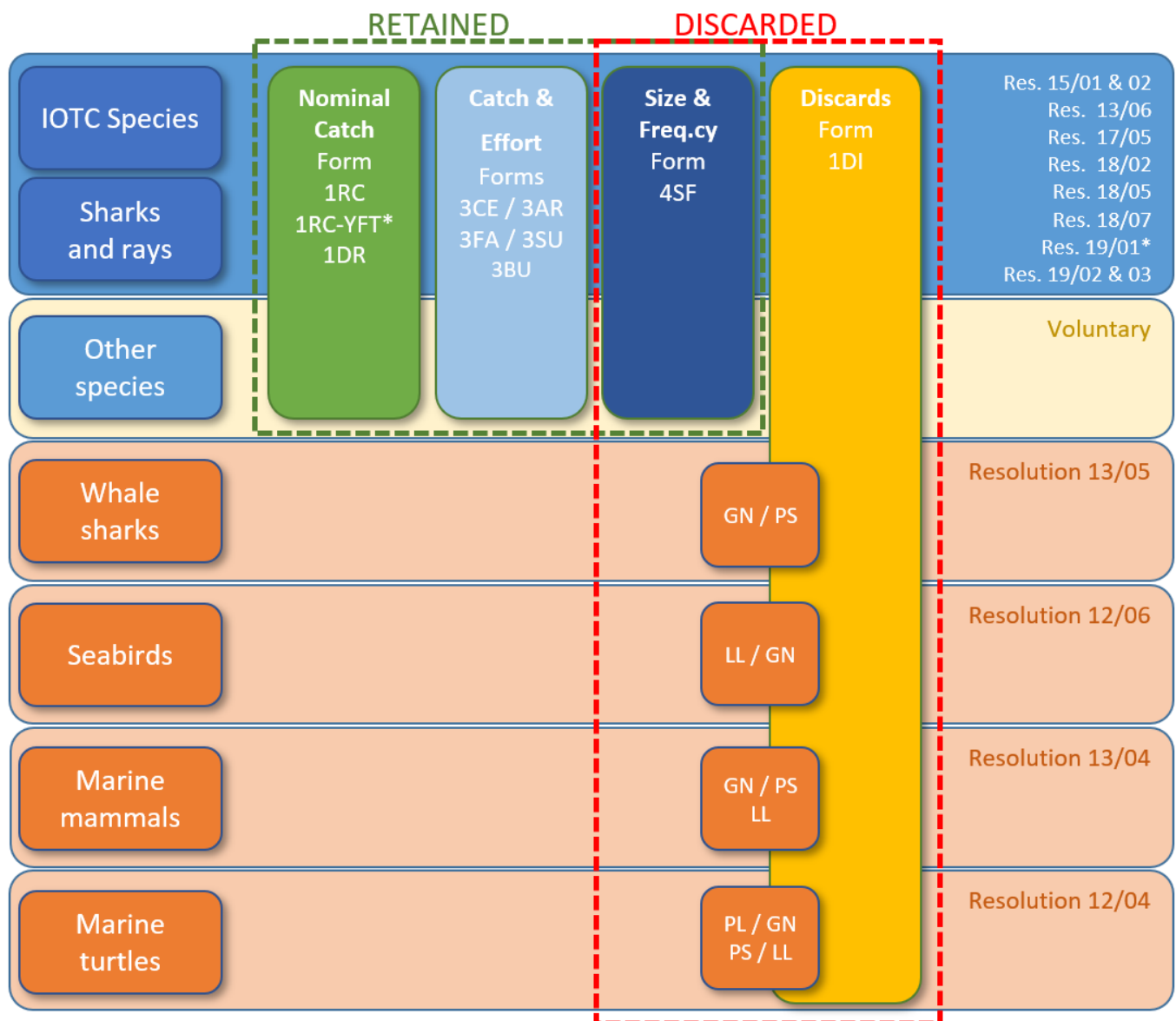


# IMPROVEMENTS TO THE IOTC RECOMMENDED DATA REPORTING FORMS

PREPARED BY: IOTC SECRETARIAT, LAST UPDATED: 25<sup>TH</sup> NOVEMBER 2022

## Purpose

To provide participants to the 18<sup>th</sup> Working Party on Data Collection and Statistics (WPDCS18) with an overview of the current state-of-the-art regarding the recommended electronic forms for the submission of mandatory statistical data to the IOTC, including proposals for their revision and for the rationalization of the data reporting workflow.



**Figure 1:** data reporting requirements by IOTC species, type of dataset and currently standing IOTC resolutions

## Background

The timely and accurate submission of fisheries statistics to the IOTC is a core task for all CPCs, as the information provided is eventually used for purposes such as support the work of the Scientific Committee and its subsidiary bodies,

assess the status of compliance with respect to mandatory reporting requirements, and determining annual contributions for members.

## Dataset types and stratification

The type of statistical data to be submitted depends on currently standing IOTC Resolutions (**Fig. 1**) and varies with the fisheries and the target and bycatch species these interact with.

**Table 1:** current IOTC data reporting forms, reference datasets and spatial-temporal resolution covered

Form	Data set	Temporal resolution	Spatial resolution	Notes
<a href="#">1 RC</a>	Retained catches in live weight	Year / quarter	IO areas (W / E)	Raised to total catches
<a href="#">1 RC-YFT<sup>1</sup></a>	Retained YFT catches in live weight	Year	EEZ / ABNJ	By gear / vessel category
<a href="#">1 DI</a>	Discard levels in live weight or numbers	Year / quarter	IO areas (W / E)	Raised to total discards
<a href="#">1 DR</a>	Zero catch matrix - Catch reporting status	Year	IO	As per res. 18/07
<a href="#">3 CE</a>	Catch-and-effort in live weight or numbers	Month	1°x1° grids	For surface fisheries
<a href="#">3 CE</a>	Catch-and-effort in live weight or numbers	Month	5°x5° grids	For longline fisheries
<a href="#">3 AR</a>	Catch-and-effort in live weight or numbers	Month	Any	For coastal fisheries
<a href="#">3 FA<sup>2</sup></a>	FAD numbers, interactions, and catches	Month	1°x1° grids	For fisheries on FOBs
<a href="#">3 FD<sup>3</sup></a>	Number of deployed FADs by year / grid	Yearly	1°x1° grids	For 2018 and 2019
<a href="#">3 BU</a>	Daily buoy positions by vessel	Day	Latitude-longitude	Monthly report
<a href="#">3 SU</a>	Number of support vessels and effort	Month	1°x1° grids	Purse-seine fisheries
<a href="#">4 SF</a>	Size-frequency data	Month	5°x5° grids	At least 1 fish / t
<a href="#">2 FC</a>	Number of fishing crafts by type of fishery	Year	N/A	Voluntary
<a href="#">7 PR</a>	Avg. prices per type of fish product	Year	N/A	Voluntary

<sup>1</sup> Applies only to CPCs for which Res. 19/01 is still binding; <sup>2</sup> Currently under revision by the *ad-hoc* Working Group on FADs (WGFAD); <sup>3</sup> Requirements for this dataset are expired, and its provision is not anymore necessary

The spatial-temporal stratification also changes with the dataset (**Table 1**), although strata generally include CPC / fleet, year, fishery, and species. Some datasets are further stratified by quarter and Indian Ocean major area (e.g., annual retained catches and annual discards) while other are stratified by month and by Indian Ocean statistical regular grids (e.g., catch-and-effort, FAD interactions, and size-frequency data).

The dataset with the highest spatial-temporal resolution is the one that collates the position of instrumented buoys at sea (see [Res. 19/02](#), “*Procedures on a Fish Aggregating Devices (FADs) management plan*” para. 24 and 25) which includes data by purse seine vessel, day, and exact location of the buoys monitored by the vessel. Due to its high resolution and to the confidentiality policies currently in place at the IOTC (see [Res. 12/02](#), “*Data confidentiality policy and procedures*”) the collated data received for this dataset cannot be publicly disseminated *as is* but need to be aggregated in a way that will prevent the identification of fishing operations for a specific vessel.

All datasets are mandatory for reporting (assuming that the corresponding fisheries are actively operating in the Indian Ocean for a given CPC) except for the *fishing craft* and *fish price* datasets whose submission is *voluntary*, as is the submission of data for other species than:

- the 16 IOTC species
- sharks and rays’ species of relevance to the IOTC
- endangered, threatened, and protected species (ETP).

The reporting of data on yellowfin tuna catches by vessel size and area of operation (Exclusive Economic Zone vs. Areas Beyond National Jurisdiction) only applies to those CPCs that objected to [Res. 21/01](#) and to which [Res. 19/01](#) (para. 26) still apply.

Also, the requirement of reporting the number of drifting FADs deployed by month and grid for the years 2018 and 2019 is (see Res. 19/01, para. 19) does not extend to years past 2019 and is therefore not active anymore.

It is worth mentioning how, although only submitted on a voluntary basis by few CPCs, fishing crafts data (i.e., number of fishing vessels by fleet, year, fishery, size class, and vessel characteristics) are fundamental for the analysis and cross-validation of catch-and-effort trends and active vessel records, as well as for the reconstruction of historical catch time series (e.g., re-estimation of Indonesian artisanal catches by gear).

## Frequency of submissions

In terms of frequency of data submissions, the IOTC requests through [Res. 15/02](#) “Mandatory statistical reporting requirements for IOTC Contracting Parties and Cooperating Non-Contracting Parties (CPCs)” that all statistical datasets be submitted by June 30<sup>th</sup> each year (see Res. 15/02, para. 7b), and include information collected during the previous calendar year.

CPCs with active longline fisheries are granted the possibility of submitting their final data by December 30<sup>th</sup> each year (see Res. 15/02, para. 7a), although revisions to existing datasets (for all fisheries) can generally be provided at any time within the limits indicated by Res. 15/02 (para. 7c).

Monthly buoy position data should instead be submitted with a time delay of at least 60 days but no longer than 90 days (see [Res. 19/02](#), para. 24).

## Data elements and recommended reporting forms

The data elements to be collected and included within each dataset are dictated by currently standing IOTC Resolutions (15/02 and others, see [Fig. 1](#)), while no specific requirement in terms of data reporting formats is in place.

In this regard, the IOTC has requested that *recommended data reporting forms* be designed by the Secretariat and made available to CPCs as the preferred way of submitting statistical data (see [Fig. 1](#) and [Table 1](#) for an indication of the data reporting forms recommended for each data set).

Most of these forms are currently available as macro-enabled, protected Excel spreadsheets which include a dedicated section for the reporting of metadata (e.g., contact details of reporting institutions / focal points, indication of the preliminary / final version of the data, data coverage, processing, and source, etc.) and a separate section for the reporting of actual data, stratified according to the type of dataset considered, and generally expected to be reported in wide tabular format.

Also, the columns / cells which accommodate *reference data* (such as coverage type codes, species codes, gear codes, flag codes, etc.) appear as dropdown lists with choices limited to the valid entries for each type of reference data.

The recommended data reporting forms are designed to accommodate for the reporting of a *complete* annual dataset stratified by the relevant criteria.

This means that at each annual submission, the Secretariat is expected to receive from each CPC:

- **One** form 1-RC for the reporting of total annual retained catches (all fisheries, data sources, species, and areas included)
- **One** form 1-DI for the reporting of total annual discards (all fisheries, data sources, species, and areas included)
- **One** form 1-RC-YFT for the reporting of YFT catches by vessel size / EEZ or ABNJ (all fisheries included)
- **One** form 1-DR for the reporting of zero catches by fishery type (all fisheries and species included)
- **Multiple** forms 3-AR for the reporting of annual geo-referenced catch-and-effort data, i.e., one for each type of coastal fishery (all months, data sources, species, and areas included)
- **Multiple** forms 3-CE for the reporting of annual geo-referenced catch-and-effort data, i.e., one for each type of industrial fishery (all months, data sources, species, and grids included)
- **Multiple** forms 3-FA for the reporting of annual geo-referenced FAD data, i.e., one for each type of industrial surface fishery (all months, data sources species and grids included)
- **One** form 3-SU for the reporting of annual supply vessels’ efforts (all months and grids included)
- **Multiple** forms 3-BU for the reporting of instrumented buoys’ position, i.e., one for each vessel / month
- **Multiple** forms 4-SF for the reporting of body lengths or weights, i.e., one for each type of fishery, data source, and species (all months and grids included)
- **One** form 2-FC for the voluntary reporting of fishing craft statistics (all fisheries, data sources and boat types)
- **One** form 7-PR for the voluntary reporting of fish price data (all fisheries, data sources, species, and markets).

## Known issues

Not all CPCs report data to the IOTC according to the recommended data reporting forms. Therefore, in these circumstances, the Secretariat must undertake the additional task of converting the submissions in a format suitable for incorporation within the IOTC databases, which is generally a non-trivial task.

Nevertheless, even when CPCs report data through the recommended data reporting forms, several issues have been encountered that require either further clarifications from the CPCs, or additional clean-up and post-processing work from the Secretariat, which might result in unnecessary and potentially error-prone conversions.

Among the issues encountered when CPCs report statistical data through the IOTC recommended forms, the following are of relevance:

- Lack of metadata (including, but not limited to, the level of coverage and the data source / data processing applied)
- Submission of non-standard fishery, species, and grid / area codes
- Empty rows and columns in the forms' data section
- Significant information is reported through the "comment" field instead of being included in the forms' metadata / data section
- Multiple forms 1-RC, 1-DI, 1-RC-YFT and 1-DR are provided, each containing data for a single fishery, fishery type (e.g., artisanal fisheries only), or a category of species (target vs. bycatch)
- Multiple forms 3-AR or 3-CE provided for the same fishery, each containing data for a single category of species (target vs. bycatch)
- The original form is copy-pasted in the wrong position of an empty Excel spreadsheet before / after being edited, or older version of the forms are used, therefore affecting the automated data extraction procedures due to wrong cell locations.

Beside these common data reporting issues, the actual format and structure of the Excel spreadsheets used in the current version of the recommended forms have some inherent drawbacks such as:

- Layout issues preventing metadata and data to be clearly displayed and accessible onscreen
- Presence of calculated fields (i.e., grid codes from grid latitudes / longitudes) that hamper the possibility of copy / pasting in bulk rows of data in the dedicated sections of forms 3-CE, 3-AR, 3-FA, 4-SF
- All reference data dropdowns do not implement the 'search as you type' functionality, and therefore are of limited help
- Forms need to be updated whenever the underlying reference data changes, as the latter are used to populate the dropdown menus
- Necessity to enable Excel macros for forms to work properly.

Current recommended data reporting forms are built with the assumption that data are entered *by hand*, which is a limiting factor for those CPCs and fisheries for which a wealth of information is available at national level, as this might result in tens (when not hundreds) of thousands records to be entered manually in these forms (e.g., catch-and-effort or size-frequency data).

Furthermore, the fact that some cells in the original form might be write protected – as they are not meant to contain data but just act as "separators" or present calculated information (e.g., the CWP grid codes) – prevents the effective copy-pasting of large tabular datasets.

Some CPCs have overcome this issue by creating a copy of the original forms that attempts to maintain the original structure while removing the locked cells, therefore enabling proper copy-pasting at the expense of removing all reference data checks originally embedded in the forms.

Regardless of the format in which data are submitted to the Secretariat, the current data submission cycle relies on exchange of (non-fully validated) information via e-mail, that is received by the Secretariat, validated against the minimum data reporting requirements and eventually incorporated into the IOTC databases (if all semantic checks are properly completed) or rejected and returned back – still via e-mail, together with feedback from a human operator – to the original submitter (**Fig. 2**)

## Proposed approach

As the main purpose of the data reporting forms is to *facilitate* the compilation of large datasets for submission to the IOTC, while at the same time ensuring information is provided according to the required standards, the Secretariat has devised a new set of reporting forms that maintain the key concepts and data fields of the current recommended forms, and improve the way in which these can be used to submit (and verify) statistical information to the IOTC.

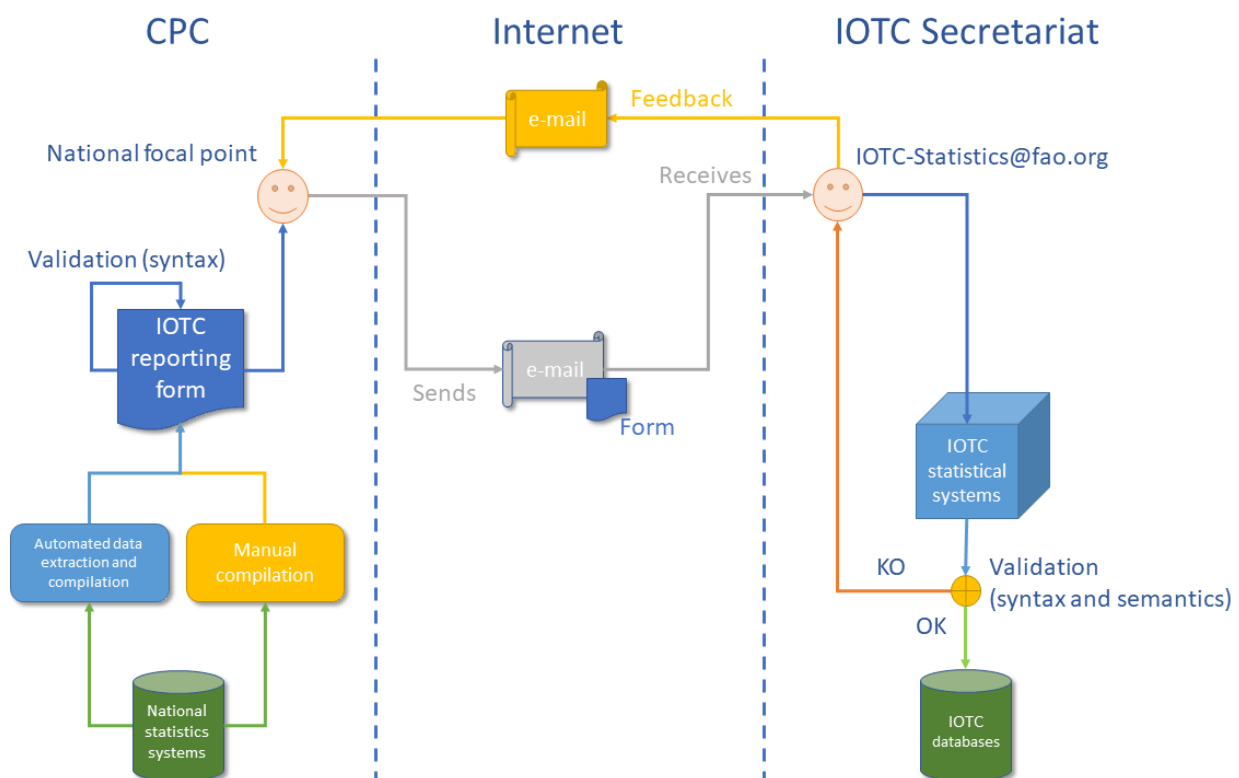
This proposal fits in the broader picture that sees e-MARIS as the enabling system for the submissions of statistical data (among others), while ensuring that quick feedback on the completeness and correctness of the statistical information are reported back to the original submitters in the shortest time possible (**Fig. 3**).

## Rationale

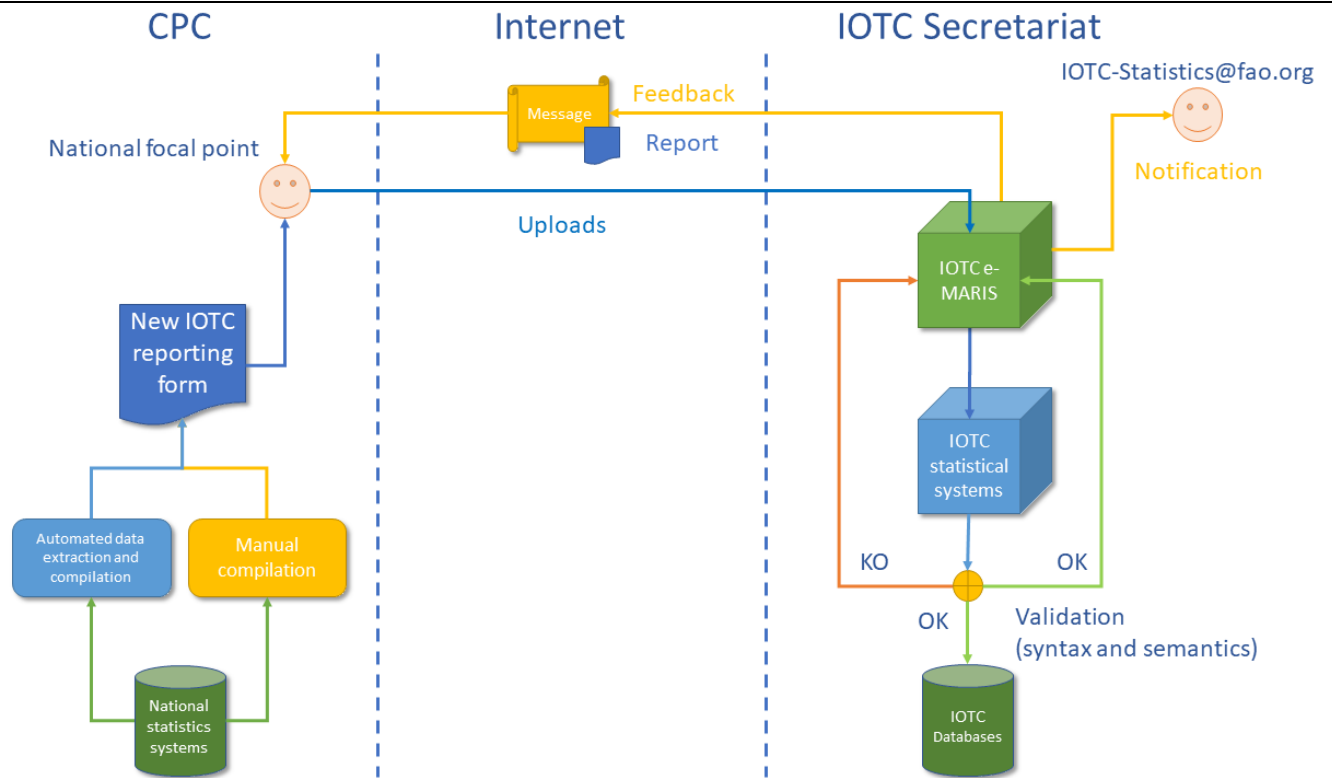
Considering the above, the revised approach proposed by the Secretariat is designed with the following aspects in mind:

- That data reporting forms should enable their *programmatic* compilation by national institutions (i.e., through R scripts or comparable procedures)
- That constraints exist in terms of the granularity of the data reported through each form (i.e., these cannot be used to report *partial* information, as it frequently happens instead)
- That the number of forms to be submitted to the IOTC should be as limited as possible, i.e., that aggregated versions of forms currently provided by fishery and / or species (such as those currently used for the reporting of catch-and-effort or size-frequency data) are also made available to report larger, fully comprehensive datasets
- That the actual validation of the forms is a crucial and independent aspect of the process, which needs to happen as early as possible, ideally soon after their submission through e-MARIS (once fully implemented)
- That following a) and d) it is not necessary to implement data validation constraints within the forms themselves, assuming that clear data compilation procedures are formalized, and reference data are made available to the public and maintained up to date
- That IOTC reference data and classification can be effectively mapped at the national level
- That IOTC reference data might change without requiring the revision of the existing forms
- That the inclusion of new reference data upon request from CPCs (e.g., newly developed fisheries or irregular areas used to report information for coastal fisheries) follows a separate process, to be initiated as soon as possible, and is not part of the forms anymore.

## Changes in the data submission workflow



**Figure 2:** data reporting workflow using *current* IOTC forms



**Figure 3:** data reporting workflow using *new* IOTC forms in combination with e-MARIS

## New data submission forms

A set of new data submission forms replacing the current versions is available for assessment and feedback by CPCs.

As anticipated, the general structure and purpose of each form is basically unchanged if not for the following major updates:

1. Form-level metadata and data are provided through two separate worksheets
2. The layout of the data reporting worksheet has been improved in terms of readability and ease of access (rationalizes and improves data entry)
3. Data fields are linked to the corresponding reference data as a remotely accessible resources, although these are not embedded in the form (maintains consistency)
4. No validation is attached to the data fields, which are all free-text cells with some pre-defined formatting for cells representing values (improves data entry)
5. No data field is calculated as a function of other fields (improves data entry and enhances consistency)
6. Only data and metadata fields cells are editable (enhances consistency)
7. Forms are now plain Excel workbooks that do not require *macros* to be enabled (enhances security)
8. Rationalization of some metadata fields (e.g., data coverage, boat class, etc.)
9. New metadata fields added in selected forms (e.g., measuring tool in Form 4-SF)
10. New data fields added in selected forms (e.g., tertiary effort unit in Form 3-AR and 3-CE, number of fish sampled in form 4-SF).

The new IOTC forms in their version 1.0.0 are available for download through the following URLs:

- Form **1-RC**: <https://data.iotc.org/reference/1.0.0/forms/Form-1RC.xlsx>
- Form **1-DI**: <https://data.iotc.org/reference/1.0.0/forms/Form-1DI.xlsx>
- Form **2-FC**: <https://data.iotc.org/reference/1.0.0/forms/Form-2FC.xlsx>
- Form **3-AR**: <https://data.iotc.org/reference/1.0.0/forms/Form-3AR.xlsx>
- Form **3-CE**: <https://data.iotc.org/reference/1.0.0/forms/Form-3CE.xlsx>
- Form **3-FA**: <https://data.iotc.org/reference/1.0.0/forms/Form-3FA.xlsx>
- Form **3-SU**: <https://data.iotc.org/reference/1.0.0/forms/Form-3SU.xlsx>
- Form **4-SF**: <https://data.iotc.org/reference/1.0.0/forms/Form-4SF.xlsx>



Additionally, the Secretariat has prepared revised versions of forms 3-AR, 3-CE, 3-FA, and 4-SF that supports the provision of data for multiple fisheries (3-AR, 3-CE, and 3-FA) as well as multiple fisheries and species (4-SF) through a single form.

These extended versions are available for download through the following URLs:

- Form **3-AR** (multiple): <https://data.iotc.org/reference/1.0.0/forms/Form-3AR-multiple.xlsx>
- Form **3-CE** (multiple): <https://data.iotc.org/reference/1.0.0/forms/Form-3CE-multiple.xlsx>
- Form **3-FA** (multiple): <https://data.iotc.org/reference/1.0.0/forms/Form-3FA-multiple.xlsx>
- Form **4-SF** (multiple): <https://data.iotc.org/reference/1.0.0/forms/Form-4SF-multiple.xlsx>

A ZIP archive containing all current versions of the new data reporting forms is also available for download as [IOTC-2022-WPDCS18-DATA02](#).

The major differences in the structure of the *multiple* versions of the forms above, when compared with their original version, are in the number of metadata required at form and record level.

In particular, the *multiple* versions of these forms have a lower number of form-level metadata fields in the *metadata* worksheet (**Fig. 6**) and a higher number of record-level metadata fields in the *data* worksheet (**Fig. 7**) to accommodate information that spans across multiple fisheries, species, and data sources (among others).

One *multiple* form 3-CE can accommodate as many standard 3-CE forms as the number of active fisheries for a given CPC, and one *multiple* form 4-SF can accommodate as many standard 4-SF forms as the cross-product of the number of active fisheries, interacted species and individual fate for a given CPC.

The possibility of dramatically reducing the number of submitted data files through the adoption of the *multiple* versions of the forms above should therefore be taken in consideration before deciding how to further progress with this activity.

Form	3-CE	Version	1.0.0
<b>Submission information</b>			
Focal point Full name	<input type="text"/>	Organization Name	<input type="text"/>
e-mail	<input type="text"/>	e-mail	<input type="text"/>
Finalization date	<input type="text"/>	Submission date	<input type="text"/>
<b>General information</b>			
Reporting year	<input type="text"/>	Fishery	<input type="text"/>
Reporting country	<input type="text"/>		
Flag country	<input type="text"/>		
<b>Data specifications</b>			
Type of data	<input type="text"/>	Effort units	<input type="text"/>
Data source	<input type="text"/>	Primary	<input type="text"/>
Data processing	<input type="text"/>	Secondary	<input type="text"/>
Data raising	<input type="text"/>	Tertiary	<input type="text"/>
Coverage type	<input type="text"/>	Catch unit	<input type="text"/>
Coverage value	<input type="text"/>		
<b>Comments</b>			
<input type="text"/>			

Form	3-CE-multiple	Version	1.0.0
<b>Submission information</b>			
Focal point Full name	<input type="text"/>	Organization Name	<input type="text"/>
e-mail	<input type="text"/>	e-mail	<input type="text"/>
Finalization date	<input type="text"/>	Submission date	<input type="text"/>
<b>General information</b>			
Reporting year	<input type="text"/>	Catch unit	<input type="text"/>
Reporting country	<input type="text"/>		
Flag country	<input type="text"/>		
<b>Comments</b>			
<input type="text"/>			

**Figure 6:** comparison between the standard (left) and *multiple* (right) versions of the *metadata* section in Form 3-CE





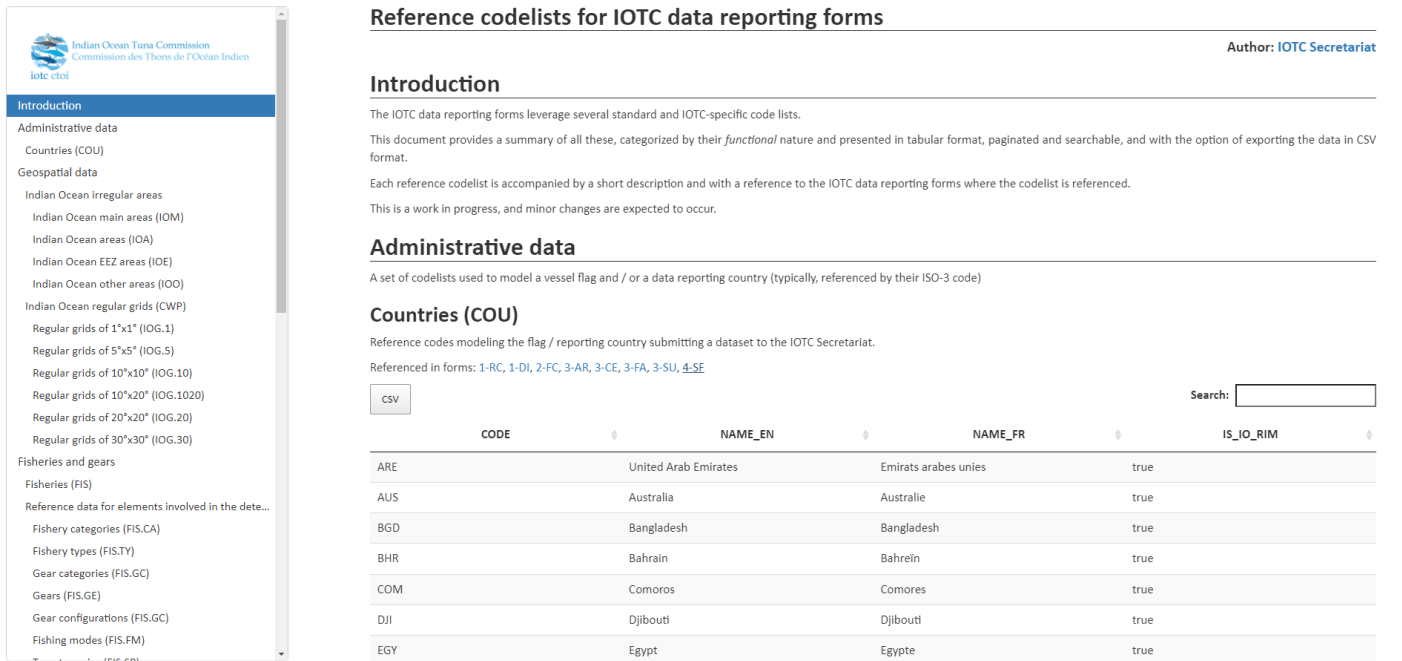
each record (assuming these are correctly reported) and therefore perform the consistency check required (as it would be the case with the new forms).

Therefore, it is also advised to consider the feasibility of collapsing forms 3-AR and 3-CE into a single form 3-CE.

## Reference data catalogue

All new IOTC forms are complemented by a browsable catalogue of reference data (both global and IOTC-specific) which underpin each included data field.

The reference data catalogue is publicly available at <https://data.iotc.org/reference/1.0.0/> and is an integral part of the revised proposal for the submission of statistical data to the IOTC which is the subject of this document.



**Reference codelists for IOTC data reporting forms**

Author: IOTC Secretariat

**Introduction**

The IOTC data reporting forms leverage several standard and IOTC-specific code lists. This document provides a summary of all these, categorized by their *functional* nature and presented in tabular format, paginated and searchable, and with the option of exporting the data in CSV format. Each reference codelist is accompanied by a short description and with a reference to the IOTC data reporting forms where the codelist is referenced. This is a work in progress, and minor changes are expected to occur.

**Administrative data**

A set of codelists used to model a vessel flag and / or a data reporting country (typically, referenced by their ISO-3 code)

**Countries (COU)**

Reference codes modeling the flag / reporting country submitting a dataset to the IOTC Secretariat. Referenced in forms: 1-RC, 1-DI, 2-FC, 3-AR, 3-CE, 3-FA, 3-SU, 4-SE

CSV

Search:

CODE	NAME_EN	NAME_FR	IS_IO_RIM
ARE	United Arab Emirates	Emirats arabes unies	true
AUS	Australia	Australie	true
BGD	Bangladesh	Bangladesh	true
BHR	Bahrain	Bahrein	true
COM	Comoros	Comores	true
DJI	Djibouti	Djibouti	true
EGY	Egypt	Egypte	true

**Figure 8:** the reference data catalogue (version 1.0.0)

Reference codelists are categorized by their field of application in groups that model:

- [Administrative data](#)
- [Geospatial data](#)
- [Fisheries and gears](#)
- [Species](#)
- [Fishing activities](#)
- [Morphometrics](#)
- [Data origin and processing](#)
- [Fishing technologies](#)
- [Legacy reference codes \(used in previous versions of the forms\)](#)
- [External reference codes \(managed by other organizations\)](#)

Each code list includes an alphabetic code, an English and French name (the latter still in the process of being fully localized) and any other type of pertinent information, when required.

The reference data catalogue allows codelists to be filtered and ordered by field and downloaded as a CSV file for offline reference.

A ZIP archive containing the current versions of all reference codelists is also available for download as [IOTC-2022-WPDCS18-DATA01](#).

Furthermore, the links included in the labels / headers of each data field in the new IOTC data reporting forms point to the remote resource – within the reference data browser – corresponding to the code list specific for that data field.

## Online data validation

Although the integration between e-MARIS and the IOTC statistical systems is not fully established at present, the Secretariat is facilitating its implementation by working on the design of an interactive web application that could be used by CPCs to receive preliminary feedback on their data submissions, *de facto* replacing (albeit temporarily) the expected interaction between these and e-MARIS.

An example of the validations and outputs performed by this application in its preliminary version are provided in **Figs. 9-14**.

**General information**

Fleet:

Flag country: LKA

Reporting country: LKA

Reported data:

Reference year: 2021

Catch unit: MT

Comments: NA

**Submission information**

Focal point:

Full name: Sisira Haputhantri & Lashanthi Perera

e-mail: sisirahaputhantri@yahoo.com, lashik2004@yahoo.com

Organization:

Name: Ministry of Fisheries

e-mail: secretary@fisheries.gov.lk, secfisherieslk@gmail.com

Dates:

Finalization: [Empty field]

Submission: [Empty field]

**Figure 9:** metadata extracted from a submitted form 1-RC

FLAG_COUNTRY_CODE	REP_COUNTRY_CODE	YEAR	QUARTER	IOTC_FISHERY_CODE	IOTC_FISHERY_NAME	FISHING_GROUND_CODE	PRELIMINARY	DATA_SOURCE_CODE	DATA_PROCESSING_CODE	TARGET_SPECIES_CODE
LKA	LKA	2021	1	BS	Beach seine	IREASIO	FIN	RCRS	RCSS	AC
LKA	LKA	2021	1	BS	Beach seine	IREASIO	FIN	RCRS	RCSS	AC
LKA	LKA	2021	1	BS	Beach seine	IREASIO	FIN	RCRS	RCSS	AC
LKA	LKA	2021	1	BS	Beach seine	IREASIO	FIN	RCRS	RCSS	AC
LKA	LKA	2021	1	BS	Beach seine	IREASIO	FIN	RCRS	RCSS	AC
LKA	LKA	2021	1	BS	Beach seine	IREASIO	FIN	RCRS	RCSS	AC
LKA	LKA	2021	1	BS	Beach seine	IREASIO	FIN	RCRS	RCSS	AC
LKA	LKA	2021	1	BS	Beach seine	IREASIO	FIN	RCRS	RCSS	AC
LKA	LKA	2021	1	BS	Beach seine	IREASIO	FIN	RCRS	RCSS	AC
LKA	LKA	2021	1	BS	Beach seine	IREASIO	FIN	RCRS	RCSS	AC

Showing 1 to 10 of 2,592 entries

**Figure 10:** annual total retained catch data extracted from a submitted form 1-RC

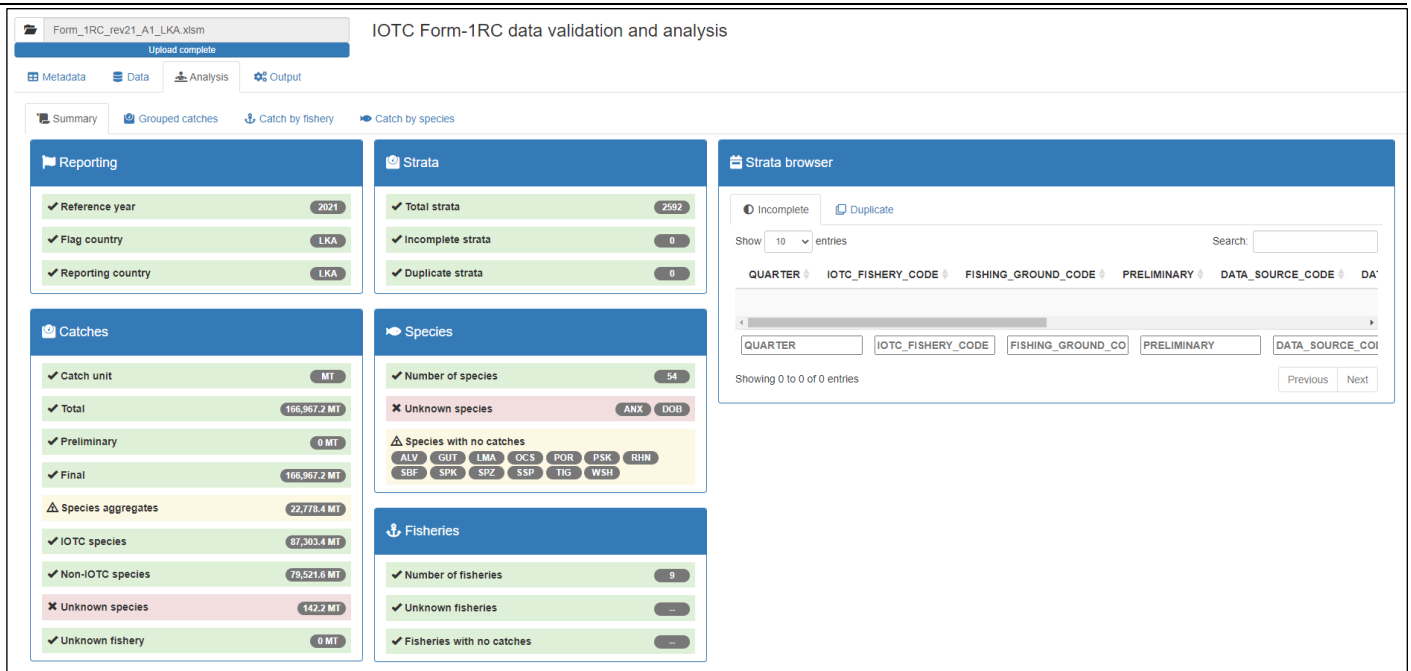


Figure 11: results of the syntax analysis performed on the data and metadata submitted through form 1-RC

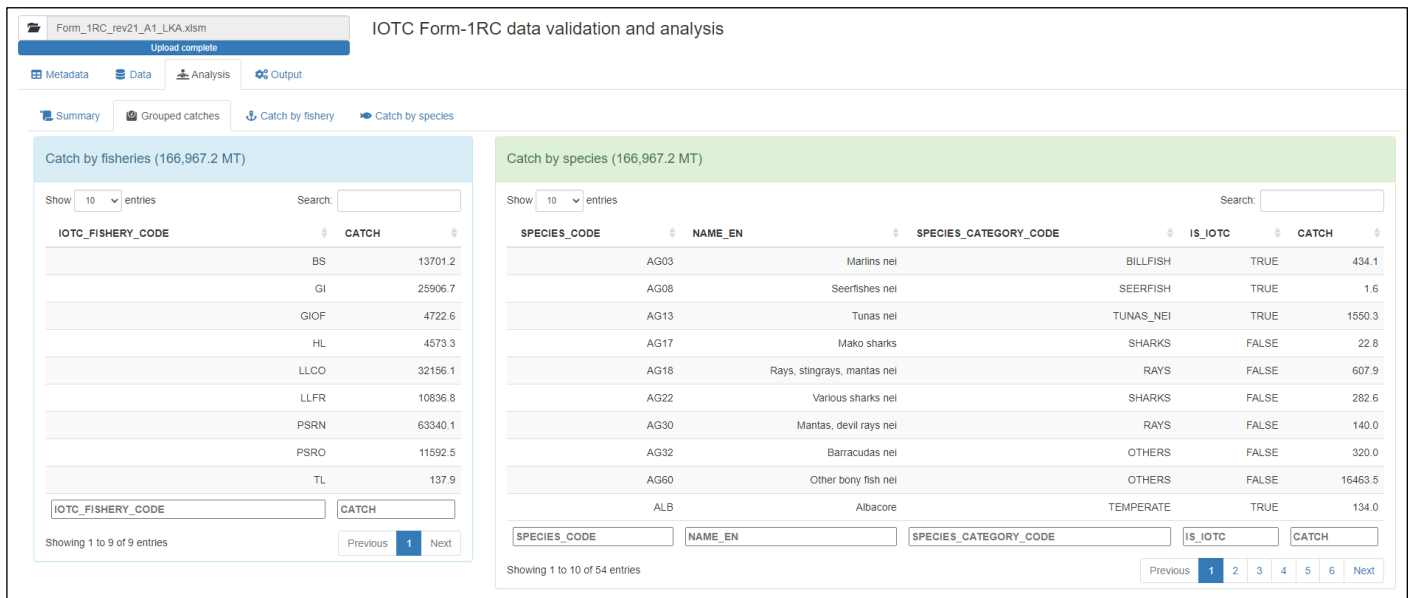


Figure 12: summary of catch by fishery and species submitted through form 1-RC

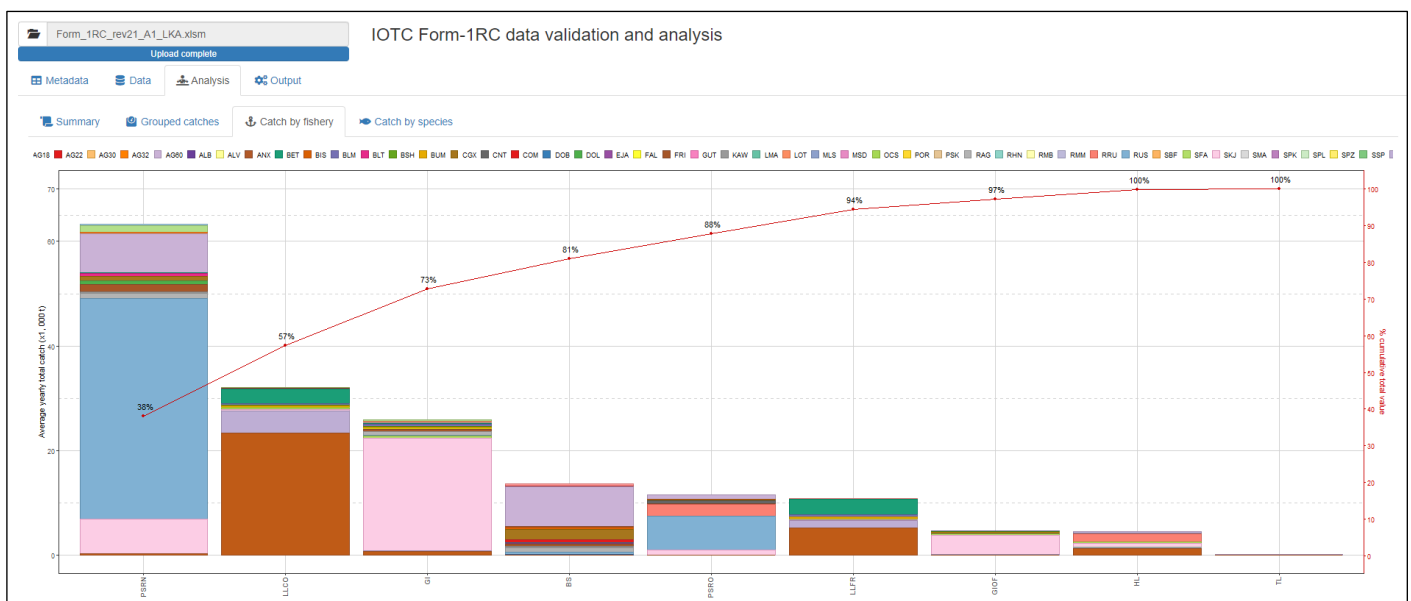


Figure 13: trends in catches by fishery submitted through form 1-RC

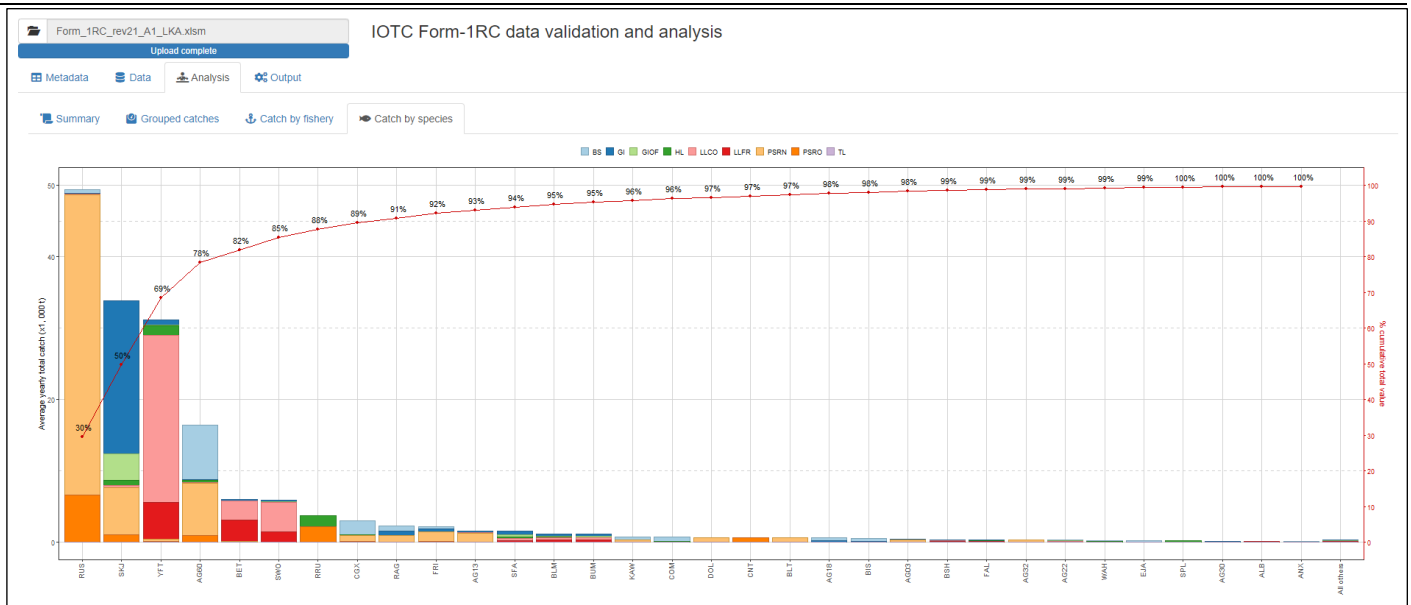


Figure 14: trends in catches by species submitted through form 1-RC

Similar interfaces for the (cross) validation of discards, catch-and-effort, FAD, and size-frequency data are currently under development by the Secretariat, and will be soon (Q1 2023) released to the public for a first round of feedback and comments.

## Conclusions and recommendations

The revision of the data reporting forms for the provision of statistical fisheries data to the IOTC is a process that is long overdue, and which has reached a proper stage of maturity thanks to the feedback collected in recent years from all relevant stakeholders, and in anticipation of the full roll-out of the e-MARIS platform.

The presented data submission forms represent a step forward towards a more logic and rational way of providing information to the IOTC, and their design takes in consideration several aspects of the revision process introduced by the IOTC Secretariat and regarding the standardization in the dissemination and exchange of fisheries information, such as the recent efforts at rationalizing the definition of *fisheries* within the IOTC (see also [IOTC-2022-WPDCS18-13 Rev3](#)).

The authors **strongly recommend** that:

- 1) CPCs and the WPDCS are aware of the planned transition from the current, manual data submission process towards a fully automated workflow for the provision of statistical data to the Secretariat
- 2) CPCs and the WPDCS familiarize with the presented revisions of the data reporting forms and provide their timely feedback to incorporate (when necessary) any suggested change in the proposal
- 3) CPCs and the WPDCS familiarize with the presented reference code lists, and how these will be used in / referenced by the revised data reporting forms
- 4) The Secretariat continue working on the online data validation tools as a mean to support CPCs in interactively checking the compliance of their datasets to IOTC data reporting standards prior to the submission to the IOTC
- 5) The Secretariat facilitates the adoption of the new data reporting forms and processes by delivering specific workshops to CPCs from Q1 2023 onwards
- 6) The WPDCS **RECOMMEND** the adoption of the *multiple* versions of the forms (where applicable) to rationalize and facilitate the provisions of large datasets to the Secretariat
- 7) The WPDCS **RECOMMEND** that current forms 3-AR and 3-CE (for the provision of catch-and-effort data for artisanal and industrial fisheries, respectively) are collapsed into a single form 3-CE, to rationalize and simplify the provisions of this type of datasets to the Secretariat
- 8) The WPDCS **ENDORSE** the change from *voluntary* to *mandatory* regarding the submission of fishing craft statistics, considering the fundamental role this dataset has in understanding and cross-validating trends in all other fisheries data, and **RECOMMEND** the SC to **ENDORSE** this change starting with the 2023 data reporting cycle.
- 9) The WPDCS **ENDORSE** the adoption of the new data reporting forms and **RECOMMEND** the SC to **ENDORSE** these as **mandatory forms** for the submission of statistical fisheries data to the Secretariat starting with the 2023 data reporting cycle