 33***.**

Response: The WPDCS NOTED that the Secretariat updated the table of allocated catch limits for yellowfin tuna for 2022 and 2023, making necessary assumptions about the catches for 2022 which will be submitted by the CPCs prior to the 30th of June 2023 (see document IOTC-2022-WPDCS18-11).

5. The WPDCS **NOTED** paper IOTC-2022-WPDCS18-04 which outlined the main outcomes of the 26th Session of the Commission (S26), specifically related to the work of the WPDCS and **AGREED** to consider how best to provide the Scientific Committee with the information it needs, in order to satisfy the Commission's requests, throughout the course of the current WPDCS meeting.

6. The WPDCS **NOTED** the four Conservation and Management Measures (CMMs) adopted at the 26th Session of the Commission (consisting of 4 Resolutions and 0 Recommendation) as listed below:
    - Resolution 22/01 On climate change as it relates to the Indian Ocean Tuna Commission.
    - Resolution 22/02 On establishing a programme for transhipment by large-scale fishing vessels.
    - Resolution 22/03 On a Management Procedure for bigeye tuna in the IOTC area of competence.
    - Resolution 22/04 On a Regional Observer Scheme.

7. The WPDCS **NOTED** that, pursuant to Article IX.4 of the IOTC Agreement, the above-mentioned Conservation and Management Measures shall become binding on Members 120 days from the date of the notification communicated by the Secretariat.

8. Participants to WPDCS18 were **ENCOURAGED** to familiarise themselves with the adopted Resolutions, especially those most relevant to the WPDCS.

3.2. Review of Conservation and Management Measures (CMMs) relevant to the WPDCS

9. The WPDCS **NOTED** paper IOTC–2022–WPDCS18–05 which encouraged participants at the WPDCS18 to review some of the existing Conservation and Management Measures (CMM) relevant to the WPDCS, **RECALLING** that three new CMMs were discussed during the 26th session of the Commission, and as necessary to 1) provide recommendations to the Scientific Committee on whether modifications may be required; and 2) recommend whether other CMMs may be required. Proposed amendments were discussed later in the meeting and are detailed subsequently in this report.

10. The WPDCS **AGREED** that it would consider proposing modifications for improvement to the existing CMMs following discussions held throughout the current WPDCS meeting.

11. In particular, the WPDCS **ENCOURAGED** participants to review the texts of Resolutions 18/07 (*On measures applicable in case of non-fulfilment of reporting obligations in the IOTC*), 21/01 (*On an interim plan for rebuilding the Indian Ocean yellowfin tuna stock in the IOTC Area of competence*) and 22/04 (On a Regional Observer Scheme) to identify aspects that might require further clarification from the SC.

12. The WPDCS **RECALLED** that an overview of the current state-of-play regarding Resolution 21/01 will be discussed later during this meeting (see document IOTC-2022-WPDCS18-11).

3.3. Progress on the recommendations of WPDCS17

13. The WPDCS **NOTED** paper IOTC–2022–WPDCS18–06 on Progress on the recommendations of WPDCS17, which provided information on the follow-up of recommendations made to the SC as well as potential responses and suggestions by the Commission, and **AGREED** to provide alternative recommendations for the consideration and potential endorsement by participants as appropriate given any progress.

14. The WPDCS **RECALLED** that any recommendation developed during a Session, must be carefully constructed so that each contains the following elements:

- a specific action to be undertaken (deliverable);
- clear responsibility for the action to be undertaken (i.e., a specific CPC of the IOTC, the IOTC Secretariat, another subsidiary body of the Commission or the Commission itself);
- a desired time frame for delivery of the action (i.e., by the next working party meeting, or other date).

15. The WPDCS further **NOTED** that the document provides updates on the progress made to address requests made by the WPDCS17, including some ongoing work to be presented and discussed at the WPDCS18 regarding the application of the small-scale fisheries matrix developed by FAO to some IOTC fisheries (IOTC-2022-WPDCS18-16), the revision of the methodology for estimating the nominal catches of Indonesian fisheries (IOTC-2022-WPDCS18-27), and the submission of purse seine fishing effort expressed in numbers of sets and of both raw and raised size-frequency data facilitated by the new reporting forms developed by the Secretariat (IOTC-2022-WPDCS18-14_Rev2).

4. Review of data requirements in conservation and management measures relevant to the WPDCS

4.1. Data recording (logbooks)

4.1.1. Res. 15/01 On the recording of catch and effort data by fishing vessels in the IOTC area of competence

16. The WPDCS **RECALLED** that current templates and samples of fishing logbooks in use by the CPCs are available from the IOTC webpage and that new versions should be submitted to the Secretariat when they are updated.

4.1.2. Res. 19/02 Procedures on a fish aggregating devices (FADs) management plan

17. The WPDCS **NOTED** paper IOTC-2022-WPDCS18-18 on the Outcomes of the 3rd ad-hoc IOTC WGFAD - Working Group on FADs.

Report of the 3rd IOTC Ad Hoc Working Group on FADs

- *WGFAD03.01 (Para 134) The WGFAD AGREED that the working group should be technical in nature and RECOMMENDED that the SC endorse its proposal that the WGFAD report to the SC (via the WPTT and*

WPEB). As such the WGFAD also NOTED that future meetings of the working group should take place before both the WPEB and WPTT so that the outcomes of the WGFAD can be presented to both working parties

- *WGFAD03.02 (Para 147) The WGFAD AGREED on the need to move towards biodegradable FADs and RECOMMENDED that the WPTT endorse this process.*

18. The WPDCS **THANKED** and **CONGRATULATED** the small Working Group **ENDORSED** by the WGFAD for its work on the proposal of harmonising definitions and classifications related to FAD fisheries.

19. The WPDCS **NOTED** the consensus of this group on several definitions included in the Res 19/02 and the recommendation of inclusion of new definitions (FOB and biodegradable FAD) or to be discussed (FAD set, abandoned FAD, and lost FAD).

20. The WPDCS also **NOTED** the absence of consensus for the definition of FAD as a deployed and/or tracked object, leading to the proposal of two classification keys to be further discussed at the next Scientific Committee and Commission meetings.

21. The WPDCS **NOTED** the presentation of the Secretariat regarding the proposal of new forms to replace current form 3FA and whose aim is to share additional FAD-related information, such as material, dimension, type and characteristics of both the surface and subsurface structures, which are of primary importance for scientific purposes.

22. The WPDCS **ACKNOWLEDGED** the necessity to harmonise FAD information from different forms to address and reduce data gaps, increase transparency, and allow the recording of all mandatory information elements requested by the relevant IOTC Resolutions.

23. The WPDCS **ACKNOWLEDGED** the necessity to design at least three new forms to take into account all the data collection and reporting requirements in Res. 15/02 and 19/02 to the level of spatial-temporal detail these require, and that an aggregated version of these data (with a stratification similar to the one currently expected for form 3-FA) could be produced and publicly shared by the Secretariat once detailed FAD information, and FAD catch-and-effort data will be available.

24. The WPDCS **ACKNOWLEDGED** the separation of the information on the floating object from the buoy information to address scientific needs.

25. The WPDCS **NOTED** the apparent redundancy between table on detailed activities and table on aggregated effort data. The reason is that both detailed and aggregated data are mandatory information which come under the responsibility of each CPC. The secretariat duty is only the cross-checking of the two tables.

26. The WPDCS **ENCOURAGED** CPCs to familiarise with the new forms and test for its fulfilment to check for applicability and provide, to the IOTC secretariat, advice on the improvement and/or needs for revision.

27. The WPDCS **NOTED** that the Secretariat, together with CPCs data analysts will continue improving the new form and a new version will be presented to the next Scientific Committee.

4.2. Data reporting (to the IOTC Secretariat)

4.2.1. Res. 15/02 On mandatory statistical reporting requirements for IOTC Contracting Parties and Cooperating Non-Contracting Parties (CPCs)

A proposal for an update of the definition of the IOTC fisheries

28. The WPDCS **NOTED** paper IOTC-2022-WPDCS18-13_Rev3 which provided the details of a proposal to update the characterization of fisheries of relevance to the IOTC and improve the reporting of statistical data to the IOTC Secretariat, and how this proposal considers a combination of seven factors (mandatory and optional), which determine the nature and unique codification of the fishery itself and guarantee its identity across the Indian Ocean region. **NOTING** that the information provided through the optional factors may be essential for the

definition of some fisheries, the Secretariat **URGED** CPCs to provide all available information when revisiting their fisheries definitions based on the new classification.

29. The WPDCS **THANKED** and **CONGRATULATED** the IOTC Secretariat for the efforts made in designing and implementing the proposed classification of fisheries which although more fine-grained is also more accurate and robust than the current definitions, beside being compatible with the standard classifications promoted by the FAO CWP (ISSCFG).

30. The WPDCS **ACKNOWLEDGED** that this proposal represents a much welcome step forward to improve the quality and accuracy of the statistical data reported to the Secretariat and further clarify the limit of application of several resolutions to the semi-industrial fisheries characterised by vessel under 15 m length (e.g., Res. 15/01 – *On the recording of catch and effort data by fishing vessels in the IOTC area of competence*, Res. 19/01 – *On an interim plan for rebuilding the Indian Ocean yellowfin tuna stock in the IOTC area of competence*, or Res. 22/04 – *On a Regional Observer Scheme*).

31. The WPDCS **NOTED** that the current IOTC classification scheme for vessels includes two components of semi-industrial vessels (see document IOTC-2022-WPDCS18-07_Rev2), one of which registered in the IOTC record of authorised vessels (RAV) while the other is not, this having led to poor monitoring of the semi-industrial vessels targeting tuna and tuna-like species in the Indian Ocean.

32. The WPDCS **NOTED** the possibility that specific types of operation might not be fully covered by the newly proposed IOTC fisheries classification, as for instance vessels may be able to change gear regularly to adapt to local constraints (e.g., weather, seasonality, fishing area).

33. In these cases, the WPDCS **ACKNOWLEDGED** that the change in gear during the course of a trip / season is equivalent to the vessels being engaged in two (or more) distinct fisheries, and that therefore the statistical data collected for the vessel shall be properly attributed to the actual fishery by the flag state and reported as such to the IOTC.

34. The WPDCS **ENCOURAGED** CPCs to familiarise with the new definitions of fisheries and their supporting tools (e.g., the IOTC fisheries identification wizard) and provide to the IOTC secretariat advice on the improvement and / or revision of the current proposal and the fisheries it identifies.

35. The WPDCS **NOTED** that the new fisheries definitions could redefine some CPC's fisheries and increase the number of fisheries listed for some CPCs. However, the WPDCS **NOTED** that the adjustment would not affect past catch data but rather improve the quality of catches reported by fisheries.

36. The WPDCS **NOTED** that the new fisheries classification encompasses all types of fisheries capturing tuna and tuna-like species, including commercial, recreational, and subsistence fisheries.

37. The WPDCS **ENDORSED** the proposed approach for a more rigorous characterization of the fisheries of relevance to the IOTC, and **RECOMMENDED** that the approach and its outcomes are **CONSIDERED** for **ENDORSEMENT** by the SC, so that the new fishery codes may be progressively included in:

    a. the IOTC data reporting forms for the submission of statistical data;
    b. all publicly disseminated IOTC datasets and reference manuals / guidelines;
    c. the IOTC databases and supporting applications.

A proposal for an improvement of the IOTC data reporting forms and workflow

38. The WPDCS **NOTED** paper IOTC-2022-WPDCS18-14_Rev2 which presented a proposal to improve the IOTC recommended data reporting forms and their submission process, including an overview of the current state-of-the-art, the benefit of its revision, and the rationalisation of the data reporting workflow more in general.

39. The WPDCS **THANKED** and **CONGRATULATED** the IOTC Secretariat for the efforts made to clarify the complex IOTC data reporting workflow, which depends on currently standing IOTC Resolutions (Res. 15/01, Res. 15/02, etc.) and varies with the type of fisheries, as well as with the target and bycatch species.

40. The WPDCS **ENCOURAGED** CPCs to familiarise with the presented revisions of the data reporting forms and provide, to the IOTC secretariat, advice on the improvement and / or revision of the current proposal.

41. The WPDCS **NOTED** the proposal from the Secretariat to have one single form 3-CE and one single form 4-SF to report georeferenced catch-and-effort and georeferences size-frequency data for all fisheries, and all fisheries and gears, respectively, and that these "*multiple*" versions of the original forms reduce significantly the number of submissions expected by the Secretariat from each CPC.

42. The WPDCS **ACKNOWLEDGED** that the presented improvements in the IOTC data reporting forms and their accompanying workflow will further simplify data submissions from CPCs, paving the ground for the implementation of a fully automated process.

43. The WPDCS **ACKNOWLEDGED** that the Secretariat will continue working on the presented online data validation tools as a means to support CPCs in interactively checking the compliance of their datasets to IOTC data reporting standards prior to the submission to the IOTC, and also as a way to strengthen the future integration between e-MARIS and the IOTC statistical working systems.

44. The WPDCS **NOTED** the will of the Secretariat to facilitate the adoption of the new data reporting forms and processes by delivering specific workshops to CPCs from the first quarter 2023 onwards.

45. The WPDCS **ENDORSED:**

    a. the proposal of replacing of Forms 3-AR and 3-CE with the updated version of form 3-CE to rationalise and simplify the submissions of geo-referenced catch and effort data;
    b. that catch and effort and size-frequency fishery statistics be submitted with the versions of form 3-CE and 4-SF that support the provision of records for multiple fisheries and species at the same time, and
    c. that at the next revision of Res. 15/02 the requirement of submitting fishing craft statistics be changed from voluntary to mandatory,

and **RECOMMENDED** the SC to consider for **ENDORSEMENT** the changes proposed in a)-c).

46. The WPDCS **AGREED** on the new electronic forms for the reporting of fisheries statistics and **RECOMMENDED** that the SC **ENDORSE** them, **NOTING** that they will greatly assist data management tasks by the Secretariat, as well as ensuring that all data are reported to the IOTC in a consistent manner.

47. The WPDCS **AGREED** that, once that the Commission has adopted data requirements, it should be the role of the SC to adopt mandatory forms to facilitate reporting by the CPC. The WPDCS therefore **RECOMMENDED** that the SC brings this proposed process to the attention of the 2023 Commission for ENDORSEMENT.

4.2.2. Res. 17/05 On the conservation of sharks caught in association with fisheries managed by IOTC

48. The WPDCS **RECALLED** the data requirements for shark species (see document IOTC-2022-WPDCS18-14_Rev2) and the main components of Res. 17/05 concerning shark protected species, shark utilisation, and retention of shark fins (see Appendix I of IOTC-2022-WPDCS18-07_Rev2).

4.2.3. Res. 18/07 On measures applicable in case of non-fulfilment of reporting obligations in the IOTC

49. The WPDCS **RECALLED** that, as per Res. 18/07, CPCs must report a binary matrix of annual records of retained catches or discards by species and fishery group for the 16 IOTC species as well as for the elasmobranch species commonly caught in tuna and tuna-like fisheries (as defined in Res. 15/01), further **RECALLING** that the Secretariat has designed the form 1-DR for that purpose.

50. The WPDCS **NOTED** that the catch matrix aims to better identify the situations of non-reporting from actual cases of zero catches and to ensure that the data reported to the Secretariat are comprehensive.

51. The WPDCS **NOTED** from paper IOTC-2022-WPDCS18-07_Rev1 the status of reporting matrix by the CPCs for the statistical year 2021, with only 33% of the CPCs having submitted complete forms 1-DR for 2021 and almost 50% of the CPCs not having submitted the matrix for that year.

52. Therefore the WPDCS **URGED** all CPCs to make efforts to report the catch matrix in the future, including submissions of historical data where missing.

53. **RECALLING** that Res. 18/07 includes penalty mechanisms for CPCs non-reporting nominal catch to the Secretariat, i.e., *"prohibit CPCs that did not report nominal catch data [...] from retaining such species as of the year following the lack or incomplete reporting until such data have been received by the IOTC Secretariat*), the WPDCS **REITERATED** its suggestion that the Compliance Committee should review the measures associated with non-compliance to the requirement of the reporting matrix.

4.2.4. Res. 21/01 On an interim plan for rebuilding the Indian Ocean yellowfin tuna stock in the IOTC area of competence

54. The WPDCS **NOTED** paper IOTC-2022-WPDCS18-11 on updated calculations supporting the identification of yellowfin tuna catch limits for 2022 and 2023 in agreement with Res. 19/01 and 21/01.

55. The WPDCS **RECALLED** that six CPCs objected to Res. 21/01, while one CPC objected to Res. 19/01 and that therefore Res. 19/01 remains binding for Indonesia, I.R. Iran, Madagascar, Oman, and Somalia while Res. 18/01 remains binding for India.

56. The WPDCS also **RECALLED** that all presented catch limits for 2022 have been effectively *calculated* on the basis of the information (historical catches) available to the Secretariat for all concerned CPCs, whereas all presented catch limits for 2023 are estimated with the assumption that CPCs will not exceed their calculated catch limit in 2022.

57. The WPDCS **NOTED** Table 1 and Table 2 of the document, which present the catch limits by CPC for 2022-2023 and by CPC and industrial gear for 2020-2023 according to Res. 21/01 and 19/01, respectively, and **ACKNOWLEDGED** that these tables will be presented to the forthcoming SC for their its endorsement.

58. The WPDCS also **NOTED** the tables contained in Appendices 1, 2, 3, and 4 of the document, which outline the historical catches, overcatches and calculated base limits for all CPCs according to the Resolutions they are bound to.

59. Therefore, the WPDCS **INVITED** concerned CPCs to verify the information contained within these table and confirm 1) the accuracy of historical catches used by the Secretariat to determine catch limits and overcatches, and 2) the results of the catch limit calculations, taking into account the interconnections between Res. 19/01 and 21/01 in terms of overcatches from the former affecting catch limits for the latter, and penalty mechanisms for repeated overcatches across two or more years.

60. The WPDCS **NOTED** the concerns raised by some CPCs about their estimated yellowfin tuna catch limit, further **NOTING** that the limits are estimated prior to the reporting of the actual 2022 catch, which therefore impacts how the overcatches are deducted.

61. The WPDCS **RECALLED** the comments made by China (Circular 2022/05) and Japan (Circular 2022/06) on the estimation procedure for deriving the catch limits of China and Taiwan,China and **REQUESTED** that concerned CPCs take this matter to the SC and the Commission.

62. The WPDCS **NOTED** with concern the non-reporting of nominal catch data by some CPCs and some discrepancies in the catch data available for yellowfin tuna stock assessments due to changes in the species composition of

the catch for some fleets. The WPDCS further **NOTED** the increase of yellowfin tuna catches from some coastal fisheries due to Res. 19/01 setting catch limits according to fishing gear and historical catch levels.

63. The WPDCS **NOTED** the catch limit of gillnet fisheries estimated. **NOTING** that the estimate for CPCs which are binding to resolution 19/01 should provide accurate data and breakdown by categories of the catch by fisheries fishing offshore and within the EEZ.

5. Progress report of the Secretariat on data related issues

5.1. IOTC Secretariat report

64. The WPDCS **NOTED** paper IOTC-2022-WPDCS18-07_Rev1 on the Report on IOTC Data Collection and Statistics.

65. The WPDCS **NOTED** that the fraction of non-reported nominal catches increased from 3% in 2021 to 8% in 2022, with an improvement in the timely report according to the species groups (about 0.6%, 20.2%, 9.5%, and 6.3%, for temperate tunas, tropical tunas, neritic tunas, and billfish, respectively for late reporting).

66. The WPDCS **ACKNOWLEDGED** the improvement in the timeliness of reporting by some coastal fisheries although with some high variability in the reporting and availability of datasets by fisheries.

67. The WPDCS **NOTED** the reporting of discard data to the Secretariat (through form 1DI) by several CPCs in 2021 with more detailed information available on the condition of the discards from various fisheries. However, the WPDCS **NOTED** that discard data are still unavailable for many CPCs and fisheries overall and that the values of discards reported appear to be very low and widely underestimated for most fisheries. The WPDCS therefore **URGED** CPCs to increase the collection and reporting of discard data to the Secretariat, **RECALLING** that the data should be extrapolated to each fishery as per Res. 15/02.

5.2. Updates on data-related requests from other Working Parties

68. The WPDCS **NOTED** paper IOTC-2022-WPDCS18-12 on Summary of updates on data-related requests from other Working Parties, including:

- A request by the WPTT to discuss and consider the development of a coordinated biological sampling program for eventually defining a sampling strategy (including minimum samples by CPCs) needed to obtain population and regional/seasonal specific growth and reproductive parameters;
- A request by the WGEMS to clarify the para. 18 of Res. 22/04 which explicitly makes reference to a spatial resolution of 1°x1° squares for reporting the observer data while the ROS forms have been designed to report the data on an operational basis and the minimum spatial resolution for disseminating observer data collected from longline fisheries is 5°x5° squares;
- A request by the WGFAD to develop new reporting guidelines for FADs and FAD-related activities once a clear and common terminology would be adopted by the Commission.

69. The WPDCS **NOTED** that the sampling strategy should be adapted to each species of interest and could be based on the data on the magnitude and size composition of the catch by fishery and gear available at the Secretariat, **RECALLING** the importance of collecting and reporting accurate information to the Secretariat.

70. The WPDCS **NOTED** that the sampling opportunities at sea or on land strongly depend on the type of fishery, the size and storage facilities on the vessels, and the skills and availability of the crews or scientific observers to sample the fish, further **NOTING** that the storage location should be kept close to the labs where the samples will be analysed to facilitate their transport in a context of increased national and international regulations for the transportation of biological materials.

71. The WPDCS **WELCOMED** the new proposal for updated data reporting forms developed by the Secretariat to submit FAD-related data and the progress made by the Small Working Group on FAD terminology, although some definitions (e.g., FAD) remain to be agreed upon by the SC and the WPTT.

5.3. Dissemination of IOTC reference data, datasets, and documents

72. The WPDCS **CONGRATULATED** the Secretariat for the ongoing work conducted to better disseminate the IOTC data (e.g., through the IOTC data browser) and **WELCOMED** the collaboration with IRD through the G2OI project that will focus on the harmonisation and standardisation of metadata formats and access protocols (e.g., frequency-size data sets).

73. The WPDCS **NOTED** the contribution of the IOTC to the FIRMS Global Tuna Atlas (GTA) (see document IOTC-2022-WPDCS18-25_Rev2) which provides public access to harmonised data sets of global nominal catch and geo-referenced catch data sets, further **NOTING** the ongoing work to extend the GTA with conversion factors (number to tons), nominal fishing effort and length-frequency data.

74. The WPDCS **ACKNOWLEDGED** the interest of associating Digital Object Identifiers (DOI) with the IOTC data sets and publications stemming from the IOTC working parties, working groups, and Scientific Committee as DOIs enable the tracking of views, downloads, and citations over time, including the management of the different versions available.

6. Updates on national statistical systems

6.1. Updates on the status of national data collection systems

75. The WPDCS **NOTED** paper IOTC-2022-WPDCS18-22 on statistics of the French purse seine fleet targeting tropical tunas in the Indian Ocean (1981-2021), with the following abstract provided by the authors:

> *"This document presents an up-to-date summary of the French purse seine fleet targeting tropical tunas in the Indian Ocean. The statistics cover the period 1981-2021 and focus on the fishing activities of 2021. In 2021, a total of 13 French vessels operated in the western Indian Ocean including 11 purse seiners and 2 support vessels. The total capacity weighted by the months of activity for each vessel was 10,874 t. The total nominal effort in 2021 was of 1835 fishing days and 2561 sets with 2012 sets on floating objects and 549 on free-swimming tuna schools. In 2021, the total catch of major tunas in the Indian Ocean represented 78,307 t which is in the range of the five last years after a notable decrease in 2020 (58,149 t) due to Covid19 pandemic. The catch was composed of 36.5% of yellowfin (Thunnus albacares, YFT), 56.8% skipjack (Katsuwonus pelamis, SKJ), 6.5% bigeye tuna (Thunnus obesus, BET), 0.1% albacore (Thunnus alalunga, ALB) and 0.2% of other small tuna species. It is notable that the proportion of SKJ was especially high (compared to YFT) and was mainly the consequence of a high fishing effort under FOB (79% of the sets). In 2021, observer programs covered 20% of the total fishing effort. Discards of tunas estimated by observers and raised to the total production represent 1,590 t, i.e., 2% of the total catch in 2021. Bycatch, also monitored by observers and raised, were composed of billfishes, various bony fishes, sharks, rays, turtles, and cetaceans. Billfishes, other bony fishes, and sharks represent 789 t in 2021 of which 79% (622 t) was discarded at sea. All sharks, rays, turtles, and cetaceans were released at sea in 2021."*

76. The WPDCS **NOTED** that fishing days are defined as the amount of time that the vessel is at sea and operational for fishing, and that thirteen hours instead of twelve are considered per day to accommodate fishing activities on FOBs with that extra hour of activity before sunrise in the Indian Ocean.

77. **ACKNOWLEDGING** that the terminology "*fishing days*" might be confusing in some cases as the fishing days are computed from the numbers of fishing hours divided by a reference value of 13 hours of daily activity by the purse seiners (considering that purse seine fishing only takes place in daylight) and not by 24, the WPDCS

AGREED that the nominal purse seine fishing effort should be systematically reported in "*fishing hours*" which is a more accurate and straightforward term.

78. **ACKNOWLEDGING** that the species composition correction method (T3) is currently being revised by French scientists, the WPDCS **NOTED** that the presented catch data are processed by the original T3 methodology using port samples from France and Seychelles.

79. The WPDCS also **NOTED** that the revised T3 methodology (available as a R package) is planned to be used next year to process the data and a full revision of the catch time series data will be provided to IOTC at some point.

80. The WPDCS **NOTED** that EU,Spain has not been using T3 since 2018 and Seychelles in 2021. Scientists from Seychelles precised that they had technical issues when processing 2021 data leading to T3 outputs not being consistent with previous outputs, and major discrepancies with logbook data.

81. The WPDCS **NOTED** the lack of description of the data collection design and data process for the majority of the fisheries and **ENCOURAGED** CPCs to submit to IOTC this information according to the guidelines provided by the Secretariat (IOTC-2021-WPDCS17-27).

82. The WPDCS **NOTED** paper IOTC-2022-WPDCS18-23 on biometric relationships and conversion coefficients of large pelagics collected in Reunion (Indian ocean), with the following abstract provided by the authors:

> "*As an outermost region (OR) of the European Union, Reunion Island is subject to the common fisheries policy (CFP) which aims to promote sustainable and economically viable fishing and aquaculture activities, in particular by encouraging the transformation products resulting from their activities. The control of the sectors by the follow-up of the traceability and the financial support makes it possible to meet its objectives. Conversion coefficients for each processing and for each species or group of species of fish marketed are used in the tools for monitoring fisheries (fishing declaration and purchasing obligations) and in the calculation of the amount of aid allocated to the sectors by the European Maritime, Fisheries and Aquaculture Fund (FEAMPA). The scale of coefficients currently applied in Reunion is inconsistent and does not comply with the CFP control regulations. A consolidated list of conversion factors for the different fish processing is proposed here for application in the Reunion region.*"

83. **ACKNOWLEDGING** that conversion factors are difficult to collect, the WPDCS **NOTED** that these are of particular interest to the general public and to FAO in particular, to complement similar information available from other t-RFMOs and for other oceans.

84. The WPDCS **NOTED** that the Secretariat is gathering conversion factors (and the corresponding data used for their calculation) for subsequent storage in the developing IOTC database of biological/morphometric data, and therefore **ENCOURAGED** CPCs to provide these data to the Secretariat at their earliest availability.

85. **ACKNOWLEDGING** that there might be different types of dressing used by fishers in their respective fisheries and the Secretariat **ENCOURAGED** CPCs to share their length-length and length-weight conversion factors and dressing types.

86. The WPDCS **NOTED** paper IOTC-2022-WPDCS18-28 on spatio-temporal dynamic of the species composition in catch of the purse seine tropical tuna fisheries, including the following abstract provided by the authors:

> "*The EU purse seine fishery is composed of two major fleets targeting tropical tuna species in the IOTC Convention Area. A common sampling design has been shared and developed by the French and Spanish scientists since the 1980s with the aim to collect data on the fishing activities and the biological parameters of their fishery. Both fleets have evolved simultaneously according to the development of the new technology and fishing practices. Thus, considering their similarities, their catches were historically assumed to be comparable. In the present study, we review the validity of this hypothesis under the*

evolution of the fishing management in the IOTC area of competence in recent years, focusing on the species composition of the catch and accounting for space and time. We investigated the reporting data and the scientific samples at landing during the period 2010-2021 in 5° squares and quarters commonly exploited by the two fleets. As expected, the French and Spanish catch were highly correlated and homogeneous whatever the fishing mode and the year. Scientific data were more stable than the declaration due to the standardisation of the measurement. However, since 2018, the species composition started to slightly differ in catch under floating objects for the two datasets. The frequency of yellowfin tuna remained quite stable in the French fleet whereas it started to be lower in the Spanish reported catch. Opposite dynamic was observed for the skipjack but no pattern regarding the bigeye tuna. This recent trend needs to be confirmed in the following years and further study on the differences in fishing strategies that have possibly led to this change."

87. The WPDCS **NOTED** that no sample was available for the Spanish component of the EU purse seine fleet in 2020 and very few samples for the French fleet, preventing any comparison in catch composition for that year.

88. The WPDCS **NOTED** that the species composition of the purse seine catch recorded by EU,France and EU,Spain and derived from sampling operations at port remained similar overall since the early 2010s for both free-swimming schools (FSC) and schools associated with drifting floating objects (FOB), but that the composition of catches on FOBs has started to differ between these fleets after 2018, mostly for yellowfin and skipjack tunas.

89. The WPDCS **NOTED** that the species composition derived from logbooks remained similar over the last decade, although with more variability in recent years, and that data reported by the French fleet show a larger fraction of yellowfin tuna in their FOB catch since 2015.

90. The WPDCS **NOTED** that the species composition of the catch was found to be more stable in the samples due to the common standard sampling protocol implemented by both fleets since the early 1990s, while the composition reported in the logbooks was visually estimated by many different skippers and/or chief engineers and therefore thought to be more prone to variability.

91. The WPDCS also **NOTED** that the reasons for the differences in the species composition of the catch derived from the samples between 2018-2021 and the previous period are unclear but could be due to the use by the Spanish fleet of new buoy models from around 2017 that better discriminate between species, therefore resulting in a different selection of the FOB-associated schools between fleets in the same stratum.

92. The WPDCS **QUERIED** whether some change in the organisation of the sampling teams (e.g., change of enumerators and team leaders) could explain the patterns observed in recent years, while **NOTING** that the sampling protocol remained the same and is considered to be well followed by the samplers.

93. The WPDCS **NOTED** that the authors are in the process of further analysing the data and will present the results at the next WPTT and WPDCS.

6.2. Overview of data processing procedures and proposed revisions of historical data

94. The WPDCS **NOTED** paper IOTC-2022-WPDCS18-27 on a Second Draft report for the review of re-estimation methodology of Indonesia's annual tuna catch data in IOTC for 2010-2020, including the following abstract provided by the authors:

"Catch data is essential in building a robust fisheries management strategy. However, in some Regional Fisheries Management Organization (RFMO) e.g., Indian Ocean Tuna Commission (IOTC), such data needs to be tailored due to several reasons, for example, inter-annual variation in reported catches by species, gear and fleets. However, such method often creates a distinguishable discrepancy between national catch data presented in the country's national report and those presented in the IOTC datasets.

Since the yellowfin tuna stock in IOTC was under pressure in the last five years, catch reduction was an inevitable solution for guiding it back into recovery. Nevertheless, if the new re-estimated data were to be used as the basis for catch reductions this would not reflect the real situation bearing in mind that the Indonesia waters is the largest ocean area among IOTC members. However, Indonesia appreciates the effort taken by IOTC Secretariat to work with Indonesia on developing a new methodology based on the best data available on the robust e-logbook to produce data catch for the period of 2010-2020.

Two-sessions assistance meeting (virtual and field visit) with the IOTC staffs were held consecutively between February and July to follow up the WPDCS17 recommendation. Both parties agreed that the current re-estimation methodology was somewhat confusing and based on obsolete study, thus an updated version with more recent and robust datasets is imminent. This report provided an in-depth study on how to conduct recalculation on the Indonesian tuna datasets with emphasis on using a reliable data source and minimising the uncertainties. In the wake that this approach will be approved as the foundation for estimating Indonesian catches for the 2010–2020 periods."

95. **NOTING** that over 90% of Indonesia's catches are accounted for by artisanal fisheries in recent years, the WPDCS **REQUESTED** that further information be provided on the coverage levels for this important component of Indonesia's fisheries in order to better assess the representativeness of the re-estimated catches.

96. The WPDCS **QUERIED** why a different method was used to estimate the artisanal and industrial components of the Indonesian fisheries, **NOTING** that the method based on estimating a mean annual catch and the total number of active longliners and large-scale purse seiners requires strong assumptions that may have a relevant impact on the results if not fully verified.

97. The WPDCS **NOTED** that the method was used for consistency with previous analyses, and is comparable to the one jointly proposed by IOTC and Indonesia in 2018 to re-estimate the historical catches of their industrial fresh-tuna longliners.

98. The WPDCS **NOTED** that the new methodology proposed by Indonesia resulted in major changes in species composition of their catches, including extremely marked decreases in catch levels of Spanish mackerels and neritic tunas for several fishing gears, **NOTING** that this could partly stem from some historical issues related to species identification and reporting that Indonesia is currently addressing through the training of skippers and crews and an improved monitoring of the data flow.

99. The WPDCS **NOTED** that Indonesia's new methodology, in some cases, results in sharp fluctuations in the catches between years (notably for bullet tuna and skipjack tuna), and **REQUESTED** that Indonesia fully explore the reasons for this volatility in the catches to confirm and / or improve the validity and statistical robustness of the underlying methodology.

100. Regarding the importance of Indonesian fisheries and their major contribution to the total catches of some Indian Ocean stocks (e.g., bullet tuna), the WPDCS **NOTED** that the new estimates - if endorsed - would likely affect in a significant way the status of these stocks compared to what is currently determined by the most recent assessments.

101. The WPDCS **NOTED** that the new time series of catch estimates covering the period 2010-2020 showed major inconsistencies when put into perspective with: a) the longer time series available for Indonesia (i.e., pre-2010) and b) data from all other artisanal fisheries from the rest of the Indian Ocean, with major shifts in catch levels for several species that would be incompatible with fish population dynamics or changes in fishing effort.

102. The WPDCS **NOTED** that, aside from discussions on the methodology used to re-estimate Indonesia's catches for 2010-2020, a number of issues require further consideration to assess the potential impact of changes to

IOTC's core datasets. Furthermore, these issues should be fully explored prior to any decision to implement revisions to Indonesia's catches disseminated by IOTC. Notably:

- Assess the consistency of Indonesia's historical catches as a result of any revisions to catches from 2010 onwards; including the need for catch reconstruction prior to 2010 to avoid discontinuities in the long-term time series, by species and gear;
- Quantify the impact of any changes to Indonesia's catches on the stock assessment status and management advice of IOTC species, given the importance of Indonesia in terms of catches of tropical tunas, neritic tunas and selected species of billfish in particular;
- Further discussion on the general approach to be used for the estimation and/or partial adjustment of Indonesia's official 1-RC catches for 2021 and in future years.

103. **ACKNOWLEDGING** that a number of issues remain unresolved regarding the proposal by Indonesia to re-estimate their official catches, the WPDCS **REQUESTED** that Indonesia continue – in collaboration with the IOTC Secretariat – to reassess their official catches and **RECOMMENDED** that the SC **ENDORSE** this activity.

6.3. Main challenges encountered in reporting mandatory statistics to the Secretariat

104. The WPDCS **NOTED** paper IOTC-2022-WPDCS18-21 providing an update on characterising the Pakistani tuna gillnet fleet through satellite imagery: preliminary summary of results and next steps, including the following abstract provided by the authors:

> *"Information on bycatch is limited in many global fisheries, including in Indian Ocean tuna drift gillnet fisheries. The existing data that does exist for the Indian Ocean suggests that bycatch rates in tuna drift gillnets may be very high, particularly for cetaceans, though the data is scattered and incomplete. Most drift gillnet fleets in the Indian Ocean are comprised of relatively small vessels that are poorly documented. This is in contrast with purse seine and pelagic longline fleets operating in this region, for which fleet classification, fishing effort, and target catches are better documented and subject to more reporting requirements under the Indian Ocean Tuna Commission (IOTC), the regional body for managing tuna fisheries. Considering existing data gaps, this study leverages satellite imagery and machine learning to better understand tuna drift gillnet fleets in the Indian Ocean, with Pakistan as a case study. This study aims to quantify and describe the Pakistani tuna drift gillnet fleet using satellite imagery to quantify and describe tuna drift gillnet vessels in port. A total of 5648.25 boats were counted in this study, with an average of 154.745 tuna drift gillnet vessels per year in the ports of Karachi, Gwadar, and Pishukan. Authors urge caution of interpretation of results as the project is ongoing, with continued vessel counting, model verification, and an analysis of vessel length forthcoming."*

105. The WPDCS **NOTED** that the information that will be gathered during this study is particularly interesting to the IOTC as little to no data regarding the vessel registry for Pakistan are currently available to the IOTC, notwithstanding the importance of this fleet segment.

106. The WPDCS further **NOTED** that Pakistan is collaborating with the Secretariat on a study regarding the matrix-based approach for the characterisation of fisheries operating in the country (as reported in IOTC-2022-WPDCS18-16).

107. The WPDCS **NOTED** that VMS is currently only being used onboard two shrimp trawlers operating out of Pakistan but work is being done to install VMS onboard gillnet vessels. The WPDCS **NOTED** that there is currently no plan to link the results collected during this study with known VMS records although this may be trialled later on.

108. The WPDCS **NOTED** that the attempts made by WWF Pakistan to estimate bycatch levels on the basis of the estimated number of vessels should be done with caution, due to the complexity of this topic and on the limited number of data points available for this estimation.

109. The WPDCS **NOTED** that on the ground sampling will be done by WWF Pakistan in the ports of Karachi and Gwadar as close in time to when satellite images are being analysed to ensure the highest level of accuracy as possible.

110. The WPDCS **NOTED** work being done by WWF Pakistan looking at AIS data analysed by Global Fishing Watch showing Pakistani vessels operating in the waters of Somalia and Yemen with tracks that are consistent with fishing activity. The WPDCS **NOTED** that the further analyses of this information will be presented to one of the IOTC working parties next year.

111. The WPDCS **NOTED** that there is a plan for gillnet vessels to be converted into longline vessels in Pakistan but further **NOTED** that the conversion programme has not yet started due to poor catches in the last two years meaning that many fishers are unwilling to change so this should have no impact on the results and estimates produced by the study but may have implications later on.

112. The WPDCS **NOTED** that currently the counting of vessels is being done manually but the authors are now training deep-learning models for object (i.e. drift gillnet vessel) detection using *FiftyOne Teams softwares* *in collaboration with G2OI project* to improve the manual detection which was conducted in *BIIGLE*.

113. Early working results show strong model performance and general detection of vessels that mirrors trends from the manual counting and the WPDCS further **NOTED** that the co-authors are working on continued model testing, including the incorporation of additional georeferenced imagery, and plan to share full results at the next WPDCS meeting.

114. The WPDCS **NOTED** that the challenge of avoiding double counting of vessels is currently being mitigated by taking averages of the number of vessels, and there is a plan to build some sort of error estimation.

115. The WPDCS **NOTED** that vessel lengths are currently being estimated using the ruler function in Google Earth pro but more efficient methodologies are being tested and that WWF Pakistan has identified approximately 300 vessels in the 15-25 m LOA range in the ports of Karachi and Gwadar.

116. The WPDCS further **NOTED** that WWF Pakistan has identified four categories of tuna gillnet vessels operating out of Pakistan: 1) Large vessels over 24 m categorised as *industrial* which have freezing facilities onboard so can for longer than two months on a single trip; 2) The main gillnet vessels which tend to range from 18-20 m LOA; 3) Vessels of 15-18 m LOA which were originally of Indian origin and have now been converted to gillnet vessels; 4) Small-scale coastal gillnet vessels 8-12 m LOA operating in coastal areas which sometimes target tuna and tuna-like species.

117. The WPDCS **NOTED** that the proposed categorization of fishing vessels by type of boat, vessel length, and area of operation made by Moreno and Herrera, 2013 (IOTC-2013-SC16-INF04) is also included in the current IOTC data reporting guidelines.

118. Furthermore, the WPDCS **NOTED** that two categories of semi-industrial vessels emerge from this categorization, and namely one composed of vessels whose characteristics require their registration in the IOTC *Record of Authorised Vessels* (RAV), and one composed by vessels with LoA between 15-24 m and exclusively fishing in the EEZ of their flag state, and that therefore the term *semi-industrial* is potentially ambiguous when considered in the context of IOTC Resolutions.

119. The WPDCS **NOTED** a suggestion to use drones within the port area to help with the ground-truthing work and **NOTED** that this will be considered by the authors, although it may require special permissions by local authority due to the sensitiveness of the matter.

6.3.1. General issues

120. **RECALLING** that the WPDCS17 identified aspects of several data-related resolutions (15/01, 15/02, and 19/02) that are either unclear or inconsistent and, in particular, that the SC24 **NOTED** that the following specific clarifications are required:

- that silky shark (*Carcharhinus falciformis*) be included in the list of "other" species appearing in the gillnet table in Section 2.3 of Annex II of Res. 15/01
- that the terms "shall be submitted frequently" appearing in para. 4.c of Res. 15/02 be further clarified
- that para 5 of Res. 15/02 be amended with the inclusion of "and baitboats" in addition to purse seiners already mentioned in this paragraph
- that para. 4.c of Res. 15/02 be amended with the inclusion of the request that "Documents describing the extrapolation procedures (including raising factors corresponding to the logbook coverage) shall also be submitted routinely" that already appears in both para. 4.a and 4.b of Res. 15/02
- that para. 26 of Res. 19/02 be amended to also allow the use of buoy position data for scientific purposes, and to further clarify how to protect business confidentiality aspects as per para. 24 of Res. 19/02,

the WPDCS **RECOMMENDED** the SC to **RECOMMEND** that the Commission consider how to best address these issues at the next revision of each resolution.

7. Global fisheries information systems and best practices

121. The WPDCS **NOTED** paper IOTC-2022-WPDCS18-16 on preliminary results of the implementation of the FAO matrix approach for the characterization of selected IOTC fisheries.

122. The WPDCS **ACKNOWLEDGED** the contribution to this study provided by Indonesia, Maldives, Pakistan, and Sri Lanka, which led to the identification of 26 fishing units.

123. The WPDCS **NOTED** that the categories "*fishing vessel size*" and "*motorization*" show more complexity in some fisheries included in the test and **ACKNOWLEDGED** that the preliminary results from participating CPCs are not covering all their fisheries operating in the IOTC Area of competence (e.g., industrial fisheries are not included).

124. The WPDCS **THANKED** the CPCs that participated voluntarily in the exercise of filling up the FAO matrix and **ENCOURAGED** all other participants and CPCs to contribute to this initiative by working with the IOTC Secretariat on the application of the FAO methodology for the characterization of their national fisheries.

125. The WPDCS **NOTED** the threshold of 24 m length overall as one of the criteria used by the IOTC to classify fisheries as "industrial", while the preliminary results on the data collected through the matrix approach showed that there are significant numbers of coastal vessels of length larger than 25 m.

126. Therefore the WPDCS **NOTED** that it might be useful to assess the pertinence of the current length threshold and consider how other factors (such as vessel gross tonnage, i.e. GT) could be incorporated in the definition of fishery categories, **ENCOURAGING** the CPCs to provide more information on the composition and attributes of the vessels of each of their national fleets catching tuna and tuna-like species in the Indian Ocean.

127. The WPDCS **NOTED** paper IOTC-2022-WPDCS18-20 on Recent trends in ICT and AI based fisheries information collection technologies with mobile devices in Japan, including the following abstract provided by the authors:

"We have been developing three different types of ICT or AI based data collection and transmission systems for fisheries related information sea conditions using mobile devices. The outline of three systems are described as below: (1) GPS data logger. The GPS data logger is the real time data collection and transmission system for fisheries related information and sea conditions using a tablet connected to GPS, sensor and echo sounder on small coastal fishing vessels and has the following five functions (i) to collect exact vessel track lines every second, (ii) to collect and enter catch by species for each set by fishers, fishers, (iii) to collect 3D gear locations and sea temperature by small wireless sensors attached to the gears and also to collect the bottom depth data from the echosounder, (iv) to transmit these data to the GPS data logger to produce automatic display of depth and sea temperature profiles for each set, and (v) to transmit all data to the cloud server and update the database for users to utilize (see document for full abstract)."

128. The WPDCS **THANKED** the authors for the work and presentation, **NOTING** the large amount and diversity of data that can be collected on the fishing activities and fish habitats with the data loggers and the variety of fisheries that use such tools.

129. The WPDCS **NOTED** the results of the preliminary trials conducted to assess the ability of a neural network to identify fish species, **ACKNOWLEDGING** the major interest of the approach for distinguishing the juveniles of bigeye and yellowfin tuna as well as frigate and bullet tunas in the context of the Indian Ocean tuna fisheries.

130. As the authors were not attending the meeting, the WPDCS **REQUESTED** that they intersessionally provide further details on the technical aspects of the presented systems, to better understand if and how these could be also implemented in the Indian Ocean and more specifically to thes small-scale fisheries operating in the region.

131. The WPDCS **NOTED** paper IOTC-2022-WPDCS18-24_Rev1 on Metadata for fisheries: ongoing work, examples, and outlooks, including the following abstract provided by the authors:

"In this paper we present a brief overview of the current work that has been undertaken for a few years to make fisheries datasets compliant with FAIR (Findability, Accessibility, Interoperability, and Reusability) data management principles in the context of different projects. We will first recall what are FAIR good practices and discuss existing options to set them up. We will present some technical aspects and relevant infrastructures which can be used to implement such standards and can provide efficient data discovery and access services. We will thereafter highlight some examples which showcase the collaboration between tuna Regional Fisheries Management Organisations (tRFMOs), FAO and IRD in the context of FIRMS and EU-funded research projects. In particular, the Global Tuna Atlas is the most advanced demonstrator, and is currently focusing on total and geo-referenced fisheries catches across the world oceans. We will also present preliminary results of the Blue-Cloud and G2OI INTERREG european projects which aim to complement catch datasets description with fishing effort, tagging, and size-frequency data. These metadata sheets describe datasets by using a variety of standards: from international domain agnostic to domain specific standards. Beyond data, similar standards and workflows can be used to describe reports or working papers which can also be assigned Digital Object Identifiers (DOIs) along with metadata to improve their discovery and access."

132. The WPDCS **NOTED** that the FAIR principles correspond to the state-of-the-art practice in data management by making the data Findable (using discovery metadata), Accessible (using proper formats and protocols), Interoperable (using standards), and Reusable (using rich usage metadata and DOIs).

133. The WPDCS **ACKNOWLEDGED** the timeliness and interest of the approach to improve the management of the data sets hosted by the Secretariat and **NOTED** that the technical aspects of the work to apply the FAIR principles to the IOTC data sets mainly consists in repackaging them with proper formats and access protocols, i.e., to add an extra layer of interoperability connecting the IOTC datasets with other spatial data infrastructures dedicated to data dissemination such as FAO GeoNetwork and GeoServer.

134. The WPDCS **NOTED** the R workflow developed to operationalise the FAIR principles and how this was applied to data sets at global (i.e., the FIRMS Global Tuna Atlas), regional (e.g., RFMO) and national levels.

135. The WPDCS **NOTED** that the costs associated with the development and application of the workflow to the IOTC data will only consist in in-kind contribution (i.e., time from the staff of the data section) and will be low as it will benefit from the IOTC data structure, formats, and metadata and rely on the previous applications of the methodology to different data sets.

136. The WPDCS **NOTED** that each data update by the CPCs will necessitate to re-run the workflow and ensure proper alignment of the data so that there is one single source of up-to-date data, further **NOTING** that DOIs can be versioned. The WPDCS **AGREED** that a potential approach would be to first focus on data sets which are less variable, e.g., data from the Indian Ocean Tuna Tagging Programme, and that data could be published on the Global Biodiversity Information Facility.

137. The WPDCS NOTED paper IOTC-2022-WPDCS18-25_Rev2 on The yearly updates of the global tuna atlas and the necessity to share conversion factors datasets, including the following abstract provided by the authors:

> *"In this paper, we present a brief overview of the current work that has been undertaken for a few years to build the FIRMS Global Tuna Atlas (GTA) which requires compliant conversion factors for the conversion of catch from numbers to weights. Indeed, the GTA aims to provide georeferenced data of captures and efforts for tuna and tuna-like species. The actual dataset for catches contains two units: Tons and Number of fish, with some data redundant because provided in both units. This dataset is not as workable as could be a dataset where units are harmonized. Thus, the next step will be to convert the data provided in number of fish to tons, with an accurate and validated dataset. This treatment is already done by IRD using a historical dataset but the resulting data is not validated by FIRMS yet. This paper aims to inform about the necessity of a conversion factors dataset validated and to ask IOTC and, in a second step, other tRFMOs, for collaboration on this topic. We first discuss the current conversion factors provided by tuna Regional Fisheries Management Organisations (e.g., IOTC) and by the French Institute of research for development (IRD). Eventually, we present a plan to validate conversion factors for scientific purposes."*

138. The WPDCS **CONGRATULATED** the authors for the work and **ACKNOWLEDGED** the importance of converting all geo-referenced catches into one single unit (i.e., metric tonnes) for analysis (e.g., extrapolation process) and visualisation purposes (e.g., maps of catches).

139. The WPDCS **NOTED** that geo-referenced catches may be reported for the same stratum (i.e., year, month, fleet, fishery, area, and school type) in both weight of catch and numbers of individuals caught for several species of the tuna RFMOs, allowing to compute and compare species-specific average weights for these strata.

140. The WPDCS **NOTED** the large variability in the estimates of weights between strata and across RFMOs, with some values inconsistent with the biology of tunas, i.e., larger than the maximal weights recorded for the species concerned.

141. The WPDCS **RECALLED** that some major discrepancies were found in the Indian Ocean between average weights derived from geo-referenced data and size-frequency data for some major longline fisheries (e.g., IOTC-2013-WPTT15-41 Rev_1), **NOTING** that all length-frequency data collected by fishers onboard longline fisheries from Taiwan,China are considered to be unreliable and preference should be given to weight data and size data collected by observers (see IOTC-2021-WPTT23-07).

142. The WPDCS **NOTED** that preliminary analysis suggested that the values of average weights used for converting numbers into weights in the GTA may have a significant effect on the raised geo-referenced catch and effort data, ENCOURAGING the authors to further explore the matter.

143. In the case of the Indian Ocean, the WPDCS **NOTED** that average weights for the principal market species (i.e., albacore, bigeye tuna, skipjack tuna, yellowfin tuna, and swordfish) are estimated by the Secretariat for each fishery on a 5°x5° grid area based on size-frequency data, including expert knowledge, and by either leveraging data from proxy fleets or adopting substitution schemes when the spatio-temporal information is not available for a given stratum. The WPDCS **ACKNOWLEDGED** the interest of these weights for the GTA but cautioned that these estimates require some strong assumptions in some cases and may result in some catch estimates in weights that could differ from official statistics, **SUGGESTING** to derive mean values of average weights by fishery for all flags combined, on an annual, quarterly, or monthly basis.

144. The WPDCS **AGREED** that the fishery-specific average weights estimated by the Secretariat for all flags combined have some interest for scientific analyses and **REQUESTED** the Secretariat to add them as a public-domain data set accessible from the IOTC website.

8. Regional Observer Scheme

8.1. Updates on the status of the ROS and its Pilot Project

145. The WPDCS **NOTED** paper IOTC-2022-WPDCS18-10_Rev2 regarding Updates on the implementation of the IOTC Regional Observer Scheme and its Pilot Project.

146. The WPDCS **NOTED** the new Resolution 22/04 *On a Regional Observer Scheme* which was adopted by the Commission in 2022 and which supersedes Resolution 11/04.

147. The WPDCS **NOTED** an overview of the data that has been submitted as part of the ROS further **ACKNOWLEDGING** that more data have been submitted than what has been included in the ROS database, due to some CPCs reporting data in non-standardised formats which cannot easily be extracted and incorporated.

148. The WPDCS **RECALLED** the change in the ROS data standards to the naming used for '*mandatory / optional for reporting*' which now read as: 1) Mandatory for reporting, 2) Mandatory for reporting *when feasible*, and 3) Optional for collection and reporting, and **ACKNOWLEDGED** how this clarification will further extend the range of information submitted to the Secretariat as part of the ROS.

149. The WPDCS **NOTED** that the levels of coverage presented for several longline and purse seine fleets are estimated on the basis of the information available to the IOTC Secretariat, including those submissions which are not in a format immediately suitable for data extraction and processing.

150. In general, and with few exceptions, the WPDCS **NOTED** with concern that the level of coverage of the ROS remains low among CPCs, and that while longline fleets present a wide range of different coverage levels (from 0% to ~14% estimated on the average of the last five years in all concerned CPCs), in the case of purse seine fleets either CPCs are fully compliant (i.e., their coverage is estimated at well above the requested 5%) or they are not providing any information at all (i.e., the coverage level is estimated to be 0%).

151. The WPDCS **ENCOURAGED** all CPCs that have implemented scientific observer programmes in their fisheries in years between 2017 and 2021 to verify that the summarised information accurately reflects their current status of development, implementation and reporting of the ROS.

152. The WPDCS **NOTED** that Res. 22/04 specifies that observer coverage should be estimated by comparing the number of observed operations/sets with the total reported operations/sets by each CPC.

153. However, the WPDCS **NOTED** that when estimating the level of observer coverage for certain CPCs it was necessary to use alternative units of effort such as fishing days or hooks deployed due to these being the default (or most common) units for the reporting of effort data to the IOTC Secretariat according to Res. 15/02.

154. The WPDCS **NOTED** that Res. 22/04 explicitly calls for CPCs to endeavour to send observer data in an electronic format that is suitable for automated data extraction.

155. The WPDCS **NOTED** paper IOTC-2022-WPDCS18-17, which describes the finalised ROS electronic data reporting forms for purse seine and longline fisheries by CPCs to the Secretariat.

156. The WPDCS **ACKNOWLEDGED** that suitable formats for the submission of ROS data to the Secretariat are:

- the ROS structured data reporting format (i.e., .**ros** files produced by the ROS e-collection tool and managed by the ROS national databases)
- the ROS tabular data reporting format (i.e., **.xlsx** files constituted by a pre-agreed, gear-dependent set of MS Excel worksheets for those CPCs that already have proprietary ROS data management systems in place).

157. The WPDCS **NOTED** that the Secretariat can *temporarily* accommodate for the submission of ROS data through other proprietary formats such as the ICCAT ST09 forms or the JPN observer data format, and **RECALLED** that these formats do not comply with the ROS minimum data requirements and therefore will be soon decommissioned as they also necessitate of additional efforts to be processed.

158. In light of the above, and with a view to standardise and improve the process for the provision of ROS data to the Secretariat, the WPDCS **ENDORSED** the forms for the submission of scientific observer data by longline and purse seine fisheries as presented in IOTC-2022-WPDCS18-17 and **REQUESTED** the Scientific Committee to **ENDORSE** their adoption together with the list of reference codes they are based upon.

8.2. Electronic Monitoring Systems in support of the IOTC ROS

159. The WPDCS **NOTED** papers IOTC-2022-WPDCS18-19, IOTC-2022-WPDCS18-32, IOTC-2022-WPDCS18-33, and IOTC-2022-WPDCS18-34, presented by the Chair of the WGEMS, which summarise the main outputs of the WGEMS 2022. These outputs included the agreement on the EMS related terms and definitions, as well as on the EM Program and EM Data standards.

160. The WPDCS **NOTED** that there was total agreement by the WGEMS participants on the EMS related terms and definitions, however, there are still some pending issues in the Annexes 1 and 2 of the EM data standards. These issues mostly refer to comments made by some CPCs regarding the EM Vessel Monitoring Plan and the capabilities of the EM to monitor ROS minimum data standards in the longline fleet.

161. The WPDCS **NOTED** that the figures and tables included in Annex 1 of paper IOTC-2022-WPDCS18-34 should only be taken as general guide as they are just examples of existing EMS installations. The EM configuration (e.g., number of cameras, position, and monitoring objectives) should be tailored to each fishery (or even at vessel level). Similarly, EM capabilities of monitoring ROS minimum data fields included in Annex 2 of IOTC-2022-WPDCS18-34 may vary from fleet to fleet if the catch handling and setting/hauling manoeuvres differ between. Thus, these values should be subject to constant review.

162. The WPDCS **ENDORSED** the EMS terms and definitions (detailed in IOTC-2022-WPDCS18-32) for review by the SC. The WPDCS **RECOMMENDED** that the SC review and endorse the EM terms and definitions for subsequent review and potential adoption by the Commission at its session in 2023. The WPDCS **NOTED** that the adopted EM terms and definitions, and the EMS standards are intended to be living documents that can be reviewed and updated as needed over time when more experience and knowledge are available.

163. The WPDCS **NOTED** the significant work of the WGEMS and very advanced state of the EMS standards (both EM Program and EM Data standards as described in IOTC-2022-WPDCS18-33 and IOTC-2022-WPDCS18-34, respectively) and **ENDORSED** these for review by the SC. The WPDCS **RECOMMENDED** that the SC review and endorse those EMS Standards for subsequent review and potential adoption by the Commission at its session in 2023.

9. Capacity building activities: data collection and processing in coastal countries

164. The WPDCS **NOTED** paper IOTC-2022-WPDCS18-08_Rev1 on IOTC capacity building activities in support of developing coastal States.

165. The WPDCS **THANKED** the IOTC Secretariat for the efforts in delivering on-site and remote capacity building activities to support data collection and reporting in developing coastal CPCs, and **RECALLED** how several external agencies and stakeholders contributed over the years to the successful implementation of these activities in the region, both through the provision of funding and through projects implemented directly at national level.

166. The WPDCS **ACKNOWLEDGED** how, due to travel restrictions still applying in 2022, the Secretariat could only deliver a limited number of on-site activities and reverted to remote workshops and meetings to progress on several topics of interest.

167. The WPDCS **NOTED** that the Secretariat managed delivered two in-person missions to Indonesia in July and November 2022, and **ACKNOWLEDGED** that these were instrumental to further progress on improving catch re-estimation for Indonesian fisheries.

168. The WPDCS further **ACKNOWLEDGED** the progress achieved in finalising the implementation of the Regional Observer Pilot Project, including the delivery of training material, workshops, and e-learning courses, the finalisation of the procurement of Electronic Monitoring Systems for Sri Lanka, and further developments of the ROS electronic tools, which are factors that should all lead to sensible improvements in the coverage and quality of observer data reported to the IOTC.

169. The WPDCS also **NOTED** the tentative list of data compliance and support missions drafted by the IOTC Secretariat for 2023, that includes Bangladesh, Indonesia, I.R. Iran, Kenya, Oman, Somalia, and Pakistan among others, and **ACKNOWLEDGED** the rationale and objective of each activity **RECALLING** how their effective delivery will still depend on the possibility of safely travelling across the identified target countries.

170. The WPDCS **ACKNOWLEDGED** that funds from a new IOTC-EU project covering the biennium 2023-2024 are available to support various capacity building activities such as:

    a. Improving data collection and reporting of artisanal fisheries data
    b. Improving time series of catches and other scientific data for science and management purposes
    c. Reconstructing historical catch series for CPCs with persistent data quality issues: Pakistan, Tanzania, Comoros, Mozambique
    d. Improving data collection, reporting and management of Regional Observer Scheme data at national and regional levels

171. The WPDCS **THANKED** the EU for their continuous interest in supporting the work of the IOTC, and for contributing to the delivery of important capacity building activities beneficial to coastal states.

172. **NOTING** with concern that non-reporting of fishery data continues to fundamentally affect the quality of stock assessments and management of IOTC species (particularly neritic tunas and billfish), and that the overall quality and reporting coverage is disproportionately related to a number of CPCs important for artisanal fisheries, the WPDCS **AGREED** to reflect the urgent need for improvements in this regard in its program of work, by prioritising those activities that focus on data collection and management of artisanal and small-scale fisheries.

Report on progress of IOTC-OFCF project

173. The WPDCS **NOTED** paper IOTC-2022-WPDCS18-29 which provided updates on the status of implementation of the IOTC-OFCF project during JFY2022 and on potential activities to be delivered during JFY2023.

174. The WPDCS **NOTED** the work in progress for the translation of IOTC Species ID cards of billfish, shark and rays into Tamil and Sinhalese Sri Lanka languages.

175. The WPDCS **NOTED** that OFCF has been collaborating productively with the Secretariat for over 20 years and **ACKNOWLEDGED** how several IOTC coastal states (Thailand and Indonesia, among others) have effectively benefited from capacity building activities supported and delivered by OFCF during the years.

Collaborations between the Secretariat and other international partners

176. The WPDCS **NOTED** paper IOTC-2022-WPDCS18-30 on a note on the collaboration of the Secretariat with international partners on data-related matters, including a presentation of additional data sources that can be used for complementing the IOTC data sets managed by the Secretariat and of the ongoing work carried out for improving and standardising the IOTC metadata through the G2OI project (see document IOTC-2022-WPDCS18-24_Rev1).

177. The WPDCS **RECALLED** the confidentiality aspects of the data sets managed and accessible from the Secretariat as set in IOTC Res. 12/02 and **NOTED** the recent FAO administrative circular 22/06 on Data Protection Policy that sets out the FAO data protection principles which are aligned with international data protection standards and controls (IOTC-2022-WPDCS18-INF04).

178. The WPDCS **NOTED** the ongoing work of the Secretariat to collate satellite tag data (i.e., horizontal and vertical movements) for IOTC species from CPCs and NGOs involved in sport fishing activities (i.e., The Billfish Foundation, International Game Fish Association, Marine Megafauna), and how the IOTC Secretariat could act as data custodian by gathering and describing the data sets with metadata, further **NOTING** that the level of confidentiality of each data set could be determined through a specific data request form setting the modalities of use of the data between the data owners and users (see Appendix I of the document).

10. WPDCS program of work

10.1. Revision of the WPDCS program of work 2023-2027

179. The WPDCS **NOTED** paper IOTC-2022-WPDCS18-09 which provides an opportunity to consider and revise the WPDCS Program of Work (2023-2027), by taking into account the specific requests of the Commission, Scientific Committee, and the resources available to the IOTC Secretariat and CPCs.

180. The WPDCS **RECALLED** that the SC, at its 18th Session, made the following request to its working parties:

"The SC REQUESTED that during all future Working Party meetings, each group not only develop a Draft Program of Work for the next five years containing low, medium and high priority projects, but that all High Priority projects are ranked. The intention is that the SC would then be able to review the rankings and develop a consolidated list of the highest priority projects to meet the needs of the Commission. Where possible, budget estimates should be determined, as well as the identification of potential funding sources." (SC18. Para 154)

181. The WPDCS **REQUESTED** that the Chairperson and Vice-Chairperson of the WPDCS, in consultation with the IOTC Secretariat, develop Terms of Reference (TOR) for each of the high priority projects that are yet to be funded, for circulation to potential funding sources.

182. The WPDCS **RECOMMENDED** that the Scientific Committee consider and endorse the WPDCS Program of Work (2023-2027), as provided at Appendix V.

11. Other business

11.1. Date and place of the 19th and 20th Sessions of the WPDCS: 2023 & 2024

183. The WPDCS **NOTED** that its 18th session was still held as a virtual (remote) meeting due to the travel restrictions still in place in some of the IOTC countries.

184. The WPDCS **AGREED** that the working party should continue to be held back-to-back with the SC, as usual, and therefore **ACKNOWLEDGED** that the exact dates and location of its 19th session will depend on whether or not CPCs will express their interest in hosting the next session.

Table 4. Draft meeting schedule for the WPDCS (2023 and 2024)

Meeting	2023			2024		
	No.	Date	Location	No.	Date	Location
Working Party on **Data Collection and Statistics** (WPDCS)	19th	TBD	TBD	20th	TBD	TBD

11.2. Review of the draft, and adoption of the report of the 18th Session of the WPDCS

185. The WPDCS **NOTED** that the report would be adopted via correspondence, and that a set of draft recommendations will be presented at the SC26 for its endorsement.

186. The WPDCS **RECOMMENDED** that the Scientific Committee consider the consolidated set of recommendations arising from WPDCS18, provided at Appendix VI.

APPENDIX I
LIST OF PARTICIPANTS

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APPENDIX II
AGENDA FOR THE 18TH WORKING PARTY ON DATA COLLECTION AND STATISTICS

Date: 28th November – 2nd December 2022
Location: Online
Platform: Zoom
Time: 12:00 – 16:00 daily (Seychelles time, GMT+04:00)

Chair: Dr Julien Barde (EU,France); **Vice-Chair:** Mr Nuwan Gunarwardane (Sri Lanka)

1. **OPENING OF THE MEETING** (Chair)
2. **ADOPTION OF THE AGENDA AND ARRANGEMENTS FOR THE SESSION** (Chairs)
3. **THE IOTC PROCESS: OUTCOMES, UPDATES AND PROGRESS** (IOTC Secretariat)
   - 3.1. Outcomes of the 24th Session of the Scientific Committee and of the 26th Session of the Commission
   - 3.2. Review of Conservation and Management Measures (*CMMs*) relevant to the WPDCS
   - 3.3. Progress on the recommendations of WPDCS17
4. **REVIEW OF DATA REQUIREMENTS IN CONSERVATION AND MANAGEMENT MEASURES RELEVANT TO THE WPDCS** (IOTC Secretariat)
   - 4.1. Data recording (logbooks)
     - 4.1.1. Res. 15/01 *On the recording of catch and effort data by fishing vessels in the IOTC area of competence*
     - 4.1.2. Res. 19/02 *Procedures on a fish aggregating devices (FADs) management plan*
   - 4.2. Data reporting (to the IOTC Secretariat)
     - 4.2.1. Res. 15/02 *On mandatory statistical reporting requirements for IOTC Contracting Parties and Cooperating Non-Contracting Parties* (CPCs)
     - 4.2.2. Res. 17/05 *On the conservation of sharks caught in association with fisheries managed by IOTC*
     - 4.2.3. Res. 18/07 *On measures applicable in case of non-fulfilment of reporting obligations in the IOTC*
     - 4.2.4. Res. 21/01 *On an interim plan for rebuilding the Indian Ocean yellowfin tuna stock in the IOTC area of competence*
   - 4.3. Regional Observer Scheme (ROS)
     - 4.3.1. Res. 22/04 *On a Regional Observer Scheme*
5. **PROGRESS REPORT OF THE SECRETARIAT ON DATA RELATED ISSUES** (IOTC Secretariat)
   - 5.1. IOTC Secretariat report
   - 5.2. Updates on data-related requests from other Working Parties (IOTC Secretariat)
   - 5.3. Dissemination of IOTC reference data, datasets, and documents
6. **UPDATES ON NATIONAL STATISTICAL SYSTEMS** (CPCs)
   - 6.1. Updates on the status of national data collection systems
   - 6.2. Overview of data processing procedures and proposed revisions of historical data
   - 6.3. Main challenges encountered in reporting mandatory statistics to the Secretariat

7. **GLOBAL FISHERIES INFORMATION SYSTEMS AND BEST PRACTICES** (Chairs & IOTC Secretariat)
8. **REGIONAL OBSERVER SCHEME** (IOTC Secretariat & CPCs)
   8.1. Updates on the status of the ROS and its Pilot Project
   8.2. Electronic Monitoring Systems in support of the IOTC ROS
9. **CAPACITY BUILDING ACTIVITIES: DATA COLLECTION AND PROCESSING IN COASTAL COUNTRIES** (Chairs & IOTC Secretariat)
10. **WPDCS PROGRAM OF WORK** (Chairs & IOTC Secretariat)
    10.1. Revision of the WPDCS Program of Work 2023–2027
11. **OTHER BUSINESS**
    11.1. Date and place of the 19th and 20th sessions of the WPDCS: 2023 & 2024 (Chairs)
    11.2. Review of the draft, and adoption of the report of the 18th session of the WPDCS (Chairs)

APPENDIX III
LIST OF DOCUMENTS

Document	Title
IOTC-2022-WPDCS18-01a	Agenda of the 18th Working Party on Data Collection and Statistics
IOTC-2022-WPDCS18-01b	Annotated agenda of the 18th Working Party on Data Collection and Statistics
IOTC-2022-WPDCS18-02	List of documents of the 18th Working Party on Data Collection and Statistics
IOTC-2022-WPDCS18-03	Outcomes of the 24th session of the Scientific Committee
IOTC-2022-WPDCS18-04	Outcomes of the 26th session of the Commission
IOTC-2022-WPDCS18-05	Review of current Conservation and Management Measures relating to the WPDCS
IOTC-2022-WPDCS18-06	Progress made on the recommendations of WPDCS17
IOTC-2022-WPDCS18-07	Report on IOTC Data Collection and Statistics
IOTC-2022-WPDCS18-08	IOTC capacity building activities in support of developing coastal CPCs
IOTC-2022-WPDCS18-09	Revision of the WPDCS Program of Work 2023–2027
IOTC-2022-WPDCS18-10	Updates on the implementation of the IOTC Regional Observer Scheme and its pilot project
IOTC-2022-WPDCS18-11	Updates on yellowfin tuna catch limits for 2022 / 2023
IOTC-2022-WPDCS18-12	Summary of updates on data-related requests from other Working Parties
IOTC-2022-WPDCS18-13	Proposed updates to the definitions of fisheries in support to the reporting of statistical data to the IOTC
IOTC-2022-WPDCS18-14	Improvements to the IOTC recommended data reporting forms
IOTC-2022-WPDCS18-16	Preliminary results of the implementation of the FAO matrix approach for the characterization of selected IOTC fisheries
IOTC-2022-WPDCS18-17	ROS data collection and reporting forms
IOTC-2022-WPDCS18-18	Report of the 3rd ad-hoc IOTC WGFAD - Working Group on FADs
IOTC-2022-WPDCS18-19	Report of the 2nd ad-hoc IOTC WGEMS - Working Group on the development of Electronic Monitoring Systems
IOTC-2022-WPDCS18-20	Recent trends in ICT and AI based fisheries information collection technologies with mobile devices in Japan
IOTC-2022-WPDCS18-21	Update on characterizing the Pakistani tuna gillnet fleet through satellite imagery: preliminary summary of results and next steps
IOTC-2022-WPDCS18-22	Statistics of the French purse seine fleet targeting tropical tunas in the Indian Ocean (1981-2021)
IOTC-2022-WPDCS18-23	Biometric relationships and conversion coefficients of large pelagics collected in Reunion (Indian ocean)
IOTC-2022-WPDCS18-24	Metadata for fisheries: ongoing work, examples and outlooks
IOTC-2022-WPDCS18-25	The yearly updates of the Global Tuna Atlas and the necessity to share conversion factors datasets
IOTC-2022-WPDCS18-27	Second Draft Report on the Review of Re-Estimation Methodology of Indonesia's Annual Tuna Catch Data in IOTC for 2010-2020
IOTC-2022-WPDCS18-28	Spatio-temporal dynamic of the species composition in catch of the purse seine tropical tuna fisheries
IOTC-2022-WPDCS18-29	Report on progress of IOTC-OFCF Project for JFY2022 activities and planned activities for JFY2023
IOTC-2022-WPDCS18-30	Note on the collaboration of the Secretariat with international partners on data-related matters
IOTC-2022-WPDCS18-31	Engaging Fishermen Community in conservation of endangered species by rewarding the releasing effort
IOTC-2022-WPDCS18-32	Electronic monitoring related terms and definitions
IOTC-2022-WPDCS18-33	Electronic monitoring program standards
IOTC-2022-WPDCS18-34	IOTC electronic monitoring system and data standards

Document	Title
IOTC-2022-WPDCS18-01a	Agenda of the 18th Working Party on Data Collection and Statistics
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IOTC-2022-WPDCS18-14	Improvements to the IOTC recommended data reporting forms
IOTC-2022-WPDCS18-16	Preliminary results of the implementation of the FAO matrix approach for the characterization of selected IOTC fisheries
IOTC-2022-WPDCS18-17	ROS data collection and reporting forms
Information papers	
Document	**Title**
IOTC-2022-WPDCS18-INF01	Report of the FAO-IOTC data compliance and support mission to Indonesia (July 2022)
IOTC-2022-WPDCS18-INF02	Towards a statistical definition of Small-Scale Fisheries: an update on the use of a matrix scoring approach to the characterization of scale of fishing units
IOTC-2022-WPDCS18-INF03	FAO matrix for the characterization of fishing activities
IOTC-2022-WPDCS18-INF04	FAO administrative circular 2022/06 on Data Protection Policy

APPENDIX IV
MAIN DATA ISSUES IDENTIFIED BY THE WPDCS AND ACTIONS PROPOSED TO ADDRESS THEM

Table A1. Main issues identified for the nominal catch (NC) data, including the CPCs and fisheries concerned, and the actions proposed

Dataset	CPCs	Fisheries	Main issues	Proposed actions
NC	**India**	**Coastal fisheries**	Partial data reported in 2018 and 2019; almost no shark catch reported for 2018	India has indicated that the IOTC shall use official figures, communicated by national authorities. Increase engagement with national scientists and stakeholders to increase the compatibility of the national data collection and reporting systems with the IOTC reporting formats
	Indonesia		Interannual variability in official estimates of total catch and species composition, multiple data submissions every year	Continue ad hoc collaboration with institutes involved in fisheries monitoring and reporting and support for sampling of artisanal fisheries (e.g., species identification) and data management
	I. R. Iran, Pakistan	**Drifting gillnet fisheries**	Possible double-counting of catch due to vessels that may be registered in Pakistan and I. R. Iran	Liaise with fisheries administrations from Pakistan and I. R. Iran to understand and address the issue
	Pakistan	**Drifting gillnet fishery**	Additional validation of latest revised catch series	Liaise with Pakistan in terms of support for appraisal of the data
	Madagascar	**Coastal fisheries, longline fisheries**	Issues with data collection, including catch and effort and size data	Provide assistance in the sampling of artisanal fisheries upon request (dependent on staff / funds available). Liaise with FAO to assess possible options for combined interventions in the country
	Somalia	**Coastal fisheries**	Lack of national data collection systems, including catch and effort and size data	Support to national initiatives (e.g., Fisheries Data Collection Working Group) for the validation of databases and data collection programmes
	Yemen	**Handline fishery**	Nominal catches from FAO used since 2007 and repeated since 2017	Liaise with FAO regional office and Statistics team of the Fisheries Division

Table A2. Main issues identified for the catch and effort (CE) data, including the CPCs and fisheries concerned, and the actions proposed

Dataset	CPCs	Fisheries	Main issues	Proposed actions
CE	**All**	**Most fisheries**	Data either not submitted, or falls short of the IOTC data reporting requirements	Implement minimum data requirements for sharks (noting that those for India are different as it has objected to the logbook Resolution)
		Coastal fisheries	Many CPCs have failed to report catches and effort per month for their coastal fisheries	As a minimum, request CPCs to report catches and fishing by species, gear, and month, in addition to the total numbers of fishing craft operated by gear, and month (or year).
	Oman	**Longline fisheries**	Data either not submitted, or falls short of the IOTC data reporting requirements	As part of the IOTC Data Compliance and Support missions, provide assistance to CPCs to understand the IOTC data requirements and processing of information and urge them to implement requirements and report data to the IOTC; for Pakistan gillnetters, appraisal of the capacity of the local crew-based data collection database to provide reliable catch and effort (as well as size-frequency) data to the Secretariat
	Indonesia	**Industrial longline fisheries**	Inconsistency between logbook and VMS	IOTC to encourage strengthening management and validation of logbook data – particularly inconsistencies with VMS data and issues of low reporting rates of submitted logbooks (<10% in recent years)
	Oman	**Handline and gillnet fisheries**	Lack of reporting due to data management	Follow-up to 2019-09 mission to finalize proper standardization of the statistical information available for handlines and gillnets, and eventually submission of catch and effort data according to Res. 15/02
	Pakistan	**Drifting gillnet fishery**	Data either not submitted, or falls short of the IOTC data reporting requirements	As part of the IOTC Data Compliance and Support missions, provide assistance to CPCs to understand the IOTC data requirements and processing of information and urge them to implement requirements and report data to the IOTC; for Pakistan gillnetters, appraisal of the capacity of the local crew-based data collection database to provide reliable catch and effort (as well as size-frequency) data to the Secretariat

Table A3: Main issues identified for the size-frequency (SF) data, including the CPCs and fisheries concerned, and the actions proposed

Dataset	CPCs	Fisheries	Main issues	Proposed actions
SF	**India, Indonesia, Malaysia, Oman, Yemen**	**Coastal fisheries**	No or very few size-frequency data reported	Assist CPCs to understand data requirements, and provide support to pilot sampling and processing of fisheries data and urge them to strictly implement IOTC mandatory data reporting requirements
	I. R. Iran	**Drifting gillnet fishery**	Data not by IOTC standards	The IOTC Secretariat to continue to provide assistance to I.R. Iran to submit size data according to fishing ground (rather than landing site) based on port sampling (as logbooks are currently being piloted on a limited number of vessels)
	Japan, Taiwan,China	**Longline fisheries**	Catch and effort and size data conflicting over the time series	Follow-up of recommendations resulting from the consultancy conducted in 2020-2021
	Pakistan	**Drifting gillnet fishery**	No or very few size-frequency data reported	IOTC Secretariat liaising with Pakistan in terms of possible assistance for data entry, processing and submission of data via the Pakistan government

Table 4: Main issues identified for the Regional Observer Scheme (ROS) data, including the CPCs and fisheries concerned, and the actions proposed

Dataset	CPCs	Fisheries	Main issues	Proposed actions
ROS	**All**	**Longline and surface fisheries**	Low levels of implementation and reporting	Organize ROS training and workshops to assist CPCs with implementation of the ROS data collection and reporting requirements, also under the activities of the ROS Pilot Project (training programme).
			Information reported in formats not suitable for data extraction	Explore ways of facilitating reporting of data using the IOTC ROS electronic tools and data reporting forms
		Coastal fisheries	Low levels of implementation and reporting	Extension of EMS pilot project to other countries besides Sri Lanka
				Strengthen data collection mechanisms at landing sites (in-port observers, alternative data collection mechanisms)
	Sri Lanka	**Coastal and offshore fisheries**	Partial implementation of ROS requirements	IOTC Secretariat to continue supporting the adoption of the ROS standards and tools; possible follow-up on EMS trial projects dependent on funding. Follow-up on the pilot study of EMS in Sri Lanka for coastal fisheries for which there are difficulties placing on-board observers

Table A5: Main issues identified for the socio-economic (SE) data, including the CPCs and fisheries concerned, and the actions proposed

Dataset	CPCs	Fisheries	Main issues	Proposed actions
Socio-Economic	**All**	**All**	Limited data available, and collated within the IOTC database	Liaise with FAO Trade and Statistics Division and economic institutions to access open repositories of fish sale price, import and export data, and national indicators (e.g., Gross Domestic Product)

APPENDIX V
WORKING PARTY ON DATA COLLECTION AND STATISTICS PROGRAM OF WORK (2023–2027)

The Program of Work consists of the following, noting that a timeline for implementation would be developed by the SC once it has agreed to the priority projects across all of its Working Parties:

Table 1. Priority topics for obtaining the information necessary to deliver the necessary advice to the Commission

Topic in order of priority		Sub-topic and project	Timings				
			2023	**2024**	**2025**	**2026**	**2027**
1	**Coastal fisheries data collection**	**1.2** Assist the implementation of data collection and sampling activities for fisheries insufficiently sampled. Priority to be given to the following fisheries:					
		• Indonesia					
		• India					
		• Bangladesh					
		• Pakistan					
		• I.R. Iran					
		• Kenya					
		• Somalia					
		• Sri Lanka					
2	**Evaluation of catch and effort data uncertainties**	**2.1** Review of historical nominal catches and catch-and-effort data for all stocks being assessed in the following years to determine the level of uncertainty to be used for stock assessment and management procedures					
			2023	**2024**	**2025**	**2026**	**2027**

Table 2. All topics of relevance to the WPDCS program of work (2023-2027)

Topic		Sub-topic and project		Timings				
				2023	2024	2025	2026	2027
1	**Coastal fisheries data collection**	**1.1**	Implement a region-wide study focusing on the application of FAO methodology for the characterization of Indian Ocean fisheries (Secretariat, CPCs)					
		1.2	Assist the implementation of data collection and sampling activities for fisheries insufficiently sampled. Priority to be given to the following fisheries:					
			• Indonesia					
			• India					
			• Bangladesh					
			• Pakistan					
			• I.R. Iran					
			• Kenya					
			• Somalia					
			• Sri Lanka					
2	**Evaluation of catch and effort data uncertainties**	**2.1**	Review of historical nominal catches and catch-and-effort data for all stocks being assessed in the following years to determine the level of uncertainty to be used for stock assessment and management procedures[1]					
3	**Compliance with IOTC data reporting requirements**	**3.1**	Data support missions					
		3.1.1	Drafting of indicators to assess performance of IOTC CPCs against IOTC Data Requirements; evaluation of performance of IOTC CPCs with those Requirements; development of plans of action to address the issues identified, including timeframe of implementation and follow-up activities required. Priority to be given to the following CPCs / fisheries:					

[1] Secretariat / WPTT / WPM / national scientists / external experts

		• Indonesia						
		• India						
		• Pakistan						
		• Oman						
		• Sri Lanka						
		• Somalia						
		• Other (as required / determined)						
		3.2 Workshops to clarify data reporting requirements[2]						
		3.3 Support the documentation of sampling protocols and processing[3]						
4	**Data access**	**4.1** Improve discoverability of IOTC scientific assets through standard metadata and DOI[4]						
5	**Support for the implementation of the IOTC Regional Observer Scheme (ROS)**	**5.1** ROS e-tools						
		5.1.1 Support the adoption of the ROS e-Reporting and ROS national database tools by countries not having any existing observer data collection and management system in place						
		5.2 ROS Regional Database						
		5.2.1 Incorporate all historical observer data currently available in other proprietary data formats (e.g., ObServe, ICCAT ST09 and other custom observer forms)						
		5.3 ROS Electronic Monitoring Systems						
		5.3.1 Implement pilot EMS system on gillnet / coastal longline vessels for fleets insufficiently covered						

[2] Recommended by the CoC
[3] Secretariat to finalize the template, CPC to provide information
[4] Secretariat in collaboration with INTERREG project

	by on-board observers, possibly by providing support through remote / in-person meetings[5]					
5.4	Evaluate the combination of alternative data collection systems and protocols for the collection of scientific observer data for artisanal and coastal fisheries, with an initial expert to develop protocols and guidelines for minimum data collection requirements in coastal fisheries, including through EMS systems.					
		2023	**2024**	**2025**	**2026**	**2027**

[5] Sri Lanka EMS, training and setup of data exchange

APPENDIX VI
CONSOLIDATED RECOMMENDATIONS OF THE 18TH SESSION OF THE WORKING PARTY ON DATA COLLECTION AND STATISTICS

Note: Appendix references refer to the Report of the 18th Session of the Working Party on Data Collection and Statistics (IOTC-2022-WPDCS18-R)

Data reporting (to the IOTC Secretariat)

Rec. WPDCS18.01 (para 37): The WPDCS **ENDORSED** the proposed approach for a more rigorous characterization of the fisheries of relevance to the IOTC, and **RECOMMENDED** that the approach and its outcomes are **CONSIDERED** for **ENDORSEMENT** by the SC, so that the new fishery codes may be progressively included in a) the IOTC data reporting forms for the submission of statistical data, b) all publicly disseminated IOTC datasets and reference manuals / guidelines, c) the IOTC databases and supporting applications.

Rec. WPDCS18.02 (para 45): The WPDCS **ENDORSED** a) the proposal of replacing of Forms 3-AR and 3-CE with the updated version of form 3-CE to rationalise and simplify the submissions of geo-referenced catch and effort data; b) that catch and effort and size-frequency fishery statistics be submitted with the versions of form 3-CE and 4-SF that support the provision of records for multiple fisheries and species at the same time, and c) that at the next revision of Res. 15/02 the requirement of submitting fishing craft statistics be changed from voluntary to mandatory, and **RECOMMENDED** the SC to consider for **ENDORSEMENT** the changes proposed in a)-c).

Rec. WPDCS18.03 (para 46): The WPDCS **AGREED** on the new electronic forms for the reporting of fisheries statistics and **RECOMMENDED** that the SC **ENDORSE** them, **NOTING** that they will greatly assist data management tasks by the Secretariat, as well as ensuring that all data are reported to the IOTC in a consistent manner.

Rec. WPDCS18.04 (para 47): The WPDCS **AGREED** that, once that the Commission has adopted data requirements, it should be the role of the SC to adopt mandatory forms to facilitate reporting by the CPC. The WPDCS therefore **RECOMMENDED** that the SC brings this proposed process to the attention of the 2023 Commission for **ENDORSEMENT**.

Overview of data processing procedures and proposed revisions of historical data

Rec. WPDCS18.05 (para 103): The WPDCS **REQUESTED** that Indonesia continue – in collaboration with the IOTC Secretariat – to reassess their official catches and **RECOMMENDED** that the Scientific Committee ENDORSE this activity.

Electronic Monitoring Systems in support of the IOTC ROS

Rec. WPDCS18.06 (para 162): The WPDCS **ENDORSED** the EMS terms and definitions (detailed in IOTC-2022-WPDCS18-32) for review by the Scientific Committee. The WPDCS **RECOMMENDED** that the SC review and endorse the EM terms and definitions for subsequent review and potential adoption by the Commission at its session in 2023.

Rec. WPDCS18.07 (para 163): The WPDCS **NOTED** the significant work of the WGEMS and very advanced state of the EMS standards (both EM Program and EM Data standards as described in IOTC-2022-WPDCS18-33 and IOTC-2022-WPDCS18-34, respectively) and **ENDORSED** these for review by the SC. The WPDCS **RECOMMENDED** that the SC review and endorse those EMS

Standards for subsequent review and potential adoption by the Commission at its session in 2023.

Main challenges encountered in reporting mandatory statistics to the Secretariat

Rec. WPDCS18.08 (para 120): **RECALLING** that the WPDCS17 identified aspects of several data-related resolutions (15/01, 15/02 and 19/02) that are either unclear or inconsistent and, in particular, that the SC24 **NOTED** that the following specific clarifications are required:

- that silky shark (*Carcharhinus falciformis*) be included in the list of "other" species appearing in the gillnet table in Section 2.3 of Annex II of Res. 15/01
- that the terms "shall be submitted frequently" appearing in para. 4.c of Res. 15/02 be further clarified
- that para 5 of Res. 15/02 be amended with the inclusion of "and baitboats" in addition to purse seiners already mentioned in this paragraph
- that para. 4.c of Res. 15/02 be amended with the inclusion of the request that "Documents describing the extrapolation procedures (including raising factors corresponding to the logbook coverage) shall also be submitted routinely" that already appears in both para. 4.a and 4.b of Res. 15/02
- that para. 26 of Res. 19/02 be amended to also allow the use of buoy position data for scientific purposes, and to further clarify how to protect business confidentiality aspects as per para. 24 of Res. 19/02,

the WPDCS **RECOMMENDED** the SC to **RECOMMEND** that the Commission consider how to best address these issues at the next revision of each resolution.

WPDCS program of work

Rec. WPDCS18.09 (para 182): The WPDCS **RECOMMENDED** that the Scientific Committee consider and endorse the WPDCS Program of Work (2023–2027)

Review of the draft, and adoption of the report of the 18th Session of the WPDCS

WPDCS18.10 (para. 186): The WPDCS **RECOMMENDED** that the Scientific Committee consider the consolidated set of recommendations arising from WPDCS18, provided at Appendix VI.