

Report and documentation of the  
**CONSULTATION AND VALIDATION WORKSHOP ON THE DEVELOPMENT OF AN  
IOTC ELECTRONIC MONITORING AND REPORTING INFORMATION SYSTEM  
(e-MARIS)**

**Cape Town, South Africa, 25-27 October, 2017**



The IOTC e-MARIS consultation workshop was financially supported by:



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## PREPARATION OF THIS DOCUMENT

In 2013 the Indian Ocean Tuna Commission (IOTC) Performance Review made two major recommendations related to compliance with data collection and reporting, and following up on infringements.

### Compliance with data collection and reporting requirements

Para 102. The Commission, through its Compliance Committee, needs to strengthen its compliance monitoring in relation to the timeliness and accuracy of data submissions. To this end, the performance review recommended :

*“b) to facilitate thorough reviews of compliance, the Commission should invest in the development and implementation of an integrated electronic reporting program. This should include automatic integration of data from CPCs into the IOTC Secretariat’s databases and automatic cross-referencing obligations and reports for the various obligations, in particular related to the provision of scientific data.”*

### Follow-up on infringements

Para 153. The performance review recommended that:

*“b) The IOTC **further develop an online reporting tool to facilitate reporting by CPCs** and to support the IOTC Secretariat through the automation of identification of non-compliance.”*

These recommendations were the basis for the development of the Electronic Monitoring and Reporting Information System (e-MARIS) initiative. This document reports on an e-MARIS consolidation and validation workshop held in Cape Town South Africa in October 2017. It also includes recommendations from the experts attending the workshop, that will serve as basis for further work on the development and implementation of the system.

The conveners of the workshop were Mr Florian Giroux<sup>1</sup>, Mr Fabio Fiorellato<sup>2</sup> and Mr Olivier Roux<sup>3</sup>. Their report provides a record of workshop activities and the outcomes as agreed to by the participants.

### Distribution:

Participants in the workshop

IOTC CPCs

Chairperson IOTC

Chairperson IOTC Compliance Committee

Chairperson IOTC Scientific Committee

Chairperson IOTC Working Party on Data Collection and Statistics

Project Manager of the FAO GEF ABNJ Tuna Project

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<sup>2</sup> IOTC Secretariat – Data Coordinator

<sup>3</sup> IT Consultant

## ACRONYMS USED

ABNJ	Area Beyond National Jurisdiction
CMMs	Conservation and Management Measures
CPCs	Contracting Parties and Cooperating Non-Contracting Parties
e-MARIS	Electronic Monitoring and Reporting Information System
FAO	Food and Agriculture Organization of the United Nations
GEF	Global Environmental Fund
ICCAT	International Commission for the Conservation of Atlantic Tunas
IOTC	Indian Ocean Tuna Commission
MCS	Monitoring, Control and Surveillance
NPFC	North Pacific Fisheries Commission
PRIOTC	Performance Review of the Indian Ocean Tuna Commission
RFMO	Regional Fisheries Management Organization
SC	Scientific Committee
SIOFA	Southern Indian Ocean Fisheries Agreement
t-RFMO	Tuna Regional Fisheries Management Organization
WPDCS	Working Party on Data Collection and Statistics

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## Opening of the Workshop and logistical arrangements

The meeting was held at the Protea Hotel Waterfront Breakwater Lodge, Cape Town, South Africa, from 25 to 27 October 2017, with the financial assistance for the participants, the resource persons and the venue being provided by the FAO Common Oceans/ABNJ Tuna Project.

Mr. Giroux Florian welcomed the workshop participants and provided general information on the workshop and logistical arrangements. Mr Aphiwe Nonkeneza, Senior Administrative Officer, Pelagic and High Seas Fisheries Management, Department of Agriculture, Forestry and Fisheries (South Africa), opened the workshop.

The work programme is presented in Appendix 1 and the List of Participants is provided in Appendix 2. The final technical specifications of the e-MARIS, including the outcomes of the workshop are presented in Appendix 3.

## Project presentation

Mr. Giroux provided an overview of the project, explaining the origin of the e-MARIS initiative being linked to the recommendations of the second IOTC Performance Review (PRIOTC02). He explained that the first IOTC performance review was undertaken in response to calls from the international community for a review of the performance of RFMOs. IOTC facilitated its first performance review in 2007; and a second review was held in 2013. The second review:

- a) evaluated the progress made on the recommendations arising from the first performance review;
- b) focused on the effectiveness of the Commission to fulfil its mandate, in accordance with set criteria;
- c) evaluated strengths, weaknesses, opportunities and risks to the Organisation.

Mr. Giroux recalled that the two main recommendations related to the e-MARIS initiative originated from paragraph 241 of the report of this (second) review (IOTC–2016–PRIOTC02–R):

### Compliance with data collection and reporting requirements

Para 102. The Commission, through its Compliance Committee, needs to strengthen its compliance monitoring in relation to the timeliness and accuracy of data submissions. To that end, the PRIOTC02 **RECOMMENDED** that:

*“b) to facilitate thorough reviews of compliance, the Commission should invest in the development and implementation of an integrated electronic reporting program. This should include automatic integration of data from CPCs into the IOTC Secretariat’s databases and automatic cross-referencing obligations and reports for the various obligations, in particular related to the provision of scientific data.”*

### Follow-up on infringements

Para 153. The PRIOTC02 **RECOMMENDED** that:

*“b) The IOTC **further develop an online reporting tool to facilitate reporting by CPCs** and to support the IOTC Secretariat through the automation of identification of non-compliance.”*

Mr. Giroux also provided an overview of the 3 phases of the e-MARIS project, namely:

### Phase 1 – ToR technical specifications

Development of a draft Terms of Reference to be used for the design & implementation of an integrated monitoring and reporting information system for IOTC CPCs, web based system accessible through the IOTC web site, to support the reporting of data & information required by the IOTC Resolutions and

the Agreement. Noting the design of e-MARIS should follow a thorough assessment of the current state of the art in close consultations with CPCs.

### **Phase 2 – Development of the system**

The development of the system includes the development of user manuals, both for internal users (installation, administration, maintenance) and the training of the IOTC CPCs. This would include the organisation of regional training courses and national training courses.

### **Phase 3 – System performance assessment**

Technical assistance to the IT Section of the IOTC Secretariat, including training and assessment of the performance of the system and debugging.

## Context, objective and methodology of the workshop

Mr. Olivier Roux presented the context of the e-MARIS project, and where possible compared it to similar processes or initiatives in the other t-RFMOs.

A summary of the review of t-RFMOs requirements and reporting/compliance processes (developed for IOTC and later updated for ICCAT, both studies funded by the FAO Common Oceans ANBJ Tuna Project) was also presented, which outlined the large number of requirements and the overall complexity of processes, justifying the development of integrated online reporting systems, which most t-RFMOs are interested in, or are already developing.

The methodology of the workshop was also presented. This was to include short presentations of the various components of e-MARIS, followed by facilitated discussions by small groups of CPCs to gather their feedback.

Participants requested information on the development phase and its duration, including a time frame for developing the system, as well as information about the budget and methodology for the approval of the next phase of the e-MARIS.

Participants also mentioned that the current IOTC statistical data templates are not mandatory and difficult to use, therefore recommended that new templates and / or data formats be developed by the IOTC Secretariat as part of the development phase of e-MARIS.

## IOTC - understanding the IOTC Compliance Process

Mr. Giroux provided an overview of the IOTC compliance process that ranged from the submission of information by the CPCs to the work of the Compliance Committee. He provided information on the functions and responsibilities of the Compliance Committee and gave an overview of the levels of compliance of IOTC members with the Commission's management measures.

## IOTC - understanding the information and data reporting requirements

Mr. Giroux provided an overview of the IOTC information and data reporting requirements and reminded the participants of the obligations of CPCs under the basic texts of the IOTC, which can be categorized into four types of reporting requirements:

1. Reporting linked to meeting deadlines:
  - Article X of the Agreement – Report of implementation
  - Rules of Procedure, Appendix V – Compliance Questionnaire

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- Scientific Committee 04 – National scientific report
  - Seventeenth Session of the Commission – Feedback letter.
  - 2. Reporting linked to Resolution's deadlines:
    - Resolution 10/08 - List of active vessels / 15 February every year
  - 3. Reporting linked to legal aspects - transposition of technical measures into domestic legislation under the Agreement's Article X:
    - Resolution 12/09 - Ban on thresher sharks.
  - 4. *Ad hoc* reporting:
    - Resolution 15/04 - record of authorised vessels
    - Resolution 01/06 - personnel authorised to validate Bigeye Tuna Statistical Documents.

Mr. Fabio Fiorellato made a presentation which focussed on the management of the mandatory statistical data at the IOTC Secretariat, covering the following topics:

- IOTC statistical data - purposes and requirements.
- Main IOTC Resolutions related to data collection and submission (Res 15/01, 15/02 and 12/02).
- Minimum set of required information by data set, species and gear.
- IOTC recommended data reporting templates and known issues.
- Current state of the art, including remarks on the difficulties in dealing with a wide range of possible data reporting templates.
- e-MARIS as an integrated tool to submit statistical data and the impact of its adoption on CPCs.
- Interactions between e-MARIS and the IOTC Statistical Working Systems.

Mr. Fiorellato reiterated the importance of timely and accurate submissions of all required statistical data, acknowledging the known issues – at CPC level – that are currently preventing the process from being successfully implemented on a global scale.

During the presentation, CPCs were called upon to self-assess their current capacity in terms of:

- 1) Collecting all the information required by standing IOTC Resolutions, down to the expected level of detail.
- 2) Timely report of statistical data to the IOTC Secretariat using the recommended IOTC forms.

These two requirements are the basis for a successful adoption of e-MARIS as a supporting tool to increase the CPCs' compliance level in terms of mandatory statistical data submissions.

The known issues and concerns associated with the recommended IOTC data submission forms were also discussed, and feedback on their usage from participants was collected.

It was once again agreed and recommended that – as part of the e-MARIS development phase – new data submission templates (potentially in CSV format) would be designed in consultation with CPCs to improve the effectiveness of the data reporting process through e-MARIS.

## ICCAT - Information & data reporting system, current status and way forward

Ms. Jenny Cheate, from the International Commission for the Conservation of Atlantic Tunas (ICCAT) Secretariat, presented the online reporting system on ICCAT's conservation and management measures.

She provided an overview of ICCAT: the Convention area, the CMMs, the 30 species of tuna and tuna-like fishes, the vessels (28,000) and the 150 management and scientific reporting requirements. A summary of the management and the 39 ICCAT databases was provided, with 14 directly related to compliance/management information.

The background of the ICCAT online reporting system was presented. The idea of on-line reporting was mooted some years back, but no official proposal was made at that time. The initiative was set within the Recommendation by ICCAT for the Development of an Online Reporting System adopted in 2016 (Recommendation 16-19), which established a Working Group and process. She explained that the ICCAT Secretariat is exploring possibilities of on-line statistical data reporting.

A summary of the actions taken so far by ICCAT was described:

- Recommendation for an Online Reporting System adopted at the 2016 annual meeting.
- 2016 FAO Common Oceans/ABNJ Tuna Project proposed funding for a project to develop a fisheries online reporting information system.
- January 2017: The ICCAT Online Reporting Working Group was convened.
- February: 2017 the group began developing a draft discussion paper as well as a model schematic, which attempted to lay out discussion topics specific to an online reporting system for the group to discuss and visualize what a system could look like.
- March 2017: the ICCAT Secretariat put out a request for a contract, stemming from funding from the ABNJ Tuna Project /GEF Common Ocean Program, which calls for the development of a “Feasibility Study for an ICCAT Online Reporting system”, including the design and development of a working prototype (case study) based on catch and effort reporting. The contract requested a cost benefit analysis of the system. The project aims to be finalized by the end of September 2018.

Ms Cheatle indicated that ICCAT was interested in following the initiatives of other t-RFMOs to learn from their experiences with the aim to develop similar systems for elements which are common to two or more t-RFMOs.

Participants inquired as to whether the ICCAT and IOTC systems would be similar and/or share ideas and/or resources. Mr Roux informed the workshop that one of the reasons behind the ABNJ Project funding both studies and hiring the same consultant to conduct them was effectively to maximise the opportunities for sharing design and implementation details between the two systems.

## NPFC - Information & data reporting system, current status and way forward

Mr. Peter Flewwelling, Compliance Manager of the North Pacific Fisheries Commission (NPFC) Secretariat, presented the ‘Direct Entry Vessel Registry’ which has been developed as a web-based direct online vessel registry system for NPFC Members who authorize approximately 1,000 fishing vessels to fish each year in NPFC Convention Area.

Mr. Flewwelling provided an overview of NPFC, including its history (NPFC Convention came into force on 19 July 2015). The current Members are Canada, China, Japan, the Republic of Korea, the Russian Federation, Taiwan Province of China, the United States of America and Vanuatu. The objectives of the Commission are ensure the long-term conservation and sustainable use of the fisheries resources in the Convention Area while protecting the marine ecosystems of the North Pacific Ocean in which these resources occur.



He also presented an overview of the direct entry vessel registry followed by a live demonstration of the entry of a vessel in the system.

From a fisheries management and MCS perspective, it was highlighted that a similar vessels registry would be the primary MCS tool to set up at national or RFMO level, and as such it should be considered as a priority module during the development of e-MARIS (considering also the possibility that it would directly connect to existing vessel registries at national level).

## e-MARIS - Scope and global organisation

Mr Roux detailed the scope of the future e-MARIS, and introduced the general framework of the system, including its main modules to be jointly further discussed during the following sessions and separately by participating CPCs divided in small work groups.

The participants discussed a range of issues and made recommendations that are compiled in the *Workshop recommendations* section below.

In response to questions from the participants, NPFC and ICCAT confirmed that, for some of their own systems, a cloud hosting option was chosen because it would cost less, and have good security and reliability.

## e-MARIS - Modules Definition and Benefits for Members

Mr Roux presented the various e-MARIS modules and detailed the benefits that Members could expect from its adoption. e-MARIS would also be beneficial for the IOTC Secretariat, freeing its staff from time-consuming and repetitive tasks, and allow them to focus resources on helping the CPCs to improve the quality of their information reporting and eventually their overall compliance level.

## Detailed presentation of the CPC-facing features

CPC-facing features were described in several 20-30 minute presentations, each followed by a 45 minutes discussion amongst CPCs (in 3 small groups). Mr. Roux presented details on the various features that e-MARIS would offer for the CPCs, along with screen 'mock-ups' to illustrate the workflows and how the various screens might look like and be organised.

At the end of each discussion session, the comments, suggestions and questions of the small groups were collected, compiled, analysed and responded to by Mr. Roux and the IOTC Secretariat staff.

These suggestions and recommendations are compiled in the *Workshop recommendations* section below.

## Presentation of the IOTC-facing features

During several 20-30 minute presentations, each followed by discussions across the floor, Mr. Roux presented the various features that e-MARIS would offer for the IOTC Secretariat, along with screen 'mock-ups' to illustrate the workflows and how the various screens might look like and be organised.

During each discussion session, the comments, suggestions and questions were collected, compiled, analysed and responded to by M. Roux and the IOTC Secretariat staff.

These suggestions and recommendations are compiled in the *Workshop recommendations* section below.

## Workshop recommendations

The workshop participants agreed to the following recommendations:

1. In accordance with the recommendations of the PRIOTC02, the IOTC Secretariat should pursue *as soon as possible* the work related to the development of the e-MARIS and secure appropriate funding (IOTC budget or contact international organizations, donor agencies and non-governmental organizations to seek financial contribution).
2. The Secretariat should present the outcomes of the e-MARIS workshop at the next session of the Compliance Committee for its consideration, and the IOTC Scientific Committee should be made aware of those results through the report of the WPDCS.
3. The Secretariat should pursue the development work in a progressive and modular approach, taking into consideration those general recommendations:
  - a) Define priorities in terms of development of the modules and give due consideration to developing an online Record of Authorized Vessels to allow CPCs to manage their own list of Authorised Vessels.
  - b) CPCs should be involved in the development phase through an iterative trial/test/feedback process before each module/system enters the production phase.
  - c) New data and information submission templates/formats should be designed in consultation with CPCs, to facilitate and improve the effectiveness of the data and information reporting process through e-MARIS, for both CPCs and the Secretariat (in particular by reducing the need for manual data entry).
  - d) Due consideration should be given to the security, reliability and efficiency aspects of the system, in relation to data confidentiality. A decision should be taken on the way the system would be hosted (locally at the Secretariat or on a Cloud platform), on a cost-effectiveness basis, taking into account the security, reliability and efficiency aspects mentioned above.
  - e) Appropriate documentation should be developed (e-MARIS user's manuals) and regional/national training should be designed and conducted by the Secretariat to assist the users of e-MARIS.
4. The Secretariat should pursue the development of the system as soon as possible, taking into consideration the below features and functionalities suggested by the participants, that will be incorporated into the detailed requirements, functional and technical specifications of e-MARIS (workshop document reference EMARIS09a):
  - a) The system should automatically save a user's work to prevent data loss in case of disconnection etc.
  - b) The system should automatically sign out users after a certain period of inactivity.
  - c) Each CPC should have dedicated administrator account(s) created by the Secretariat, through which they would be able to create/manage CPC user accounts.
  - d) CPC user accounts should be assigned roles (e.g.: *compliance, science, validation*).
  - e) Replying to notifications/feedback should be possible right from the user's e-mail client.
  - f) Notification "*read*" status should be per user account, even if a notification is sent to all users of a CPC.
  - g) Requirements should allow for keywords to be assigned for filtering/searching.
  - h) Requirements should be assigned a compliance/science category, to match the CPC user roles.

- i) CPCs should have access to the reporting and compliance history of all CPCs, upon their publication (following the current process in place at IOTC).
  - j) CPCs should have access to a live dashboard of all CPC reporting status/level (it would also show the number of requirements applying vs not applying to a given CPC).
  - k) Requirement deadlines should also show the number of days remaining to report.
  - l) Any information submission should allow to be exported as PDF/Word before/after being submitted, to share it with colleagues or managers.
  - m) On submission of a report, there should be an option to add a list of email addresses to which the PDF of the report would be sent.
  - n) The system should provide for a “validator” role that would have to approve any submission before it is actually published in the system (optional, depending on each CPC internal processes).
  - o) Annual reports should not be submitted automatically when the deadline is reached.
5. The Secretariat should update and finalize the Terms of Reference, detailed requirements, functional and technical specifications of the e-MARIS incorporating the recommendations of the workshop,
  6. The workshop participants suggested that the outcomes of this workshop be presented to the WP on Compliance, at its first meeting. The participants expressed their expectation that such a meeting would take place as soon as possible,

## Conclusions

There was an excellent level of participation to the discussions by all CPCs present at the workshop, which resulted in a range of constructive comments, questions and suggestions that will be taken into account to update the e-MARIS specifications to their final version.

The participants also expressed their strong interest in the proposed system, especially because, considering the large and ever growing number of information that have to be reported to IOTC, it would make reporting of information easier and more streamlined.,

Participants from other RFMO Secretariats (ICCAT, NPFC and SIOFA) expressed their interest in the approach adopted by IOTC to design and develop an online information reporting system for compliance and science information, and indicated that they would be interested in following the development, and possibly adopting some of the specifications and components for their own future needs.

Finally, the participants fully endorsed the presented e-MARIS specifications, with the inclusion of the additional features suggested during the workshop, and strongly encouraged the IOTC Secretariat to move forward on the next phase of the development of e-MARIS as soon as possible. The final technical specifications of the e-MARIS, including the outcomes of the workshop are presented in Appendix 3.

## Appendix 1 - Tentative programme of the workshop

<b>S.1.1</b>	<b>Day 1 – 25<sup>th</sup> October, 2017</b>	
	0830 - 0900	Registration
	0900 - 0920	Welcome of participants
		Opening: To be confirmed (DAFF Host country)
		Introduction of participants and resource persons
	0920 -0940	Project presentation: (IOTC)
	0940 -1000	Context, objective and methodology of the workshop (e-MARIS Team)
<b>S.1.2</b>	<b>1000 - 1030</b>	<b>Morning Break</b>
	1030 - 1050	IOTC - Understanding the IOTC Compliance Process (IOTC)
	1050 - 1100	Open discussions
	1100 - 1120	IOTC - Understanding the information & data reporting requirements (IOTC)
	1120 - 1130	Open discussions
	1130 - 1150	ICCAT - Information & data reporting system, current status and way forward (ICCAT)
	1150 - 1200	Open discussions
	1200 - 1220	NPFC - Information & data reporting system, current status and way forward (NPFC)
	1220 - 1230	Open discussions
<b>S.1.3</b>	<b>1230 - 1400</b>	<b>Lunch Break</b>
	1400 - 1430	e-MARIS Application - Scope and global organisation
	1430 - 1500	Open discussions
<b>S.1.4</b>	<b>1500 - 1530</b>	<b>Afternoon Break</b>
	1530 - 1615	e-MARIS Application - Modules Definition and Benefits for Members (e-MARIS Team)
	1615 - 1630	Open discussions
<b>S.2.1</b>	<b>Day 2 – 26<sup>th</sup> October, 2017</b>	
	0900 - 0930	Module 1 - Implementation Dashboard (e-MARIS Team)
		Module 1 - Administrative features
	0930 - 1030	Workgroups and discussions - Participants
<b>S.2.2</b>	<b>1030 - 1100</b>	<b>Morning Break</b>
	1100 - 1130	Module 1 - Implementation Dashboard (e-MARIS Team)
		Module 1 - Information submission features
	1130 - 1230	Workgroups and discussions - Participants
<b>S.2.3</b>	<b>1230 - 1345</b>	<b>Lunch Break</b>
	1345 - 1415	Module 1 - Implementation Dashboard (e-MARIS Team)
		Module 1 - Reporting and Compliance status features
	1415 - 1500	Workgroups and discussions - Participants

<b>S.2.4</b>	<b>1500 - 1530</b>	<b>Afternoon Break</b>	
	1530 - 1600	Module 2 - Compliance Dashboard Module 2 - Administrative features	(e-MARIS Team)
	1600 - 1700	Workgroups and discussions - Participants	
<b>S.3.1</b>	<b>Day 3 – 27<sup>th</sup> October, 2017</b>		
	0900 - 0930	Module 2 - Compliance Dashboard Module 2 - Managing requirements	(e-MARIS Team)
	0930 - 1030	Workgroups and discussions - Participants	
<b>S.3.2</b>	<b>1030 - 1100</b>	<b>Morning Break</b>	
	1100 – 1130	Module 2 - Compliance Dashboard Module 2 - Reporting and Compliance status	(e-MARIS Team)
	1130 - 1230	Workgroups and discussions - Participants	
<b>S.3.3</b>	<b>1230 - 1345</b>	<b>Lunch Break</b>	
	1345 - 1415	Module 2 - Compliance Dashboard Module 2 - Compliance products	(e-MARIS Team)
	1415 - 1500	Workgroups and discussions - Participants	
<b>S.3.4</b>	<b>1500 - 1530</b>	<b>Afternoon Break</b>	
	1530 - 1600	Wrap-up and review of workshop recommendations	

## Appendix 2 - List of Participants

Name	Function	Contact/email
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