



Description of the Availability and Resolution of CCSBT Fishing Effort Data

Introduction

This paper has been prepared to address the following item from the ERSWG11 workplan:

“(29) Prepare a description of the availability and resolution of SBT fishing effort data, including the assumptions used in raising that data and options for improving the quality of such effort data.”

Regarding the request for options for “improving the quality of such effort data”, it is assumed that this refers to possible ways of improving the usability of the data for ERSWG purposes, rather than addressing data quality issues of the data itself. This document only focuses on sources of longline data.

SBT Effort Data Sources

ERSWG11 Paper CCSBT-ERS/1503/04 presented summaries of three data sets held by the Secretariat that could be used to represent SBT fishing effort:

- Catch and effort data (logbook)
- Official SBT catch data
- ERSWG Data Exchange effort data

While the “Official SBT catch” dataset does not include effort, it is included in this paper since it is a useful indicator of effort because the other two datasets have limitations.

SBT Effort Data Descriptions

Catch and effort data

These data are catch and effort data aggregated at most by 5x5 degree square or provided as shot by shot. Coverage is very high or raised, but there are complications with what data are actually provided. As a minimum, Members provide catch and effort data for all operations where SBT are targeted or caught, but some Members provide catch and effort data for their entire fleet or for particular areas (see the rules for the selection of effort section below) and include substantial effort that is not relevant to the SBT fishery. In addition, some of the data provided are raised, some are not. Therefore, while these data may provide the most comprehensive available CCSBT effort data, they are complex and use of these data will incorrectly indicate the extent of the SBT fishery with respect to ERS.

Instead, if examining the impact of the SBT fishery on ERS, these data would need to be used with other data (for example SBT catch rates or the “Official SBT catch data”) to constrain the data to the spatial and temporal expanse of the SBT fishery.

Members submit these data for the annual Scientific Data Exchange for specific purposes, so modifying this dataset for ERSWG purposes would first require detailed consideration by the ESC. It is more practical to modify the ERSWG Data Exchange Data.

Availability and resolution of the data

	Australia	EU	Indonesia	Japan	Korea	New Zealand	South Africa	Taiwan
Date Coverage	1975-2015	-	-	1965-2015	1991-2015	1989-2015	2005-2015	1981-2015
Raised	No	-	-	Yes	No	No	No	Yes
Spatial Resolution	5x5	-	-	5x5	5x5	Shot by shot	1x1 or better	5x5
Temporal Resolution	Month	-	-	Month	Month	Day	Month	Month

Rules for the selection of effort

Australia	Total effort in the fisheries where SBT is caught (namely, the Eastern Tuna and Billfish Fishery (ETBF), Western Tuna and Billfish Fishery (WTBF) and the Southern Bluefin Tuna Fishery (SBTF)), irrespective of whether SBT were actually caught.
Japan	Includes effort from vessels that caught SBT in the year according to the following: Regardless of SBT catch, include effort for: 1965-2004 : CCSBT areas 1 to 10 2005 onwards: CCSBT areas 1-10, 14, 15 If SBT are caught, include area 11 for 1965-2004, areas 11-13 from 2005 onwards.
Korea	2013 and earlier : The data are for all effort when SBT are caught.
New Zealand	Includes all data for the commercial tuna longline fleet, using the TLCER forms.
South Africa	All sets that caught SBT are included.
Taiwan	All effort of authorized and active vessels operating at south of 20°S.

Assumptions used in raising the data

Japan	Unknown
Taiwan	The dataset are raised to total landed catch and the coefficients of raised catch-and-effort data was calculated as the following formula: (landed catches / logbook). Besides, the missing data was replaced by zeros and the coverage of the data was operate in south of 20°S for authorized and active vessels whole year.

Official SBT catch data

General Overview

This dataset is aggregated raised catch data that is at a similar resolution as the catch and effort data. The data are either provided by Members, taken from provided catch and effort data if they have been raised, or are from unraised catch and effort data that are then raised by the Secretariat. Effort information is not included but this catch information is the best available spatial and temporal representation of the SBT fishery catch.

As with the catch and effort data, Members submit these data for the annual Scientific Data Exchange for specific purposes, so modifying this dataset for ERSWG purposes may not be practical. It is more practical to modify the ERSWG Data Exchange Data.

Availability and resolution of the data

	Australia	EU ³	Indonesia ³	Japan ¹	Korea ²	New Zealand ²	Philippines ³	South Africa ²	Taiwan ¹
Date Coverage	1987-2015	2003-2015	1976-2015	1965-2015	1991-2015	1989-2015	1996-2014	2005-2015	1981-2015
Raised	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Spatial Resolution	5x5	-	-	5x5	5x5	5x5	CCSBT statistical area	5x5	5x5
Temporal Resolution	Month	Year	Month	Month	Month	Month	Month	Month	Month

1. Taken from catch and effort data that have been raised by Members.

2. Catch and Effort data raised by the Secretariat to total catch by fleet

3. Total catch by fleet data

Rules for the selection of effort

There is no effort information included in this dataset.

Assumptions used in raising the data

There are no effort data to raise in this dataset, however three Member's catch data are raised to the member's total catch using a single factor for each fleet/year. For two Members raised catch and effort data are used with the raising described in the previous section of this paper.

ERSWG Data Exchange effort data

General Overview

This dataset contains catch data taken from sets monitored by scientific observers, and effort from logbook data for the entire SBT fishery. Data are provided by year and CCSBT statistical area and are available for the period from 2010 to 2015.

Availability and resolution of the data

	Australia	EU	Indonesia	Japan	Korea	New Zealand	South Africa	Taiwan
Date Coverage	2010-2015	-	-	2010-2015	2010-2015	2010-2015	2014-2015	2010-2015
Raised	No ¹	-	-	No ¹	2010-2011 Yes 2012-2015 No ¹	No ¹	No ¹	No ¹
Spatial Resolution	CCSBT statistical area	-	-	CCSBT statistical area	CCSBT statistical area	CCSBT statistical area	CCSBT statistical area	CCSBT statistical area
Temporal Resolution	Year	-	-	Year	Year	Year	Year	Year

1. 100% logbook coverage.

Rules for the selection of effort

All Members use the same rule for selecting catch and effort to include in this dataset, which comes from the [ERSWG Data Exchange requirements](#):

“For the purpose of the ERS Data Exchange, the SBT fishery is defined as all fishing effort by authorised vessels¹ for shots/sets where SBT was either targeted or caught². Data for the full SBT fishery as defined here is to be provided as part of this data exchange. Data should not be provided for fishing that does not match this definition.”

Assumptions used in raising the data

These effort data are not raised since they are source from logbook data, and Members have 100% logbook coverage, apart from the 2010-2011 data from Korea. At the time of writing it was not known how the raising is done.

Options for improving the quality of the data

Of the three datasets this one would seem to be the most appropriate for ERSWG purposes, mainly since the rules for the selection of effort are consistent for all Members and have been designed for the ERSWG. It only includes effort where SBT was targeted or caught, unlike the catch and effort data which includes effort that has no relevance to the SBT fishery.

The main limitations of this particular dataset are the spatial and temporal resolutions and the length of the time series. Improving these would result in very useful effort data. In addition these data are missing effort from the Indonesian SBT fishery because Indonesia has not yet been able to provide spatial catch and effort information to the CCSBT.

In summary, in terms of the effort component these data could be improved with:

- Higher spatial resolution, e.g. to 5x5.
- Higher temporal resolution, e.g. by month.
- Increased date coverage.
- Addition of Indonesian effort in the future.

Accommodating the above changes to spatial and temporal resolution is straight-forward with respect to the [ERSWG Data Exchange templates](#), but depends on which level the extra resolution is applied.

If only effort is provided at the higher resolutions (not catch and not proportion of effort with specific mitigation measures)

Tables 1 and 2 would remain unchanged so that catch and the proportion of effort with specific mitigation measures would still be provided by year and CCSBT statistical area. A new table would be added for effort at the higher resolution, like the following (Similar to the existing table 1 with additional columns, which are highlighted in grey, and removal of observed effort columns).

Country/ Fishing Entity	Calendar year	Month	Fishery		CCSBT statistical area	Longitude	Latitude	Total Effort (no. of hooks)
			Gear code	Fleet code				

If effort and the proportion of effort with specific mitigation measures are provided at the higher resolutions, but not catch

Modify table 1 as follows, table 2 remains the same (The only modification to table 1 is the addition of three columns, which are highlighted in grey):

Table 1

Country/ Fishing Entity	Calendar year	Month	Fishery		CCSBT statistical area	Longitude	Latitude	Total Effort (no. of hooks)	Total Observed Effort	Observer coverage (%)	Proportion of observed effort with specific mitigation measures						
			Gear code	Fleet code							TP+NS	TP+WB*	NS+WB*	TP+WB*+NS	Nil	TP only	NS only

If all data are provided at the higher resolutions: effort, the proportion of effort with specific mitigation measures, and catch

Modify both table 1 and table 2 as follows (The only modification to each tables is the addition of three columns, which are highlighted in grey):

Table 1

Country/ Fishing Entity	Calendar year	Month	Fishery		CCSBT statistical area	Longitude	Latitude	Total Effort (no. of hooks)	Total Observed Effort	Observer coverage (%)	Proportion of observed effort with specific mitigation measures						
			Gear code	Fleet code							TP+NS	TP+WB*	NS+WB*	TP+WB*+NS	Nil	TP only	NS only

Table 2

Country/ Fishing entity	Calendar year	Month	Fishery		CCSBT Statistical Area	Longitude	Latitude	Species code	Scientific name	Common name	Observed captures	Observed capture rate	Observed Mortalities	Observed mortality rate	Observed live releases	Estimated total number of mortalities
			Gear code	Fleet code												

Prepared by the Secretariat