

Preparation of Taiwan's Southern bluefin tuna catch and effort data submission for 2014

1 Introduction

Fishery statistics data of Taiwanese southern bluefin tuna (SBT) fleet are collected and compiled by the Fisheries Agency, Council of Agriculture, Executive Yuan, (Taiwan, ROC) (hereinafter FA) . According to the contract with FA, Overseas Fisheries Development Council (OFDC) processes fishery statistics data and provides data report annually to the Commission for the Conservation of Southern Bluefin Tuna (CCSBT) as part of the annual data exchange. It was noted that the SBT statistics system has a reformation from 2002, since the SBT weekly report with weight and length of individual catch was introduced to monitor its national allocation. Before 2002, the logbook was the only source to produce the data report. In April 2014, the reports were submitted to the Secretariat of CCSBT for annual data exchange as follows:

- Total Catch by Fleet 2012 and 2013 (quota year and calendar year)
- Aggregated Catch and Effort data 2012 and 2013.
- Catch at size data 2012 and 2013.
- Catch at age data 2012 and 2013.
- Non-retained Catch 2012 and 2013.

2 Data Sources

For the 2013 data submission, there were five sources of data used to compose the data report. These were: the Taiwanese Tuna Longline Daily Fishing Logsheets Database, SBT Catch by set Database, Catch Certification Database, Fisheries Observer Database and Vessel Monitoring Track Record Database.

Daily Fishing Logsheets Database

The collection of logbook of distant water tuna fisheries is carried out by FA, and the fishers are required to complete the logbook, in order to apply for the catch certification document. The Daily Fishing Logsheets Database, which contains data collected from logbooks of recovery, is established and maintained by OFDC. Before 2009, the SBT catch was not included in the logbook as a species category since fishers had reported Weekly Report for SBT, and was filled in a column for recording other tunas, but sometimes the captains would make a footnote next to the column for identifying the catch of SBT. Since 2009, the logbook was revised by OFDC and the catch of SBT began to be recorded as a specific species in the logbook. Appendix A-1, Appendix A-2 and Appendix A-3 are the forms of the logbook, and the following tables are required from the database:

- (1) General information - contains information on vessel identification and trip operation.
- (2) Daily fishing effort - contains information on characters of fishing operations and fishing effort (e.g. number of hooks between float, number of hooks, and etc.).
- (3) Daily catch detail - contains a separate record for each species caught, together with the number and weight of fish caught.
- (4) Record of size of catch – contains the first 30 fish samples measured with length and weight.

Southern Bluefin Tuna (SBT) Catch for each set Database

The fishers authorized to fish for SBT are required to report weekly catch of SBT to FA for quota monitoring. OFDC has established the SBT Catch by set Database, which is based on this weekly report system. Due to lack of SBT catch information in logbook for some vessels, the data of weekly report were used to connect the Daily Fishing Logsheets data for preparing the Aggregated Catch and Effort report, the Catch at size report and the Catch at age report. In addition, non-retained SBT catch was also acquired from the weekly data system. The data collection form of weekly

report is shown as Appendix B. The following tables are required from this database:

- (1) Vessel information - contains information on vessel identification.
- (2) Weekly fishing record - contains information on weekly total catches of target species, weekly average sea water temperature, weekly average total hooks and weekly average number of hooks between float for each operation.
- (3) Catch for each Set – contains each SBT information on date caught, location caught, length, weight and tag number for each set.
- (4) Discard catch - contains information of number and weight of discards.

Catch Certification database

Catch Certification database is compiled and maintained by the FA and contains the data collected from catch monitoring document of CCSBT and traders' sales of SBT. The database is used to prepare the Total Catch by Fleet (quota year and calendar year). The following tables are required by this database:

- (1) Vessels information -contains information on vessel identification.
- (2) Description of fishing – contains information on operation date, total number and weight for whole fish of catches.
- (3) Intermediate product destination section - contains transshipment information or landing in intermediate port for export.
- (4) Final product destination Section – contains information on landing of products for domestic sale or export.
- (5) Traders' sales - contains information on real catch when it passes the customs.

Fisheries Observer database

FA employs scientific observers to collect data on board for deep sea longline fleets. OFDC developed a database to record and maintain the data collected from scientific observers, including records of retained and discarded of catches, length and weight measurements of sampled catches, and other biological samples. The following tables are required from this database:

- (1) Vessel and trip identification - contains information on vessels identification and trip date.
- (2) Fishing operation – contains information on gear attributes, location of setting and hauling, and fishing effort.
- (3) Information on biological on catch for each set - contains measurement of length and weight of each fish sample and describes biological attributes of animals caught, including condition when retained or discarded and sex.

- (4) Catch retained and discard – contains catch record for each species caught, including the number and weigh of catch retained and discarded.

Vessel Monitoring Track Record Database

Since April 2002, any vessels authorized to fish for SBT are required to install vessel monitoring system (VMS) equipment in order to monitor the positions of the vessels. Information of vessels track was carrying through VMS and OFDC has established the database to store the dynamic track including registration number, date, time, positions and etc.

3 Data Preparation

The recovery of all logbooks, which are completed by authorized and active vessels mainly fishing SBT, will be confirmed whether they are completed early in the first quarter. Raw data file of database tables from Daily Fishing Logsheets, SBT Catch by Set and Catch Certification records are acquired late in the first quarter of each calendar year. Excluding Catch Certification records, the data are uploaded to MS WordPad and then using the SAS software to analyze it the submitted reports each year as aggregated catch and effort report, the catch at size report and the catch at age report were processed in SAS software and produced as MS Excel. The catch of calendar year and quota year for The Total Catch by Fleet report are produced and processed wholly in MS Excel to conduct statistics of the amount of catch by calendar year and quota year.

Definition of Seasons

All data reports use fishing date to sort catch records by time period, so that we can define a catch falls within which season period.

Spatial Definitions

All data reports have been provided by latitude/longitude grid cells (5x5 degrees) based on calendar year and quota year statistics, except for the catch by fleet.

4 Data Validation

Data management systems

All the logbooks and weekly report records were preliminarily examined for accuracy before entering the database. SQL server database, which stores all logbook and weekly report records, is established by OFDC for tracking catch. In addition to SQL server database, there is also a system being conducted based on MS Excel spreadsheets for weekly report records and these two systems records are cross-referenced to ensure the data entry is correct in both systems. However, OFDC has developed a programming for SQL server database to ensure validity and plausibility of data during data entry process. After the data entry, the data were loaded from SQL server database and examined by using SAS program when unreasonable data were observed, such as unreasonably small or large weights / numbers / hooks; unreasonably small or large average weights for a species; unreasonable distance in continuous fishing day.

Cross-Verification of datasets

The positions recorded of logbook and weekly reports are cross-checked against track record of VMS. In addition, fisheries observer report was included in process of cross-checked against logbook and weekly reports for SBT catch. Weekly reports of individual vessel are cross-checked against catch monitoring documentation scheme records and traders' sales records. OFDC will conduct an investigation when discrepancies appear in these records. All data submissions are cross-referenced to ensure accuracy of results. Any discrepancies can be tracked down to original database, if required.

Appendix A-1

航次基本資料

GENERAL INFORMATION¹

公司行號名稱 : _____ 負責人姓名 : _____
 Company name : _____ Vessel Owner : _____

漁船名稱 : _____
 Vessel name : _____

漁船噸位 : _____ 噸(Tons)
 Gross Register Tonnage : _____

漁船統一編號 : CT□ - □□□□
 Registration number : CT□ - □□□□

航次數第 航 次
 No. of trips : The _____ voyage sequence

航次期間(Trip information) :

自民國 _____ 年 _____ 月 _____ 日 由 _____ 基地(港口) 出海，

Departure date (Min Guo year², month, day), and departure port

於 _____ 年 _____ 月 _____ 日 開始作業， _____ 年 _____ 月 _____ 日 停止作業，

Start fishing date (Min Guo year, month, day), and stop fishing date (Min Guo year, month, day)

至民國 _____ 年 _____ 月 _____ 日 返回(到達) _____ 基地(港口)，

Return date (Min Guo year, month, day), and return port

總共航行日數 _____ 日，作業日數 _____ 日。

Total navigating days, and total fishing days

船員人數 : _____ 人
 No. of crews : _____ Persons

船長姓名 : _____ (簽章)
 Captain name : _____ (Signature)

填表人姓名 : _____ (簽章)
 Crew name : _____ (Signature)

¹ The origin form is only in Chinese. English translation shown in shadow is added on this document.

² The year used in the Chinese format report is Min Guo calendar year, which is basically the year AD minus 1,911. For example, Min Guo year 98 is the same as the year 2009.

Appendix A-2

Daily fishing record (translated from Chinese)

Daily fishing record	Vessel name				Date	YYMM/DD	Time			
	Location (at noon)	Latitude :	Longitude :		Sea surface temperature	Length of branch line				
	Bait used				Length of floating line	No. of branch line (No. of hooks per basket)				
Catch detail	Weight Retained (kg)	Number Retained	Weight Discarded (kg)	Number Discarded	Catch detail	Weight Retained (kg)	Number Retained	Weight Discarded (kg)	Number Discarded	
Albacore ≤ 10 kg					Shortbill spearfish					
Albacore >10 kg					Longbill spearfish					
Bigeye tuna ≤ 15kg					Other marlins					
Bigeye tuna 16-25kg					Thresher shark					
Bigeye tuna 26-40kg					White shark					
Bigeye tuna >40kg					Silk shark					
Yellowfin tuna ≤ 15kg					Tiger shark					
Yellowfin tuna 16-25kg					Mako Shark					
Yellowfin tuna >25kg					Porbeagle					
Southern Bluefin tuna ≤ 15kg					Crocodile shark					
Southern Bluefin tuna 16-25kg					Blue shark					
Southern Bluefin tuna 26-40kg					Hammerhead shark					
Southern Bluefin tuna >40kg					Oceanic white tip shark					
Bluefin tuna					Other shark					
Other tuna					Bonito, skipjack					
Swordfish ≤ 25kg					Mahi mahi					
Swordfish 26-45kg					Oil fish (castor)					
Swordfish >45kg					Oil fish (escolar)					
White marlin ≤ 40kg					Other fish					
White marlin >40kg					Sea turtle					
Blue marlin					Sea bird					
Black marlin					Whale and Dolphin					
Sailfish										

Appendix A-3

Record on length and weight (Unit: cm in length and kg in weight) Distance between 2 buoys: _____ Meters Total hooks : _____

Species code	Length	Weight															

Species code (Species name) :

- 1. Albacore 2. Bigeye tuna 3. Yellowfin tuna 4. Bluefin tuna 5. Skipjack 6. Swordfish 7. White marlin 8. Blue marlin 9. Black marlin
- 10. Other marlins 11. Southern Bluefin tuna 13. Other fish 14. Other tuna 15. Sailfish 16. Shortbill spearfish 17. Longbill spearfish
- 51. Blue shark 52. Blackspot shark 53. Mako shark 54. Other shark 56. Hammerhead shark 58. Oceanic white tip shark 61. Thresher shark
- 63. White shark 64. Tiger shark 65. Porbeagle 66. Crocodile shark

Captain signature : _____

