

This slide is titled "Overview" and features the Pacific Community logo in the top right corner. It contains a bulleted list of five items: "Why collect data ?", "WCPFC Scientific data requirements", "Science data requirements and E-Monitoring (EMS)", "Challenges for EMS data collection", and "Future of EMS for tRFMOs". Below the list, the text "Take home messages" is written in blue. The slide is enclosed in a black rectangular border.

## Why collect data ?



Data Collected → Science → Management → Sustainability

**No data** → No Analyses  
→ No Management (precautionary at best)

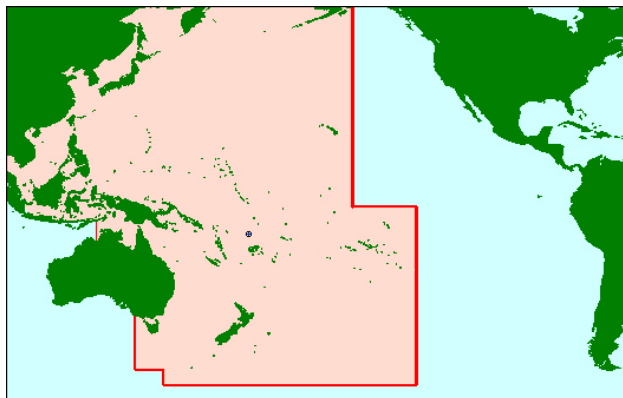
**Poor data** → Analyses with uncertainty  
→ Precautionary Management

**Good data** → Informed Analyses  
→ Targeted Management [more certainty]  
→ HCRs and RPs can be set  
→ Better chance of Sustainability

## Data obligations to the WCPFC



SCIENTIFIC DATA required for **WCPFC CONVENTION STATISTICAL AREA**



SCIENTIFIC DATA used to determine **STATUS OF STOCKS** and provide **advice** to the WCPFC member countries to manage their stocks .....

## Data obligations to the WCPFC

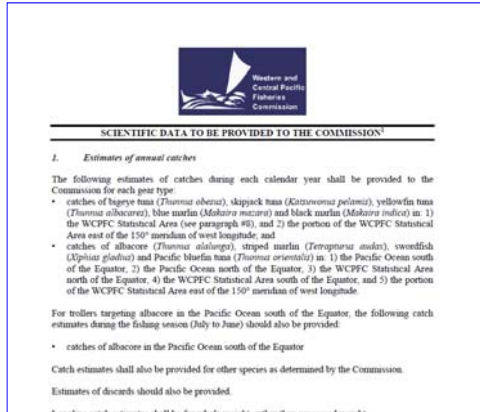


The WCPFC regulations for

*“Scientific Data to be provided to the Commission”*

specifies the data required for Stock assessments and related analyses.

(<http://www.wcpfc.int/doc/data-01/scientific-data-be-provided-commission-revised-wcpfc4-6-7-and-9>)



## Data obligations to the WCPFC



### REGIONAL OBSERVER DATA

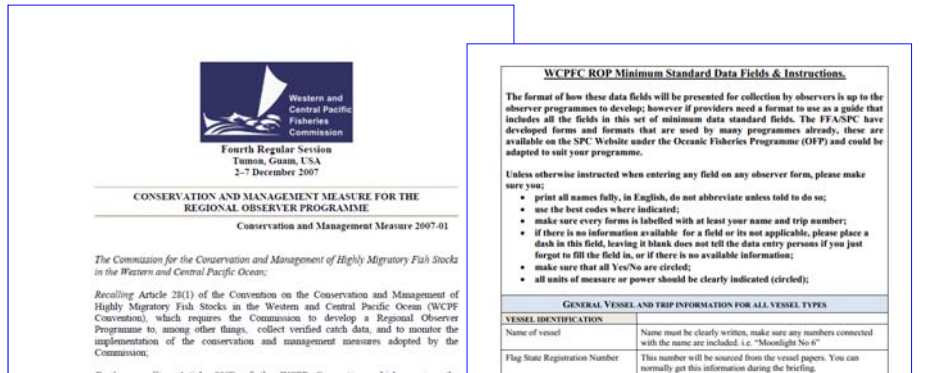
*“CMM 2007-01 – Regional Observer Programme (ROP)”*

and the

*“WCPFC ROP Minimum Standard Data fields”*

specify the OBSERVER DATA PROVISION requirements.

(<http://www.wcpfc.int/system/files/Table-ROP-data-fields-instructions.pdf>)



# Science data requirements and E-Monitoring



WCPFC rules do not [yet] cater for **HOW** to acquire data... only **WHAT** data needs to be submitted...

E-Monitoring trials focus on **OBSERVER DATA**... but lack standards for **HOW** to acquire data...

so we attempted to define the **HOW** leading into the trials

# Science data requirements and E-Monitoring



Enhancing the table of WCPFC Observer data field requirements to define the **HOW**...

**Data Field Name**

GENERAL VESSEL AND TRIP INFORMATION FOR ALL VESSEL TYPES - VESSEL IDENTIFICATION				
Data Field	Initial Sea Table	Initial Vessel Manager version 1.2.0.1E	Instructions	Initial proposal for E-M
Name of vessel	Yes - via VMS Fishing vessel; Clear text, included in metadata as configured during application	Yes - shown on inspection report	Name must be clearly written, include any safety numbers contained with the name are included, i.e. "Adventure No 9"	This information is available prior to departing the port and should be completed by the port data collection officer responsible for the inclusion coordination of entering the E-Monitoring equipment data using the vessel OBSERVER
Flag State Registration Number	Yes - via VMS 201 Fleet Reg Number (PRF field), that can be used for this identification metadata as configured during application	Yes - shown on inspection report	This number will be copied from the vessel pages. You can normally get this information during the briefing	
International Radio Call Sign	Yes - via VMS Radio Call Sign field, included in metadata as configured during application	Yes - shown on inspection report; Status "value"	The vessel call signs usually issued to the vessel by the flag state in accordance with IMO regulations and procedures. This can become the WCPFC identification number of the vessel	
Vessel Owner Company	No - not available for configuration on the vessel	Yes - can be configured in the program	Name and contact details of the owner of the vessel, if it is owned by a company, that is the company name	
Hot workshops conducted with C/MI 2004-03	Yes - via VMS Extension field, that can be used for this included in	Yes - shown on inspection report; Status 14-daw	The hot workshops should be conducted with C/MI 2004-03, these are virtually the same as the FAO standard eye-witness findings	

**Original guidelines for data collection forms**

**Initial 'brainstorm' proposals on HOW for E-M**

**Comments from Technical Service Provider on HOW for E-M**

SPECIES OF SPECIAL INTEREST				
Data Field	Initial Sea Table	Initial Vessel Manager version 1.2.0.1E	Instructions	Proposal for E-M
Type of interaction	Double - The idea is that Initial Sea Table records when there is fishing activity, i.e. when activated by sensor		STSI version 1.2.0.1E does not support recording of sensor information for automatic tagging of video	This information will need to be collected from other sensor information on the gear or sensor of the video, both of which are used in conjunction with GPS equipment. This would identify and store the direction and position of the interaction.
Date and time of interaction	If you need sensor information to be recorded from starting stoppage recording then we need to make a case change		A user - review could later be made to incorporate intelligence for sensor data. This will have to be ready for at the time of entering video	The video sensors would need to be directed at least to the track line being hauled to determine the species of special interest.
Latitude and longitude of interaction	Please see SATLS(NOTE2) at the end of this document			The E-Monitoring trial will also need to consider obtaining information on interaction with gear during the SETTING phase (e.g. tracks, or video sensors would need to be mounted appropriately)
Species codes of sensitive species	Yes - The idea is that Initial Sea Table records when there is fishing activity	MI - not as proposed	We suggest using to use the NOTE tag as a video to add	It is envisaged that E-Monitoring would not be able to capture interactions which did not

# Science data requirements and E-Monitoring



Enhancing the table of WCPFC (ROP) Observer data field requirements to define the **HOW...**

## CATEGORIES OF OBSERVER DATA FIELDS

1. Collected at port during pre-trip inspection
2. Easily recorded from video review
3. More difficult to obtain from video review
4. Impossible to obtain from E-M [at this stage ?]
5. New, very useful data

Field Name	Field Name	Field Name	Field Name	Field Name
Type of observation	Depth - The value for Depth shall be recorded in meters (m) to the nearest meter. This value shall be recorded in the logbook.	Depth - The value for Depth shall be recorded in meters (m) to the nearest meter. This value shall be recorded in the logbook.	Depth - The value for Depth shall be recorded in meters (m) to the nearest meter. This value shall be recorded in the logbook.	Depth - The value for Depth shall be recorded in meters (m) to the nearest meter. This value shall be recorded in the logbook.
Date and time of observation	If you need value information to be recorded from video, please use the following format: YYYY-MM-DD HH:MM:SS. This value shall be recorded in the logbook.	If you need value information to be recorded from video, please use the following format: YYYY-MM-DD HH:MM:SS. This value shall be recorded in the logbook.	If you need value information to be recorded from video, please use the following format: YYYY-MM-DD HH:MM:SS. This value shall be recorded in the logbook.	If you need value information to be recorded from video, please use the following format: YYYY-MM-DD HH:MM:SS. This value shall be recorded in the logbook.
Latitude and longitude of observation	Please use the following format: YYYY-MM-DD HH:MM:SS. This value shall be recorded in the logbook.	Please use the following format: YYYY-MM-DD HH:MM:SS. This value shall be recorded in the logbook.	Please use the following format: YYYY-MM-DD HH:MM:SS. This value shall be recorded in the logbook.	Please use the following format: YYYY-MM-DD HH:MM:SS. This value shall be recorded in the logbook.
Species and/or catch	For the purpose of this table, the species shall be recorded in the logbook.	For the purpose of this table, the species shall be recorded in the logbook.	For the purpose of this table, the species shall be recorded in the logbook.	For the purpose of this table, the species shall be recorded in the logbook.

# Science data requirements and E-Monitoring



## CATEGORIES OF OBSERVER DATA FIELDS FROM E-M EXAMPLES

1. Collected at port during pre-trip inspection
  - Information that doesn't change during a trip (e.g. vessel attributes and certain gear details)
2. Easily recorded from video review
  - Clear species identification (e.g. large yellowfin tuna, mahi mahi, swordfish, certain shark species)
  - Processing (FATE) of landed tuna
3. More difficult to obtain from video review
  - Hook number (between successive floats) with the catch
  - Identification of some species (fish struck-off, small BET/YFT, marlins)
  - Condition on release of fish (where relevant)
  - Length of fish ?

## Science data requirements and E-Monitoring



### CATEGORIES OF OBSERVER DATA FIELDS FROM E-M

#### **EXAMPLES** (cont.)

#### 4. Most difficult or impossible to obtain from E-M at this stage

- SEX identification (when from internal organs)
- Use and success of certain mitigation measures (not yet tested)
- Monitoring of marine pollution

#### 5. New, useful information now available from E-M

- Precise time and position for each catch
- Ability to review video many times ... (for example, to resolve species id.)
- [May eventually prompt inclusion into WCPFC ROP data fields]

## Science data requirements and E-Monitoring



Enhancing the table of WCPFC Observer data field requirements to define the **HOW**...

### **STRONG RECOMMENDATIONS**

- I. This type of work needs to be formalised and conducted prior to trials (setting and using the standards)
- II. Continuous improvement and update of information (updating the standards)
- III. Basis for potential certification and auditing ? (using the standards)

## Challenges for data acquisition from E-Monitoring



- WCPFC ROP data standards are the MINIMUM standards agreed by the WCPFC ... [Other fields have been requested by scientists but are not included]
- Regardless of how ROP data are collected (hard-copy forms, E-Reporting or E-Monitoring), these data must be acquired and submitted
- Some examples of fields that present challenges for E-Monitoring include ...
  - Hook number
  - Gender/Sex
  - Length measurements
- Opportunity for data acquisition from E-Monitoring ?
  - Purse seine tuna species composition and bycatch ?

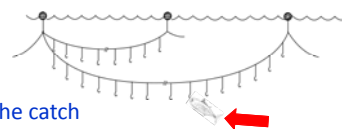
## Challenges for data acquisition from E-Monitoring



### Hook number of catch

What is it ?

- the hook no. [between the successive floats] of the catch

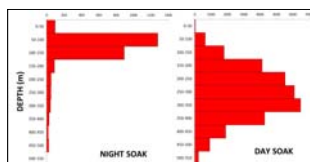


Example of scientific use

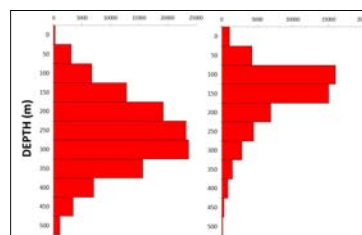
- Comparisons of relative depth range by species & in relation to gear (e.g. selectivity)
- Potentially informs CPUE standardisation analyses

Issue/challenge to collect from E-M

- Difficult/time consuming to count



Estimated depth of bigeye tuna catch from longline gear



Estimated depth of bigeye tuna (left) and Mahi mahi (right) taken from longline gear

## Challenges for data acquisition from E-Monitoring



### Sex identification

#### What is it ?

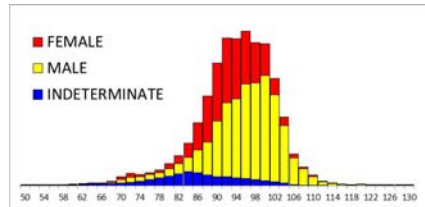
- Identification to determine whether fish is MALE or FEMALE

#### Example of scientific use

- Provides important input parameters for stock assessments
- Size/Sex structure of the population available to that GEAR

#### Issue/challenge to collect from E-M

- Where organs are internal, it may be very difficult and/or time consuming to acquire this information



Longline-caught albacore tuna catch by size/sex

## Challenges for data acquisition from E-Monitoring



### Length Measurements



#### What is it ?

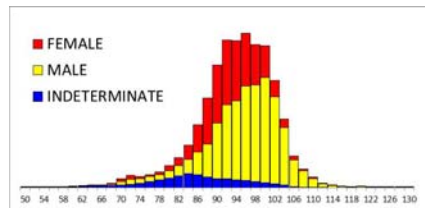
- Length of each fish is determined
- Different measurements are required depending on category of fish (tuna are upper-jaw to caudal fork length, billfish are lower-jaw to fork length)

#### Example of scientific use

- Provides important input parameters for stock assessments
- Size structure of the population available to that GEAR

#### Issue/challenge to collect from E-M

- Availability of digital measuring tool ?
- Accuracy of tool ?
- Correct use of tool ?
- Unhindered view of fish when measuring ?



Longline-caught albacore tuna catch by size/sex



## Opportunity for data acquisition from E-Monitoring ?



### Purse seine tuna species composition

#### What is it ?

- Species (and size) composition from purse seine tuna catch



#### Example of scientific use

- Observer data currently only means for determining PS catch estimates by species
- Important input for stock assessments

#### Potential for E-M

- Only very small samples can be obtained from current method
- Bias in current method (GRAB)
- Can E-M (HD video/photos) provide better data more efficiently ?
- Use E-M to complement the on-board observers data collection ?



## Opportunity for data acquisition from E-Monitoring ?



### Purse seine Bycatch composition

#### What is it ?

- Observer estimates of BYCATCH from purse seine set

#### Example of scientific use

- Provides only means for determining PS BYCATCH estimates by species
- Important input for certain bycatch species stock assessments

#### Potential for E-M

- Observer is often too busy measuring target catch to accurately record BYCATCH...
- Use strategically-placed E-M cameras to record BYCATCH and complement the on-board observers BYCATCH data collection ?



## Future of E-Monitoring for tRFMOs ?



Establish standards for receiving EMS ROP data (**WHAT**)

Consider standards for **HOW** the ROP data are collected

- To what extent will this be possible ?

Consider Certification and Auditing

- To what extent will this be possible ?

Opportunities for global harmonisation ?

- There is already a group working on PS and LL observer data fields
- A natural extension of their work...

...before it is too late !

## WCPFC E-R and E-M Data Standards



**Western and Central Pacific Fisheries Commission (WCPFC)**  
E-REPORTING STANDARD DATA FIELDS  
OPERATIONAL LOGSHEET DATA  
Draft - Version 2.0  
7<sup>th</sup> June 2015

Guide WCPFC member countries on what fields/format for EMS and E-R data to submit in the future ...

Format can be XML, TXT, CSV ...

<https://www.wcpfc.int/node/21569>

## TAKE HOME MESSAGES



Good progress and optimism, but still some work to do...

- tRFMOs should be formally considering requirements and standards for EMS (and E-R) now !
- Communication and collaboration amongst stakeholders (particularly industry) is critical
- Identify, motivate and support the research by technical service providers (vendors) to resolve the challenges/issues ...