KOBE III Bycatch Joint Technical Working Group: Harmonisation of Purse-seine Data Collected by Tuna-RFMO Observer Programmes

Summary. The so-called "Kobe Process", a series of informal joint meetings of the tuna Regional Fishery Management Organizations, has identified a number of issues that should be analyzed in order to improve harmonisation globally. The process identified harmonisation of bycatch data collected by the RFMOs as one such issue. This document is a report of a meeting of technical experts in tropical tuna purse-seine fisheries observer programs, which provided the first opportunity for progress towards harmonisation of bycatch data for tropical tuna purse-seine fisheries. The objective of this meeting was to harmonize data collection systems and variable definitions to improve research on bycatch mitigation, stock assessment and other topics. The report includes recommendations for the minimum data standards and data fields, including identification of areas where some uncertainty in data definitions remains.

Background

The second joint meeting of the tuna RFMOs (the "Kobe Process") established a Joint Technical Working Group on Bycatch with the first 12 month work-plan for this group approved at the third Kobe meeting in July 2011. Included in this work-plan is the “harmonisation of bycatch data collected by tuna RFMOs” with the intended purpose of identifying the minimum data standards and data fields that should be collected across all RFMOs with a view to allowing interoperability. In establishing the minimum standards it is recognised that these should maximise the detail recorded (where practical) so that data users can aggregate information to suit the questions asked. Harmonisation of data across tuna RFMOs is desired to allow for more comprehensive reporting on the status of bycatch species, to assist with the identification of factors that cause or increase bycatch, and to evaluate the performance of mitigation methods. At the same time, improvements in quality of the data collection should help stock assessments and other functions of t-RFMOs.

The Inter American Tropical Tuna Commission (IATTC) is the only tropical tuna RFMO that employs its own observers. They are managed by its secretariat to undertake duties in the Eastern Pacific Ocean (EPO). If vessels cross the RFMO boundary between the IATTC and Western and Central Pacific Fisheries Commission (WCPFC) they continue to undertake their observer duties which may contribute to the WCPFC Regional Observer Programme (ROP). National observer programmes also operate in the EPO. All recognized observer programmes in the EPO collect common data fields which are specified by the IATTC. In the Western and Central Pacific Ocean (WCPO) the secretariat of the WCPFC supervises its ROP. The ROP is based on the use of existing regional, sub-regional and national observer programmes that were already in place when the Conservation and Management Measure for the Regional Observer Programme (CMM 2007-01) entered into force on 15 February 2008. The WCPFC provides minimum data fields, observer programme standards, facilitates the use of authorized observers in the ROP as required by CMMs in the WCPO, and the ROP addresses the data and monitoring requirements of the Commission’s CMMs. The International Commission for the Conservation of Atlantic Tunas (ICCAT) and the Indian Ocean Tuna Commission (IOTC) do not currently administer scientific observer programs. The IOTC has adopted minimum data fields and description for observer programs operating in the Indian Ocean. ICCAT have not

Suggested citation:
Anonymous. 2012. KOBE III Bycatch Joint Technical Working Group: Harmonisation of Purse-seine Data Collected by Tuna RFMO Observer Programmes. ISSF Technical Report 2012-12. International Seafood Sustainability Foundation, Washington, D.C., USA.

yet developed minimum data fields or standards for observer programs operating in the Atlantic Ocean. Observer programs operating in the Atlantic and Indian Oceans are National Observer Programmes (primarily from Spain and France). Mention of "t-RFMO observer programmes" in this report refers to those programmes (regional or national) listed here.

A meeting of technical experts from tuna purse-seine fisheries observer programs was convened from 5 - 9 March 2012, in Sukarrieta, Spain, and provided the first opportunity for progress towards completion of this task for tropical tuna purse-seine fisheries. The meeting was organized by Martin Hall from IATTC with financial support from International Seafood Sustainability Foundation and held at the AZTI facility. The abbreviated name given to the meeting was "Sukarrieta II". The objective of this meeting was to harmonize data collection systems and variable definitions to improve research on bycatch mitigation, stock assessment and other topics.

In this progress report to the Joint Technical Working Group, a summary of the discussions at Sukarieta II that were directly relevant to the Working Group is provided, along with a first draft of the minimum data standards and data fields for purse-seine fisheries for revision by the technical working group. This includes identification of areas where some uncertainty in data definitions remains. Attendees at the Sukarrieta II meeting that are also members of the Joint Technical Working Group were Martin Hall, Shannon Cass-Calay, Pilar Pallares, Josu Santiago and Simon Nicol (Joint Technical Working Group Chair). Other participants were Alain Damiano, Alicia Delgado, Ernesto Altamirano, Hilario Murua, Javier Ariz, Jefferson Murua, Jon Ruiz, Nerea Lezama, Nick Vogel, Pascal Cauquil, Paul Bannerman, Paul de Bruyn, Peter Sharples, Peter Williams and Pierre Chavance.

Issues pertinent for interoperability of observer data collected in the purse-seine fisheries of tuna-RFMOs.

1. OBSERVER COVERAGE

   A number of studies (Lawson, 1997; Hall, 1999; Lennert-Cody, 2001; Babcock et al., 2003; Lawson, 2006a; Sánchez et al., 2007; Amandè et al., 2010) show that biases and precision are minimised when observer coverage exceeds 20% (assuming that there are no observer effects, and that the sample is representative, and not biased towards flags, ports, etc.). When coverages are below this level appropriate statistical designs are necessary for the placement of observers to minimise the introduction of bias. Placement designs should include stratifications based on characteristics of vessel, gear and other factors. Representative samples are needed even at high coverage if some fleets operate in a different manner/area.

   There is potential for bias in the historical data of t-RFMOs. The observer coverage of purse seine effort in the EPO has been 100% for vessels with greater than 363 mt capacity (noting that these vessels represent over 90% of the catch of tunas in the EPO) for over two decades. In the WCPO 100% coverage has only been required for the last 2 years. The coverage rates varied by observer program prior to the introduction of the 100% requirement but has been >20% for all programs for the last decade. For ICCAT and IOTC the coverage is lower, but has been increasing in recent years.

   When coverage rates are less than 100%, biases due to the placement of observers on vessels should also be checked. Observed and unobserved trips by vessels should be compared with regards to duration, catch rates, species composition, etc., to verify that there are no changes in vessel activity or fishers behavior in the presence of the observer.

   References cited above:

Amandè, M. J., Lennert, C., Bez, N., Hall, M. A. and Chassot, E. 2010. How much sampling coverage affects bycatch estimates in purse seine fisheries? IOTC-2010-WPEB-20. 16 pp.
Babcock, E., Pikitch, E. and Hudson, C. 2003. How much observer coverage is enough to adequately estimate bycatch? Report of the Pew Institute for Ocean Science. Rosenstiel School of Marine and Atmospheric Science, University of Miami, Miami, FL. 36 pp.
Hall, M.A. 1999. Estimating the ecological impacts of fisheries: What data are needed to estimate bycatches. p. 175-184 in Nolan, C.P. (ed.) Proceedings of the International Conference on Integrated Fisheries Monitoring, Sidney, Australia, 1-5 February, 1999. FAO, Rome, 1999. 378 p.
Lawson, T. 1997. Estimation of bycatch and discards in central and western Pacific tuna fisheries: preliminary results. Oceanic Fisheries Programme Internal Report. No. 33. Noumea, New Caledonia. 32 pp.
Lawson, T. 2006b. Scientific aspects of observer programmes for tuna fisheries in the western and central Pacific Ocean. Scientific Committee Second Regular Session, Manila, Philippines, August 7-18, 2006. WCPFC-SC2-2006/ST WP-1. Western and Central Pacific Fisheries Commission. 28 pp.
Lennert-Cody, C. E. 2001. Effects of sample size on by-catch estimation using systematic sampling and spatial post-stratification: summary of preliminary results. IOTC Proceedings No. 4. WPDCS01-09. pp. 48-53.
Sánchez, S., Murua, H., González, I. and Ruiz, J. 2007. Optimum sample number for estimating shark by-catch in the Spanish purse seiners in the western Indian Ocean. July 16-20, 2007. IOTC, WPTT-26. Indian Ocean Tuna Commission. 6 pp.

2. Definitions of TRIP

There are differences in the definition of trips between observer programs. WCPFC/IOTC/ICCAT define the conclusion of a trip when unloading occurs (regardless of % unloaded) whereas IATTC define a trip as ending when at least 2/3 of the catch is unloaded.

IATTC assigns a sequential trip number to every observed trip at its commencement as it has a central role in coordinating observer activities. This is not currently the situation for the other t-RFMOs. The trip number in the WCPO is a combination of the observer_code + year + sequential_trip_number_of_observer. In the Indian and Atlantic Oceans (the observer programs of France and Spain), the trip number is a combination of the landing_date + boat_code. Although the assignment method and format differs between t-RFMOs, all observer trip numbers are unique in each observer program. These differences make it extremely difficult to compare directly the number of trips from IATTC with the other t- RFMOs.

3. Definitions of ZERO CATCH SETS

The reporting of skunk sets (Zero catch sets) can differ between the t-RFMOs. In some cases, the catch per set based in all sets made (regardless of their catch) is used, while other analyses use catch per successful set, excluding the zeroes. When comparisons between data already summarized by t-RFMOs are made, how the skunk sets were treated should be checked to ensure comparability of data. There are also some differences in the definition of “zero catch”, with some studies using strictly zero catch and other studies using low tonnages (e.g. less than 1 MT or less than 5 MT) because they are generally considered failed sets by the fishers.

4. VESSEL REGISTER

Vessel Number

Vessel characteristics strongly influence the catch of purse seine vessels and in many statistical analyses of catch data the "vessel effect" is explicitly included in these models to interpret results (e.g. standardisation of effort, tracking of performance with regard to bycatches, characterising tuna fisheries). Such analyses can be compromised if vessels change flag or name and this is unknown to the data analyst (resulting in bias and pseudo replication). The t-RFMOs currently have vessel registers of various forms to track vessel name and flag for compliance and other reasons. Movements of vessels between t-RFMOs also occur and explicitly including such movements in inter T-RFMO comparisons would make them more statistically powerful. Consequently, standardisation or interoperability in these RFMO registers is desirable. The unique vessel identifier system (TUVI - see http://www.tuna-org.org/vesselpos.htm) that is used to construct the Consolidated List of Authorized Vessels (CLAV, a combined list of authorized vessels for all T-RFMOs) provides an opportunity for standardisation and interoperability. On the basis that t-RFMO continue to fully participate in the CLAV then this number could be recorded on observer forms and vessel logsheets allowing association of data to vessels.

Vessel/Well capacity

The variation between vessel capacities is a significant determinant of vessel catch and operational strategy and it is desirable that this be included in the vessel registry to further help with the interpretation of data analyses. Currently capacity is measured either in metric tonnes or in cubic meters depending on the country of vessel registration. Measurement in cubic meters is more common and standardising to this unit in the vessel register would be more efficient. The use of a conversion formula from metric tonnes to cubic meters is required to facilitate comparison with historical data.

How wells are used during each trip can also vary (e.g. sealed, for non-tuna spp.) and it is desirable that this be included in the details that observers record.

Vessel Nets

There are differences in the nets used by vessels that are likely to influence the presence and quantity of bycatch. Information on net characteristics is desirable for both standardisation of information and for identifying net types that may minimise interactions with bycatch. Establishing a catalog of net types is needed and could be established from port inspections or manufacturers. The IATTC have drafted a data form suitable for collecting the relevant net information. Changes in nets are infrequent on purse-seine vessels and the net-type could be included in the information stored on the CLAV. Observers currently record an estimate of net size and depth and this information could be used to assist with updating CLAV information and identify when alterations to vessel nets are made.

5. Vessel Captain/Fishing Master Name

The experience of the vessel captain/fishing master influences the fishing strategy adopted and catch of purse seine vessels and the explicit inclusion of this effect in statistical models benefits the interpretation of results. As vessel captains/fishing masters change vessel a unique identifier

similar to TUVI for captains/fishing masters would be desirable. This would require additional collaboration amongst the t-RFMOs to establish such a standardised register.

6. Fishing Location Information

Observers are currently asked to collect information of the detection equipment used to determine fishing locations (such as bird radar capabilities etc). The inclusion of such information is also likely to assist with the interpretation of results and trends from statistical analyses. Rather than observers recording equipment capacity information it would be preferable that equipment manufacturer and model is recorded as the capability information can be collected from the supply companies.

Vessels are often provided with advice on where to fish through 3rd party analyses of real-time oceanography which is then relayed to the vessel. The inclusion of this information in statistical models may also assist with interpretation of results. The recording of whether 3rd party information was provided would be beneficial for analyses.

7. Observer Placement

Placement meetings that specify the roles, obligations and responsibilities of observers and vessel staff should be adopted by all t-RFMO as this helps ensure the collection of higher quality information. The exchange of information used in the placement meetings by the different t-RFMOs will help in adding consistency and completing the list of issues addressed. This is particularly important for vessels that may fish across the jurisdictions of t-RFMOs (e.g. Pacific) on a trip where RFMO requirements may differ.

8. Data Reviews by Skippers

There is no homogenous policy regarding the right of captains/fishing masters to review and make comments regarding the data that the observer collects. Some RFMO observer programs are bound by the requirements of their organization, like the IATTC/AIDCP observer programs, but others do not have these requirements. It is advisable that when such review occurs that this is recorded so that data analysts are aware of differences in data collection procedures. This information is likely to be particularly pertinent where independence between vessel logbook and observer data is assumed.

9. Environmental Data

Environmental data is currently collected on observer forms with some consistency in data collected across RFMOs (e.g. wind speed, SST). These have been collected to help inform analyses on catchability (e.g. currents, wind strength that may affect set malfunction), and to better understand aggregation rates and/or species assemblages under FADs (eddy activity, frontal conditions, thermocline depth, etc.). The availability of high-resolution environmental data from satellites, moorings, and oceanic general circulation models has increased significantly in recent times and it may be more efficient to obtain this information from this source in the future.

10. Data Quality and Management

Auditing systems are critical to ensure the highest quality of observer data is available for users. Inter RFMO analyses would benefit from the application of consistent quality control measures to

all data. In this respect, the auditing/editing system developed by IATTC is very comprehensive and could easily be adopted by the other t-RFMO's. This would assist with all t-RFMOs achieving data standards.

The recording of vessel activity TIME in UTC format is preferable for data consistency. IATTC observers collect the time of sunrise/sunset which is used to synchronise ship's time with the time in the area of operation. WCPFC observers synchronise UTC time with ship's time at the start of each day, which enables the ship's time recorded for activities during each time to be converted to UTC time. While both methods are different, there was enough information collected to determine UTC time in each database. The French and Spanish observer programs report time in UTC.

11. Length Measurement of tuna discards

IATTC observers collect an estimate of target tuna discard weight in size range (weight) bins but WCPFC observers take length measurements from a random sample of the discards to get size distribution and species composition of the discards and estimate the overall tuna discards. Despite differences in the methodology, the general requirement (i.e. the catch by species estimate and size distribution of discards) is consistent between these two RFMOs. The size bins approach may however restrict the application of length increment based analyses (eg. cohort) if the bin range is too large.

12. Definition of Set types

The language used to describe set types varies between t-RFMOs. Documentation is required that specifies definitions of set types for each t-RFMO to avoid the potential for incorrect assignment of set type for cross t-RFMO comparison. The Sukarrieta II meeting identified the following broad thesaurus of terms:

Preferred term and preliminary definition	IATTC	WCPFC	IRD IEO AZTI
School set *Sets on schools were there are no indications of association with floating objects, marine mammals or whale sharks*	1. Boilers 2. Breezers 3. Finners 4. Foamers 5. Jumpers 6. Rippler 7. Shiners 8. Splasher 9. Subsurface	1. Unassociated 2. Feeding on baitfish 3. Free School	Free School
Drifting FAD set *Sets on floating objects constructed and deployed or encountered and modified by the fishers to attract fish to facilitate their aggregation and capture. This may include using the vessel (or its support boats) to act as the FAD.*	FAD set	1. Drifting raft 2. Drifting FAD 3. Drifting payao	FAD set
Log set *Sets on encountered floating objects, including natural, man-made objects, dead animals, etc., as far as they are not intentionally deployed or modified by human intervention*	Log set (definition includes logs, debris, and dead animals)	1. Drifting log 2. Drifting debris 3. Dead animal	FAD set
Payao set *Sets on encountered man-made floating object that are anchored*		1. Anchored FAD 2. Anchored raft 3. Payao	
Whale set *Sets are made very close or encircling the live whale(s).*		1. Live whale	

Whale shark set *Sets are made very close or encircling the live whale shark.*		1. Live whale shark	
Dolphin set *Common only in the eastern Pacific. There is a clear association, and the set is preceded by a chase of the dolphin herd.*			
Baitboat set *Sets occur in association with a baitboat. The baitboat drifts or sails slowly, attracts a tuna school, and may keep it by chumming the water. They are left as a separate class because of the potential effect of chumming that makes it different from a regular floating object.*		8 Other floating object	
Seamount set	Type not used		

To aid in establishing solid statistical basis for pooling data it would also be desirable for analyses be undertaken to ascertain the differences in catch and assemblage composition between the difference set types within and across t-RFMOs.

13. FAD Records

FAD sets are easily identified when the FAD is encircled, but occasionally the sets may happen in the vicinity of the FAD. There is some uncertainty in these circumstances on how to define the set type. The Sukarrieta II meeting suggested that if a FAD was observed within a small distance (e.g. 0.5 to 1 nm) from the area encircled then the presence of the FAD should be recorded. This information would allow the classification of the set type to be determined by the data analyst.

It is also desirable that the material used to construct encountered FADs be recorded as this influence the longevity of FADs and the assemblage associated. Recording of FAD dimensions including the depth of the submerged material is also highly desirable.

14. Mitigation Measures

Understanding the performance of mitigation measures work is a priority activity for most t-RFMOs. To facilitate analyses and sharing of advances on this field, data collection should evolve in parallel to the research and implementation of mitigation measures.. Careful recording of the equipment or procedures used, and the outcomes observed (e.g. the fate of the animals involved) would be beneficial. Joint and dynamic development of these forms will be extremely useful.

15. Revision of draft standards

Revision of the standard data fields should occur after the upcoming ISSF workshop on standardizing purse seine CPUE (ISSF Technical Report 2012-10) to ensure that the collection of data relevant for developing indices of abundance for use in stock assessment are appropriate and well defined.

Other issues identified that are pertinent to the "Kobe Process" and bycatch

1. Observer Programs

The internationalization of tuna fisheries is resulting in observers from multiple programs working in many RFMOs (e.g. IATTC and Spanish observer working on vessels that cross into WCPFC jurisdictions). Presently, the observer programs in the EPO, Indian Ocean and Atlantic Ocean

require that their observers have a University degree. In the WCPO different regional programs only require that they have completed a high school level education and that they can have the capability to write clear reports in English. The adoption of "competency based standards" for observers and observer training that are coherent within the t-RFMO's would avoid potential differences in observer qualifications and assist with ensuring consistency in data recording. Coherent standards within the RFMOs would also help ensure that observers are aware and capable of the specific data collection needs associated with each RFMO. The "Kobe process" provides the opportunity to develop these standards and could be included in agenda of future "Kobe" meetings

To avoid potential biases in observer data the "Kobe process" provides the opportunity for developing joint RFMO policy that "placement of observers on vessels should be based on scientific principles and not on the willingness of vessels to accept observers".

"Safety on board" vessels is an increasingly important issue for observers and Agencies/Organizations responsible for observer placement. Future "Kobe meetings" should promote that the RFMO members provide safe and sanitary conditions to observers so these can perform their duties with the desired level of competence.

Current developments in electronic equipment should enhance the observer's duties. This includes current initiatives in on-board observer data processing (i.e. IRD-Sete system which can be used on "tablet" units) and the application of video camera technology to assist with the estimation of bycatch composition and biomass. The application of this technology should help reduce the burden of monitoring and free the observer to collect more scientific information. Pilot projects for such initiatives should continue as a matter of priority, with information shared between the t-RFMOs. The technology currently has limitations and until the technology is improved, the Sukarrieta II meeting cautioned against full-scale implementation until complete testing had been undertaken and adequate resources are allocated, including comprehensive technical support in all areas.

The preliminary review of t-RFMO observer training activities held during the Sukarrieta II meeting indicates that they are consistent across the RFMOs. A desired aspect of training, other than the obvious information about the fishery and species identification, should include instructions to observers on the different issues related to culture and what was called 'etiquette' onboard the vessels. Furthermore, as the captain/master determines the fishing strategy it is desirable that specific training/extension/outreach is provided to these persons on bycatch mitigation measures. As the observer is often viewed by the captain/master as a source of information on mitigation it is also desirable that observers are provided with suitable information that can be provided to fishing masters on mitigation measures.

2. <u>Data Quality and Management</u>

The Sukarrieta II meeting provided a rare opportunity for those responsible for data quality and management to discuss shared issues. A more regular meeting (e.g. every 2 years) where t-RFMO data managers meet to maximise information sharing and system development would be highly beneficial to maintaining coherence between the data management systems of each t-RFMO. Similar harmonization meetings should be planned for longline observer programmes.

3. <u>Environmental Variables</u>

The environmental data collected by observers provides an additional source of independent data for the validation of Oceanic General Circulation Models (OGCM). Oceanographic institutions responsible for developing these models should be advised on the existence of these environmental data and the data made available to improve the OGCMs if requested.

Observer Purse-Seine Data Harmonisation

Inter-operability in the data collected on bycatch on purse-seine vessels is required for undertaking global analyses on bycatch prevalence and mitigation methods beyond the most rudimentary level. Developing indices of abundance and interpreting catch per unit effort data derived from purse-seine fisheries is difficult due to the frequent and rapid changes in vessels and fishing equipment and strategies. The more detailed information that is collected on vessel and effort characteristics aids the standardisation of purse seine data. Standardising data forms across established observer programs is also difficult as many collect information beyond that required for t-RFMO/Country specific reasons. Consequently the Sukarrieta II meeting did not focus this harmonization review on changes required to existing data forms. Instead, the meeting examined inter-operability between t-RFMOs observer data by listing the data fields collected by each t-RFMO and provided a qualitative evaluation of interoperability based on the similarity and level of detail reported in each t-RFMO. A ranking of 'HIGH' meaning most data fields and details are the same, 'INTERMEDIATE' meaning some similarity in data fields and detail and 'LOW' meaning little similarity in data fields and details that would result in restricted inter-operability. The Table below summarises this evaluation. The more detailed list of data fields is provided below this Table.

Data category	**Rank**
Harmonisation of Effort Data	
Vessel Identification *(Information to uniquely identify vessels)*	HIGH
Vessel Trip Information *(Information to calculate trip duration, location and time)*	HIGH
Observer Information *(Information to uniquely identify captain/fishing master)*	HIGH
Crew Information *(Information to calculate crew number)*	HIGH
Vessel and Gear Attributes *(Information to detail vessel specification and equipment)*	HIGH
Daily Activities *(Information characterise vessel fishing and non-fishing activities during a trip allowing effort to be examined in finer resolution)*	INTERMEDIATE
School and Set Information *(Information to characterise school type and detection method)*	HIGH
Harmonisation of catch data	
Catch Information *(weight and or numbers of target and bycatch species)*	INTERMEDIATE
Length Information *(weight and or numbers of target and bycatch species)*	LOW
Species of Special Interest *(weight, length, fate and description of interaction)*	INTERMEDIATE

OBSERVER PURSE-SEINE DATA HARMONISATION

Harmonisation of Effort Data

Part 1. Vessel Identification

The current "Minimum Data-field Standards" specified by each of the t-RFMOs are outlined in the Table below. However, if each t-RFMO fully participates in the CLAV database then the TUVI number is all that is required to uniquely identify vessels for inter-operability.

IATTC	IOTC	ICCAT (IRD IEO AZTI)	WCPFC
Full Name of Vessel **Vessel Code (provided by IATTC)** **Vessel Flag (provided by IATTC)**[1]	**Registered vessel owners** (owner's name, nationality, address and contact details). **Charterers / operators** (operator's full name (company or individual as appropriate), nationality, address and contact details). **Flag State** (Name of country in which vessel is registered). **National register number** (issued by country in which the vessel is registered). **IMO number** (International Maritime Organization of the United Nations). **International radio call sign** (IRCS issued to the vessel by the flag State in accordance with IMO regulations) **IOTC number** (IOTC Registry) **Vessel phone, fax and email**	**Name of Vessel** (before embarkation) **Vessel Code** (number given to observer before embarkment by IRD) **Vessel Owner/Company**	**Full Name of vessel** (including any numbers). **Flag State Registration Number** (sourced from the vessel papers). **International Radio Call Sign** (ICRS; issued to the vessel by the flag State in accordance with IMO regulations). **Vessel Owner/Company** **Hull markings consistent with CMM 2004-03**. **WCPFC identification number (WIN) markings consistent with CMM 2004-03**. **WIN format for markings consistent with CMM 2004-03.**

[1] Detailed vessel and owner information is not collected by observers, but this information is constantly updated and available through the Vessel Register database maintained by the IATTC. This information includes the vessel owner, manager, call sign, port of registration, gross weight, length, width, depth, year built, etc.

Part 2. Vessel Trip Information

The current "Minimum Data-field Standards" specified by each of the t-RFMOs are outlined in the Table below. Currently IATTC define a purse-seine vessel trip differently to the other t-RFMOs with a trip concluding at 20 days and/or when at least 50% of the catch is unloaded. The clear reporting of when a trip commences and concludes is required to reduce the potential for inappropriate representation of trip data when inter-t-RFMO comparisons are undertaken.

IATTC	IOTC	ICCAT (IRD IEO AZTI)	WCPFC
Trip Number (unique 6-digit number assigned by IATTC) **Date (YYMMDD) of departure from port**. **Name and code of the port of departure** **Date (YYMMDD) of return to port** **Name of the port of return**	**Date and time of departure from port**. (this may not coincide with the port where the observer embarks). **Name of the port and country of departure** **Date and time of return to port** (this may not coincide with the port where the observer embarks). (Recommended but not mandatory) **Name of the port and country of return**	**Date and time of departure from port with observer** **Name of the port of departure with observer** **Date and time of return to port with observer** **Name of the port of return with observer**	**Date and time of departure from port**. **Name of the port and country of departure** **Date and time of return to port** **Name of the port and country of return**

Part 3. Observer Information

The current "Minimum Data-field Standards" specified by each of the t-RFMOs are outlined in the Table below. The most important data are those that identify the duration of the observers trip and information that can be used to uniquely identify the observer for the purpose of interoperability. The creation of a joint t-RFMO observer register may be an efficient way to achieve the "unique observer identity" (ie similar principal to TUVI).

IATTC	IOTC	ICCAT (IRD IEO AZTI)	WCPFC
Observer name (First and Last name) **Observer code** (provided by IATTC) **Nationality of observer** (Passport Country) **Name of Observer Programme** -country and or organization [2]	**Observer name** First and Last name in Full **Nationality of observer and Passport Number** **Name of Observer Programme** – Controlling organisation **Contact persons in Controlling Organisation** **Date, time and location of embarkation** **Date, time and location of disembarkation** (If the observer embarks/disembarks at sea outside port limits via a vessel transfer, record "at sea" and record the position in Latitude and Longitude)**.**	**Observer Name** (First and Last Name)	**Observer name** (First name(s) First and Last name Last – no abbreviations or initials) **Nationality of observer** (Passport Country) **Name of Observer Programme** -country and or organization **Date, time and location of embarkation** **Date, time and location of disembarkation**

[2] This information is not collected by the observer, but is available to the staff.

Part 4. Crew Information

The current "Minimum Data-field Standards" specified by each of the t-RFMOs are outlined in the Table below. The most important data are those that identify the total crew number and uniquely identify the captain/fishing master. The creation of a joint t-RFMO captain/fishing master register may be an efficient way to achieve the "unique observer identity" (ie similar principal to TUVI).

IATTC	IOTC	ICCAT (IRD IEO AZTI)	WCPFC
Name of all fishing captains (Last name(s) and First name) **Date (YYMMDD) for change of captain (if occurred)** **Captain codes (provided by IATTC)**	**Fishing Master** (Record the full name of the Fishing Master). **Fishing Master nationality** (Record the nationality of the Fishing Master). **Captain** (Record the full name of the Captain. Note in some instances the fishing master and Captain may be the same person). **Captain nationality** (Record the nationality of the Captain). **Number of crew** (Record the number of crew. This should be cross checked against the vessel's crew list. Also check the maximum crew compliment on the vessel's safety certificate).		**Name of captain** (First name(s) First and Last name Last – no abbreviations or initials) **Nationality of captain and type of Identification document** (e.g. Passport nationality of the captain). **Name of fishing master** (First name(s) First and Last name Last – no abbreviations or initials). **Nationality of fishing master and type of Identification document** **Total number of other crew and nationalities** (eg. 8 Philippines 6 Samoans 4 Taiwanese) **Total number of Crew** (total number of persons on the vessel excluding the observer).

Part 5. Vessel and Gear Attributes

The current "Minimum Data-field Standards" specified by each of the t-RFMOs are outlined in the Table below. The characteristics of the vessel and gear assist with standardizing effort and the over-riding principal for data collection should be to maximize the detail to the better the standardization. If the t-RFMOs fully participate in the CLAV then much of the required information could be collected during registration and stored in the TUVI database.

IATTC	IOTC	ICCAT (IRD IEO AZTI)	WCPFC
Vessel Attributes			
Capacity (provided by IATTC) **Number of Speedboats** (the number that are functional) **Bow Thruster** (yes/no, equipped & operable) **Helicopter** (yes/no, equipped) **Number of screws** (number of propellers powering the vessel) **Power Block Diameter** (inches) **Inflatable Raft** (yes/no, equipped & operable for dolphin rescue) **High Intensity Floodlights** (yes/no, equipped & operable and capable of producing 140,000 lumens) **Diver**	**Gross tonnage** (gross registered tonnage, GRT, or gross tonnage of the vessel ,GT) **Length overall** **Main engines** (Make/ Power) **Vessel cruising/maximum speed** **Vessel range** (days at sea) **Hull material** **Total fish carrying capacity** (t/m3) **Fish Storage Methods** (method used by the vessel to preserve and store catch, using following categories. blast freezing, ice, chilled seawater, brine freezing, refrigerated seawater, other) **Power Block** (Make & Model) **Purse winch** (Make & Model) **Number of buoys per type (satellite and / or radio buoys) at embarkation on board** **Number of buoys per type (satellite and / or radio buoys) at embarkation at sea** **Associated Supply vessel name(s)** (the details of any supply vessels that interact or assist the vessel during the time the	**Date of construction** **Overall Length** **Hull Length** **Width** **Draft** **Number of wells** **Well capacity (**tons) **Fuel tank capacity** (cubic meters) **Main engine power (**HP) **Maximum speed** (knt) **Searching speed** **Number of skiffs** **Number of nets** **Number of speedboats** **Number of fixed binoculars** **Number of binoculars** **Number of Radio buoys onboard (**beginning of the trip) **Radio direction finder Ryokuseisha** **Radio direction finder 400 for Argos buoys** **Trigger and location system for GPS buoys**	**Vessel cruising speed** (defined as the speed the vessel travel, which allows it to optimize its fuel usage but also gets the vessel along at a good speed). **Vessel fish hold capacity** (The total maximum amounts in metric Tons (mT.) that the vessel freezers, wells and other fish storage areas on a vessel can hold). **Length** (taken from the vessel plans or from other paper work that indicates the LOA). **Tonnage** (specify unit. The vessel may be registered using Gross Tonnage (GT) or in (GRT) this will be indicated on the vessel registration papers). **Engine power** (Specify unit. Usually be found in the vessel plans or from the engineer). **Number of onboard support vessels** (How many vessels on board other than the net skiff, i.e. speedboats light boats, tow boats). **Aircraft Make/Model,/Colour/Call-sign/Registration**

	trip).	**Location system for SERPE (Ariane 2) buoys**	
Gear Attributes			
Maximum depth of net (observer estimated in fathoms) **Maximum depth of net** (observer estimated by reporting no. of panels) **Maximum length of net** (observer estimated in fathoms) **Net mesh size** (inches, measured by observer) **Dolphin Safety Panel Depth** (observer estimated in fathoms) **Dolphin Safety Panel Depth** (observer estimated by reporting no. of panels) **Dolphin Safety Panel length** (observer estimated in fathoms) **Dolphin Safety Panel mesh size** (inches, measured by observer)	**Maximum Net depth** (meters) **Maximum Net length** (meters) **Mesh length** (stretched mesh (mm))	**Depth of net** **Length of net** **Weight of bottom chain**	**Maximum depth of net** (obtained from engineer) **Maximum length of net** (obtained from engineer) **Net mesh size** (measured by observer) **Brailer(s) capacity sizes** (recorded in MT)

Vessel electronics (preference for make(s) and model(s) to be specified for each piece of equipment			
Sonar (yes/no, used to locate schools during cruise) **Bird Radar** (yes/no, equipped & operable)	**Radios** (number of VHF, HF, make, model, power, frequency range). **Satellite communication systems** **Fisheries information services** (supplier and information type) **Vessel Monitoring Systems** **Global Positioning Systems** (GPS) (Make and Model) **Track plotters** (make and model) **Radars** (power and frequency range of the systems) **Acoustic depth sounder** (make and the model). **Acoustic sonar** (make, model, power and frequency range). **Weather facsimile** **Sea Surface Temperature** **Expendable bathythermographs** **Acoustic doppler current meter**	**Compass/autopilot** **Distance recorder** **Navigation Radar** **Bird Radar** **Ecohsounder** **Sonar** **VHF & BLU Radio** **Satellite** **GPS** **Sea Temperature Meter** **VMS** **Othe**r (specify)	**Radars** **Depth Sounder** **Global Positioning System (GPS)** **Track Plotter** **Weather Facsimile** **Sea Surface Temperature (SST) gauge** **Sonar** **Radio/ Satellite Buoys** **Doppler Current Meter** **Expendable Bathythermograph (XBT)** **Fishery information services** **Satellite Communications Services** (Phone/Fax/Email numbers, and record Satellite numbers) **Vessel Monitoring System** (Indicate the type of systems used on a vessel).

Part 6. Daily Activities

The t-RFMOs require that a log/journal of daily activities is completed by the observer. This information is required to characterise effort data at resolutions finer than the trip (eg. set level). For inter-operability date, time, duration and location of activities is required. Activities can be classified into those that describe: the set; searching; transiting; FAD maintenance, deployment and retrieval; drifting; seamount ; transshipment; and other non-fishing activities (such as breakdowns, sheltering from bad weather). There is considerable variation in the detail currently collected under these headings by each of the t-RFMOs but fishing activities can be clearly determined which is the critical requirement. The use of "seamount" to describe some set types causes problems for comparability of data. There are many more such sets in the WCPO than in other areas, and the same applies to payao (anchored FAD) sets. There is a need to stratify data before making comparison.

When floating objects are encountered the details for collection specified by each t-RFMO also vary, however information is collected on the type and detection method, and if the object is a FAD information is collected on its origin, construction and attachment materials, disposal, associated electronics/markers and size. The information collected by each t-RFMO appears sufficient to differentiate floating objects into FAD and non FAD and catergorize differences in FADs providing an intermediate level interoperability between t-RFMOs.

The current “Minimum Data-field Standards” specified by each of the t-RFMOs are outlined in the Table below.

IATTC	IOTC	ICCAT (IRD IEO AZTI)	WCPFC
Time of Sunrise and Sunset **On effort** (Yes/No whether on or near bridge to observe vessel operations) **Date of a particular event/activity** (ships time) **Time of event/activity** (ships time) **Latitude and longitude of activity** (record position of each activity) **Searching method** **Sighting method** **Bearing from Ship to sighting** (in degrees) **Distance from ship to sighting** (nearest	**Time of activity** (GMT) **Latitude** (to minute), **longitude** (to minute) at start of activity. **Boat activity code** **School Association / Detection method** (include sightings and specify if school free or associated to a FAD or a natural LOG, and how they were detected). **Object** (sightings should be recorded). **Time School detection** (time the school of fish was first detected). **Numbers of school sighted per day** (How many fish were sighted during the day by	**Date of the day** (day/month/year) **Daily Activity data form number** (one data sheet per day and number sequentially) **Morning distance** (from distance counter (eg GPS) at beginning of day) **Evening distance** (from distance counter (eg GPS) at end of day) **Ocean** **Time of activity** (GMT) **Latitude** (to minute), **longitude** (to minute) and **Quadrant** **Boat activity code** **Activity around the boat code**	**Date and time of start of daily activities** (both ships time and UTC recorded) **Time of activity** (Record ships time for each activity) **Latitude and longitude of activity** (record position of each activity) **Numbers of school sighted per day** (How many free or associated schools of fish were sighted during the day)

10th nautical mile) **Vessel speed** (search and run events) **Water temperature** (every set) **Weather** (cloud cover, beaufort No, visibility for every search or run) **Aerial Assistance** (yes or no if helicopter or plane used in set) **Catch per set** (metric tons) for YFT, SKJ, Others (with codes) **Wells used** (well number catch was loaded in)	association type) **Target Species** **Wind** (force & direction). **Sea waves** (height & direction). **Swell** (height & direction).	**Boat speed** (knots -2 digits) **Sea surface temperature** (1/10 degree – max 3 digit) **Wind speed** (table 4) **Reason why no fishing undertaken** **Distance from vessel to sighting**	
Activities codes provided are	**Activities codes provided are**	**Activities codes provided are**	**Activities codes provided are**
To describe the set	*To describe the set*	*To describe the set*	*To describe the set*
Mammal set Unassociated tuna set Floating object set End of set		Start of set (skiff on water) (End of set (retrieve skiff)	Set Setting on FAD Net cleaning set
To describe searching	*To describe searching*	*To describe searching*	*To describe searching*
The vessel is searching Log sighted Cues sighted (birds, logs, schools, etc.)	Searching with a school associated to the vessel Searching for tuna schools, logs or Fish Aggregating Devices (FADs) Chasing a tuna school	Searching (general) Searching exclusively for floating objects End of searching	Searching Investigate free school Investigate floating object Helicopter takes off to search Helicopter returned from search
To describe transiting	*To describe transiting*	*To describe transiting*	*To describe transiting*

Departed from a port Arrived at a port Depart at sea Arrive at sea Running to another area or to a port (no crew member is looking for signs of fish for 5 mins or more)	Steaming during the day Steaming at night	Transit (steaming) Transit to favourable oceanographic area Boat arriving on favourable oceanographic area) Steaming at night towards an object Continued steaming towards favourable area and write what the observed system is	Transit
To describe other non fishing activities	*To describe other non fishing activities*	*To describe other non fishing activities*	*To describe other non fishing activities*
	Drifting - bad weather Drifting/at anchor/in port – breakdown In port (for refuelling, loading goods, crew change)	Breakdown at sea Bad weather (sheltering with engine on) In Port	No fishing - Breakdown No fishing - Bad weather In port No fishing - Other reason
To describe FAD activities	*To describe FAD activities*	*To describe FAD activities*	*To describe FAD activities*
Deploy, retrieve, service FAD Encounter with floating debris or log		Deploy or modify floating object Retrieve a floating object belonging to the boat Retrieve a floating object not belonging to the boat Retrieve the object	Deploy - raft, FAD or payao Deploy locating buoy Servicing FAD or floating object Retrieve - raft, FAD or payao Retrieve locating buoy Investigate floating object using sonar/sounder Vessel drifting beside FAD attracting fish away from FAD before carrying out a Set Vessel setting close to FAD (specify estimated distance) Vessel using lights of boat or light boat to attract fish from FAD during night
To describe drifting activities	*To describe drifting activities*	*To describe drifting activities*	*To describe drifting activities*

The vessel is drifting	Drifting (reason not specified) Drifting during the day with a tuna school Drifting during the day near a log or aFAD Drifting or steaming at night - with fish aggregating lights	Drifting at night with engine shutdown Drifting close to school or floating object	No fishing - Drifting at day's end No fishing - Drifting with floating object Drifting -With fish aggregating lights
To describe seamount activities		*To describe seamount activities*	*To describe seamount activities*
		At anchor on seamount	
To describe transshipping activities		*To describe transshipping activities*	*To describe transshipping activities*
		Transshippment at sea	Transshipping or bunkering
To describe other activities		*To describe other activities*	*To describe other activities*
		Other	
		To describe activities around the boat	
		Alone in the area In a group of boats with other purse seiner visible on radar and: 1. Same fishing gear and flag 2. Different fishing gear but same flag 3. Same fishing gear but different flag 4. Different fishing gear and flag	
When the activity is associated with a floating object or the sighting of a floating object the following information is also collected			
Type of Floating Object		**Type of Floating Object*****means unclear if this is a non FAD category	**Type of Floating Object**
To describe Non-FAD floating Objects	*To describe Non-FAD floating Objects*	*To describe Non-FAD floating Objects*	*To describe Non-FAD floating Objects*

Non FAD Tree Dead animal		Tree (or branch) Palm of coconut/palm tree Dead animal Box, drum or large board Rope, cable Net or piece of net Plastic Object Metal object Artificial object (without locating beacon)*** Experimental object*** Drifting Raft or buoy***	Tree or log (natural, free floating) Dead Animal Manmade object (Non FAD)
To described FADs	*To described FADs*	*To described FADs*	*To described FADs*
FAD Artificial light for attracting fish Construction material Chain / cable / rings Cane / bamboo Bait container / bait Cord / rope Floats / corks Net material Sacks / bags Planks / pallets / plywood Metal drum / plastic drum PVC or other plastic tubes Plastic sheeting		Drifting raft (line and net) with beacon/buoy DCP anchored (purpose of attracting fish) Tuna boat (or skiff) Support boat (supply) Bundled straw Dead animal with beacon/buoy Manmade object (box, drum, board, rope, cable, net (or piece), plastic) with a beacon/buoy	Manmade object (Drifting FAD) Anchored Raft Fad or Payao Anchored Tree or Logs Tree or logs (converted into FAD) Debris (flotsam bunched together) Construction material Logs, trees, debris tied together Timber/planks/pallets/spool PVC or plastic tubing Plastic drums Plastic sheeting Metal drums Philippines design drum FAD Bamboo/cane Floats/cork Other

			Attachments Chain, cable rings, weights Chord/rope Netting hanging underneath FAD Bait containers Sacking/Bagging Coconut fronds/tree branches Other
Other Unknown			Other
How Floating Object is detected	**How Floating Object is detected**	**How Floating Object is detected**	**How Floating Object is detected**
By Visual Observation	*By Visual Observation*	*By Visual Observation*	*By Visual Observation*
Visual - the object itself Visual – Flag, Buoy, cork, etc Lights Visual - birds			Seen from vessel by crew Helicopter report Lights Flock of Birds sighted from vessel Discovered in pursed net
By Electronic/Remote Observation	*By Electronic/Remote Observation*	*By Electronic/Remote Observation*	*By Electronic/Remote Observation*
Radio transmitter / beeper Radar reflector Radar Satellite		Radio direction finder (Radiogoniomètre) Satellite with various additions Radiogoniomètre + GPS GPS Serpe Satellite + échosondeur indéterminé Satellite sans échosondeur Satellite + sonar Satellite + échosondeur Zunibal Satellite + échosondeur Satlink	Found using vessel radio buoy Bird radar Sonar / depth sounder Information from other vessel Navigation Radar Anchored (GPS) Marked with GPS buoy

		Satellite + échosondeur Nautical Satellite + échosondeur autre (à préciser dans les notes)	
Other Method	*Other Method*	*Other Method*	*Other Method*
			Being deployed (so not detected)
Other		Autre type (à préciser dans les notes)	Other (please specify in comments)
Unknown			Unknown
IF a FAD then the following is also collected			
Origin of the FAD	**Origin of the FAD**	**Origin of the FAD**	**Origin of the FAD** (** PIRFO addition)
Your vessel – this trip Your vessel – previous trip		Belonging to this boat or the company	Your Vessel
Other vessel– owner consent Other vessel– no owner consent		Belonging to another boat or another company	Other vessel's- with permission Other vessel's- without permission Other vessel's- consent unknown**
		Drifting Object found	Drifting and found by your vessel
		Seeded	Deployed by FAD auxiliary vessel
		Other	Other (describe)
Unknown		Unknown	Unknown (describe)
Disposal of the FAD	**Disposal of the FAD**	**Disposal of the FAD**	**Disposal of the FAD**
		Attach a beacon/buoy	Deploy - raft, FAD or payao Deploy radio buoy

Left in water with description of FAD component (as above)		Left in water Remain in water with the same beacon/buoy Replace the beacon/buoy	Manmade object (Drifting FAD)- changed Servicing FAD or floating object Retrieve radio buoy
Removed		Retrieve on vessel Destroyed Sink	Retrieve - raft, FAD or payao
		Other	
Electronics associated with FAD	**Electronics associated with FAD**	**Electronics associated with FAD**	**Electronics associated with FAD**
Direction to the object			Radio buoy (with identification)
			Radio buoy -unidentified
Geographic position of the object			GPS buoy (with identification)
			GPS buoy - unidentified
Tuna quantity			Sounder buoy (with identification)
Tuna species			Sounder buoy - unidentified
			Light buoy
Water Temperature			Other (describe)
			Unknown (describe in comments)
Estimated size of FAD	**Estimated size of FAD**	**Estimated size of FAD**	**Estimated size of FAD**
Simple Diagram of FAD to be drawn indicating dimensions.			Simple Diagram of FAD to be drawn indicating dimensions.
Dimensions (in m)			
Netting hanging from the object (yes/no/unknown), estimated area of hanging netting (m^2), predominant mesh size (inches)			Record depth of Netting and or other materials hanging from FAD
Tag number			FAD Markings or numbers
Maximum depth of object (m)			

			Describe condition of the FAD when first and any attachments.
			Describe any changes or additions to the FAD by the vessel.
Other Data	**Other Data**	**Other Data**	**Other Data**
Bait container refilled (yes/no/unknown)			
Fauna entrapped			
Water clarity (clear/turbid/very turbid)			
% epibiota			
		Describe fate/staus of species associated with FAD Caught and alive Caught and dead free	

Part 7. School and Set Information

Each of the t-RFMOs currently collects information on how the school was detected (with categories under the sub-headings of by observation and by the use of electronics), the type of school, and reasons why a set did not occur or was only partially completed. The level of detail varies between t-RFMOs, however the essential information to define school type which is required for inter-operability is collected by all t-RFMOs. WCPFC may wish to include a data category for breakdowns that occur during a set to allow differentiation of these malfunctions. Preferred definitions of school type are outlined in the preceding sections of this document. The current "Minimum Data-field Standards" specified by each of the t-RFMOs are outlined in the Table below.

IATTC	IOTC	ICCAT (IRD IEO AZTI)	WCPFC
Method of detection of school (How the vessel first detected the fish) Codes are:	**Method of detection of school** (How the vessel first detected the fish) Codes are:	**Method of detection of school** (How the vessel first detected the fish) Codes are:	**Method of detection of school** (How the vessel first detected the fish) Codes are:
By Observation	*By Observation*	*By Observation*	*By Observation*
Birds sighted	Seen from vessel	School (no precision on type of school)	Seen from vessel
Mammal sighted	Seen from helicopter	Naked Eye	Seen from helicopter
Other cue sighted	FAD	Binoculars	
Splashes sighted		Breezer (Balbaya), Finner/Jumper/Splasher (Sardara ou Saut), Boiler/Meatball/Foamer/Smoker (Brisant ou rouge)	
Breezer sighted		Birds	
Log sighted		Object no beacon	
Chase		Dead animal	
		Small cetacean (dolphin, pilot whale)	
		Big cetacean (sperm whale)	
		Whale (eg Baleine)	
		Whale shark	
		Shark	
		School that have escaped from previous set	

		Boat school Fishing on seamount Fishing on drop off of continental shelf	
Using Electronics		*Using Electronics*	*Using Electronics*
	Marked with beacon Bird radar Acoustic – sonar / depth sounder	Bird Radar Normal Radar Echosounder Object with beacon GPS buoy GPS buoy with echosounder Dead animal with a beacon)	Marked with beacon Bird radar Sonar / depth sounder Anchored FAD / payao (recorded)
Other Method		*Other Method*	*Other Method*
	Info. from other vessel	No system Other tuna boat Supply vessel Other (specify)	Info. from other vessel
Type of school association	**Type of school association**	**Type of school association**	**Type of school association** (Noting that fish feeding on bait fish with no floating objects around is considered unassociated). Codes are:
Unassociated tuna set	Free school or unassociated. Birds	Free school	Unassociated Feeding on Baitfish
Floating object set Live Whale set Dolphin set	School Object Marine mammal	School object Whale set Whale shark set	Drifting log, debris or dead animal Drifting raft, FAD or payao Anchored raft, FAD or payao Live whale Live whale shark Other floating object (please specify)

Accidental set			No tuna associated
Malfunction		**Malfunction**	
Roll-up Main engine failure Main vessel hydraulic failure Skiff failure (mechanical or hydraulic) Speed boat failure Winch failure (mechanical) Power block failure Bow thruster failure Ripped net (not caused by roll-up) Broken purse cable Fouled or broken bunchline Fouled or broken corkline Broken leadline Broken skiff towline Broken vang guy line Broken topping winch cable Webbing in the rings Webbing caught on the stern Other		Unknown Fish escape by diving Fish escape as travelling to quick Current to strong Too many fish Net damage Winch failure Bad weather Whale escape and school follow Other (specify)	
Reason no set		**Reason no set**	
Tuna separated from the dolphin school Dolphin running to a rain squall Other reason Voluntary aborted set		Nothing to report Captains decision 1. School to small 2. Fish to small 3. Company decision School behaviour 1. Moving to quick	

		2. Fish dive before making set 3. Too deep Other 1. Sighting without fish 2. Strong current 3. Mechanical failure 4. Another boat is setting on the school	

Harmonisation of catch data

Part 8. Catch Information

Each of the t-RFMO require that the observer estimate the weight of the catch and/or numbers of bycatch species. The weight categories differ between the t-RFMOs and this places restriction on the inter-operability of the data collected. Information on whether the catch is retained or discarded is collected by each t-RFMO and although there are differences in the levels of detail the information is reasonably coherent allowing for inter-t-RFMOs comparison. The current "Minimum Data-field Standards" specified by each of the t-RFMOs are outlined in the Table below.

IATTC	IOTC	ICCAT (IRD IEO AZTI)	WCPFC
Trip number, Set number, Date **Let go time** (time when the skiff, with the net attached, hits the water) **Ringsup time** (the time when all the purse rings break the surface of the water) **Endset time** (the time when the skiff is secured on deck after completing the set) **Tunaset or logset** **Evidence of strong currents during set & how determined** **Malfunctions during the set** (rime occurred, time repair completed, delay in the set)	**Set Number** (numbers run sequentially until the end of the observed trip). **Date & Time start set** (skiff is launched) **Position at set start** (Latitude / Longitude) **Time start pursing** (purse winches start to purse the net). **Time net pursed** (when the last purse ring through which the purse wire runs is onboard). **Time start brailing** **Time end brailing** **Average weight of brail** **Time Skiff onboard** (end set) **FAD buoy number / ID** **Depredation** (species directly observed or deemed responsible for the depredation with ID reliability code)	**Set number** **Date** **Daily Activity data form number and activity number** **Captains estimate of school size before commencement of set (if possible per species and mean weight of each species)** **Time of set start – skiff launched** **Rings up time** **End of set (skiff on board)** **Thickness of the school** **Mean depth of school** **Depth at shallowest part of school** **Sonar used during setting** **Supply vessel part of setting – supply name** **Speed & direction of current at 10m depth** **Maximum depth of net when in closed**	**Observer's record of date and time of start of set** (usually recorded when the pelican hook is released and net skiff slides in to the water taking the net with it) **Observers record of date and time of end of set** (Record when the net skiff is hauled on board after the set) **Vessel's record of date and time of start of set** (Record what time and date the vessel has entered in the Log sheet for the same set) **Retained catch and Discards, by species** (Record all species that are retained using the FAO codes.

IATTC collects catch in metric tons with fields for YFT, SKJ, Other (spp code) and well numbers specified where catch loaded		IRD form request an estimate from the Captain/Fishing master for total catch of YFT, SKJ, BET and all school and average weight for each species	
	IOTC requests species code, total weight of retained tuna and the processing code by weight IOTC requests weight by species of product transhipped at sea and the Carrier / Fishing Vessel details (name and registration number of the vessels to which fish are transhipped or from which fish are received). IOTC requires the species code, number and estimated weight, fate and reason for discarded and released by-catch. Forms should specify if discarded from the net or if landed onboard and then released, record the details of protected and endangered species. For each species discarded or released record a fate code taking into account any physical damage or stress that may affect survival and the reason for discard.	IRD request Species code, weight category, total weight and well number of retained tuna For discard tuna IRD requests species code, weight category, discard code (see below) total weight, weather landed on deck For bycatch, IRD request species code, fate code, discard code, total weight, total number and for sharks and billfish average weight and/or average size	PIRFO forms request an estimated breakdown down of total tuna catch (MT) by % in the following categories SKJ, YFT<9kgs, YFT>9Kgs, BET<9kgs, BET>9Kgs and number for YFT>9Kgs and BET>9Kgs).
		IRD weight categories as follows for YFT, BET, ALB (<3Kg, 3-10Kg, 11-30Kg, 3-30Kg, 31-50Kg, 11-50Kg, >50Kg, >10Kg) IRD weight categories as follows for SKJ, BLT, FRI, FRZ, LTA, KAW (<1.8Kg, >1.8Kg, 1.8-4Kg, 1.8-6Kg, 4-6Kg, 4-8Kg, 6-8Kg, >8Kg)	An estimate of the catch by fate code is also requested for target tuna and bycatch according to the following codes:
For retained catch	*For retained catch*	*For retained catch*	*For retained catch*

Human consumption Mixed (some catch consumed, some discarded)		retained (in well) Partially kept (shark fin, dry fish etc) Crew consumption	Retained – whole weight Retained – headed and gutted (billfish only) Retained – gilled and gutted (kept for sale) Retained – partial (eg. fillet, loin) Retained trunk – fins retained(shark only) Discarded trunk – fins retained (shark only) Retained – crew consumption Retained – other reason (specify)
For discarded catch	*For discarded catch*	*For discarded catch*	*For discarded catch*
Discarded Species/size undesirable for market Catch lost due to ripped sack Vessel full Well limitation (wells not ready to receive fish) Condition undesirable for market Other	Record the reason that the fish was not retained. This may include damage caused by depredation from marine mammals or sharks, size etc.	Discard in sea alive Discard in sea dead Wrong size Wrong species Wells full Damage fish Other (specify)	Discarded – too small (tuna only) Discarded – unwanted species Discarded – gear damage (tuna only) Discarded – vessel fully loaded Discarded – shark damage Discarded – whale damage Discarded – poor quality Discarded species of special interest – alive Discarded species of special interest - dead Discarded species of special interest – unknown condition Discarded - other reason (specify)
	Tag recovery information Number of tagged fish recovered Species Tag numbers/Type Location (exact position of capture in latitude and longitude). Position recording system (eg GPS) Vessel name (flag) Method of capture Fish state (fresh caught or processed code). Length & length measurement code Weight Sex		**Tag recovery information**

	Sample retained Finder's details (name and contact details). **Fish Tagged** (Record if any of the fish released are tagged and record all the tag details for each fish).		

Part 9. Length Information

IATTC currently do not require length measurements to be undertaken on the vessel and have implemented port sampling for these data. The diversity of unloading locations for the IATTC is believed to be low and the traceability of tuna catch high. Consequently length based information collected in port can be related back to the set. The traceability of catch in the WCPFC is more complex due to the occurrence of well sorting and high diversity of unloading locations and observers are required to undertake length measurements on the vessel. This includes measurement of discarded species and those of special interest which provides the opportunity to raise the catch data into finer resolution size increments. This is not possible for discarded species in the IATTC and inter-operability with the IATTC is poor for this data field. The current "Minimum Data-field Standards" specified by each of the t-RFMOs are outlined in the Table below.

IATTC	IOTC	ICCAT (IRD IEO AZTI)	WCPFC
	Species Code (IOTC)		**Species code** (FAO).
	Length measurement code Tip of the snout to the end of the tail Tip of the upper jaw to fork in tail Lower jaw to fork in tail Pectoral fin to fork in tail (Skates & Rays) Total wingspan width (Turtles) carapace length Not measured	One column per species – check form for details	**Length measurement code** (as per the measurement methods given in the codes) Upper jaw to fork in tail Upper jaw to second dorsal fin Lower jaw to fork in tail Pectoral fin to fork in tail Pectoral fin to second dorsal fin Total length (for sharks)
Tuna **Metric Tons captured by species code & size category** (small <2.5kg; medium 2.5-15 kg; large >25kg; Total) **Billfish by species and number** Post-orbital Length (cm, up to 12 individuals) Collective number of individuals by category small <90cm; medium 90-150cm; large >150cm; Total)		**Discarded tuna** Estimate species composition from 100 to 150 randomly selected individuals then measure 10-20 (nearest cm) for each species For other discards species All species length, sex, weight (if precision scales available), picture (if first time seen) to be reported but a priority for sharks, billfish and atlantic bonito.	**Length (cm)**

Part 10. Species of Special Interest

The information collected by the t-RFMOs provides for some inter-operability between the datasets. General information describing the type of interaction and set details along with information on the species and fate when landed on the deck and when released is collected (with level of detail varying between t-RFMO). The IATTC, IOTC and ICCAT also collect specific information on turtle interaction. The current "Minimum Data-field Standards" specified by each of the t-RFMOs are outlined in the Table below (IATTC also collects sighting data on marine mammals, seabirds and sea turtles).

IATTC	IOTC	ICCAT (IRD IEO AZTI)	WCPFC
General Information	*General Information*	*General Information*	*General Information*
Trip Number	**Fishing event number**	**Set number**	**Type of interaction** (eg. caught on line - tangled in net, swimming around outside of net, etc).
Set Number			**Date and time of interaction** (ship date & time)
			Latitude and longitude of interaction
Species (using code table or specified)	Species (FAO code)		**Species FAO code of marine reptile, marine mammal, or seabird**.
Landed on deck	*Landed on deck*	*Landed on deck*	*Landed on deck*
Rays and Manta Rays **Estimated number of individuals by species code & size category** (small <90cm; medium 90-150cm; large >150cm; Total) and **Density** (Small, Medium, Large, Total) **Other Big and Medium Fish** **Code & Estimated number of individuals by species code & size category** (small <30cm; medium 30-		All species length, sex, weight (if precision scales available), picture (if first time seen) to be reported but a priority for sharks, billfish and Atlantic bonito.	**Length** (cm)

60cm; large >60cm; Total) and **Density** (Small, Medium, Large, Total) **Seabird species code & number** **Other Fish, invertebrates, other fauna species code, number & density** **Sharks and Billfish by species and number** Length (cm) Collective number of individuals by category small <90cm; medium 90-150cm; large >150cm; Total) **Cetaceans by species** Length (cm) and girth (cm) Fetus length (cm)			
			Length measurement code (as above for codes)
Sharks Sex (Male/Female/Unknown) **Cetaceans** Sex (Male/Female)			**Gender** (Male/Female/Indeterminate/Unknown)
			Estimated shark fin weight by species
			Estimated shark carcass weight by species
	Fate Codes		**Condition when landed on deck** (Codes are:)

Cetaceans Lactating (yes/no) Fetus & its sex	Dead Alive (swam away) conditions not determined Alive and in good health condition Alive; minor injuries / stressed high probability of survival Alive; life threatening injuries / severe stress unlikely to survive Condition not observed and unknown		Alive but unable to describe condition Alive and healthy. Alive, but injured or distressed. Alive, but unlikely to live. Entangled, okay. Entangled, injured. Hooked, externally, injured. Hooked, externally, injured. Hooked, unknown, injured. Dead Entangled, dead Hooked, externally, dead. Hooked, internally, dead. Hooked, internally, dead. Condition unknown. Entangled, unknown condition. Hooked, externally, condition unknown Hooked, internally, condition unknown. Hooked, unknown, condition unknown.
Tuna **Code & Metric Tons discard to sea by category** (small <2.5kg; medium 2.5-15 kg; large >15kg; Total) plus reason (as above for codes) **Sharks** Fate (human consumption, discarded, released alive, other , unknown) **Billfish** Fate (human consumption, discarded, released alive, other , unknown		**Condition when released** (same codes as above)	**Condition when released** (same codes as above)
	Number of Marine mammals Sightings by species Species & length of landed mammals Fate Reason for capture	**Whaleshark and cetaceans** Escape from net Released from net alive Released but dead Other (specify)	

			Tag recovery information
			Tag release information
			Interactions with Vessel or Gear only
			Vessel's activity during interaction (PIRFO options are: setting, hauling, searching, transiting, other)
			Condition of species observed at start of interaction (as above)
			Condition of species observed at end of interaction (as above)
			Description of interaction
			Number of animals sighted
Turtles		**Turtles**	
Species Olive Ridley Leatherback Hawksbill Loggerhead Unidentified			
Activity Alive & immobile Swimming Copulating Feeding Dead Other/Unkown			
Number of turtles Various sighting One group of multiple turtles Found trapped/entangled in floating object Passed alive through the power block	**Number of turtles** Sightings by species Species & length of landed turtles Fate Reason for capture		

Association Marine mammals Tuna (breezer) Unassociated Other Floating object Distance of the association (m)			
Condition upon leaving the Turtle Entangled alive in flotsam Previously dead Released unharmed Light injuries Grave injuries Killed Escaped/evaded net Consumed Not involved in set Other/Unknown		Tangled but alive Tangled but dead Free	