Data Collection System and Tuna Statistical in Malaysia

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ABSTRACT

Tuna landings in Malaysia consist of neritic tuna and oceanic tuna. For neritic tuna, most of the catches were landed in many fishing ports along the coastline. The fishing ports belong to private companies, fishermen association and government agency. For oceanic tuna, the catches were unloaded in Malaysian International Tuna Port(MITP), Penang and in Port Louis, Mauritius. Since 2011, most of the catches were unloaded in Port Louis, Mauritius as all the longline vessels were operating in the southeast of Indian Ocean. For neritic tuna, the information related to catches, efforts and vessels were recorded by the DoF staff at major landing sites. The sampling program is designated so that the samplings activities will represent the minimum requirement for statistical analysis and this is not only for neritic tuna alone, but also for all the species caught by the fishing vessels. For oceanic tuna, catch and effort data submitted monthly by the vessel owner were processed by the staff specialised in tuna fisheries according to the IOTC format. No size data were sample as it is beyond the capacity of the DoF in term of staff and financial aspects. With a close cooperation from the vessel owner, the quality of data recording on oceanic tuna are improving. For neritic tuna data collection, there is still much to improve to satisty the minimum requirement for stock assessment and other statistical analysis.

Introduction

Marine fishing areas in Malaysia can be divided into several sub-areas, west and east coast of Peninsular Malaysia, Sarawak and Sabah waters which include Sulu and Celebes Seas in the east coast. The Straits of Malacca is in the west coast of Peninsular Malaysia which form part of the IOTC area of competence which include the state of Perlis, Kedah, Penang, Perak and Selangor. The Malaysian ZEE in the Straits of Malacca is bordering with the Indonesia toward the west and toward the north it is bordering with the Thailand (Andaman Sea) (Figure 1).

Marine fish production from Malaysian waters was 1,428,881mt had a value of RM 6,651.89 million in 2010. In 2011, production of marine fish had declines by 3.9% to 1,373,105 mt from the previous year. Coastal fisheries has contributed more than 78% of the total marine fish landings and the rest from the deep sea catches beyond 30 nm offshore

From the total annual catch of marines fishes, catch contributed by the deep sea fisheries are still quite low (22%) and therefore the government is aiming to increase the catch from the deep sea and open sea. Tuna fisheries (oceanic and neritic) are one of the targeted fisheries to be developed in near future. The second strategic development plan for tuna fisheries is to be launched before end of 2013.

Trawler, purse seines and drift net were the major commercial fishing gear that contributed significantly to the total landing of marine fish in Malaysia. The species that form a bulk of the catch by the purse seines are mainly scombrids (*Rastrelliger kanagurta, R. brachysoma, R. fauhnii, Thunnus tonggol, Euthynnus affinis, Auxis thazard*) and carangids (*Decapterus spp,, Selar spp, Megalopis cordyla.* Tuna long line is the commercial fishing gear that were used to catch oceanic tuna by the commercial tuna fishing vessels.

Figure 1: Malaysian fishing areas including the Straits of Malacca

Definitions

For the purposes of publishing in fisheries annual statistic, "Tuna oseanik" or oceanic tuna unless otherwise indicated refer to the four species, Yellowfin tuna (*Thunnus albacares*), Bigeye tuna (*Thunnus obesus*), Albacore tuna (*Thunnus alalunga*) and Skipjack tuna (*Katsuwonus pelamis*).

While coastal or neritic tuna "Aya hitam" refer to Longtail tuna (*Thunnus tonggol*), "Aya kurik" refer to Eastern little tuna or kawakawa (*Euthynnus affinis*) and "Aya selasih" refer to Frigate tuna (*Auxis thazard*) and Bullet tuna (*A. rochei*). The actual name of oceanic and neritic tunas species used when filling the IOTC form requirement.

Major Landing Site

Malaysian longline vessels started to operate in the Indian Ocean in 2003 by using tuna longline. The number of vessels gradually increased from 15 (2003) to 58 vessels in 2010 but then decreased drastically in 2011. Before 2011, the oceanic tuna were caught in IOTC area were landed in International Tuna Port (MITP) which is the only port that handles Oceanic Tuna landings from the Indian Ocean. The MITP is located in Penang and it is jointly managed by a private company and government agency (LKIM - Fisheries Development Authority of Malaysia). Starting in 2011, 5 longline from new fishing company started to operate in the southwest of Indian Ocean and they unloaded the catches at the Port Louis, Mauritius

Most of neritic tuna were landed in state of Sabah/Labuan, Sarawak, Perlis, Perak, Kelantan, Terengganu and Pahang. The landing sites are at the LKIM's complexes' that managed by Fisheries Development Authority of Malaysia (LKIM) and some are managed by private sectors.

The Malaysian Fisheries Statistics

The Department of Fisheries (DoF), Malaysia has collected fisheries data since the 1950s. The purpose of this data collection exercise was mainly to produce information for fisheries management and also to produce the annual statistic bulletin.

Since 1970s a more streamlined method has been adopted using standards like the "South-China Sea Programme". In later years more emphasized was given when more samples were collected, more areas were covered, more enumerators were assigned full time, collection data entry forms and methods were standardized and streamlined, more super-vision were given and training were provided to enumerators.

What Fisheries Statistic was collected?

To achieve the mission, vision and also objectives the Department of Fisheries, through the strategies, plan and program need a quality of information on fishery such as effort data, production data, price, value and import and export.

Various agencies is needed to fulfill the requirement in collecting all the data and information. At present, the Department of Fisheries, Marketing Authorities and Custom will gather all the important data.

How the Department of Fisheries collects the fisheries statistic

Each state in Malaysia was divided into fisheries administrative districts (Figure 2). Each fisheries administrative district was assigned at least one full time Fisheries Assistant whose job is as a full time enumerator collecting mainly catch and effort data. Effort data collection was helped by licensing Fisheries Assistance who kept a 'Punch Card' System'. Where Licensing Fisheries Assistance records all licensing transaction such as issuance of new license for vessels, cancellation, renewal, change owner, state, gear-type etc.

Annually the data on the punch card was compiled to produce the annual statistic bulletin and other reports. The data collection was done by every type of gears to catch the fish.

To get the total number of vessel operating, information on active licensing and operating illegal vessel were gathered. These figures will be the multiplying factors to estimate the total landings in the end.

All effort data from District office level will be sorted, calculated and compiled to make a summarize form and sent to state office. In the state office, recheck of the summarized form from all district office will be done by officer in charge before sending it to the Fisheries Headquarters. Data Collection System section in Department of Fisheries will be responsible in publishing the annual fisheries statistic.
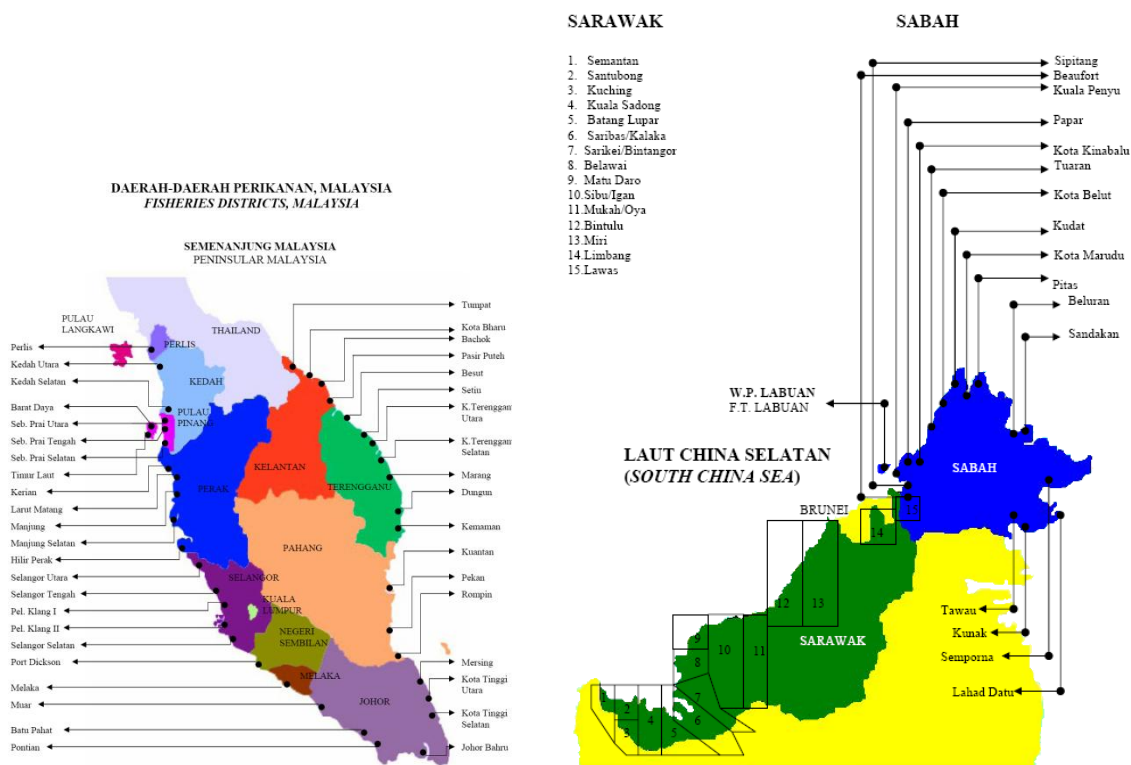
Figure 2 . Fisheries administrative district in Malaysia

How the data from LOV (Landing Operation Vessels) were collected.

The Department of Fisheries Malaysia had identified 3 main holistic monitoring components of fishing vessels:

1) Information on vessels' operation.

   The information will be gathered through "Landing Operation Vessel" (LOV) and it will be organized as fisheries data collection programs.

2) Vessel monitoring

   These monitoring is through "Vessel Monitoring System" (VMS) which were attached to the vessels categorize for >70 GRT.

3) Monitoring entrepreneurship level.

TUNA CATCH DATA

1.   Tuna catch from national waters

Tuna (neritic and oceanic) tuna in Malaysian EEZ were caught mainly by purse seines, trawlers handlines, and dirft nets. The catch and effort data were collected, processed and analysed similar to as other fishing gears and species. For tuna longline vessels operating beyond Malaysian EEZ, both logbook and LOV are required for the vessel operators to submit the report to the Malaysian Fisheries Authority.

2.   Tuna catch in Indian Ocean

For all tuna that were caught in the Indian Ocean, their catches were unloaded at the MITP, Penang. The landing data were recorded by the LKIM. (Fisheries Development Authority of Malaysia) and the vessel owners also provide the final landing record to the LKIM. The LKIM will then submit all the necessary catch reoord to the DoF.

When oceanic tuna landing activities were in the MITP (Malaysia International Tuna Port), the permanents staff from the DoF had conducted regular sampling including measured of length frequency. At present, a total of 5 Malaysia tuna vessels were operating in the southwest of the Indian Ocean and unloading their catches in Port Louis, Mauritius. Since 2012, all the Malaysian vessels unloaded their catch in Mauritic and no unloading by the Malaysia longline vessels at the MITP Penang, Malaysia.

The landing report were directly send to Department of Malaysia and all the data transform and analyzed according the IOTC requirement .

Sampling for neritic tuna and other tuna-like species is under the responsibility of Fisheries Information Management Division. Their sampling program covers all landing sites and fishing ports along the west coast of Peninsular Malaysia for the vessels operating in the Malaysian Fisheries waters.

Conclusions

Department of Fisheries has issued annual fishery statistics since 1950s. Improvement of statistical methods of data collection and coordination of data processing from the district level before reaching the headquarters of fisheries has resulted in better statistics. LOV and used of VMS on vessels has helped in the improvement of data collection to be more systematic. Production of annual statistics are very useful and can help in analyzing the stock assessment and thus can assist management in managing the country's fisheries sustainably.

Annual statistics for oceanic and neritic tuna are also available in the same annual statistics. To meet the needs of IOTC, the department also sent a catch and landing information of oceanic and neritic tuna to the IOTC every year ever since Malaysia has become a member of IOTC.

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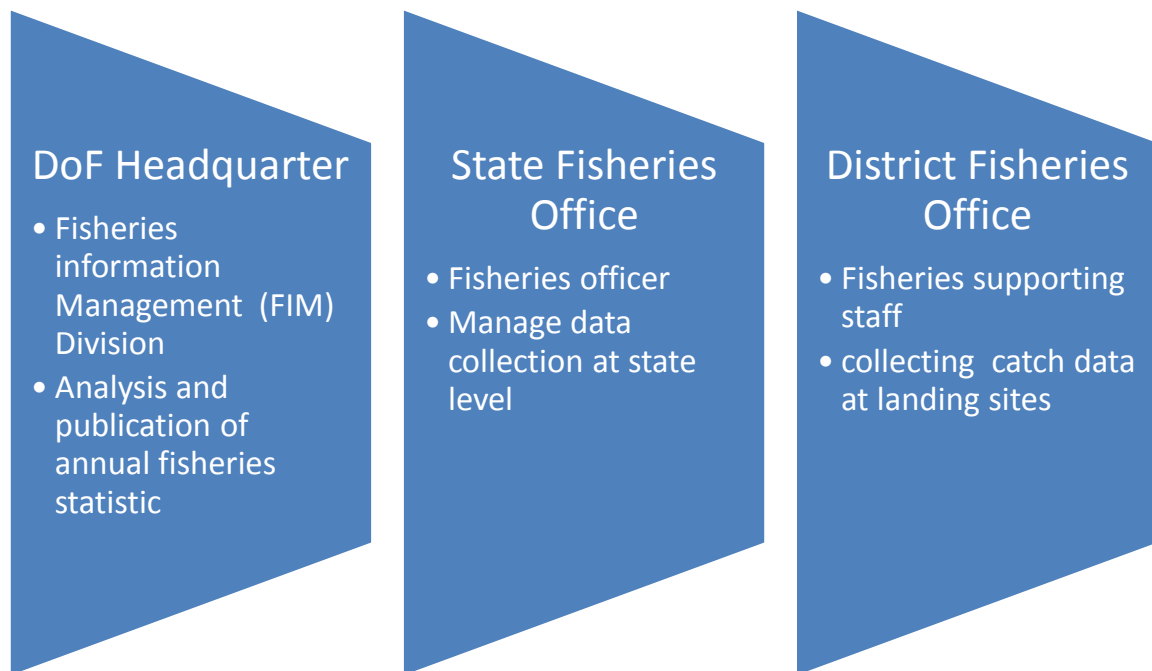Anon. 2010. Annual Fisheries Statistic, Department of Fisheries, Malaysia

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APPENDIX I

FLOWCHART:
MANAGEMENT OF FISHERIES INFORMATION

DoF Headquarter
- Fisheries information Management (FIM) Division
- Analysis and publication of annual fisheries statistic

State Fisheries Office
- Fisheries officer
- Manage data collection at state level

District Fisheries Office
- Fisheries supporting staff
- collecting catch data at landing sites

APPENDIX II

List type of fishing gears in Annual Fisheries Statistic of Malaysia
1) Trawl Nets
2) Seine Nets
3) Purse Seine Fish
4) Purse Seine Anchovy
5) Other Seine
6) Gill/ Drift Nets
7) Lift Net
8) Traps
9) Stationary
10) Portable
11) Hock & Line
12) Bag Nets
13) Push/Scoop Nets
14) Barrie Nets