



Food and Agriculture  
Organization of the  
United Nations



Indian Ocean Tuna Commission  
Commission des Thons de l'Océan Indien

# TECHNICAL WORKSHOP ON GLOBAL HARMONIZATION OF TUNA FISHERIES STATISTICS

CWP AD-HOC TASK GROUP ON REFERENCE HARMONIZATION

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## DATA COLLECTION AND MANAGEMENT TOOLS TO SUPPORT THE REGIONAL OBSERVER SCHEME PILOT PROJECT



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The ROS tools are a set of data models, software components and interactive applications developed by the IOTC Secretariat (with funds from NOAA and WWF) as part of the Regional Observer Scheme (ROS) pilot project IOTC Resolution 16/04.

The purpose was to:

1. Create a **set of tools** to support the **collection and management of scientific information** as recorded by on-board observers.
2. Enable **automated data exchange** with national institutions and eventually the IOTC Secretariat.
3. To build a reliable ***Regional Observer Database***.

# Rationale for the e-Reporting tools

1. Observer data is currently submitted to IOTC in a number of different hardcopy and electronic formats, including:
  - Excel data sheets
  - Word documents
  - Hardcopy/softcopy observer trip reports
  - Scanned pdf documents
  - Fleet specific formats (e.g., ObServer, ICCAT ST09)
2. Time-consuming for the IOTC Secretariat to extract, process and validate the data.
3. Differences in the data submission formats mean data are often inconsistent and incomplete, missing many of the mandatory data fields.
4. Also the IOTC Secretariat lacks a centralized database for the processing and analysis of observer data.

# Highly variable observer data submissions to the IOTC Secretariat!

## 7.2. Seabirds caught

Year	Month	Species	Square number (1°x1°)	Fate	Comments
				Dead: Released alive:	Interaction observed around vessel during haul.
				Dead: Released alive:	
				Dead: Released alive:	
				Dead: Released alive:	

## REPORT DE MISION DE OBSERVADOR

Océano	Indico
Nombre del observador	BAILLOUT Christophe
Nombre del atunero	ALBATUN DOS
Fecha de comienzo / fin de la marea	02-04-2014 / 03-04-2014



MINISTÈRE DES RESSOURCES HALIÉUTIQUES  
ET DE LA PÊCHE

Antananarivo, le

U 4 FEV 2015

Le Directeur Exécutif

CENTRE DE SURVEILLANCE DES PÊCHES

du Centre de

Monsieur  
De la Commission

N° 26/15/MRHP/CSP

PB Bo  
Mah

OBJET: Embarquements sur les thoniers étrangers réalisés en 2014

Monsieur le Secrétaire Exécutif,

Nous avons l'honneur de vous transmettre les synthèses de  
d'observateurs sur les thoniers durant l'année 2014.

Il s'agit de 7 embarquements, à savoir :

Year	month	NS	LAT	Long (E)	English name	IOTC species code	live/dead code (IOTC)	Retain/discards code (IOTC)	Scar code (IOTC)	size (cm)	size code (IOTC)	processed weight (kg)	processed weight code (IOTC)	sex code (IOTC)	Maturity sta
2014	4	5	35	87	Shy-type albatrosses	(na)	D	na (landed & thrown back)		48	NM	4.0	RG	U	
2014	4	5	36	84	Shy-type albatrosses	(na)	D	na (landed & thrown back)	NS	44	NM	5.0	RG	U	
2014	4	5	36	84	Shy-type albatrosses	(na)	D	na (landed & thrown back)	NS	46	NM	6.5	RG	U	
2014	4	5	36	84	Shy-type albatrosses	(na)	D	na (landed & thrown back)	NS	44	NM	5.3		U	
2014	4	5	36	87	Indian yellow-nosed albatross	(na)	D	na (landed & thrown back)			NM			U	
2014	4	5	36	87	Indian yellow-nosed albatross	(na)	D	na (landed & thrown back)			NM			U	
2014	4	5	36	88	Shy-type albatrosses	(na)	D	na (landed & thrown back)		47	NM	7.0	RG	U	
2014	4	5	36	88	Indian yellow-nosed albatross	(na)	D	na (landed & thrown back)			NM			U	
2014	4	5	36	88	Shy-type albatrosses	(na)	D	na (landed & thrown back)		56	NM	2.6		U	
2014	5	5	35	84	Dark colored albatrosses	(na)	U			51	NM	5.0		U	
2014	5	5	35	88	Indian yellow-nosed albatross	(na)	U				NM			U	
2014	5	5	35	89	Indian yellow-nosed albatross	(na)	U				NM			U	
2014	5	5	35	89	Black-browed albatross group	(na)	U				NM			U	
2014	5	5	35	89	Indian yellow-nosed albatross	(na)	D	na (landed & thrown back)			NM	4.0		U	
2014	5	5	35	89	Indian yellow-nosed albatross	(na)	D	na (landed & thrown back)			NM	4.0		U	
2014	5	5	35	89	Indian yellow-nosed albatross	(na)	D	na (landed & thrown back)			NM	4.0		U	
2014	7	5	36	87	Black-browed albatross group	(na)	D	na (landed & thrown back)	UN	55	DISK	4.0	RG	U	
2014	8	5	31	92	Indian yellow-nosed albatross	(na)	D	na (landed & thrown back)	SK	49	NM	2.5		U	
2014	8	5	31	92	Indian yellow-nosed albatross	(na)	D	na (landed & thrown back)	NS	47	NM	3.1		U	
2014	8	5	31	92	Indian yellow-nosed albatross	(na)	D	na (landed & thrown back)	NS	42	NM	3.5		U	
2014	9	5	11	36	Flesh-footed shearwater	(na)	D	na (landed & thrown back)	NS	28	DISK			U	



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## To recap - objectives of the IOTC ROS e-Reporting tools

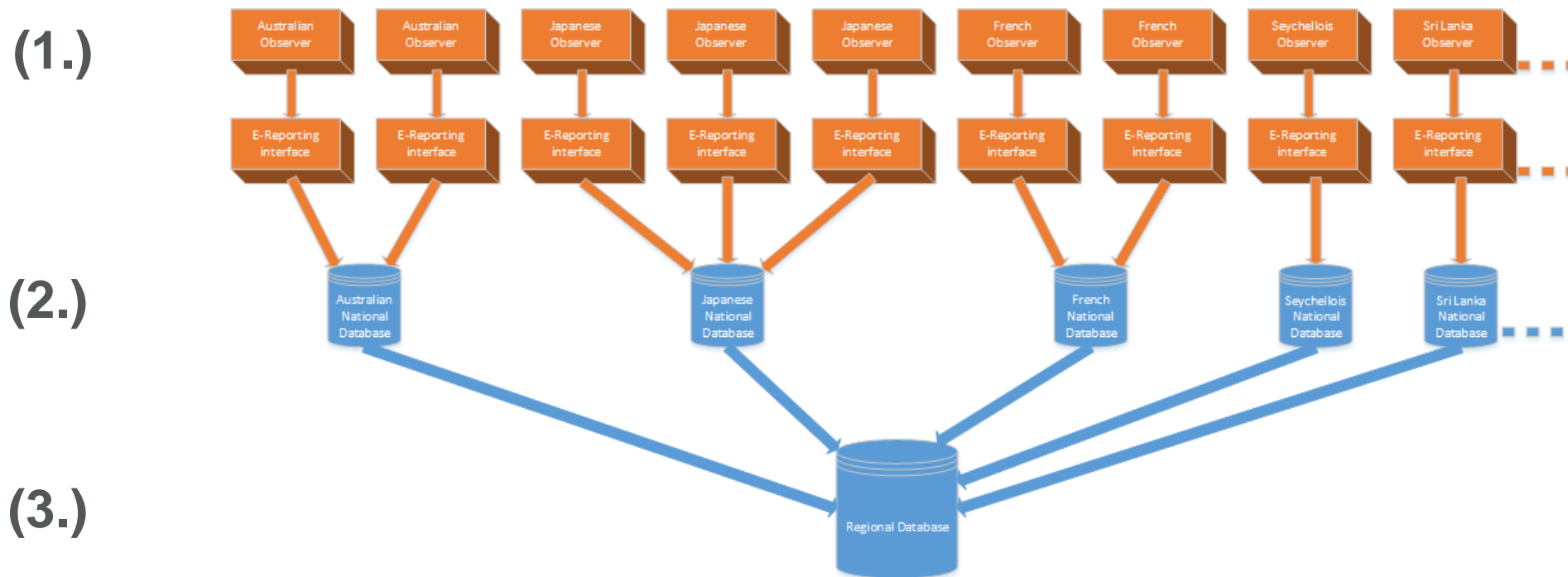
1. Improve the efficiency of **data capture** and **quality** of data collected by observers, and timeliness of data reporting to the IOTC Secretariat.
2. **Standardize the format and content of observer data** submitted to the IOTC Secretariat
3. **Reduce the burden on data processing** of observer data by the IOTC Secretariat.

### Target IOTC CPCs:

- Generally developing coastal states lacking a dedicated national observer database or technical expertise to report observer data to the IOTC Secretariat.

# The ROS tools consist of the following components:

1. **The e-Reporting interface:** data entry portal for scientific observers, that incorporates validation checks, code-list synchronization, and export functionality.
2. **The National Observer Database** (to be deployed at country level)
3. **The Regional Observer Database** (hosted by the IOTC secretariat)



# The ROS tools - overview

The goal of the ROS tools is manifold, as these tools and their interconnecting workflow are currently capable of supporting:

- The formal definition of a **scientific observer data model** (based on the ROS Observer Manual) that is independent from the data exchange format;
- A more effective scientific observer **data *collection* process** (including the mandatory fields for data *reporting* to the IOTC Secretariat);
- The creation of a number of **National Observer Databases**, whose content can be used to generate country-specific statistics and reports;
- The collation of all mandatory data *reporting* information from National Observer databases into a single, centralized **Regional Observer Database**.



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## The ROS data model

The ROS model represents the logical structure of the gear-specific scientific observer *data structure* and acts as the conceptual interface interconnecting the various components of the workflow.

Beside simplifying all interactions between the system components, this structured and comprehensive data model (formally defined by its XSD schema) can also be easily extended and modified when required.

All data within the ROS model (one or more trips) can be serialized to XML and eventually, through ad-hoc XSL transformations, converted to other formats such as HTML, PDF, Excel spreadsheets and more.





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## The ROS data model – complementary tools

Complementary tools to allow scientific observations recorded with different tools to be converted to the *ROS data model* have been already developed or are currently planned for development.

Available converters already exist for:

- *ICCAT ST09 format*;
- *Japanese LL custom format*.

While converters are planned to be developed for:

- *ObServe2* format;
- SWIOFP database.



## The e-Reporting interface

The e-Reporting interface is a user-friendly graphical tool, running in a common browser window, that supports on-board observers in recording the various gear-dependent data fields as specified by the ROS Observer Manual<sup>1</sup>, on a trip-to-trip basis.

The e-Reporting interface is an *offline* tool and as such it does not require an active internet connection to function properly.

Scientific data collected for a trip (or for a set of trips) can be exported and shared with the identified national focal point for the vessel flag country once finalized.

1. [http://iotc.org/sites/default/files/documents/science/IOTC-2015-ROS\\_11\\_04\\_Observer\\_Manual\\_v1.2.pdf](http://iotc.org/sites/default/files/documents/science/IOTC-2015-ROS_11_04_Observer_Manual_v1.2.pdf)



# The e-Reporting interface – Login

IOTC - Regional Observer Scheme / e-Reporting interface - Version 0.8.0

IOTC - Regional Observer Scheme e-reporting interface

English Français Food and Agriculture Organization of the United Nations

Welcome to the ROS / Regional Observer Scheme e-reporting interface. Please insert your name in the box below to start using the tool.

Last name:

First name:

IOTC identification number:

Nationality:

Flag country:

Select an accredited observer from the following list

<b>ADELINE, GAMAYEL</b> IOTC NUMBER: IOTCSYC008 NATIONALITY: SEYCHELLOIS FLAG COUNTRY: SEYCHELLES
<b>ADELINE, RICKY</b> IOTC NUMBER: IOTCSYC009 NATIONALITY: SEYCHELLOIS FLAG COUNTRY: SEYCHELLES
<b>ADONIS, DANILLA</b> IOTC NUMBER: IOTCSYC010 NATIONALITY: SEYCHELLOIS FLAG COUNTRY: SEYCHELLES
<b>ADRIENNE, DANIA</b> IOTC NUMBER: IOTCSYC011 NATIONALITY: SEYCHELLOIS FLAG COUNTRY: SEYCHELLES
<b>AGLAE, ASHLEY</b> IOTC NUMBER: IOTCSYC012 NATIONALITY: SEYCHELLOIS FLAG COUNTRY: SEYCHELLES
<b>ANTHA, MARISA</b> IOTC NUMBER: IOTCSYC014 NATIONALITY: SEYCHELLOIS FLAG COUNTRY: SEYCHELLES
<b>ALLY, JUDE</b> IOTC NUMBER: IOTCSYC003 NATIONALITY: SEYCHELLOIS FLAG COUNTRY: SEYCHELLES
<b>ANDREW, SAVIO</b> IOTC NUMBER: IOTCSYC013



# The e-Reporting interface – Main menu

The screenshot displays the main menu of the IOTC - Regional Observer Scheme e-reporting interface. The browser window title is "IOTC - Regional Observer Scheme / e-Reporting interface - Version 0.8.0". The page header includes the text "IOTC - Regional Observer Scheme e-reporting interface" and navigation options for "English" and "Français". Logos for "iotc ctoi" and the "Food and Agriculture Organization of the United Nations" are also present. A "Welcome:" message is visible in the top right corner.

**Main menu** << ≡ MENU

- Start a new trip
- Trip list
- Settings
- Help
- About

Internet connection : ✔  
Logged as : [username]

**FULLSCREEN MODE**

**WELCOME**

Welcome to the ROS / Regional Observer Scheme e-reporting interface.  
Use this tool to collect, manage and report scientific observations to your national focal points.

**QUICK ACCESS**



- START A NEW TRIP
- TRIP LIST
- SETTINGS
- HELP
- ABOUT




# The e-Reporting interface – Start a new trip


IOTC - Regional Observer Scheme / e-Reporting interface - Version 0.8.0


IOTC - Regional Observer Scheme e-reporting interface


English Français   Food and Agriculture Organization of the United Nations


Main menu << MENU Main > New trip Welcome: [User Name]


Start a new trip 

Trip list 

Settings 

Help 

About 

Internet connection: 

Logged as: [User Name]

FULLSCREEN MODE

Trip label

Flag country

Fishing operation type

SUBMIT



# The e-Reporting interface – Generic module (example)

IOTC - Regional Observer Scheme / e-Reporting interface - Version 0.8.0

IOTC - Regional Observer Scheme e-reporting interface

English Français Food and Agriculture Organization of the United Nations

MENU Main > Trip list > Test Trip 1 [Longline] > Generic #1 ← **Breadcrumbs** Welcome

Select a section: **Generic #1** Generic #5 Generic #6 Longline #2 Longline #4 ← **Module Navigation Bar** GENERIC #1 HELP SAVE

Vessel information Deployment details Trip information Vessel owner Vessel specific details Electronic equipment Catch info Waste management

THERE ARE AVAILABLE VESSELS

**Vessel information - details**

**Field Information**

**Module Tabs**

**Set value to unknown**

Vessel name ⓘ ⓘ \*   
 National registration number ⓘ   
 Licensed target species ⓘ  +

Vessel type ⓘ ⓘ \*   
 Vessel IOTC number ⓘ ⓘ \*  The IOTC number should start with 'IOTC'  
 IMO or Lloyds number ⓘ

Main gear ⓘ ⓘ \*   
 Port of registration ⓘ ⓘ \*  Click on the field to open the port selector

**Vessel information - trip**

Port of departure ⓘ ⓘ \*  Click on the field to open the port selector  
 Date / time vessel sailed ⓘ ⓘ \*  The vessel sail date must be before the date when the  
 Date / time vessel returned to port ⓘ ⓘ \*  The return to port date must be after the date when the

Port of return ⓘ ⓘ \*  Click on the field to open the port selector



# The e-Reporting interface – Trip Activity Map

The screenshot displays the IOTC - Regional Observer Scheme e-reporting interface. The main window title is "IOTC - Regional Observer Scheme / e-Reporting interface - Version 0.8.0". The interface includes a navigation menu, a language selector (English, Français), and a welcome message. A table lists test trips with columns for "Trip label" and "Flag country". A "Trip Activity Map" window is overlaid on the table, showing a map of the Seychelles islands with various activity markers. The map legend includes: Trip start (green), Trip End (yellow), Set start/end (red), Transhipments (blue), Vessel sighted (cyan), and Vessel activity (purple). The map also features zoom controls and a Leaflet/OpenStreetMap attribution.

Trip label	Flag country
<input type="checkbox"/> Test Trip 1	Seychelles
<input type="checkbox"/> Test Trip 2	Seychelles
<input type="checkbox"/> Test Trip 3	Seychelles
<input type="checkbox"/> Test Trip 4	Seychelles
<input type="checkbox"/> Test Trip 5	Seychelles
<input type="checkbox"/> Test Trip 6	Seychelles

Legend for Trip Activity Map:

- Trip start
- Trip End
- Set start/end
- Transhipments
- Vessel sighted
- Vessel activity



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## The National Observer Database

As part of the suite of ROS tools, the IOTC Secretariat has also designed a specific application - meant to be deployed locally, once for each participating CPC - with the purpose of ingesting all scientific data collected by observers for a specific flag country and provide CPC with the skeleton of a **National Observer Database** where all information that is currently marked as “**mandatory for collection**” is stored.

The ***National Observer Database*** can be exported as a standalone *Microsoft Access* database for national focal point to analyze its content and extend its basic data extraction capabilities.

The interface designed for the management of the National Observer Database is capable of synchronizing its content with the centralized **Regional Observer Database** (hosted by the IOTC secretariat), that will accommodate and collate the set of information marked as *mandatory for reporting* within the ROS Observer Manual<sup>2</sup>.

2. [http://iotc.org/sites/default/files/documents/science/IOTC-2015-ROS\\_11\\_04\\_Observer\\_Manual\\_v1.2.pdf](http://iotc.org/sites/default/files/documents/science/IOTC-2015-ROS_11_04_Observer_Manual_v1.2.pdf)





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# The National Observer Database – Login

ROS National Database Tools

Please fill the information below before start using the Regional Observer Scheme National Database

<b>Country</b>	<input type="text" value="Australia"/>
<b>Contact Name</b>	<input type="text"/>
<b>Email</b>	<input type="text"/>
<b>Phone</b>	<input type="text"/>
<b>Fax</b>	<input type="text"/>
<b>Ros Username</b>	<input type="text"/>
<b>Ros Password</b>	<input type="text"/>



# The National Observer Database – Main screen

ROS National Database

File Help

Import trip data Export database

Vessel name	Vessel ID	Fishery type	Status	Finalization d...	Trip start	Trip end	Observer name	Observer ID	Submission s...	Select
YASMIN	IOTC000020	Longline	COMPLETE	2017/11/08 ...	2017/11/01	2017/11/30			Sent	<input type="checkbox"/>
MONIKA	IOTC016642	Purse Seine	INCOMPLETE	2017/11/08 ...	2017/11/02	2017/11/18			Sent	<input type="checkbox"/>

Deselect all trip data Select all trip data Send selected trip data to the IOTC Regional DB Remove selected trip data

```

System initialized
UUID: 5de6dd46-0c99-4e19-ae90-f74000b6393f successfully sent to the IOTC Regional DB!
UUID: 5cb03f80-2d65-42df-bb4e-d5ad1d5eeec successfully sent to the IOTC Regional DB!
Successfully deleted trip data with UUID: 5de6dd46-0c99-4e19-ae90-f74000b6393f
Successfully deleted trip data with UUID: 5cb03f80-2d65-42df-bb4e-d5ad1d5eeec
Importing file: /tmp/Trip_AUS_Purse_Seine_5cb03f80-2d65-42df-bb4e-d5ad1d5eeec_20171109.ros...Done!
Importing file: /tmp/Trip_AUS_Longline_5de6dd46-0c99-4e19-ae90-f74000b6393f_20171109.ros...Done!
UUID: 5de6dd46-0c99-4e19-ae90-f74000b6393f successfully sent to the IOTC Regional DB!
UUID: 5cb03f80-2d65-42df-bb4e-d5ad1d5eeec successfully sent to the IOTC Regional DB!
  
```

User: Test User Country: Australia Current timezone: Central European Time - Europe/Rome

# Main advantages of the new IOTC e-Reporting tools

1. **Reduces the burden of data entry for observers.** No longer necessary for data to be entered in the IOTC data collection forms AND data reporting forms.
2. IOTC observer reports are generated as an automatic output within the National Database module. **Streamlines reporting of observer between IOTC CPCs and the IOTC Secretariat.**
3. The e-Reporting interface contains **validation checks**, and ensures that all mandatory data fields have been completed prior to submitting data to IOTC.
4. Enables **automatic updates to IOTC gear/species code lists**, including the IOTC Record of Active Vessels (RAV).
5. Future versions of the E-Reporting interface can be updated easily with changes to the ROS data collection and reporting forms and deployed remotely to CPCs.
6. Dedicated modules for third-party proprietary tools (e.g. ObServer, ICCAT ST09) are also being developed to automatically export observer to the IOTC ROS Regional database.

# Future developments

- The 1<sup>st</sup> development phase of the ROS tools completed in late-2017.
- IOTC Secretariat currently rolling out workshops to CPCs interested in trialling the tools with actual observer data:
  - Training workshop delivered in Sri Lanka (Dec-2017 & Feb-2018). Sri Lanka to begin reporting observer data using the ROS tools from early-2018.
  - Additional workshops planned for 2018: Indonesia, Mauritius, Tanzania.
- A number of developments will completed in the next future will include:
  - Development of the *ObServe2* importer;
  - Import of historical data within the *Regional Observer Database*;
  - Definition of country-dependant, specific extraction queries for the *National Observer Database*;
  - Implementation of a data dissemination interface for the *Regional Observer Database*.



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# Thank You!

You can download a beta version of the Ereporting interface at this URL:

<https://tinyurl.com/y9xrk3xs>