UPDATE FROM THE CONSULTANCY ON THE DEVELOPMENT AND IMPLEMENTATION OF AN OBSERVER TRAINING PROGRAMME TO SUPPORT THE IOTC REGIONAL OBSERVER SCHEME

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SUMMARY

This document presents an up-to-date summary of the consultancy on the development and implementation of an observer training programme to support the IOTC Regional Observer Scheme (ROS)[3] implemented by CapMarine[4]. CapMarine addresses the 17th WPDCS to request it to review and endorse documents developed under the consultancy and to address proposed changes to Minimum Standard Data Fields adopted by the 23rd Session of the Commission.

KEYWORDS: *Standard data fields; data collection forms; scientific field observer training manual; observer logistic coordination guide; guidelines for observers, tuna purse-seine, pelagic longline, pelagic drift gillnet.*

Background

Fisheries observer data is important for fisheries management, as it provides a source of detailed information on fishing activities that is independent from logbooks. At a sufficient level of resolution, it can be used for analyses such as the standardisation of catch rates and analysis of bycatch mitigation measures. In 2009, the IOTC Commission approved Resolution 09/04 On a Regional Observer Scheme (ROS). This scheme was introduced to collect verified catch data and other scientific data related to the fisheries for tuna and tuna-like species in the IOTC area of competence through the implementation of national programmes.

In 2010, the IOTC Scientific Committee reviewed and endorsed an Observer Manual[5], an Observer Trip Report template[6] (containing agreed upon minimum reporting requirements) and data forms that would meet minimum data collection requirements. These were approved, in provisional form, by the Commission in 2011 where it was noted:

> "*Minimum data requirements were adopted as well as an observer report template that will be reviewed and revised as necessary".*

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[5] IOTC-2010-SC11-R
[6] IOTC-2018-SC12-R

Resolution 11/04 on the ROS[7] was adopted at this meeting and similarly provided a means for the observer scheme to begin, while the development of more comprehensive training tools was to be ongoing. Paragraph 15 of this Resolution states:

> *"The elements of the Observer Scheme, notably those regarding its coverage, are subject to review and revision, as appropriate, for application in 2012 and subsequent years. Based on the experience of other Tuna RFMOs, the IOTC Scientific Committee will elaborate an observer working manual, a template to be used for reporting (including minimum data fields) and a training program".*

Based on this mandate many national observer programmes were initiated under the scheme, and programmes that were already underway began reporting to the IOTC. Nevertheless, there were a number of issues arising from the data received by the IOTC Secretariat through the trip report template which were discussed in detail in 2014 at the WPEB[8] and WPDSC. This included issues with the resolution of data (e.g.: effort reported for an entire trip), new requests arising from the Commission and SC, areas of redundancy and duplication, a misunderstanding of data field descriptions and lack of categorisation/coding resulting in inconsistent data entries.

In 2014, the Scientific Committee adopted[9] a set of changes to the data reporting requirements:

> *"The SC **NOTED** the revisions to the observer reporting templates proposed by the WPEB10 and the WPDCS10 to improve the quality of the data submissions for scientific purposes such as stock assessments and other such scientific work as requested by the IOTC Scientific Committee".*
>
> Further,
>
> *"**NOTING** that improving the quality of data submissions is a process that evolves and develops over time, the SC **ADOPTED** the revised observer templates as interim reporting templates for immediate use by CPCs where ready and for preliminary use by CPCs where further time is required for review. The **SC AGREED** that the IOTC Secretariat will make these templates available in 2015 and update the guidance in the manual accordingly. Following implementation in interim format, the **SC AGREED** that these will be reviewed and modified further as appropriate in 2015".*

The revised reporting templates (in excel format), updated version of the manual and data collection forms were made available on the IOTC website[10]. Since then, the quality of reporting has improved substantially, notably the reporting of set level information, and coverage levels have also increased[11].

In a positive step towards supporting the implementation of the ROS, the Commission adopted in 2016, a Pilot Project for the IOTC ROS[12], centred around five key components that aim to tackle each of the key issues that currently undermine the collection and analysis of high-quality data to contribute to

[7] IOTC-2011-S15-R
[8] IOTC–2014–WPEB10–08 Rev_1 Update on the implementation of the IOTC Regional Observer Scheme
[9] Based on the request of the Commission to elaborate these minimum data fields, noting that only the Commission can adopt binding requirements or take decisions and that the role of the SC is to provide advice to the Commission.
[10] www.iotc.org/science/regional-observer-scheme-science
[11] IOTC-2017-SC20-07
[12] IOTC (2016). Resolution 16/04 On the implementation of a pilot project in view of promoting the Regional Observer Scheme of IOTC

stock assessment and management advice. The current consultancy aims to support the implementation of component one[13] and two[14] by:

- ✓ producing a revised set of data collection forms,
- ✓ developing packages for the training of logistic observer coordination teams and scientific field observers;
- ✓ establishing observer programmes and training in voluntary CPCs;
- ✓ piloting IOTC ROS Electronic tools and methods in voluntary CPCs.

In this paper we provide an update on the production of a revised set of data collection forms, and the developing of packages for the training of observer logistic coordination teams and scientific field observers; and request the 17th WPDCS to:

1) address proposed changes to minimum standard data-fields recommended by the SC21 and adopted by the 23rd session of the Commission (Appendix I);
2) review, propose peer reviewers, and/or approve ongoing peer reviews and endorse draft guidelines for scientific field observers deployed at-sea on-board:
    a) tuna purse-seiners;
    b) pelagic longliners; and
    c) pelagic drift gill-netters;
3) review and endorse:
    a) proposed revised set of data collection forms;
    b) scientific field observer training programme and manual; and
    c) observer logistic coordination training programme and guide.

Discussion

Revised set of data collection forms

CapMarine reviewed data collection forms available from other local and regional observer programmes, oceans and fisheries to identify clear and user-friendly designs, approaches and styles to be used in the production of IOTC ROS data collection forms.

The revised set of data collection forms match the agreed standard data-fields as recommended by the SC21, as adopted by the 23rd Session of the Commission. The forms, follow the IOTC ROS eCollection interface format and data fields sequencing as closely as possible to facilitate ease of use and transfer of data into electronic format by observers or program support staff.

The revised sets of data collection forms are organised as per Figure 1 below. These can be downloaded from the WPDCS meeting web page as INFO documents and are to be reviewed and endorsed by the 17th WPDCS. Data collection forms for pole & line are still under development.

[13] Component 1: addresses the problem of establishing observer programmes from scratch where there are few resources, expertise and experiences to draw on through the development of a full observer training programme package.
[14] Component 2: aims to tackle the issues with poor data reporting through the development of an electronic reporting tool which will facilitate the submission of data at both the national and at the regional level, improving the quality of data through error-checking procedures and creating time-saving efficiencies for CPCs and the IOTC Secretariat.

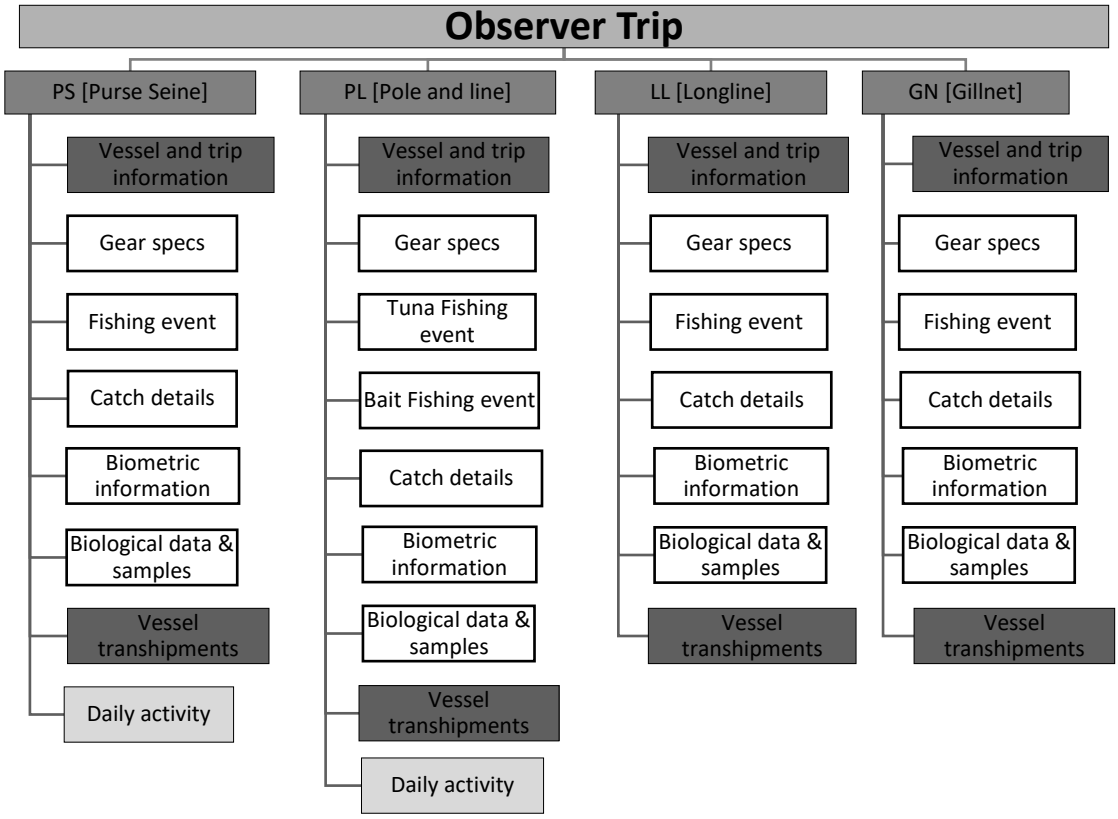

Figure 1: Macro organisation of revised, gear-specific data collection forms for the IOTC ROS (in dark grey general forms applicable to all gears; in light grey forms applicable to surface fisheries, in white gear specific forms).

Minimum standard data fields

While revising data collection forms CapMarine identified issues concerning the IOTC ROS standard data-fields adopted by the 23rd Session of the Commission. These included shortcomings on minimum standard data field definitions, units, filling instructions and related codes. A list of proposed changes is presented in **Appendix I,** these are to be discussed and endorsed by the 17th WPDCS.

Guidelines for scientific field observers deployed at-sea

Scientific field observers are independent specialists, deployed on-board commercial fishing vessels in accordance with a mandated observer programme. At-sea observers are in a unique position, as they are not affiliated with the vessels personnel and are required to work alone often for long periods, without direct supervision or assistance from their controlling organisation. It is therefore important that observers are provided with clear *work and sampling protocols*, *sampling instructions and priorities*, and detailed *instructions on how to complete data collection forms* accurately to ensure that the collected data is of high quality and can be used for the intended purposes.

CapMarine has therefore developed a set of practical *'Guidelines' for scientific field observers to follow when deployed onboard* registered vessels operating in the industrial large pelagic fisheries in the Indian Ocean (*purse-seine, pelagic longline, gillnet and pole & line vessels*). The 'Guidelines' are currently being peer reviewed by a set of experts selected based on their observer program experience and fishery-specific knowledge (Table 1). These can be downloaded from the WPDCS

meeting web page as INFO documents, and are to be reviewed, proposed for further peer reviewing, and/or endorsed based on ongoing peer-reviews, by the 17th WPDCS.

Table 1: List of experts contacted for the peer review of IOTC Observer Guidelines for observers deployed with purse-seiners, longliners and gill-netters (the guidelines for pole & line are under development but the content is not dissimilar to other surface fisheries for which material is available and in the review process).

N°	Name	Organisation	Guidelines	Contact details	Status
1	Jiangfeng Zhu	Shanghai Ocean University, China	Longline	jfzhu@shou.edu.cn	PR ongoing
2	Pascal Bach	IRD, France (EU)	Longline	pascal.bach@ird.fr	PR completed
3	Suraj Chandrakuamara	Department for Fisheries and Agricultural Research, Sri Lanka	Longline	ksckdumidi@gmail.com	PR ongoing
4	Jon Ruiz Gondra & all	AZTI, Spain (EU)	Purse-seine	jruiz@azti.es	PR completed
5	Emmanuel Chassot	IOTC	Purse-seine	emmanuel.chassot@fao.org	PR completed
6	Reza Shahifar	Iranian Fisheries Organisation, Iran	Gillnet	r.shahifar@gmail.com	PR ongoing
7	Umair Shahid	WWF, Pakistan	Gillnet	ushahid@wwf.org.pk	PR ongoing
8	John Carlson	Observer Coordinator Southeast Gillnet Observer Program, NOOA, USA	Gillnet	john.carlson@noaa.gov	PR ongoing

Scientific field observer training programme and manual

Scientific field observers working on fishing vessels during normal operations are in a position to verify and record accurate, *in situ* data about the location, catch composition and gear configuration of fishing operations, and are usually the only independent source of this information. To be successful in this environment, they require a high level of integrity and personal self-motivation *and* need the academic qualifications and training to optimally accomplish the detailed tasks and responsibilities assigned to them.

CapMarine has developed a *Scientific Field Observer Training Manual* and a *Training Programme,* taking into account the *Basic Observer Training Curriculum* endorsed by the IOTC Scientific Committee and provisionally approved the IOTC Committee in 2019 (IOTC–2019–S23–10_Rev1[E]: Regional Observer Scheme – Draft Programme Standards, page 15 – 32). The Scientific Field Observer Training Manual and Training Programme can be downloaded from the WPDCS meeting web page as INFO documents. These are to be reviewed and endorsed by the 17th WPDCS.

Observer logistic coordination training programme and guide

Good logistical management of sea-going observers is a crucial aspect in ensuring the success of an observer programme. Often the implementation of a legal, institutional, financial and management framework, under which an observer scheme should work is overlooked, which can impede its

implementation or influence the longevity and efficiency of the program, compromising observer work and exposing observers to unnecessary safety risks. To overcome such problems National Observer Program (NOP) implementing institutions / organisations should include a team of NOP co-ordinators responsible for ensuring the correct functioning of the scheme. NOP co-ordinators lacking experience in the deployment and management of observers should undergo specialised training in these processes.

CapMarine has developed an *Observer Logistic Coordination Guide* to the development of an observer program and the deployment and co-ordination of observers at sea and a *Training Programme.* Both documents can be downloaded from the WPDCS meeting web page as INFO documents, and are to be reviewed and endorsed by the 17th WPDCS.

Appendix I

IOTC ROS Minimum Standard Data Fields proposed for revision

Section name	Data field name	Data field description	Proposed changes and justification
PS gear specifications	Maximum length of the net.	Record the maximum length of the net according to the net specifications. This corresponds to the length of the topline. Note: specify units (preferably meters). Units {M | KM})	Change units from {M | KM}to {M | FEET}
	Maximum depth of the net	Record the maximum fishing depth according to the net specifications. Note: specify units (preferably meters). Units {M | KM})	Change units from {M | KM}to {M | PHANTOMS}
	Bunt stretched mesh size	Record mesh size of the bunt, chafer or sack of the net (see purse-seine net scheme). Ask the Deck Boss. Verify value given by measuring 3 stretched mesh lengths (knot to knot) and calculating the average. If values differ, record measured average mesh size and report this on your trip report. Units {MM | CM | M}	Change units from {MM | CM | M} to {CM}.
	Mid-net stretched mesh size	Record mesh size of the bunt, chafer or sack of the net (see purse-seine net scheme). Ask the Deck Boss. Verify value given by measuring 3 stretched mesh lengths (knot to knot) and calculating the average. If values differ, record measured average mesh size and report this on your trip report. Units {MM | CM | M}	Change units from {MM | CM | M} to {CM}.
LL gear specifications	Mainline length	Record the total length of the mainline (i.e. mainline maximum length). This information can be obtained from the Captain or Fishing Master. Note: specify units (preferably 'Kilometres'). Units {M | KM}	Change units from {M | KM} to {M | NM}.
LL fishing events	Mainline set length	Record mainline total set length (i.e. the total deployed length of the mainline for the specific set). Usually calculated by multiplying the total time to set the line and the average line setter speed, taking into account any interruption times. This information can be obtained from the Fishing Master and cross checked against observer. Units {M | KM}	Change units from {M | KM} to {M | NM}.

LL fishing events	Method(s) to stun fish	Record the method/s used to stun fish during hauling (Table 24)	Add a code for "Not applicable" to table 24 for vessels that don't stun fish.
Catch details (all gears) - ***Additional catch details on SSIs***	Hauling method	Detail how the specimen was brought on-board (Table 49). [Consistent with IOTC Res 12-04]	Change data field name to *Handling method* as observers associate 'landing method' to vessel offloading.
	Resuscitation (for turtles only)	For turtles indicate Yes if the release took place with resuscitation and No if not.	Change data field name and definitions as recommended by J. Bourjea (Turtle expert, IFREMER). *Revival (for turtles only): For turtles indicate Yes if the release took place following the application of revival procedures and No if not.*

Section name	Data field name	Data field description	Proposed changes and justification
Catch details (all gears) ***Biometric information***	Length 1 type	Specify the length code used for the measurement (Table 53).	We advise to separate the Length type data field into two different data fields to simplify data collection, code retention and the adding / removal of measurement tools and length measurement types to IOTC e-reporting tool. *Length 1 type: Specify the length type taken (Table 53 A).* *Length 2 type: When an additional length measurement is taken, the corresponding length code should be recorded (Table 53 A).* *Length 1 and Length 2 estimation method: Specify the estimation method used to obtain the length (Table 53 B).*
	Length 2 type	When an additional length measurement is taken, the corresponding length code should be recorded (Table 53).	
	Length 1 value	Record the length corresponding to the length type taken rounded to the lower centimetre. For LD1 this should be rounded to the lower half centimetre.	
	Length 2 value	When an additional length measurement is taken, the corresponding length should be recorded rounded to the lower centimetre. For LD1 this should be rounded to the lower half centimetre.	
	Length 1 units	{CM | M}	

	Length 1 units		
Daily activity (surface fisheries)	Time	Record time at the start of every fishing activity and every two hours from sunrise to sunset.	*Record time at the start of every fishing activity, every two hours from sunrise to sunset and during any FAD/Log activities.* This information is not included in the ROS Minimum Data Requirements but is requested under FAD related IOTC Data Requirements (Resolution 15/02, 19/01 and 19/02). It could be recorded by other means (FAD logbook and buoy providers for instance). But the EU is collecting this information under the EU PS observer program. We propose to change this instruction to standardize data collection with the EU programme.

OTC ROS data collection codes proposed for revision

Table 2. Length measurement descriptions[151617]

Current version

Code	Tools	Type	Description (all rounded to the lowest cm)
FL	Caliper	Fork length	Tip of the snout to the fork of the tail
FT	Tape measure	Curved fork length	Tip of the snout to the fork of the tail
FB	Board	Board fork length	Tip of the snout to the fork of the tail
EF	Caliper	Eye fork length	Caudal margin of eye to the fork of the tail
ET	Tape measure	Curved eye fork length	Caudal margin of eye to the fork of the tail
PF	Caliper	Pectoral fork length	Anterior insertion of the pectoral fin to the fork of the tail
PT	Tape measure	Curved pectoral fork length	Anterior insertion of the pectoral fin to the fork of the tail
DF	Caliper	Dorsal fork length	Anterior insertion of the dorsal fin to the fork of the tail
DT	Tape measure	Curved dorsal fork length	Anterior insertion of the dorsal fin to the fork of the tail
CK	Caliper	Cleithrum-keel length	Posterior point of cleithrum to the anterior point of the caudal keel
KT	Tape measure	Curved cleithrum keel length	Posterior point of cleithrum to the anterior point of the caudal keel
CF	Caliper	Cleithrum-fork length	Posterior point of cleithrum to the fork of the tail
CT	Tape measure	Cleithrum-fork length	Posterior point of cleithrum to the fork of the tail
PAL	Caliper	Pectoral-anal length	Anterior insertion of pectoral fin to the posterior rim of the anal fin
PAT	Tape measure	Curved pectoral anal length	Anterior insertion of pectoral fin to the posterior rim of the anal fin
Billfish			
LJFL	Caliper	Lower Jaw Fork Length	Tip of the lower jaw to the fork of the tail
LJFT	Tape measure	Curved Lower Jaw Fork Length	Tip of the lower jaw to the fork of the tail

15 IOTC-2013-WPDCS09-13 Rev_1

16 Collette, B.B. and C.E. Nauen, 1983. FAO species, catalogue. Vol. 2. Scombrids of the world. An annotated and illustrated catalogue of tunas, mackerels, bonitos and related species known to date. FAO Fish.Synop., (125) Vol. 2: 137 p.

17 Nakamura, I., 1985. FAO species catalogue. Vo1.5. Billfishes of the World. An annotated and illustrated catalogue of marlins, sailfishes, spearfishes and swordfishes known to date. FAO Fish.Synop., (125) Vo1.5:65 p.

Sharks			
PCL	Caliper	Precaudal Length	Tip of the head to the anterior portion of the caudal keel
PCT	Tape measure	Curved Precaudal Length	Tip of the head to the anterior portion of the caudal keel
Rays			
TW	Caliper	Total width	Total disc width
TT	Tape measure	Curved Total width	Total disc width
Turtles			
CL	Caliper	Carapace Length	Total carapace length - notch to notch
CT	Tape measure	Curved Carapace Length	Total carapace length - notch to notch
Birds			
TL	Caliper	Total length	Tip of bill to tip of tail
WL	Caliper	Wing length	Bend of the wing to the tip of the longest primary feathers

Proposed revised version

Table 53A: Length type

- *PAL and PAT codes converted to PA and PD for conformity with IOTC e-reporting tool.*
- *FD1 (fist dorsal length) included for conformity with IOTC Tuna species identification card measurements.*
- *UJFL (upper jaw to the fork of the tail) included as this measurement is often taken by at-sea observers.*
- *PD (pectoral-dorsal fin length) included as this measurement is often taken by at-sea observers.*
- *TL (total length) included for conformity with IOTC Shark species identification card measurements.*

Code	**Type**	**Description (all rounded to the lowest cm)**
		ALL FISH EXCEPT BILLFISH
FL	Fork length	Tip of the snout to the fork of the tail
EF	Eye fork length	Caudal margin of eye to the fork of the tail
PF	Pectoral fork length	Anterior insertion of the pectoral fin to the fork of the tail
DF	Dorsal fork length	Anterior insertion of the dorsal fin to the fork of the tail
CK	Cleithrum-keel length	Posterior point of cleithrum to the anterior point of the caudal keel
CF	Cleithrum-fork length	Posterior point of cleithrum to the fork of the tail

PA	Pectoral-anal length	Anterior insertion of pectoral fin to the posterior rim of the anal fin
PD	Pectoral-dorsal length	Anterior insertion of the pectoral fin to the anterior insertion of the second dorsal fin
FD1	First dorsal length also called pre-dorsal length	Tip of the upper jaw to the insertion of the first dorsal spine
UJFL	Upper jaw to the fork of the tail length	Tip of upper jaw to fork of tail
	BILLFISH	
LJFL	Lower Jaw Fork Length	Tip of the lower jaw to the fork of the tail
	SHARKS	
PCL	Precaudal Length	Tip of the head to the anterior portion of the caudal keel
TL	Total length	From tip of snout to extreme end of tail in a straight line
	RAYS	
TW	Total width	Total disc width
	TURTLES	
CL	Carapace Length	Total straight carapace length - notch to notch
CT	Curved Carapace Length	Total curved carapace length - notch to notch
	BIRDS	
TL	Total length	Tip of bill to tip of tail, straight measurement
WL	Wing length	Bend of the wing to the tip of the longest primary feathers, straight measurement

Table 53B: Length estimation method

Code	**Tools**
CA	Caliper
TM	Tape measure
MB	Measuring board
EM	Eye measurement (observer)
LO	Vessel logbook (eye measurement crew)
LW	Length weight relationship

Table 3. Fish stunning methods

Current version

Code	Description
CO2	Carbon dioxide narcosis
PS	Percussive stunning
SP	Spiking
ELC	Electrocution

Proposed revised version

Code	Description
CO2	Carbon dioxide narcosis
PS	Percussive stunning
SP	Spiking
ELC	Electrocution
NA	Not applicable