

Fishery Statistic Data Collection System in Indonesia

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Introduction

As an archipelago country, Indonesia has more than 17.5 thousand islands with five main islands: Sumatra, Java, Kalimantan, Sulawesi, and Papua. Split by the equator, the archipelago is almost entirely tropical in climate. Indonesian fisheries are among the largest and most productive worldwide, and are expected to play an important role in the economic development, in providing food resources to millions of people and prosperity of Indonesia.

The marine fisheries area covers archipelago waters and territorial waters about 3.1 million kilometers square and the Indonesian Exclusive Economic Zone (EEZ) waters about 2.7 million kilometers square. For the fisheries management purposes and based on characteristic of fish resources and its environment, the Indonesian marine waters is divided into 11 (eleven) Fisheries Management Areas (FMAs), which are :WPP-RI 571 (Malacca Strait and Andaman Sea), WPP-RI 572 (Indian Ocean of Western Sumatera and Sunda Strait), WPP-RI 573 (Indian Ocean of Southern Java, Southern Nusa Tenggara, Sawu Sea, and Western of Timor Sea), WPP-RI 711 (Karimata Strait, Natuna Sea and South China Sea), WPP-RI 712 (Java Sea), WPP-RI 713 (Makassar Sea, Bone Bay, Flores Sea and Bali Sea), WPP-RI 714 (Tolo Bay and Banda Sea), WPP-RI 715 (Tomini Bay, Maluku Sea, Halmahera Sea, Seram Sea and Berau Bay), WPP-RI 716 (Sulawesi Sea and Northern of Halmahera Island), WPP-RI 717 (Cendrawasih Bay and Pacific Ocean), WPP-RI 718 (Aru Bay, Arafuru Sea and Eastern of Timor Sea).



Figure 1. Map of Indonesia's Fisheries Management Area

National fisheries statistics reported that marine capture fisheries production from Indonesian waters is 5,435,633 mt in 2012. In 2012, the production had increased by 1.68% from the

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previous year. In that time, the total production of tuna is 275,778 mt, skipjack 429,024 mt and eastern little tuna 432,138 mt.

The Indonesian data collection systems

Fishery statistics of Indonesia available until 1972, the design of the sample survey a sampling frame was obtained through the complete enumeration of the 1973 Agriculture Census which was undertaken by the Central Bureau of Statistics. The standard statistical system has been introduced since April 1976 for the marine fishery and from January 1977 for the inland open water fishery and fresh water culture (Yamamoto, 1980). The concerns to have a better system in Indonesia fishery are growing not only at national level but also international level. Various efforts have been made to have a better coverage as well as system take in place, for example for tuna statistic currently have been broken down into species and gear replacing the former system that aggregated all tuna as a group.

Following the development of data and system for marine capture fisheries, some improvements of data collection method have been implemented, such as tuna catch monitoring program for industrial tuna long line fisheries.

Fisheries data are collected throughout the year (January-December) in Indonesia, through three different data collection schemes, depending on the size of the landing place:

1. Landing site based, which refer to fishing ports and major landing sites; daily reports from fishing companies (total enumeration), with total catches by month reported to the DGCF in Jakarta.
2. Catch monitoring program at fishing port. Focus on IOTC area, samples data collected by enumerators from longline catch unloadings in port, including Jakarta, Cilacap, Benoa (since 2002), and PelabuhanRatu (since 2007); this scheme was implemented in 2002 with the assistance of the IOTC-OFCF Project, and ACIAR/CSIRO/DAFF, and is currently run by DGCF and RCFMC, with inputs from CSIRO in Benoa.
3. Fishing village based: Information collected by the District offices, processed and reported by quarter to the DGCF in Jakarta.

In the context of data collection, there are organizations and job duties of institutions involved both at national and local government which involved, namely:

1. Directorate General of Capture Fisheries has responsible for designing survey method, supervision of the survey, tabulation/compilation, analyzing, and publishing of National Capture Fisheries Statistics.
2. Province Fisheries Services has responsible for selecting sampling village at district level, supervision of the survey at the district level, tabulation/compilation, analyzing, and publishing of Provincial Capture Fisheries Statistics.
3. District Fisheries Services has responsible for supervision, collecting of data, processing/estimation of the survey form, and reporting statistical fisheries data at district level.
4. Fishing ports authority has responsible for collecting catch data which unloaded at their ports.
5. Field Enumerators has responsible for collecting data in field.

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The General Procedure of Data Acquisition

- Refers to the landing. Fisheries data collection system sourced fishing port and industrial port/processor (census for powered boat) and sampling village (multiple raising factors for non-powered boat) at district level.
- The total catch from districts are aggregated per province and are validated and published in the annual fishery report by national government

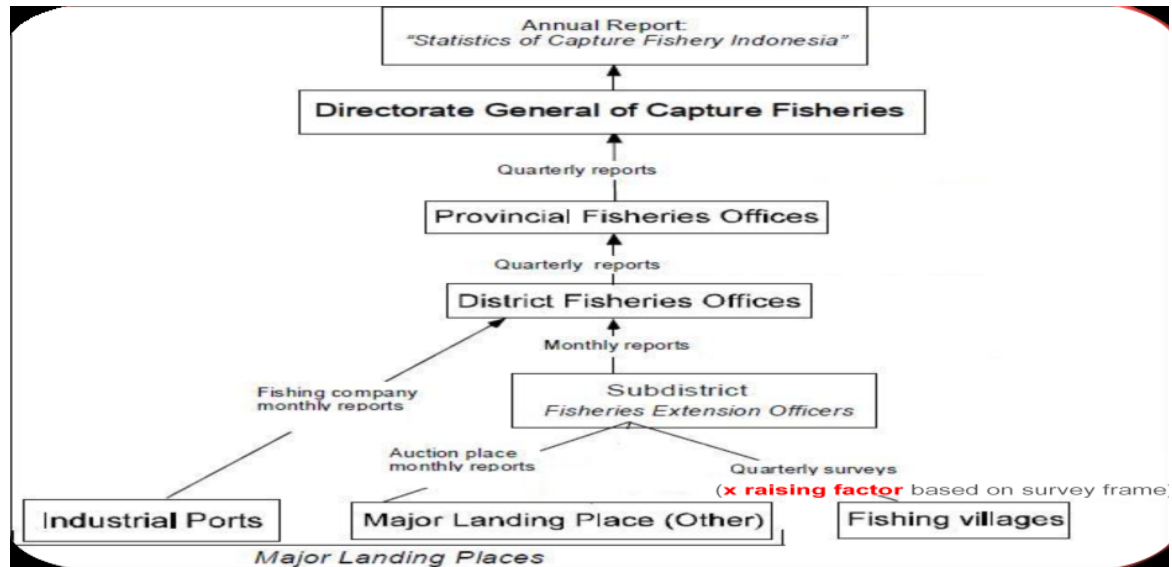


Figure 2. General procedure of Indonesia Fishery data and statistic acquisition (DGCF_2011)

Tuna Catch Data

Tuna resources are spread out almost all over Indonesia waters include archipelagic and territorial waters as well as IEEZ. There are 6 main fisheries targeting on tuna species (skipjack, yellowfin and bigeye tuna as well as albacore) in Indonesia i.e. purse seine, longline, gillnet, troll line, pole & line and hand line. Three main ports for Indian Ocean which landed tuna are Bena (Bali), Nizam Zachman Port (Jakarta), and Cilacap (Central Java). Besides that, Indonesia has also many tuna landing sites of artisanal fisheries.

1. Tuna catch from national waters

Basically, data tuna from many fishing gears can be easily separated by compiling data from each landing port or report from provincial and district. This kind of report covered production each gear per species. Due to fisheries management purpose, this report then compiled based on each FMA's and coastal area. This procedure is generally applied to all species, tuna data is not exceptional. Provision of tuna fisheries data has been aggregated at national level (commercial and artisanal fisheries).

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2. Tuna catch in Indian Ocean

Tuna catch in Indian Ocean mainly come from FAO convention are 57. In Fisheries Management Areas of Indonesia, this convention area covering 3 (three) FMA's are 571, 572 and 573. Whole areas, consists of 14 provinces faces and exploiting tuna in Indian Ocean. They are Aceh, North Sumatera, West Sumatera, Bengkulu, Lampung, Banten, West Java, DKI Jakarta, and Central Java, Jogjakarta, East Java, Bali, NTB and NTT. In Indian Ocean, data tuna comes from many fishing gears. Those gears commonly are Longline, Purse seine, Gill net, Hand line, and Pole and line. Furthermore, as continuation of Tuna sampling program from IOTC, Indonesia still work with this program and produce specific data tuna for longline. As the result, data tuna in Indian Ocean is covering data from artisanal fisheries and industrial fisheries. Artisanal fisheries work with existing methodology, otherwise, data from industrial fisheries from Nizam Zachman, Palabuhanratu, Cilacap and Benoa covered with Tuna sampling program. The aggregate data from Artisanal dan Industrial become National data Tuna report.

3. Southern Bluefin tuna Catch Documentation Scheme (CDS)

Catch Documentation scheme (CDS) has been implemented by Indonesia since 1 January 2010 in two fishing ports i.e. Benoa Port, Bali and Nizam Zachman Oceanic Fishing Port, Jakarta. All activities in both export and import of SBT shall complete three forms Catch Tagging Form, Catch Monitoring Form, Re-Export/Export after Landing of Domestic Product Form and submitted to DGCF-DRFM. DFRM will compile CDS data and submitted to CCSBT secretariat in spreadsheet format. During three years implementation of CDS we found that the validation and supervision in filling the CDS forms should regularly monitor in order to minimize the possible error

Table 1. Indonesia Monthly Catch Report of SBT (January- December 2012) under CDS Scheme (DRFM-DGCF 2012) (as presented in Satria et al 2013)

Month	Total			Bali-Benoa			Jakarta		
	Number	Net Weights (Kg)	Estimated Whole Weight (GG*1,15) (Kg)	Number	Net Weights (Kg)	Estimated Whole Weight (GG*1,15) (Kg)	Number	Net Weights (Kg)	Estimated Whole Weight (GG*1,15) (Kg)
January	672	58.763	67.577	514	53.808	61.879	158	4.955	5.698
February	665	65.247	75.034	647	63.378	72.885	18	1.869	2.149
March	455	46.028	52.932	425	42.967	49.412	30	3.061	3.520
April	523	38.005	43.706	410	34.115	39.232	113	3.890	4.474
May	158	10.171	11.697	93	7.810	8.982	65	2.361	2.715
June	260	17.667	20.318	165	14.850	17.078	95	2.817	3.240
July	796	42.693	49.097	343	29.756	34.219	453	12.937	14.878
August	1.185	86.324	99.272	816	75.752	87.114	369	10.572	12.158
September	1.653	128.120	147.338	1.484	123.286	141.779	169	4.834	5.559
October	1.558	112.540	129.421	1.558	112.540	129.421	-	-	-
November	1.291	85.687	98.540	1.291	85.687	98.540	-	-	-
December	1.201	87.505	100.631	1.201	87.505	100.631	-	-	-
TOTAL	10.417	778.750	895.563	8.947	731.454	841.172	1.470	47.296	54.391

Note:

- The data would be update in the near future
- The catch of SBT of 2012 is temporary figure

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4. Tuna data collection and statistic in Fisheries management Areas (FMA) 716,715,713,714 and 717 are also improving and strengthening through various activities, training and workshop in collaboration with WCPFC and supervised by SPC. Indonesia under WPEA_OFM phase one recently in 2011 for the first time report to the WCPFC her catch by species and by gear particularly Yellowfin tuna, Bigeye tuna and Skipjack as well the annual catch estimate to the commission and continue in the following year.

Indonesia is an archipelagic country with a huge areas required to monitor including her marine waters. As a member of international community and actively involved in various regional organization including IOTC, WCPFC and CCSBT. Indonesia has continuously improve capacity and system of its data and fishery statistic

Acknowledgement

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