

## Framework for the Development Observer Manuals, Reporting Templates and Training Programmes for the Indian Ocean Tuna Commission

**CAPRICORN FISHERIES MONITORING cc**  
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### Introduction

Worldwide scientific observer programmes are used in fisheries management to provide “independent” baseline information on fisheries. This is particularly important in the case of Regional Fisheries Management Organisations (RFMOs) where member states (contracting parties) might include distant water fleets, domestic fleets (fishing within EEZs) and artisanal fisheries (exploiting territorial waters). Regional Observer Programmes (ROPs) such as the one developed by IOTC for the monitoring on Large-Scale Transshipment Vessels (LSTVs) perform a valuable role in collating catch and effort data and monitoring within the region. Similarly scientific observers can also be deployed across all fishery sectors to collect information primarily for management, stock assessment, conservation and other “neutral” activities. Although not explicit in the Observer description, Observers do have a passive “compliance” function as well.

IOTC have recognised the need for Observers in Resolution 09/04 for a Regional Observer Scheme Scientific Observer Programme. This “Framework for the Development of Observer Materials” is the first step in this process. A fundamental requirement of any Observer Programme, particularly in regions where there are many participating countries and also many different gear and vessel types, is the standardisation within the organisation of the basic Observer Manuals. This would include for example a Standard Operating Procedure (SOP) for all fleets and fisheries, standard Observer protocols to facilitate Observer deployments, as well as standardised training procedures such that all Observers deployed are skilled to a minimum standard.

In the case of the IOTC, as with many other tuna RFMOs, there is a matrix of coastal and island states, distant water fleets, languages, target species and fishery types (purse seine, longline, FADs, pole and line and a broad spectrum of artisanal gears). This represents an enormous challenge, particularly for implementation.

### Development of a Regional Observer Programme for IOTC

We recommend that the IOTC-ROP be clearly separated between “High-seas” and “Artisanal” programmes. Both sectors have their own specific requirements and particular set of protocols and logistics. The Artisanal component is the most challenging and we recommend that it be implemented only once the high seas component has been effectively implemented.

### High Seas and Offshore Domestic Operations

We foresee the following major steps (in sequence) towards the development of a “high seas” ROP for IOTC :

- ✓ Agreement by all CPCs<sup>1</sup> on the essential materials needed for Observer deployments, reporting and data collation. This is the framework proposed herewith;
- ✓ Detailed preparation and development of the Observer materials agreed to by the CPCs;
- ✓ Review and acceptance (with changes as needed) of the primary versions of the Observer material;
- ✓ Translation into the designated official language(s) of IOTC CPCs;
- ✓ Development of an Implementation Strategy (SOP) for Observer deployments across all fleets – implementation is normally staggered focusing on priority areas, fisheries and species. **This should include synchronisation with existing Observer programmes in the region to optimise the use of Observers.** This will require linkages and MOU's to be developed between CPCs;
- ✓ Agreement by IOTC CPCs on SOPs. This could be modelled on existing programmes such as CCAMLR where Observers from one members licensed vessels are deployed on others. Reporting protocols then take on a higher level of importance and require “Confidentiality” conditions;
- ✓ Training of a core Observer capacity pool for high seas deployment in the IOTC region;
- ✓ Implementation of the deployment of the core Observer group to test functionality of the programme (protocols, reporting mechanisms, logistics etc);
- ✓ Introduction of Country-specific training for high seas deployments;
- ✓ Implementation of Country specific programmes for high seas deployments<sup>2</sup>.

## Artisanal Fisheries

We foresee the following major steps (in sequence) towards the development of an “Artisanal Fisheries” ROP for IOTC :

- ✓ Agreement by all CPCs on the essential materials needed for Observer deployments, reporting and data collation. A “provisional” framework is provided herewith – noting that the Artisanal programme will require a higher level of Country-Specific involvement than for the high seas component;
- ✓ Detailed preparation and development of the Artisanal Observer materials agreed to by the CPCs;
- ✓ Review and acceptance (with changes as needed) of the primary versions of the Artisanal Observer material;

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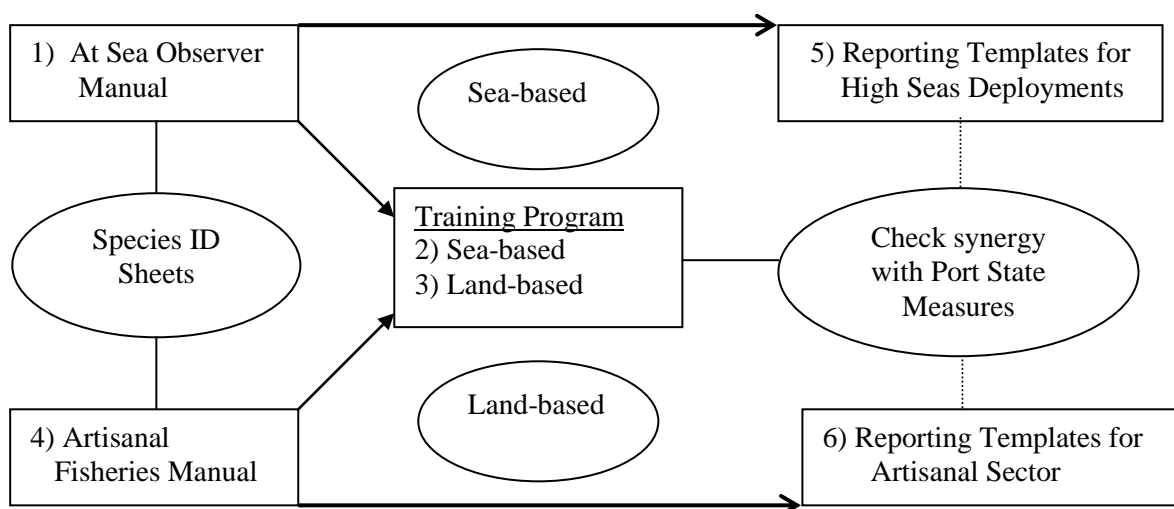
<sup>1</sup> We refer only to IOTC contracting parties or members of IOTC – we assume participation in the scheme is obligatory for CPCs and that non-contracting parties and those with Observer status will have the option to participate.

<sup>2</sup> We note also that there are numerous regional project initiatives such as SWIOFP, ASCLME, MACEMP, KCDP, WIOMSA that may need to be integrated into the scheme, or could contribute to the development of the IOTC-ROP.

- ✓ Translation into the designated official language(s) of IOTC CPCs;
- ✓ Development of an Implementation Strategy (SOP) for Observer deployments in each country with gear-specific procedures for Artisanal fisheries. Implementation staggered focusing on priority areas, fisheries and species. **Synchronisation with existing Observer programmes in the region to optimise the use of Observers.** This will require linkages and MOU's to be developed between CPCs and a mechanism for members to monitor artisanal fisheries in the country of another member.
- ✓ Training of a core Observer capacity pool in EACH country for Artisanal Fisheries deployments in the IOTC region;
- ✓ Implementation of the deployment of the core Observer group to test functionality of the programme (protocols, reporting mechanisms, logistics etc);
- ✓ Implementation of Country specific programmes for Artisanal deployments

### Development of Materials for the IOTC-ROP

There are six main outputs regarding the materials developed. These are demonstrated in the schematic below :



## **Proposed Framework for IOTC Sea-Based Observer Tuna Manual**

Manual will be split into three main parts

### **PART A : IOTC, REGIONAL DYNAMICS, COUNTRIES, FISHERIES & SPECIES**

#### **1.0 Background to IOTC, structure, members and dynamics**

- 1.1 Indian Ocean Tuna Commission
- 1.2 Mission and Objectives of the IOTC
- 1.3 Structure of the Commission
- 1.4 Membership to the IOTC
- 1.5 Functions and Responsibilities
- 1.6 Subsidiary Bodies set up by the Commission: Scientific Committee Sub-commissions  
Working Parties
- 1.7 Main Species under IOTC Management
- 1.8 Data Collection and Submission of Data to the IOTC

#### **2.0 Geography and Political Dimension of the Indian Ocean Region**

- 2.1 Countries and principal ports and handling facilities, fisheries management authorities
- 2.2 Meteorology and oceanography – seasonality and prevailing conditions
- 2.3 Ecology, eco-labels and adoption of EAF
- 2.4 Main IOTC fisheries in the region and each country
- 2.5 Summary of catches in the region (species, fisheries, trends)
- 2.6 Essential conservation measures and country specific fisheries management measures and legal instruments

#### **3.0 Fisheries and Operational Characteristics** (for each vessel descriptions, setting, hauling, storage, transshipments and discharges)

- 3.1 Purse Seine
- 3.2 Longline
- 3.3 Pole
- 3.4 Line
- 3.5 FAD Fisheries
- 3.6 Gill / trammel nets
- 3.7 Artisanal
- 3.8 Recreational

#### **4.0 Commercial Target Species**

- 4.1 Bigeye Tuna (*Thunnus obesus*)
  - 4.1.1 Biology, essential population dynamics
- 4.2 Yellowfin Tuna (*Thunnus albacares*)
  - 4.2.1 Biology, essential population dynamics

- 4.3 Skipjack tuna and bonitas
  - 4.3.1 Biology, essential population dynamics
- 4.4 Albacore (*Thunnus alalunga*)
  - 4.4.1 Biology, essential population dynamics
- 4.5 Swordfish (*Xiphias gladius*)
  - 4.5.1 Biology, essential population dynamics
- 4.6 Shark (var spp.)
  - 4.6.1 Biology, essential population dynamics

## **5.0 Bycatch**

- 5.1 Retained bycatch
- 5.2 Discard
- 5.3 Incidental bycatch of Protected, Endangered and Threatened (PET) species
- 5.4 Mitigation methods – TEDs, BRDs, Tori-lines and other.

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## **PART B : OBSERVER BASICS, PROTOCOLS, LOGISTICS, SAMPLING,**

### **6.0 The Origin and Value of Observer Programmes**

- 6.1 Rationale for the IOTC-ROP
- 6.2 Other Observer Programmes in the region

### **7.0 Defining “the Observer”**

- 7.1 Scientific Observers
  - 7.1.1 Qualifications and prerequisites
  - 7.1.2 Fisheries Observers
  - 7.1.3 Marine Mammal Observers and Interactions
  - 7.1.4 Tagging and Experimental activities
- 7.2 Compliance “Observers”

### **8.0 Observer role and responsibilities**

- 8.1 Observer Code of Conduct and Protocols
- 8.2 MOU’s and country-specific guidelines
- 8.3 Health and safety
- 8.4 Work schedules

### **9.0 Pre-Deployment**

- 9.1 Checklists and briefing
- 9.2 “Standby” and transit arrangements
- 9.3 Logistics
- 9.4 Vessel Inspection – safety, accommodation, communications, protocols

**10.0 Deployment**

- 10.1 Work Schedule
- 10.2 Sampling procedures
  - 10.2.1 Routine fisheries
  - 10.2.2 Incidental mortality
  - 10.2.3 Special requirements (eg. Tagging and genetics)
  - 10.2.4 Marine mammals
  - 10.2.5 Seabirds and mitigation
  - 10.2.6 Other PET species
- 10.3 Sampling Strategies
  - 10.3.1 Sampling Locations and Sample Selection
  - 10.3.2 Selecting Fish
  - 10.3.3 Stratified Sampling
  - 10.3.4 Proportional Sampling
  - 10.3.5 Sampling for size and species mixes
  - 10.3.6 Pre-sorted catch sampling
- 10.4 Disembarking and Debriefing

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**PART C : TECHNICAL ASPECTS, DATA COLLECTION AND DATA MANAGEMENT****11.0 Data collection**

- 11.1 Observer Logbooks & Instructions
- 11.2 Observer / Vessel and trip by trip records
- 11.3 Deployment Forms
- 11.4 Biological data forms
- 11.5 Catch and effort sampling
- 11.6 Marine mammals, sea birds and PET sampling (JNCC and other)
- 11.7 Daily Meteorological and Oceanographic Observations
- 11.8 Specialised data collection (genetics and other)
- 11.9 Adherence to MarPol regulations
- 11.10 General Compliance and Comments

**12.0 Reports**

- 12.1 Observer Deployment Report
- 12.2 Safety equipment and H&R reporting
- 12.3 Observer Report (5-Days or other)
- 12.4 Supplier Report (5-Day or other)
- 12.5 End of Trip Report and basic report formats and processing

**13.0 Data Management**

- 13.1 Hard copy and deck sampling methods
  - 13.2 Transfer of hard data to electronic formats / standardisation
  - 13.3 Basic database design and management – Access / excel / formatting
  - 13.4 Backing up data and cross checking / verification methods
  - 13.5 Basic statistical reporting methods
  - 13.6 Data Fields (samples only) :
    - 13.6.1 By Country (Year, Data, catch/landing, weights)
    - 13.6.2 By Region (Gear type, Catch by species)
    - 13.6.3 Catch and Effort (date/month/time/area/lat/long), catch, effort unit, gear (ps/ll/pole/etc).
    - 13.6.4 Biological Data Sampling (Weight Unit, Sampling Weights)
    - 13.6.5 Environmental data (wind, temp, sea state, sst, cloud cover etc)
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**PROPOSED FRAMEWORK FOR IOTC SEA & LAND-BASED OBSERVER TRAINING PROGRAMME**

**Training Schedule (Note this is based on facilities in RSA – courses can be relocated depending on availability of facilities)**

**Length of Training course : 2-4 weeks**

**1) Pre-Training Checks :**

- ✓ Prior to going on course a marine medical must be completed by all trainees
- ✓ Academic qualifications – Basic writing and mathematical skills are essential
- ✓ Potential Observers must have no criminal record
- ✓ Sea-going experience is preferable – susceptibility to sea sickness disclosed
- ✓ References that show proof of character, integrity and ability to maintain confidentiality recommended
- ✓ Language and communication skills – preferably in language(s) of the region.

**2) Week 1 (Training Facility)**

**Days 1 – 2 :** Personal Safety and Survival  
Vessel Familiarisation  
Observer Protocols  
On-board health

**Days 3 – 6 :** **Overview of fisheries**  
Vessel types  
Basic fishing gear and operations  
Fishery Regulations and compliance issues  
Country and RFMO-specific requirements  
Species identification (emphasis on tuna)  
Practical and test on weeks activities

**Day 7 :** **Rest day**

**3) Week 2 (Outsourced Training)**

**Day 8 :** Sea Survival Training (outsourced)

**Days 9 – 11** First Aid and CPR (outsourced)

**Days 12 – 14** Marine fire fighting

**4) Week 3 (Training Facility)**

**Days 15 – 17** Catch Sampling and methods  
Biological Sampling and methods  
PET Species / Invertebrate Identification  
Ecosystem basics and EAF



**Days 18 – 20** Position Recording, Navigation  
Meteorology, Oceanography Basics  
Data capture and data fields / forms  
Reporting at sea and Trip reports  
Codes & Units of Measurement to be used in the Logbooks  
Language Templates  
Practical and test on weeks activities

**Day 21 :**                      **Rest day**

**Week 4:    Advanced course work – this is an optional week**

**Days 22-23**    Seismic surveys, mammals and PET species (specialisation)

**Day 24 :**            HUET training (outsourced)

**Days 25-29 :**    Computer introduction to Word / Excel / Access 5days

**Days 30 :**        **Course wrap up**

**Optional course (extension as needed) :**

GMDSS (International Observers)

Responsible fisheries (2-3 days course)

**Certificates issued at end of course**

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## **Proposed Framework for IOTC Reporting Templates**

We propose that the following reporting templates should be developed. Some of these are similar to existing templates used in the IOTC transshipment programme, some have similarities to CCAMLR and ICCAT. The intention is to develop a unique set of reporting templates that cater explicitly for IOTC requirements.

### **Reporting Templates**

1. Pre-Sea Inspection Checklist
2. General Vessel Details
3. Observer Deployment Report (within 24 hrs)
4. Onboard Gear Detail Observer 5-Day Report
5. Trip details
6. Catch and Effort Details
7. Daily Meteorological and Oceanographic Observations
8. Biological Sampling
9. Interactions between Fishing Operations and Marine Mammals and Sea Birds
10. End of Trip Observer Report and Cruise Summary
11. Adherence to MarPol regulations
12. General Compliance and Comments

Most of these forms are standard Observer material – they will be prepared and submitted for review to IOTC. Actual data fields to be defined once there is agreement on the basic templates needed.

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## **Proposed Framework for IOTC Land-Based Observer Tuna Manual (Artisanal Fisheries)**

Manual will be split into three main parts – Manual for Artisanal fisheries is similar to Sea-Based but incorporates specific Artisanal components.

**Note “Artisanal” manual will be Tuna-Specific and will not attempt to incorporate all other species and fisheries.**

## **PART A : IOTC, REGIONAL DYNAMICS, COUNTRIES, FISHERIES & SPECIES**

### **1.0 Background to IOTC, structure, members and dynamics**

- 1.1 Indian Ocean Tuna Commission
- 1.2 Mission and Objectives of the IOTC
- 1.3 Structure of the Commission
- 1.4 Membership to the IOTC
- 1.5 Functions and Responsibilities
- 1.6 Subsidiary Bodies set up by the Commission: Scientific Committee Sub-commissions  
Working Parties
- 1.7 Main Species under IOTC Management
- 1.8 Data Collection and Submission of Data to the IOTC

### **2.0 Geography and Political Dimension of the Indian Ocean Region**

- 2.1 Countries and principal ports, districts and handling facilities, fisheries management authorities
- 2.2 Meteorology and oceanography – seasonality and prevailing conditions
- 2.3 Ecology, eco-labels and adoption of EAF
- 2.4 Main IOTC fisheries in the region by each country
- 2.5 Summary of Artisanal catches in the region (species, fisheries, trends) and relative importance compared to offshore fisheries
- 2.6 Summary of country-specific species, fisheries and trends (Artisanal)
- 2.7 Essential conservation measures and country specific fisheries management measures and legal instruments applicable to Artisanal Fisheries.

### **3.0 Artisanal Fisheries and Operational Characteristics (Country-Specific)**

- 3.1 Extent of Artisanal fishery in IOTC Member countries
  - 3.1.1 Frame surveys and other assessment methods
  - 3.1.2 Location of principal landing points and beach management units (BMUs)
  - 3.1.3 District Authorities and local reporting requirements
  - 3.1.4 MCS structures
  - 3.1.5 Vessel types
- 3.2 Gear-specific landings
  - 3.2.1 Gill nets

- 3.2.2 Handline
- 3.2.3 Line and pole
- 3.2.4 Trolling
- 3.2.5 Beach seine and “ring nets” (purse)
- 3.2.6 FADs and Traps
- 3.2.7 Longlines if applicable
- 3.2.8 Recreational and other

#### **4.0 Commercial Target Species (Artisanal)**

- 4.1 Albacore (Thunnus alalunga)
  - 4.1.1 Biology, essential population dynamics
- 4.2 Yellowfin Tuna (Thunnus albacares)
  - 4.2.1 Biology, essential population dynamics
- 4.3 Skipjack and Other tuna sp.
  - 4.3.1 Biology, essential population dynamics
- 4.4 Shark (var spp.)
  - 4.4.1 Biology, essential population dynamics

#### **5.0 Bycatch**

- 5.1 Retained bycatch (Artisanal)
- 5.2 Discard
- 5.3 Incidental bycatch of Protected, Endangered and Threatened (PET) species
- 5.4 Mitigation methods – TEDs, BRDs and other.

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## **PART B : ARTISANAL OBSERVER BASICS, PROTOCOLS, LOGISTICS, SAMPLING,**

### **6.0 Land-Based Observer Programmes**

- 6.1 Rationale for the IOTC-ROP
- 6.2 Other Observer Programmes in the region

### **7.0 Defining “the Observer”**

- 7.1 Scientific Observers and Land-based Monitors
  - 7.1.1 Qualifications and prerequisites for Monitors of Artisanal Fishers
  - 7.1.2 Observers / Monitors for Artisanal fisheries
  - 7.1.3 Marine Mammals
  - 7.1.4 Tagging, Research and Experimental activities

### **8.0 Observer role and responsibilities**

- 8.1 Observer / Monitor Code of Conduct and Protocols
- 8.2 MOU’s and country-specific guidelines
- 8.3 Health and safety
- 8.4 Work schedules

### **9.0 Pre-Deployment**

- 9.1 Checklists and briefing
- 9.2 Logistics and deployment in the field
- 9.3 Landing sites and vessel selection
- 9.4 Communications and protocols with local fishers (customs etc)

## **10.0 Deployment in the Field**

- 10.1 Work Schedule and synchronisation with Artisanal activities
- 10.2 Intertidal conditions, monsoons and seasonal availability of Tuna's
- 10.3 Sampling procedures
  - 10.3.1 Routine fisheries sampling – selecting sample sizes
  - 10.3.2 Fish handling and quality control
  - 10.3.3 Special requirements (eg. Tagging and genetics)
- 10.4 Sampling Strategies
  - 10.4.1 Sampling Locations and Sample Selection
  - 10.4.2 Selecting Fish
  - 10.4.3 Stratified Sampling
  - 10.4.4 Proportional Sampling
  - 10.4.5 Sampling for size and species mixes
  - 10.4.6 Pre-sorted catch sampling
- 10.5 Relocating and Debriefing

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## **PART C : ARTISANAL : TECHNICAL ASPECTS, DATA COLLECTION AND DATA MANAGEMENT**

### **11.0 Data collection**

- 11.1 Observer Logbooks & Instructions
- 11.2 Observer field trip records
- 11.3 Deployment Forms
- 11.4 Biological data forms
- 11.5 Catch and effort sampling
- 11.6 Daily Meteorological and Oceanographic Observations
- 11.7 Specialised data collection (genetics and other)
- 11.8 General Compliance and Comments

### **12.0 Reports**

- 12.1 Observer Deployment Report
- 12.2 Weekly H&R reporting
- 12.3 Observer Weekly Reports (5-Days or other)
- 12.4 Synchronisation with local reporting structures

**13.0 Data Management**

- 13.1 Hard copy management and recording techniques in the field
  - 13.2 Transfer of hard data to electronic formats / standardisation
  - 13.3 Basic database design and management – Access / excel / formatting
  - 13.4 Backing up data and cross checking / verification methods
  - 13.5 Basic statistical reporting methods
  - 13.6 Data Fields (samples only) :
    - 13.6.1 By Country (Year, Data, catch/landing, weights)
    - 13.6.2 By Region / district / landing site (Gear type, Catch by species)
    - 13.6.3 Catch and Effort (date/month/time/area/lat/long), catch, effort unit, gear (ps/ll/pole/etc).
    - 13.6.4 Biological Data Sampling (Weight Unit, Sampling Weights)
    - 13.6.5 Environmental data (wind, temp, sea state, sst, cloud cover etc)
-