Information published on Task II - Catch & Effort (T2CE)

Summary

This document provides a summarized description of the Task II Catch and Effort statistics (T2CE) published on the ICCAT website and also explains the changes in structure of the information published. In addition, it briefly describes the applications available to extract T2CE information.

1. Dataset description

The information published (pertaining to 1950 through to 2007) is only the T2CE reported by the CPCs to ICCAT (Contracting and Cooperating non-Contracting Parties, Entities or Fishing Entities) and some other non-Cooperating Parties.

1.1 Definition

The Secretariat uses the acronym "T2CE" to reference the information related to Task II Catch and Effort statistics. T2CE are basically data obtained from sampling a portion of the individual fishing operations of a given fishery in a specified period of time. In its general form, T2CE is defined as:

> "The complete species (tuna, tuna like species and sharks) catch composition (in weight <kg> or/and in number of fish) obtained by a given amount of effort (absolute value) in a given stratification or detail level (stratum)".

The stratification level defines the "specific form" of T2CE. ICCAT's Standing Committee on Research and Statistics (SCRS) requires that T2CE data be submitted every year by fleet and gear, with at least the following time/area stratification level:

- Time: month
- Area: 1x1 degree squares (all surface gears); 5x5 degree squares (longline gears).

Finer temporal or spatial strata can be used. In particular, a T2CE record can be as detailed as a daily fishing operation of a vessel (e.g.: longline set of individual vessels --any reference to a vessel is always removed in order to preserve confidentiality--). In some cases, T2CE records are as aggregated as a month's catch composition for an entire country and gear in a large geographical zone (e.g.: 20x20 square); such records, however, do not conform to SCRS requirements.

1.2 Characteristics and specific issues

The species catch coverage (proportion of the overall Task I catch represented by T2CE) can range from a minimum of 5% to almost 100% depending on many factors.

The stratification level currently available in the entire T2CE database (1950 to 2007) is very heterogeneous.

- Time stratification is usually required by month but a considerable portion of available T2CE is by quarter or year.

- Area stratification can go from 1x1 degree squares to large geographical regions (see square types in: http://www.iccat.int/Forms/CODES_SquareTypes.xls).

Other problems that need to be taken into account are:

- In many datasets the amount of fishing effort is missing (not reported); such records may be unusable for detailed CPUE analysis.

- In many datasets, there may be misreporting of the entire species composition (where by-catch species may be underrepresented) obtained by a given effort amount of fishing effort.

- In many time series there is a large heterogeneity of fishing effort units within the same fishing gear (and/or Flag).

- Various datasets have already extrapolated (raised) species catches to the overall Task I catch, such that the original sampling coverage cannot be determined.

- In some datasets, the effort is "double counted". This occurs when, for the same fishery, more than one dataset with partial species catch compositions (often stratified differently) is reported to ICCAT through separate data submissions.

2. Structure

Following the SCRS guidelines, the general output form of the T2CE dataset has been restructured to incorporate a larger number of species. **Table 1** below shows the new structure.

Table 1. Default field structure adopted for publishing T2CE statistics.

Field group	*Field sub-group*	*Field name*	*Type*	*Description*	*Auxiliary table**
Strata definitions	Dataset ID	DSetID	int	Dataset Unique identifier	
		DSetType	string	Dataset type	Table 2
	Flag	Flag	string	Flag name	Flags & Fleets
		FleetCode	string	Fleet code	Flags & Fleets
	Gear	GearGrp	string	Gear group code	Gears
		GearCode	string	Gear code	Gears
	Time	Year	int	Year of the catch (calendar year)	
		TimePeriodID	int	Time period	Time Periods
	Geographic	SquareTypeCode	string	Square type	Square Types
		QuadID	tinyint	Quadrant ID	[1-NE; 2-SE; 3-SW; 4-NW]
		Lat	float	Latitude (degrees)	
		Lon	float	Longitude (degrees)	
	Effort	Eff1	float	First effort amount (Effort 1)	
		Eff1Type	string	Unit of Effort 1	Effort types
		Eff2	float	Second effort amount (Effort 2)	
		Eff2Type	string	Unit of Effort 2	Effort types
	Catches	CatchUnit	string	Catch units: Weight (kg) or number (nr)	
Species catch composition	Major tuna	ALB	float	*Thunnus alalunga*	
		BET	float	*Thunnus obesus*	
		BFT	float	*Thunnus thynnus*	
		BUM	float	*Makaira nigricans*	
		SAI	float	*Istiophorus albicans*	
		SKJ	float	*Katsuwonus pelamis*	
		SWO	float	*Xiphias gladius*	
		WHM	float	*Tetrapturus albidus*	
		YFT	float	*Thunnus albacares*	
	Small tuna	BLF	float	*Thunnus atlanticus*	
		BLT	float	*Auxis rochei*	
		BON	float	*Sarda sarda*	
		BOP	float	*Orcynopsis unicolor*	
		BRS	float	*Scomberomorus brasiliensis*	
		CER	float	*Scomberomorus regalis*	
		FRI	float	*Auxis thazard*	
		KGM	float	*Scomberomorus cavalla*	
		KGX	float	*Scomberomorus spp*	
		LTA	float	*Euthynnus alletteratus*	
		MAW	float	*Scomberomorus tritor*	
		SLT	float	*Allothunnus fallai*	
		SSM	float	*Scomberomorus maculatus*	
		WAH	float	*Acanthocybium solandri*	
		oSmt	float	other (combined) small tuna species not included above	
	Other tuna	BIL	float	*Istiophoridae*	

		BLM	float	*Makaira indica*	
		MLS	float	*Tetrapturus audax*	
		SBF	float	*Thunnus maccoyii*	
		SPF	float	*Tetrapturus pfluegeri*	
		oTun	float	other (combined) tuna species not included above	
	Major sharks	BSH	float	*Prionace glauca*	
		POR	float	*Lamna nasus*	
		SMA	float	*Isurus oxyrinchus*	
		MAK	float	*Isurus spp*	
	Other sharks	oSks	float	other (combined) sharks species not included above	

* See ICCAT coding system (www.iccat.int/en/Stat_Codes.htm).

The ICCAT Secretariat maintains additional details of T2CE statistics (types of weight per species, FAD/Free school operation modes, etc.) in the ICCAT-DB (Secretariat Central Database System). These can not be incorporated in a bi-dimensional file structure as shown in **Table 1**. Specific information with additional detail, whenever available in the ICCAT-DB, can be provided by the Secretariat upon request.

Simplified format

Aimed at keeping the basic output format for publication simple, the following adoptions were made:

a) Due to the large amount of species available, catches of less important species (species codes not included in **Table 1**) were joined in the following groups:

   - "oSmt": other small tuna;
   - "oTun": other tuna;
   - "oSks": other sharks.

b) Catch details by "fishing operation mode" (FAD/Free school catches from tropical purse seine fisheries) were grouped.

Additionally, the species catch composition in weight (kg) was separated from the species catch composition in numbers, due to the incorporation of more species (35) in the catch composition section (otherwise it would require 70 columns only for species catch data). The dataset integrity relationship between both types of catches reported were maintained using a special field "DSetType". **Table 2** includes the meaning of each value.

Table 2. Definition of dataset types.

DsetType	***Description***
n-	Dataset with reported Catches (all species) in Number ONLY
nw	Dataset with reported Catches (all species) in Number and Weight (kg)
-w	Dataset with Catches in Weight (kg) ONLY

For example, extracting a given dataset in weight (uniquely identified by DSetID) with DSetType = "nw" means that equivalent information is also available in Number (*n.b.* the fishing effort is equal in each record: only the species catch changes to the equivalent to number of fish).

3. Extraction facilities

T2CE statistics can be queried online (Web application) using a combination of various filtering options, or offline by downloading a MS-ACCESS application with T2CE data.

3.1 Web application

With the web application (www.iccat.int/en/t2ce.asp) the user can select the raw information (defined in **Table 1**) based on a combination of various options: one Flag (OR all); one Gear group (OR all); Years range (OR all); Catch units (Weight [kg] or Number).

The default output order is: Flag, Gear group, YearC, Fleet, Gear, TimePeriod, SquareCode, Quad, Lat and Lon, all in ascending order.

The output can optionally show 50 or 100 rows per page (50 rows by default) as the web server spent a large amount of time rendering HTML pages.

An export procedure is also available which extracts the entire output to an ASCII delimited (optionally: "tab", ";"and "|") format. The "tab" delimiter is the default, once it is directly readable by Excel. The total number of rows can be exported and has been constrained to 60,000 records. Thus, it is important to be specific when choosing the filtering options (e.g.: one Flag, a few years, one gear).

3.2 MS-ACCESS application

This database (download the file: www.iccat.int/Data/t2ce.rar, uncompress it with WINRAR and run it) has some procedures embedded in it that facilitate the analyses of T2CE statistics.

Pre-requisites

The MS-ACCESS database requires that MS-ACCESS 2003 or 2007 be pre-installed in the machine.
WinRar from Rar Lab (downloadable from www.rarlab.com/download.htm).

Installation

Download the file to a directory in your machine and unzip it. It has a unique file "t2ce_20081216.mdb" with around 210 MB, containing VBA code and data. Simply double-click it and the MS-ACCESS will start.

Some changes to the MS-ACCESS security should be made in order to run it.

- MS-ACCESS 2000/2003 users: change security level to "normal" or "low" (Menu: Tools/Macro/Security)
- MS-ACCESS 2007 users: after opening the application a security Warning is issued. Click "Options…" and within the "Security Alert" pop-up window, choose the option "Enable this content".
  (CAUTION: The VBA code in not protected. Thus, it can be viewed or studied but it should not be changed).

Features

The application starts by showing a window with an overall catalog of the T2CE information available, from 1950 through to 2007, characterized by various elements (Year, Flag, Gear, etc,). This window has various filtering options, which allows the user to extract the information needed. An advanced search is also possible through SQL queries.

Two catalog types (Summary and Detailed) are available. The corresponding catalog can be filtered by choosing a Flag (OR "-all-"), a Gear group (OR "-all-") and the Catch units (Weight OR Number). The filter will dynamically show, shaded in blue, the years containing Catch and Effort information (the first year in the first series is selected by default).

To extract the corresponding T2CE data the user has 3 options:

a) Button “Extract the combined selection”: extracts the datasets of the current filter options (double-click on a shaded cell will have the same effect).

b) Button(s) “Apply filter” (Flag/Gear/Year): extracts all the datasets of the current Flag/Gear/Year.

c) Button “Custom filter”: allow a customizable and more flexible filter (Years /Flag/Gear/Catch units).

In all cases, a pop-up window with the underlying data will appear.

To copy all records to a spreadsheet like MS-Excel or OOFFICE-Calc, select all records with a mouse click on the top left hand corner of the data window (row where the fields are defined), copy them to the clipboard (Ctrl+C), and pass the clipboard content to a new spreadsheet. The shortcut sequence can vary depending on the keyboard layout (e.g.: English/US: Ctrl+A -> Ctrl+C -> Ctrl+V).

For advanced SQL operations, the most important tables are: “t2ce” which contains the raw T2CE data, and, “Catalogue” which is the T2CE dataset summary. DatasetTypes, Flags and TimeStrata are only auxiliary tables.