IOTC-2019-WPDCS15-INF06

CAPACITY BUILDING WORKSHOP ON OBSERVER DATA COLLECTION FOR TUNA FISHERIES IN THE INDIAN OCEAN

Karachi, Pakistan 11-13 December 2018

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EXECUTIVE SUMMARY

The ROS2 workshop organized by WWF – Pakistan was held in Karachi, Pakistan, from 11 December to 13 December 2018. A total of 39 participants attended the workshop.

The following are a subset of the complete recommendations and decisions from the ROS2 workshop to the Indian Ocean Tuna Commission for their consideration, which are provided from paragraph 98-104.

Summary First Session: Data Requirements, investigating gaps and Knowledge

ROS2 workshop (pages 5-13). The Workshop noted that some of the key definitions used to distinguish the data reporting and collection requirements in the Regional Observer Scheme remain ambiguous– notably the definition and extent of overlap between industrial fisheries, semi-industrial fisheries, artisanal fisheries, and coastal fisheries – this was agreed that this was a Commission level discussion and the responsibility of members states to raise it at the next Commission meeting in 2019.

The Workshop discussed the minimum standards required by each CPC. It was also briefly discussed how CPCs could meet minimum requirements for data collection that would allow the outcomes of the ROS to support the compliance and effective implementation of conservation management measures for tuna and tuna like species.

Gillnet was considered was considered a passive and indiscriminate gear which not only entangled desired target species, but also caught large number of non – target species of ecological significance. (Mozzam Khan – WPEB/IOTC 2012) The Workshop also noted Resolution 17/07 on limiting the use of large-scale driftnets (gillnets) will be mandatory for all member states in all the IOTC area by 2020, but discussed the rationale behind limiting the size of gillnets to 2.5km, noting that the decision was taken by the United Nations General Assembly (46/215) in 1991[1].

Summary Second Session: Advancement and Proposal for Consideration by IOTC under ROS

ROS2 workshop (pages 13-20). Please see nested tables on page 17-20.

Summary Third Session: Strengthening Regional Cooperation in the Indian Ocean

ROS2 workshop (pages 21-22). The Workshop **ACKNOWLEDGED** the recommendations arising from the 14th session of the WPDCS and related to the objectives of the workshop (*WPDCS14.02: evaluate the validity of alternative data collection tools, and combinations of these as potential alternatives to onboard human observer coverage for the collection of the minimum standard data fields for small-scale vessels* and *WPDCS14.05: development of minimum standards on EMS for IOTC*) and **RECOMMENDED** that the outcomes of this Workshop are used to drive the process of implementation of both IOTC recommendations.

The Workshop **RECOMMENDED** that member countries are actively consulted or participate in the feasibility analysis of alternative methods for the collection of scientific observer data, in particular by providing expertise on the assessment of the collected information for scientific purposes.

[1] http://www.un.org/documents/ga/res/46/a46r215

The workshop **NOTED** the interest expressed by Kenya, Mozambique and Maldives in participating to the ROS Pilot Project activity on the implementation of an observer training programme to support implementation of the Regional Observer Scheme in the Indian Ocean and **RECOMMENDED** that IOTC consider the inclusion of these CPCs in future activities

ACKNOWLEDGING the recent revision of mandatory data fields for ROS reporting purposes (see appendix …) the Workshop **RECOMMENDED** that CPCs exploring the possibility of data collection mechanism alternative to onboard scientific observers ensure proper level of coverage between these and the ROS minimum data reporting requirements for the considered gear types.

The Workshop **ACKNOWLEDGED** the draft action plans provided by participants and **RECOMMENDED** that the identified actions and opportunities (including the strategies identified for their implementation) for the strengthening of the ROS implementation at national level are considered and taken forward by CPCs with the support of the identified partners.

ACKNOWLEDGING the need for a stronger regional cooperation for the fulfillment of the identified objectives, the Workshop **RECOMMENDED** that mechanisms are identified / established to help implement the IOTC ROS and alternative data collection protocols for the collection of scientific observer data.

Review of the draft, and adoption of the report of the ROS2 Workshop

The ROS2 workshop participants **RECOMMENDED** that the Indian Ocean Tuna Commission consider the consolidated set of recommendations arising from ROS2 workshop.

ACRONYMS and ABBREVIATIONS

ABNJ	Areas Beyond National Jurisdiction
BRUV	Baited Remote Underwater Video Systems
BRT	Blue Resources Trust
BMIS	Bycatch Management Information System
BOBLME	Bay Of Bengal Large Marine Ecosystem
CAPs	Concerted Action Plans
CCSBT	Commission for the Conservation of Southern Bluefin Tuna
CITES	The Convention on International Trade in Endangered Species of Wild Fauna and Flora
CMMs	Conservation and Management Measures
CMS	Convention on the Conservation of Migratory Species of wild Animals
CPCs	Cooperating Non contracting Parties
CPPS	Permanent Commission for the South Pacific
CPUE	Catch Per Unit Effort
CSRP	Centre for Sustainable Research and Practice
eDNA	Environmental Deoxyribonucleic Acid
EEZ	Exclusive Economic Zone
EMS	Electronic Monitoring System
ETP	Endangered, Threatened and Protected
EUPOA	European Union Plan of Action for Sharks
FAO	Food and Agriculture Organization of the United Nations
FFA	Fisheries Forum Agency
GDP	Gross Domestic Product
GSRI	Global Sharks and Rays Initiative
GN	Gillnet
HL	Handline
HS	Harmonized System
IATTC	Inter-American Tropical Tuna Commission
ICCAT	International Commission for the Conservation of Atlantic Tunas
IFS	Introduction from the Sea
IPOA	International Plan of Action
IOSYP	Indian Ocean Shark Year Plan
IOTC	Indian Ocean Tuna Commission
IUU	Illegal Unreported and Unregulated
ISSF	International Seafood Sustainable Foundation
IUCN	International Union for Conservation of Nature and Natural Resources
JCU	James Cook University
Km	Kilometer
LAF	Legal Acquisition Finding
LED	Light Emitting Diode
LL	Long Lines
LoA	Length overall

m	Meter
MEAs	Multilateral Environment Agreements
MoU	Memorandum of Understanding
MPA	Marine Protected Area
MSC	Marine Stewardship Council
NDFs	Non-Detrimental Findings
NGO	Non-Governmental Organization
NIO	Northern Indian Ocean
NOAA	National Oceanic and Atmospheric Administration
NPOA	National Plan of Action
NWIO	North West Indian Ocean
OSPESCA	Organización del Sector Pesquero y Acuícola del Istmo Centroamericano
RAT	Rapid Assessment Tool
ROS	Regional Observer Scheme
RPOA	Regional Plan Of Action
RSCAPs	Regional Seas Convention and Actions Plans
SC	Scientific Committee
SRCF	Sub-Regional Fisheries Commission
SWOT	Strengths, weaknesses, opportunities, Threats
TAC	Total Allowable Catch
tRFMO	Tuna Regional Fisheries Management Organization
UAE	United Arab Emirates
UNCLOS	United Nations Convention on the Law of the Sea
UNEP	United Nations Environment Program
UNFSA	United Nations Fish Stock Agreement
USD	United Stated Dollars
WCPFC	Western and Central Pacific Fisheries Commission
WCS	Wildlife Conservation Society
WPDCS	Working Party on Data Collection and Statistics
WPEB	Working Party on Ecosystems and Bycatch
WWF	World Wide Fund for Nature

Opening of the Meeting (Inaugural Session)

1. The ROS2 workshop was held in Karachi, Pakistan from 11-13 December 2018. A total of 39participants attended the workshop, including 11 International participants from 5 countries (I.R. Iran, Kenya, Maldives, Mozambique and Sri Lanka) and 2 participants from the IOTC Secretariat. The list of participants is provided at Appendix I.

2. The meeting was opened on 11thDecember 2018 by the recitation of verses from the Holy Quran, followed by a welcome of participants to Pakistan by Dr Babar Khan (WWF). A key note speech was provided by Moazzam Khan (WWF) on the crew-based observer scheme. Remarks were also provided by Asad Rafi Chandna (Director General/Fisheries Development Commissioner, Pakistan) and Mr. Fabio Fiorellato on behalf of the IOTC Secretariat.

3. WWF-Pakistan presented the 'Observer of the Year' award. The vote of thanks was given by Farhan Khan (Pakistan) and also acknowledgement to the ABNJ Project[2] which provided funding for the workshop.

Adoption of the Agenda and arrangement for the Session

4. The ROS2 workshop agenda was adopted and is provided in Appendix II. The documents presented at the workshop are also listed in Appendix III(https://www.dropbox.com/sh/ai4rftk4oa6p7wj/AAARAorbn0L3b6UaCWZAHHuka?dl=0).

First Session: Data requirements, investigating gaps and knowledge

Current status of Regional Observer Scheme in the Indian Ocean (IOTC Secretariat)

5. Mr. Fabio Fiorellato, IOTC Data Coordinator, provided participants with an overview of the main reporting requirements and data assets held by the IOTC Secretariat, catch trends by gear and main fisheries under the IOTC management mandate, and details of the main CMMs related to data collection and reporting. Participants noted that IOTC Resolutions, including Resolution 11/04 "*On a Regional Observer Scheme*", are binding to all members of IOTC, although there continues to be persistent problems by many CPCs in terms of compliance with IOTC's mandatory data collection and reporting requirements.

6. The Workshop noted that annual catches of tuna within the IOTC area of competence (≈1 million tons) account for almost 20% of the global tuna production, and that all species – other than the 16 species under IOTC mandate – are referred to as *bycatch* regardless of their fate or targeting status for a specific fishery.

7. The Workshop noted that gillnets, longliners, purse seine, pole-and-line are the main gears in terms of retained catches reported to the Secretariat. The Workshop also noted that the majority of catches are accounted for by artisanal fisheries (i.e., over 65% of catches in recent years), and this has a major impact on the quality and timeliness of the information available to the IOTC Secretariat and used by scientists for stock assessment purposes – including the collection of observer data.

8. The Workshop noted that the quality of data available by species is highly dependent on the importance of catches from artisanal fisheries, which tend to be the least well reported fisheries and often require catches to be at least partially or fully estimated by the IOTC Secretariat. The workshop further noted

[2] http://www.fao.org/in-action/commonoceans/projects/tuna-biodiversity/en/

that catch-and-effort and size frequency data for neritic tunas and billfish continues to be poorly reported, and remains a major challenge for stock assessments which in many cases continue to be highly uncertain.

9. In terms of the IOTC Regional Observer Scheme, the Workshop noted the difficulties of deploying on-board scientific observers in accordance with IOTC Resolution 11/04 (i.e., on vessels which are larger than 24 metres LOA3, or less than 24 metres and fish outside the EEZ). Deployment on vessels under 24 metres operating on the high seas is particularly challenging given the logistical and safety issues associated with placing observers on smaller sized vessels.

10. The Workshop noted discussions on possible alternative, complementary, methods to on-board scientific observers to collect observer data, for example: electronic monitoring systems, crew based data collection, port sampling, or a combination of more than one of the alternative methods in order to improve coverage and verification of the data.

11. The Workshop noted the differences between logbooks and scientific observer data – namely, that data collected by scientific observers are considered to be independent (and impartial) compared to logbooks completed by the vessel captain. The range of information collected by scientific observers is also considerably more detailed than standard logbooks, including daily records of all fishing related activities (including times recorded for steaming, searching, gear setting and hauling), and the collection of length, weights, and other biological indicators for a sample of the main species. Consequently, while the information from scientific observers can be used to validate information collected by logbooks, the limited range of information captured by logbooks means that the data do not fulfil the data collection and reporting requirements of the Regional Observer Scheme.

12. The IOTC Secretariat informed participants that 21st Session of the Scientific Committee formally endorsed the activities in the Working Party on Data Collection and Statistics program of work, which includes an evaluation study to assess the feasibility of alternative methods of data collection for small-scale fleets in the context of the ROS:

*The SC noted that there is a lack of data for small-scale fisheries that are currently unable to deploy human observers and other means of data collection are required. The SC **REQUESTED** the WPDCS to continue to evaluate the validity of alternative data collection tools to on-board human observers (such as the use of crew as observers (i.e. self-sampling), electronic human observer coverage for the collection of the minimum standard data fields for small-scale fisheries monitoring (e.g. cameras) and port sampling), and combinations of these, as potential alternatives to on-board (SC21.para21).*

Status of compliance and data collection and reporting requirements

13. The Workshop noted the current levels of compliance (in terms of data-related IOTC Resolutions, including Resolution 11/04 *On a Regional Observer Scheme*), for each of the countries attending the workshop, and that improvements are required for both coastal, and industrial surface and longline fleets.

14. The workshop participants noted that a total of 15 CPCs have submitted a list of observers to the IOTC Secretariat and have been allocated an IOTC observer number, and that a total of 375 observers are now registered as active. 1,374 trips have now been reported to the IOTC Secretariat (the majority of which refer to purse seine and longline trips), of which 909 of these (67%) have now been incorporated in the IOTC ROS database. It was also noted that while there has been a consistent improvement in the

[3] Length overall (LOA) is the maximum length of a vessel's hull measured parallel to the waterline.

number of observer coverage in recent years, the increase coverage is almost entirely accounted for by industrial fleets while coverage of other, artisanal, fisheries remains extremely low.

15. The Workshop discussed regarding the minimum standards, including the Code of conduct, and safety at sea for observers. The IOTC Secretariat provided the workshop participants with information regarding the list of requirements.

16. In response to the lack of progress implementing the Regional Observer Scheme, particularly by developing coastal states, in 2016 the IOTC Commission adopted Resolution 16/04 ROS Pilot Project4 which aims "to enhance the implementation of the Resolution 11/01 on a Regional Observer Scheme and to raise the level of compliance to the Implementation of Resolution 15/01 and 15/02"5.

17. The Workshop noted the following five priorities (or areas of improvement) targeted by ROS Pilot Project, aimed at improving compliance with the ROS mandatory requirements:

    i. observer training programme and minimum standards;

    ii. electronic data collection and reporting;

    iii. observer database and incorporation of historic observer trip reports (hosted at the IOTC Secretariat)

    iv. electronic monitoring systems

    v. support to artisanal fisheries data collection system (in terms of observation in-port)

    vi. Train observers in port sampling (Iran has a good experience on it and interest in making progress in port sampling and observer scheme)

18. The Workshop noted the different activities in support of each of these major component. In particular the recent activities to support the 'observer training programme and minimum standards', which have included the revision of the minimum standard data fields for data collection and reporting purposes, and a new project – to be implemented by IOTC through external science providers – for the development and implementation of an observer training programme that aims at building a comprehensive training package for the implementation of the ROS and the delivery of training courses in six countries (including Sri Lanka, I.R. Iran and Tanzania).

19. The Workshop noted that the IOTC Secretariat is also collaborating with the Government of Sri Lanka to appraise the feasibility of electronic monitoring systems (EMS) on smaller-scale vessels (i.e., six coastal longline and gillnet vessels, between 15-20 metres LOA). The IOTC Secretariat is responsible for undertaking the feasibility and data quality review, for development of draft standards for e-monitoring on small-scale fisheries.

20. The Workshop participants also expressed an interest in being part of the ROS Pilot Project. Kenya, Mozambique and Maldives in particular expressed an interest in participating in the observer training programme training, and the IOTC Secretariat confirmed that training may be provided to other CPCs not currently not included in the Pilot Project (depending on the availability of funds).

21. Following the presentation of the ROS Pilot Project, a number of items were discussed by the workshop participants, including:

[4]Resolution 16/04 *On the implementation of a pilot project in view of promoting the Regional Observer Scheme of IOTC*, http://www.iotc.org/cmm/resolution-1604-implementation-pilot-project-view-promoting-regional-observer-scheme-iotc

[5] Resolution 16/04, para.1.

a) The need to clarify the current definition of fishing effort coverage used to assess the level of implementation of the Regional Observer Scheme. In the case of longline fleets, observer coverage has been considered as the number hooks observed compared to the no. hooks deployed, while in the case of purse seine, pole-and-line and gillnet fisheries there is currently no clear indication of the specific effort unit to be considered)

b) Comments on the differences between logbook data and scientific observer data, and how scientific observer data – which is considered *independent* and generally completer and more accurate than logbook data – can be used for cross-verification.

c) That the Regional Observer Scheme standards deals with aspects such as code of conduct, safety-at-sea, insurance and liability, etc., and that these cannot be discussed from a scientific point of view but require a dedicated, technical ad-hoc working group. The IOTC Secretariat confirmed that the finalized list of such requirements will be circulated as part of the material for this workshop.

Outcomes from the Expert Consultation workshop held in Oman and Seychelles (Fabio Fiorellato)

22. The IOTC Secretariat provided Workshop participants with an overview of the first ROS workshop held in Oman in 2015, the main outcomes of the workshop, and areas for improvement identified by draft plans of action developed by the participating countries in the workshop, including:

- Training and deployment of scientific observer's on-board large-scale vessels (when applicable).
- Improvements in port-sampling coverage.
- Development of training courses to support the introduction of measures for the reduction of bycatch rates for Species of Special Interest.
- Introduction of tablet-based data collection protocols for enumerators.
- Implementation of crew-based / self-reporting observer schemes.
- Improve current definitions of artisanal and industrial fisheries to enable the development of tailored and more appropriate data collection mechanisms that take into consideration the vessel size and logistical difficulties of collecting data.

23. It was noted that, despite the positive progress in implementing electronic or crew-based data collection systems by several countries attending the workshop (e.g., Kenya, Pakistan, Sri Lanka), progress has been more mixed in addressing the priorities identified by each country's national plan of action since the 2015 workshop, and that additional follow-up is needed to ensure improvements in compliance from current levels of implementation of the Regional Observer Scheme

24. The main findings of the ROS Expert Workshop (held in Seychelles, September 2018) were also presented by the IOTC Secretariat to participants and a summary of the main outcomes, including (appendices are provided in dropbox folder[6]:

- Proposed programme standards and guidelines
- Amendments to the list of mandatory data reporting fields
- Harmonization of reference classifications

[6] https://www.dropbox.com/sh/ai4rftk4oa6p7wj/AAARAorbn0L3b6UaCWZAHHuka?dl=0

25. The Workshop noted that the outcomes of the ROS Expert Workshop have been presented to, and endorsed, by the 14thIOTC Working Party on Data Collection and Statistics and 21st session of the Scientific Committee. An overview was also provided on the implications to the changes in the current mandatory data collection and reporting requirements for the Regional Observer Scheme.

Country Presentations

26. The representatives from the Government of Kenya provided a presentation on the country report. The abstract of the presentation is as follows; *"Kenya presentation detailed about the country's maritime area and the activities and uses of marine resources in the country. It also explained the fisheries catch primarily belongs to small scale fisheries, further distinguishing fisheries catch by gear type and providing a composition of the fleets engaged in the EEZ of Kenya. A graph showing an estimate of the catch EU owned PS inside Kenya EEZ is also presented. The presentation focused on the current level of fisheries management and also provided the current status of the implementation of the National Observer program which appeared to be low. The presentation highlighted the need for training and capacity building of observers".*

27. Mr. Isaac Wafula from Kenya presented the status of tuna fisheries. He explained that the country has small-scale fisheries, but also comprise of large scale and industrial/distant water fishing fleets. He explained that the main gear types include, GN, pole and line, LL, Trolling, Purse seines – and methods also include aerial sightings for catch of target species. He also explained that the fleets included foreign owned tuna LL(9), Kenya flagged tuna LL (2), Kenya flagged PS (3) vessels operating in Kenyan EEZ.

28. He explained that the current status of observer coverage is very low. There are only five trained observers accredited by IOTC. There are two longline vessels and both have observers on board.

29. The challenges for having on board observers was discussed in detail, highlighting the lack of comprehensive training programme including associated training on species identification, collection of biological information. He also explained that the observers faced logistical issues and was marred with socio-political and financial impediments.

30. Mr Isaac Wafula expressed that WWF has been supporting the Government of Kenya in collection of data from landing sites using mobile application.

31. The representatives from the Government of Mozambique provided a presentation on the country report. The abstract of the presentation is as follows: *"Presentation from Mozambique focused on the mechanisms of data collections of tuna fisheries. The main fisheries and sub-sectors as well as the catch of Tuna fisheries are mentioned. Data on the catch by the artisanal, recreational and sport fisheries was also discussed. The current status of the national observer scheme was discussed and the problems that were detected during data collection were also mentioned. Practical actions to be taken are recommended to fishing industries, institutions and other stakeholders. Future plans mentioned in the presentation include approval and enforcement of IOTC resolutions regarding conservation of sharks, sea turtles and sea birds. Mozambique Program also aims to cover 2 Northern provinces for data collection on neritic species.*

32. Mr. Jose Halafo provided the country presentation on the status of tuna fisheries in Mozambique. He discussed that 92% of the total catch comes from artisanal fisheries of which IOTC primary species include 7.7 million tonnes?

33. The workshop participants noted the distinctive decline in fishing effort of the distant water fishing fleets from 6,640 (2,722 fishing days) in 2010 to 2,728 (1,636 fishing days) in 2017. It was noted that this decline was largely due to pending access agreements with the EU.

34. The workshop participants noted that eight observers have been trained by Mozambique and are also registered as observers. In 2017, 11% of the total fishing days were covered by scientific observers on board national longline vessels. Observer trips were reported in electronic format to the IOTC.

35. The IOTC secretariat noted there was a difference in the data format submitted to the IOTC, and it was assured that data will be submitted on IOTC format in the future.

36. The workshop participants noted the request for capacity building and support from non-government organizations.

37. The representatives from the Government of Maldives provided a presentation on the country's report. The abstract of the presentation is as follows: *"Presentation from Maldives described the three major gear types including pole-and-line, handline and longline and provided the approximate amount of catch and species targeted by each method. The two main species of tuna caught in Maldives are Skipjack and Yellowfin Tuna. The presentation also mentioned the requirement of catch certificate with all the tuna and grouper fish products exported from Maldives. Fish purchases and exports of fish and fish products are also discussed in the presentation. The presentation also described a web-based Fisheries Information System software, FIS that allows members on either side of the value chain to access the data. Currently Maldives do not have a fully established National Observer Program, and most of the observers are only focused on collecting scientific data. Challenges faced in the data collection and future plans of improvement were also discussed".*

38. Ms. Rauufiya provided the country presentation on the status of tuna fisheries in the Maldives. It was noted that the Maldives tuna fishery data collection began in 1959, and species specific data was recorded from 1966 onwards.

39. The workshop participants noted that in 2017, approximately 75% of the total catch of tuna belonged to the Maldives pole and line fisheries, of which skipjack (80%) was the dominantly caught tuna species.

40. The workshop participants noted that there are no observers on board tuna vessels at the moment and that they are in the process of improving the monitoring of tuna catches.

41. The workshop participants noted the challenges faced by the Maldives, which included the lack of comprehensive training programmes, further noting that the SWIOfish4 World Bank project is providing assistance to develop electronic monitoring system in the Maldives.

42. The representatives from the Government of Sri Lanka provided a presentation on the country report. The abstract of the presentation is as follows: "*Sri Lanka provided an overview of the fisheries sector and fleet composition of the country. The main gear type used in the Tuna fisheries are Large-mesh Gillnet, Long line and Ring nets and the target species include a few species of Tropical Tuna, Neritic Tuna, Billfish as well as some species of sharks. The current level of management of fisheries, in particular tuna was described and log book data collection as well as electronic log book system for tuna vessels was described. The presentation also included the current status of the National Observer*

Scheme. It was concluded that assistance in training program on introducing e-log book system and training scientific observers would be needed in the near future".

43. Mr Janaka provided the country presentation from Sri Lanka on the status of tuna fisheries and data collection. It was noted that Sri Lanka has introduced on board observers on longline vessels.

44. The workshop participants noted that Sri Lanka has achieved 100% logbook and VMS coverage on vessels fishing outside the EEZ.

45. The workshop participants noted that 20 fisheries officers have been selected and trained, of which 15 were selected and 10 are posted as observers.

46. The workshop participants noted the challenges faced by Sri Lanka in implementing the ROS, which included the deployment of observers on board tuna fishing vessels as 97% of the vessels are less than 15 m.

47. The workshop participants noted the need for support, trainings and administrative changes required to develop national plans for observer programme.

48. The workshop participants noted that IOTC will be planning to install electronic monitoring systems on at least 6 vessels including gillnet (2) and longline (4) fleets.

49. It was discussed that the e-logbook system introduced by Sri Lanka is more efficient then the manual logbook data system, easier to record and save data.

50. The workshop participants noted that there are 1500 vessels fishing outside the EEZ and all vessels have VMS on board.

51. The representatives from the Government of Islamic Republic of Iran provided a presentation on the country's report. The abstract of the presentation is as follows: "*Iran provided a brief overview of its fisheries from 2017 and discussed the history of the competence of Iran Fisheries organization in IOTC area. The presentation also provided a view of current fisheries management as well as Port based CMS measures regulations. Efforts made to combat IUU fisheries are also mentioned and it is stated that infraction is punished by law. Challenges and future plans are also discussed.*

52. Mr. Reza Shahifar provided the country presentation on the status of tuna fisheries and data collection system in Iran. The workshop participants noted that Iran has 11,292 vessels. This is total number of Iranian fishing vessels which are active in different fishing activities. The number of all type of vessels (from small boat to big ship) which are active in tuna fisheries have been around 6280 in 2017. It was also noted that tuna fisheries are of significant importance and comprise of more than 46 per cent of total catch.

53. The workshop participants noted the increase of compliance to IOTC (from 11% in 2011 to 72% in 2017).

54. The workshop participants noted the need for capacity building of fishermen and the need to ensure that system of monitoring is economically feasible.

55. Iran has good experience in port sampling and monitoring and there are often weaknesses and we may need to look at a combination of two or three to facilitate data collection and meeting reporting requirements.

56. The representatives from the Government of Pakistan provided a presentation on the country's report. The abstract of the presentation is as follows: *Pakistan mentioned that approximately 80% of total fish production is contributed by the marine fisheries sector, and it contributes to 1% of country's GDP.*

According to the presentation, gillnet is the main fishing gear used for tuna fishing in Pakistan, furthermore 12 Taiwanese long-liners were also licensed to fish under Pakistani flag in 1993. A total of 3800 gillnetters and 815 pelagic gillnet fishing boats operating in the IOTC area were recorded in 2017. It is also said that the maritime area of EEZ is divided into 3 zones. Vessel monitoring system is also discussed. It was stated that WWF-Pakistan has 85 observers on tuna boats but no observers on gillnetters but governments. Fisheries legislation is also briefed and challenges in the management of tuna fisheries are also mentioned. It was concluded that the size of the fishing fleet as well as the tuna catches is increasing but improvement in the fisheries statistics is still needed.

57. Mr Farhan Khan presented the country report on tuna status and data collection from Pakistan. It was noted that Pakistan catches tuna primarily with gillnets and have around 815 vessels. The workshop participants noted the increase in tuna catches from 45,000 tonnes (2012) to 71,000 tonnes (2017).

58. The presentation presented revealed that Pakistan is not able to fulfil reporting requirements, as there is no logbook data system, and we certainly need to improve the data collection systems – if the basics are not right, and move towards electronic monitoring. For each country there are strengths and weakness, emphasize the need for implementing crew-based observer scheme and close interaction with the government departments.

59. The workshop participants noted that Pakistan has made VMS mandatory under the Deep-Sea Fishing Licensing Policy adopted earlier in 2018.

60. Government of Pakistan expressed acknowledgement to WWF-Pakistan for the support in data collection. The workshop participants noted that WWF-Pakistan has 75 observers on tuna gillnet vessels actively engaged in data collection.

61. The workshop participants noted that Government of Pakistan under its new licensing policy will have VMS, logbook and all other requirements fulfilled.

62. The IOTC Secretariat acknowledged and appreciated the support of WWF-Pakistan and the Government of Pakistan in the improvement in data acquisition to IOTC and active participation.

7. Conclusion (Chair)

63. The Workshop noted that some of the key definitions used to distinguish the data reporting and collection requirements in the Regional Observer Scheme remain ambiguous– notably the definition and extent of overlap between industrial fisheries, semi-industrial fisheries, artisanal fisheries, and coastal fisheries – but that this was agreed that this was a Commission level discussion and the responsibility of members states to raise it at the next Commission meeting in 2019.

64. The Workshop discussed the minimum standards required by each CPC. It was also briefly discussed how CPCs could meet minimum requirements for data collection that would allow the outcomes of the ROS to support the compliance and effective implementation of conservation management measures for tuna and tuna like species.

65. The Workshop also noted Resolution 17/07 on limiting the use of large-scale driftnets (gillnets) will be mandatory for all member states in all the IOTC area by 2020, but discussed the rationale behind limiting the size of gillnets to 2.5km, noting that the decision was taken by the United Nations General Assembly in 1991[7].

[7] http://www.un.org/documents/ga/res/46/a46r215

66. Data collection systems and recognition of crew-based observers, electronic monitoring – as the data requirements cannot be only done by port sampling – there is a strong case that these methods are complimentary to each other and can provide the data. There is no single requirements/tool or method that would allow for a robust data collection system and the pros and cons of each in terms of resources that are invested in the systems. There needs to be a comprehensive assessment on what we have heard. Is infrastructure available? Is it possible to include any of the systems?

68. Considerations, we need to ensure that the combination of the data collection systems needs to be verified, but also looking at whether the data collection system is scientific and that it complies with the minimum standards of the ROS. It might be good to do an exercise on looking at data collection mechanisms and to go through the minimum data fields required through other means, such as crew-observers. We need to assess the specifications of these alternate data collection mechanisms to see how these can be adopted by the Commission.

69. Alternate data collection mechanisms (observer coverage) is currently optional and it was discussed whether it can be made mandatory. It might require capacity building for interested coastal states for crew-based observer data collection and IOTC could potentially take the lead role.

Outcomes of the WPDCS and SC

70. The workshop participants noted the presentation by the IOTC Secretariat on the outcomes and recommendations of the 14th session of the WPDCS and the 21st session of the SC held in Seychelles related to the implementation of the Regional Observer Scheme.

    WPDCS14.01 (para. 146): The WPDCS **NOTED** that all changes to the proposed ROS *Minimum Standard Data Fields* are captured within the summary table in appendix to this document and **RECOMMENDED** that the ROS *Minimum Standard Data Fields* in Appendix VII are adopted by the Commission.

    WPDCS14.02 (para. 149): The WPDCS **RECOMMENDED** that the SC evaluate the validity of alternative data collection tools, and combinations of these (such as the use of crew as observers, electronic monitoring and port sampling), as potential alternatives to onboard human observer coverage for the collection of the minimum standard data fields for small-scale vessels.

    WPDCS14.05 (para. 153): The WPDCS **RECOMMENDED** the development of minimum standards on EMS for IOTC. The WPDCS further **NOTED** the WCPFC are currently drafting standards on EM and **ACKNOWLEDGED** that it would be pertinent for IOTC to follow this process and utilize the outcomes where relevant.

71. The IOTC Secretariat informed participants that the 21st session of the Scientific Committee endorsed all the recommendation from the WPDCS as well as its program of work, noting that ROS specific activities are now outlined and sources of funding are being identified.

Second Session: Advancement and proposal for consideration by IOTC under ROS

Case Studies - Sri Lanka – elogbook data system

72. The e-logbook data system was introduced as a case study from Sri Lanka. The workshop participants noted the easier application and use by skippers of the tablet.

73. There are 17 harbours previously a manual logbook system was introduced to collect fisheries data. The older version was the manual logbook data system which included species wise, location wise, weights, no of pieces, date/time, bycatch, discards and tag release data. The fishing vessels using the

manual logbook had several issues, they found it really cumbersome process, so they changed to e-logbook system. Several data fields can be entered from departure to arrival and catch report, including equipment. At first the device must register the vessel through the application. The vessel name, owners, contact no. are made part of the observers. Once the vessel is registered (IMEI No.) received and also add details of SSB radio, the number of crew members before the departure FIA customs inspect the vessel. All details are necessary under catch data you may enter immediate 2 – and its very sequential how the data is entered. All data fields can be entered with enough information to track the vessel including vessel position/map. The information has to be then put as arrival confirming the registered vessel is now in port.

74. The information is sent to the head office and then it is reconciled and then sent to IOTC. The application is using GPS system, with data sim, and fisheries observer can trace back the data. Data collection regulation for taking the legal action against data non-compliance. Is there a difference in time before you can get information? The system requires some level of education – you might be having coverage, but done have on board observer. The Fisheries department – IOTC encourage Sri Lanka on development of electronic logbook – anything that improves the efficiency of logbooks is definitely encouraged.

75. The e-logbook system is an interactive system but the crew-based observer might not be so helpful in identifying them.

Technology for data – collating together

76. Low-cost technologies available for data collection for small-scale fisheries were discussed in addition to their practical applications. This included the use of AIS and VMS, electronic monitoring systems and use of crew-based observers.

77. The pilots on AIS on fishing vessels were discussed in detail which provided an analysis on the vessel traffic within the Indian Ocean region. Information from AIS data was provided based on traffic from cargo vessels, fishing vessels registered in tuna regional fisheries management organizations. It was discussed that the AIS vessels operating in the Indian Ocean have received frequent signals of AIS being turned off and on. In such a scenario, it is essential to couple technologies and to use AIS with additional technologies such as VMS to be able to have increased transparency.

78. It was discussed that AIS data can be overlaid with information from satellite tagging of endangered, threatened and protected species, such as sea turtles satellite tags, and an analysis can be carried out on interactions of shipping, fishing vessels with sea turtles.

79. Further, information on pilots such as CCTV cameras and other electronic monitoring systems was also provided. The fly wire system used as a e-monitoring system was also discussed in detail. Its specifications, model, type and data gathering was also discussed. In addition, shellcatch's technology was also discussed which allows to provide pattern recognition for certain species and elements coming in the frame which makes reporting from e-system easier.

80. The workshop noted that WWF stands committed for facilitating coastal states in implementing their regional observer scheme, in addition WWF is also in a position to support pilots with interested

member states of the IOTC. In addition, the example of crew-based observer scheme was discussed in detail for participating countries to implement or engage in data collection for small scale vessels.

Crew based observer programme

81. The workshop noted the programme established by WWF-Pakistan under the ABNJ tuna project on engaging crew as observers for data collection from tuna gillnet fleets.

82. The programme was established initially with support from the Government of Australia in 2012 and then later the programme has been supported by the ABNJ tuna project under the GEF, Common Oceans and FAO. The programme was initiated with four observers and now there are 75 observers/skippers involved in the data collection.

83. The approach has been relatively successful and recognized by the Indian Ocean Tuna Commission and the Government of Pakistan. The Government of Pakistan has adopted the data collected from the observer programme and submitted it to IOTC. The Government of Pakistan and WWF-Pakistan have also undertaken a reconstruction of catches for tuna and submitted to IOTC.

84. The crew-based observer does not take up any additional space on board the fishing vessel. The participating crew member is provided with a digital camera and raw data sheets. The raw data sheets have been translated from IOTC data sheets and the most necessary information was captured in the data sheets for observers to be recorded.

85. The crew members are also engaged in safe releases of sea turtles, cetaceans and sharks. The programme is also being replicated in Sri Lanka for data collection and requests have been received from other coastal states too.

86. The crew-based observer programme is now being considered as an alternate to data collection for small scale vessels.

EMS feasibility study: IOTC Secretariat

87. The IOTC Secretariat provided an overview of a current evaluation study to assess the feasibility of incorporating electronic monitoring systems (EMS) on six longline and gillnet vessels between 15-20 metres LOA in Sri Lanka, as one component of the capacity building activities under the ROS Pilot Project.

88. The Workshop noted that EMS offers a number of advantages in terms of collection of observer data, including:
    - Enables the collection of data on smaller sized vessels which are impractical for on-board observers, including fishing location, speed, gear setting and hauling activities, and composition of the catch and discards.
    - Video and image data collected by EMS are verifiable and can be audited at any point –to a greater extent than even on-board observer trip reports. In that sense, EMS data meets the basic requirements that observer data should be 'scientific and independent'.
    - EMS data can be used to compare and validate the information from on-board observers or other complementary data collection sources.

- EMS technology is developing rapidly, with the potential to collect increasingly accurate information, in real-time.
- The initial high financial costs of procuring and installing EMS equipment may be offset in the longer-term by reducing the cost of training of observers and number of on-board observers required.

89. However, the Workshop also acknowledged that, despite the increasing sophistication of EMS solutions, EMS alone is unlikely to fulfil the complete data collection requirements of the Regional Observer Scheme – particularly the collection of biological information. However, the combination of EMS with other data collection methods, such as port sampling, potentially enables the collection of the minimum observer data fields.

90. The Workshop further noted that boat owners or fishers may be more reluctant to the introduction of cameras and other monitoring equipment on-board vessels compared to, for example, crew-based data collection, and that the presence of EMS may induce positive bias by altering the behaviour or fishing practices of crews aware that their activities are being recorded.

91. The Workshop noted that while the IOTC project is currently focused on Sri Lanka, the IOTC Secretariat is seeking to collaborate with similar initiatives in the region in terms of developing standards of best practice for the implementation of EMS on small scale vessels (including gillnetters), including: coastal longliners in La Réunion (funded by Institut de Recherche pour le Développement, France), and gillnetters in Pakistan (funded by the ABNJ project).

92. That self-sampling (similar to crew-based observer programmes) has been implemented on the coastal longline fleet of La Réunion, and that the while information collected by such programme has been incorporated in the ROS Regional Database, the information has been flagged as being not “fully compliant” with the ROS requirements.

93. Interest in assessing the e-Logbook solution developed by Sri Lanka and its applicability as a tool for the collection of observer data (although with results not fully comparable to those expected from a properly implemented scientific observers programme) with participants from other coastal countries in the region considering the possibility of adapting the e-Logbook for their own needs

Action Plan for development and implementation of ROS
Presentation from Group 1 facilitated by **Mr. Fabio Fiorellato – IOTC**

Applicability	Gear type	Difficulties and Challenges (List down each one separately)	What are the most feasible actions (Independent and verifiable) required to meet/implement ROS? (Tools, methods, means, ways, resource, capacity)	What are the opportunities now to implement ROS? (Legal, Financial, Administrative, Projects, IOTC, NGOs)	Strategy		
					Who?	When?	How?
Tuna vessels required to have observer on board (Independent)	All	Daily cost of observer	Increase available funding	Finding external sponsors / secure funding	National Fisheries Organizations	N.D.	N.D.
	All	Privacy issues	Build awareness, workshop informing of the purposes, increase motivation	Liaise with fishery cooperatives / unions for support	National Fisheries Organizations	Yearly	Workshops and finding agreements with identified partners
	All	Lack of training	Train observer trainers	Specific IOTC project (ROS PP)	IOTC	2019-2020	N.D.
	GN	Onboard conditions	Ensure boats are built / modified according to better safety standards	Legal / Regulations	National Fisheries Organizations	2019-2020	Create new (sub)divisions of the fisheries ministries dealing with observers (LKA)
	GN	Onboard conditions	Consider / implement alternative data collection protocols through crew members	Learn from active programs in the region (WWF PAK / LKA)	National Fisheries Organizations	ASAP (2019)	IOTC / WWF / DFAR to facilitate exchange, National Fisheries Organizations implement the action

Applicability	Gear type	Difficulties and Challenges (List down each one separately)	What are the most feasible actions (Independent and verifiable) required to meet/implement ROS? (Tools, methods, means, ways, resource, capacity)	What are the opportunities now to implement ROS? (Legal, Financial, Administrative, Projects, IOTC, NGOs)	Strategy		
					Who?	When?	How?
	GN	Scientific independence of the information collected (for crew based)	Complement with port sampling / Electronic Monitoring Systems / Consistent scrutiny of the process (data templates, results etc.)	EMS trial, IOTC capacity building	National Fisheries Organizations / Universities / Research Institutions	ASAP (2019)	Identify observer coordinators to assess the quality of the information collected, seek collaboration from IOTC scientists
Tuna vessels not required to have observer on board	All artisanal	On board conditions	See above				
	All artisanal	Scientific independence of the information collected (for crew based)	See above				
	All artisanal	Port sampling: too many landing sites	Community-based sampling or extrapolation from major landing sites	Support from Community Based Organizations	Provincial Fisheries Organization	2020 onwards (2019 to pave the ground)	Liaise with CBOs, ensure Provincial – National fisheries organization collaborate together
	All artisanal	Port sampling: too many vessels landing	Sampling of the boats and extrapolation / increase number of samplers	Best-practices from other RFMOs / countries, training courses for species ID	National / Provincial Fisheries Organization	2019+	
	All artisanal	Port sampling: lack of trust	Depends on the case: port / harbour authorities may help	Legal opportunities	Local Fisheries Organizations / Fish Harbor authorities	ASAP (2019)	incorporate requirement in the regulations

Presentation from Group 2 facilitated by **Mr. James Geehan – IOTC**

Applicability	Gear type	Difficulties and Challenges (List down each one separately)	What are the most feasible actions (Independent and verifiable) required to meet/implement ROS? (Tools, methods, means, ways, resource, capacity)	What are the opportunities now to implement ROS? (Legal, Financial, Administrative, Projects, IOTC, NGOs)	Strategy		
					Who?	When?	How?
Tuna vessels required to have observer on board Independent	Longline (Maldives)	Problems with recruitment of observers, can't mix with the crew as the crew is not always local	Crew-based observer scheme (for legitimation of the data, briefing and debriefing sessions of observers)	Fisheries management act for purse seine and long line in Kenya (Against piracy and collaboration with coast guards)	Kenya Fisheries	June 19	Enforcement
	Longline (Kenya)	Security Issues (Piracy)	Training programmes for both fishers and the governmental organizations	Intergovernmental organization for the Arabian Sea for generation of funds for better monitoring practices	Governments of regional countries	Coming year	Diplomatic Dialogues
	Longline Sri Lanka	Limited space on boat to accommodate observers	Collaboration with security agencies in the sea	IOTC compliance and support	IOTC		
	Purse seine	Cost of hiring observers	Build capacity of current observers	Support from IOTC for strengthening port sampling in regional countries			
	Gillnets (Iran)	Length of the fishing trip	EMS (Shellcatch and flywire)	Enhancing relationships with fishers			
		Lifestyle of the sea for educated observers (Recruitment issues)	Acceptance of CBOP by IOTC, so as to generate funds for implementation of observers				
	Gillnets (Pakistan)	Cost and size of the boat	Fishermen cooperatives to be aiding in data collection				

Applicability	Gear type	Difficulties and Challenges (List down each one separately)	What are the most feasible actions (Independent and verifiable) required to meet/implement ROS? (Tools, methods, means, ways, resource, capacity)	What are the opportunities now to implement ROS? (Legal, Financial, Administrative, Projects, IOTC, NGOs)	Strategy	Applicability	Gear type
		Limited funds and capacity of the governmental organizations					
	Longline Mozambique	Lack of funds and recruitment issues as younger generations do not want to go on the sea for extended hours					
Tuna vessels not required to have observer on board	Pole and Line	Vast data and lack of capacity for port sampling	Involvement of crew members to report catch	Cross checking of the data (Crew based observer, export data and port sampling)	Governmental Organizations along with NGO's with the help of the fisher community		
		Information sharing between fishers and governmental organizations.		Incentivise crew-based observer coverage			
	Gillnets (Pakistan)	Unreported catch, landing of catch at Chabahar Port (Iran)	Crew based observer programme	e-log books in Sri Lanka			
		Link of the national bodies with fishers is very weak	Establishment of local fisher organizations and constant feedback mechanism is to be developed	E-MOB application in Kenya			

Third Session: Strengthening Regional Cooperation in Indian Ocean

South West Indian Ocean Fisheries Commission/G16 Coastal States Group/NIOCPFM

94. Due to time constraints this agenda item was not discussed in detail.

95. The regional cooperation was discussed briefly and the existing sub-regional bodies working on fisheries management were highlighted and identified to explore opportunities for cross-exchange between coastal states.

96. It was briefly explained that the G16 coastal states meeting will be held in early January 2019 where allocation criteria proposal on tuna will be discussed. It was discussed that the alternate data collection mechanisms may also be discussed during this meeting.

97. A North Indian Ocean Cooperating Party for Fisheries Management (NIOCPFM) is a proposed body of work for northern Indian ocean to engage in fisheries management through regional cooperation as no body currently exists in this region.

Recommendations of the Workshop

98. Evaluation of alternative data collection protocols
- The Workshop **ACKNOWLEDGED** the recommendations arising from the 14th session of the WPDCS and related to the objectives of the workshop (*WPDCS14.02: evaluate the validity of alternative data collection tools, and combinations of these as potential alternatives to onboard human observer coverage for the collection of the minimum standard data fields for small-scale vessels* and *WPDCS14.05: development of minimum standards on EMS for IOTC*) and **RECOMMENDED** that the outcomes of this Workshop are used to drive the process of implementation of both IOTC recommendations.
- The Workshop **RECOMMENDED** that member countries are actively consulted or participate in the feasibility analysis of alternative methods for the collection of scientific observer data, in particular by providing expertise on the assessment of the collected information for scientific purposes.

99. Observer training and capacity building
- The workshop **NOTED** the interest expressed by Kenya, Mozambique and Maldives in participating to the ROS Pilot Project activity on the implementation of an observer training programme to support implementation of the Regional Observer Scheme in the Indian Ocean and **RECOMMENDED** that IOTC consider the inclusion of these CPCs in future activities

100. Data reporting standards
- **ACKNOWLEDGING** the recent revision of mandatory data fields for ROS reporting purposes (see appendix …) the Workshop **RECOMMENDED** that CPCs exploring the possibility of data collection mechanism alternative to onboard scientific observers ensure proper level of coverage between these and the ROS minimum data reporting requirements for the considered gear types.

101. Development and implementation of the ROS
- The Workshop **ACKNOWLEDGED** the draft action plans provided by participants and **RECOMMENDED** that the identified actions and opportunities (including the strategies identified for their implementation) for the strengthening of the ROS implementation at national level are considered and taken forward by CPCs with the support of the identified partners.

102. Regional level cooperation

- **ACKNOWLEDGING** the need for a stronger regional cooperation for the fulfillment of the identified objectives, the Workshop **RECOMMENDED** that mechanisms are identified / established to help implement the IOTC ROS and alternative data collection protocols for the collection of scientific observer data.

103. The meeting was closed with thanks to all the organizers, participants, delegates and resource persons of the workshop.

104. The meeting report will be adopted once feedback is received from all participating coastal states and the member countries which were not able to attend the workshop. The deadline for adoption would be 20 days from the day of the workshop report is shared with all participants.

APPENDIX 1
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APPENDIX II

AGENDA OF THE WORKSHOP

Time	Activity	Responsibility
Inaugural Session		
0900 - 0930	Registration of Participants	Ms. Saba Ayub WWF
0930 – 0935	Recitation of Holy Quran	Mr. Asad Hassan WWF
0935 – 0945	Welcome and objectives	Dr. Babar Khan - WWF
0945 – 1000	Key Note - Crew Based Observer Programme	Mr. M. Moazzam Khan, WWF
1000 – 1015	Remarks by FDC MoMA	Mr. Asad Chandna - GoP
1015 – 1035	An overview of Regional Observer Scheme in IOTC	Mr. Fabio Fiorellato - IOTC
1035 – 1045	Conservation Award for 'observer of the year'	Mr. Saeed Ul Islam - WWF
1100 – 1110	Vote of Thanks	Mr. Farhan Khan - GoP
Tea Break (1110 – 1130)		
First Technical Session: Data Requirements, investigating gaps and knowledge		
1130 – 1200	Current status of Regional Observer Scheme in Indian Ocean)	Mr. Fabio Fiorellato - IOTC
1200 – 1220	Outcomes from the Expert Consultation workshops held in Oman and Seychelles	Mr. Fabio Fiorellato - IOTC
1220 – 1230	Discussion	Faisal Iftikhar (Chair)
1230 – 1330	Country presentations	Mr. Isaac - Kenya, Mr. Osvaldo - Mozambique, Ms. Raufiyya - Maldives
Lunch and Prayer Break (1330 – 1430)		
1430 – 1530	Country presentations	Mr. Janaka - Sri Lanka, Mr. Reza - Iran and Mr. Farhan - Pakistan
1530 – 1540	Conclusion	Mr. M. Moazzam Khan, WWF (Chair)
1540 – 1550	Outcomes of WPDCS and SC	Mr. James Geehan - IOTC
1550 – 1630	Discussion on feasibility of implementing alternative protocols	All Participants
Day Two – 12 December 2018		
Session II: Advancement and Proposals for consideration by IOTC under ROS		
0900 – 0910	Recap on Day One	Mr. Umair Shahid - WWF
0910 – 1045	Case studies	Sri Lanka – E-LOG Book, Kenya – Port Sampling,
1045 – 1100	Conclusion	Mr. Reza Shahifar (Chair)

Tea break (1100 - 1130)	

1130 – 1145	IOTC electronic tools in support of ROS	Mr. James Geehan - IOTC
11:45 – 11:55	Outcomes of the WPDC 14 and SC 21	Mr. Fabio Fiorellato - IOTC
1145 – 1200	Introduction to Group work	Mr. Umair Shahid - WWF
1200 – 1330	**Action Plan for development and implementation of ROS**	Group 01 Facilitator. Mr. Fabio Fiorellato - IOTC Group 02 Facilitator. Mr. James Geehan - IOTC
1330 – 1430	Lunch break	
1430 – 1530	Group presentations and discussion	Mr. James Geehan – IOTC Mr. Fabio Fiorellato - IOTC
1530 – 1600	Tea Break	
1600 – 1630	Draft recommendations and suggestions to drive the feasibility study on alternate data collection mechanisms	Mr. Faisal Iftikhar (Chair)
Day Three – 13 December 2018		
0900 – 0915	Recap on Day Two	Mr. Umair Shahid - WWF
Session III: Strengthening Regional Cooperation in Indian Ocean		
0915 – 0930 0930 – 1015	Recap on Day One Presentation – Group 01	Umair Shahid Mr. Fabio Fiorellato
1015 – 1100 1100 – 1145	Presentation – Group 02 Open discussion	Mr. James Geehan Chair (Mr. Faisal Iftikhar)
1145 – 1215	Closing ceremony & Certificate Distribution	WWF