Received: 17 June 2014

Evaluating catches by FAD and Free School Purse Seiners in the West Coast of Malaysia

By

Sallehudin Jamon
Samsudin Basir
Effarina Mohd Faizal Abdullah

Capture Fisheries Division, FRI Kampong Acheh, 32000 Sitiawan, Perak, MALAYSIA

ABSTRACT

The catches of neritic tuna in the west coast of Peninsular Malaysia (Strait of Malacca) were about 50% of the annual neritic tuna landing in Malaysia. Compared to 2012, the landings of neritic tuna in 2013 from the west coast decreased to 18,200mt from 24,200mt. Nearly 96% of the neritic tuna landings contributed by purse seiners with two main species longtail and kawakawa with the overall ratio of 3:2. There are two types of purse seiners vessels in the west coast; purse seiners using FAD (FAD purse seiners) and free school purse seiners (FS purse seiners). The average catch rates of FAD purse seiners and FS purse seiners were estimated at 2,100 kg/day and 1,769 kg/day respectively while the percentage of neritic tuna caught by the FAD purse seiners to FS purse seiners 47% and 40% respectively. Species composition from these two type of purse seiners especially ratio trend of longtail and kawakawa were also analyzed to determine possible effect of FAD on neritic tuna catch composition.

Key words: FADs, Purse Seiner, Longtail, Kawakawa, Catch Rate

INTRODUCTION

Fisheries area in Malaysia can be divided into several sub-regions, namely the West Coast and East Coast of Peninsular Malaysia, Sabah and Sarawak (Figure 1). The Straits of Malacca is located on the West Coast of Peninsular Malaysia and in the north it overlooks the Andaman Sea and the Indian Ocean. Perlis State is the main landing spot for neritic tuna followed by Kedah, Pulau Pinang, Perak and Selangor.

Perlis has its advantage in neritic tuna fisheries as it has deep waters fishing areas which also facing an Andaman Sea and Indian Ocean

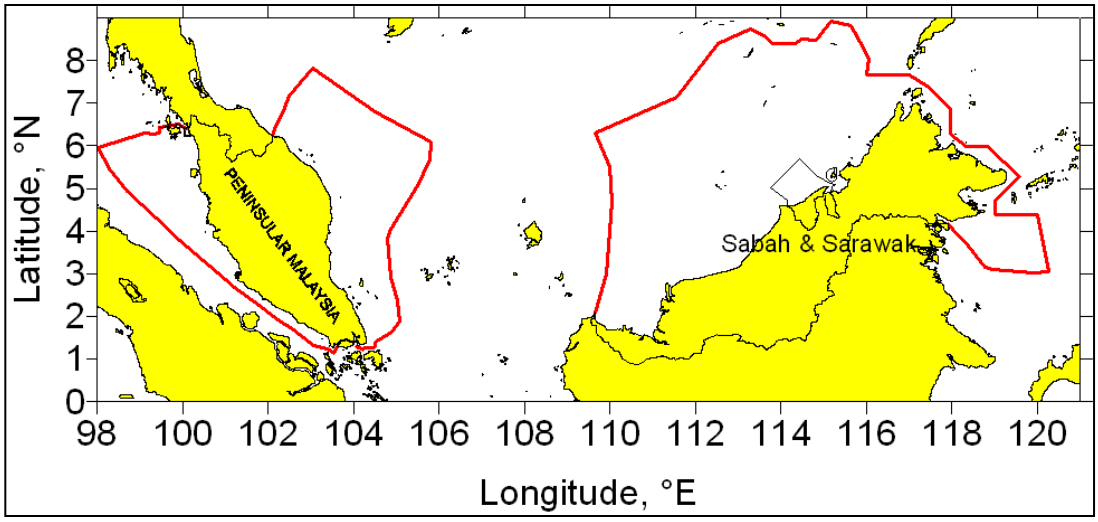

Figure 1 : Malaysia EEZ area

In 2012, total marine landing had increased by 7.22% from 1,373,105 tonnes in 2011 to 1,472,240 tonnes. Inshore fisheries contributed 63.82% and 59.54% in terms of quantity and value to the national food fish sector while deep-sea fisheries contributed only 18.88% and 15.77% respectively in terms of quantity and value.

The inshore landings recorded a slight increase by 4.62% from 1,085,965 tonnes in 2011 to 1,136,182 tonnes in 2012. Landings from the deep-sea fisheries sector also recorded an increase of 17.04% from 287,140 tonnes in 2011 to 336,057 tonnes in 2012. Pelagic fish contributed the highest landings with 562,732 tonnes or 38.22% from the total marine landings in Malaysia, followed by landings of demersal fish with 324,224 tonnes (22.02%) and the rest are from landings of molluscs, crustaceans and others.

This paper try to evaluate a preliminary finding of the catches by the purse seiners >70 GRT operating by using a FAD and those that hunting the free school tuna.

Neritic Tuna Fisheries

Neritic tuna species were part of the small pelagic fish which contributed 4 – 5 % to the total marine landings. The main neritic tuna species found in Malaysian waters

were longtail (*Thunnus tonggol*) and kawakawa (*Euthynnus affinis*) and frigate tuna (*Auxis thazard*). Although the percentage is small, neritic tuna landings in the west coast of Peninsular Malaysia contributed about USD 30 million in terms of value.

Generally, neritic tuna were caught by purse seines, trawl nets, drift/gill nets and hook and lines. Purse seines were the main fishing gears followed by trawl nets and for drift/gill nets and hook and lines. Tuna fishing activities by purse seiners in the western coast of Peninsular Malaysia are of two types, namely with the use of FADs and also without FADs or free searching (Free School).

Catches of Neritic Tuna in the Malacca Straits

In 2013, nearly 50% of neritic tuna landings in Malaysia came from the Straits of Malacca which are facing the Andaman Sea. The rest of the landings come from the East Coast of Peninsular Malaysia, Sabah and Sarawak. Neritic tuna landings in West Coast Peninsular Malaysia showed increasing landings from 2001 until 2012. However, the landings decreased by 25% in 2013 compared to 2012. (Figure 2). The significant decrease in neritic tuna landings were observed in Perak and Perlis, at which they decreased by 38% and 26% respectively compared to 2012.

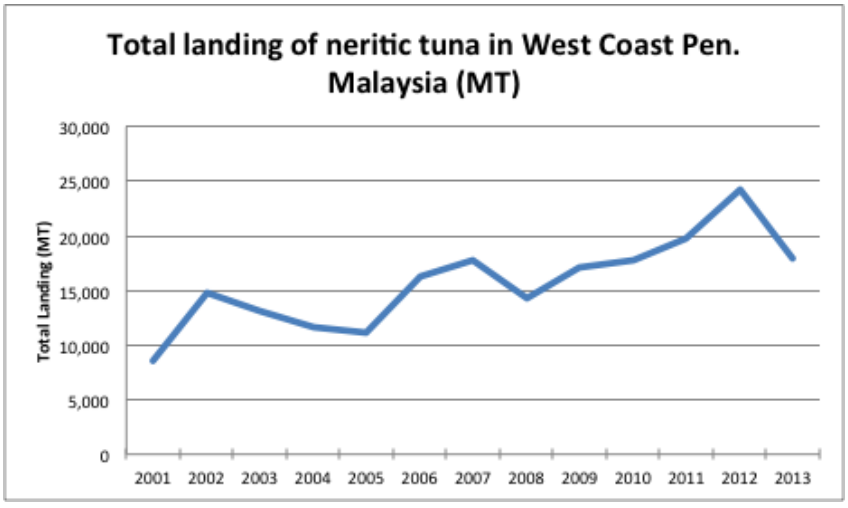

Figure 2: Landings of neritic tuna in West Coast of Peninsular Malaysia from 2001-2013

Monthly landings of neritic tuna in the Malacca Straits is shown in Figure 3. Throughout the monthly landings from January until September, the catch of longtail species surpassed kawakawa species, but there was a sudden increased of

kawakawa species in October and November over longtail and followed by a sharp decreased in following month. A sudden fluctuation of significant landing of kawakawa species was never happen before and this type of event might need some explanation and this could by referred to other regional landing trends in the Andaman Sea areas such as in landing trend in Phuket. The State of Perak recorded the highest catches of neritic tuna compared to the rest 3 States with kawakawa species formed the highest composition (Figure 4). In addition, the state of Perak recorded the highest landings of neritic tuna in 2012 and 2013 compared to the state of Perlis. The highest catch of neritic tuna in Perak state contributed by the higher number of purse seiners >70 GRT with 176 registered vessels compared to Perlis only 56 registered vessels. However, the average CPUEs by Perlis purse seiners were much higher than Perak with 190 tons/boat by Perak purse seiners compared to only 46 tons/boat by Perak purse seiners.

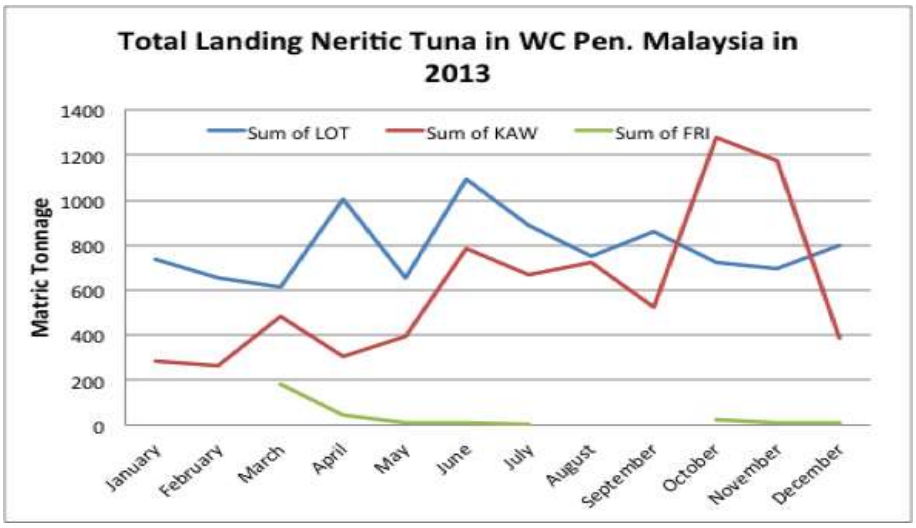

Figure 3: Monthly landings of neritic tuna by species in west coast of Peninsular Malaysia

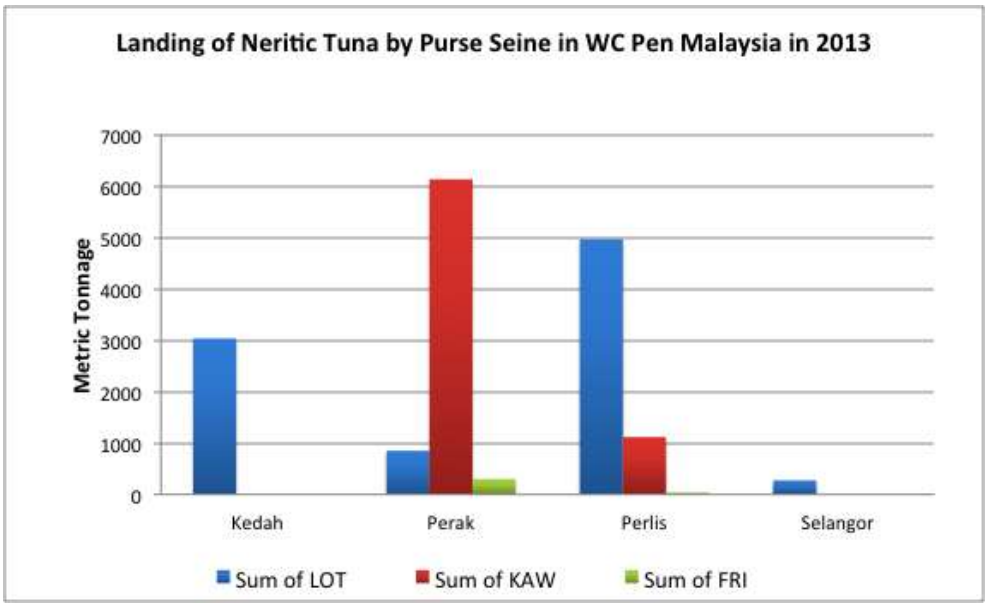

Figure 4: Landings of neritic tuna in West Coast of Peninsular Malaysia

FISH AGGREGATING DEVICES (FADs)

FADs were used to facilitate and increase efficiency to catch the pelagic fish. The FADs normal set in areas with depths exceeding 40 meters. The FADs are made of coconut leaf and anchored by several concrete sacks. Most of the FADs are maintained and some of the owners employed fishermen to look after their FADs to prevent stealing or encroached by other fishermen. Most areas with sufficient depth were located in the northern most of Malacca Strait. The larger purse seiners (>70 GRT) can only operate in areas beyond 30nm from the shore as stated under the Zoning Regulation by the Fisheries Authority. Normally the larger purse seiners were operating in locations confine to the areas within the EEZ as shown in Figure 5. There were cases where the purse seiners from Malaysia and Thailand encroaching into the fishing areas beyond their respective EEZ (Jamon, S. and Basir, S., 2013). This happened as the common fishing areas for larger purse seiners are within the border of Malaysia, Thailand and Indonesia.

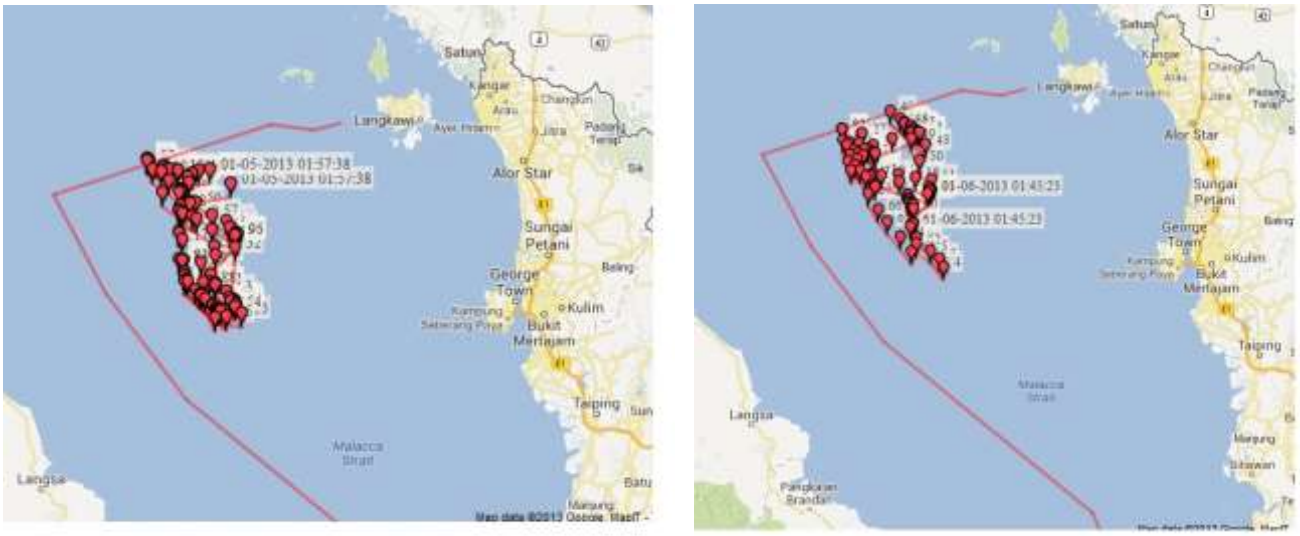

Figure 5. The common fishing areas by purse seiners > 70 GRT in the Malacca Strait.

CPUEs and Catch Composition

Fishing efforts were estimated using number of day at sea. The efforts information was recorded by the vessel crew in VOR (vessel operation report) form that resemble logbooks and which have to be submitted to the State Fisheries Office as part of the licensing rules. The catches and efforts data from the FADs and FS purse seiners were collected from the fishermen in Kuala Perlis. The data were collected from a total of 85 trips by FAD and FS purse seiners > 70GRT. The small collection of catch and efforts data were analyzed to determine any significant different in CPUE and catch composition between the FAD purse seines and FS purse seines.

Average number of days at sea for FADs and FS purse seiners were 5 and 4 days respectively. The total catch of all species by the FADs purse seiners were much higher that the FS purse seiners and the average CPUE by FAD purse seines and FS purse seiners were 2.1 tons/tds (ton/ number of days at sea) and 1.76 ton/tds respectively. For neritic tuna species, the average CPUE of FADs purse seiners was slightly higher than FS purse seiners at 0.99 ton/tds and 0.715 ton/tds for the later.

Table 1 showed the difference in composition of most common species caught by the FAD purse seines and FS purse seines. *Pampus sp.* and *Ilisha elongata* were the two species rarely found in the catch by FS purse seines. The FAD purse seines caught large amount of neritic tuna, but in term of percentage FS purse seines the catch by FS purse seines were slightly higher than the FAD purse seines. In general, there were not much different in catch composition by the two purse seines. Percentage of mix fish in the catch composition is high at 9% -11% than the total number of catches. Mix species consists of various species of pelagic fish that have are small in size.

Table 1: Average CPUEs and species composition of the FAD PS and FS PS. CPUE (kg/day at sea)

	FAD		FS	
SPECIES	CPUE	Percentage	CPUE	Percentage
Neritic tuna	988.03	9.95	715.52	12.92
Rastrelliger brachysoma	101.62	6.09	103.45	7.74
Rastrelliger kanagurta	170.23	3.74	143.97	6.28
Caranx sp	56.31	2.65	8.62	4.51
Priacanthus macracanthus	143.04	3.63	34.48	9.03
Decapterus sp	193.20	3.98	150.86	8.78
Scomberomorus sp	6.80	1.49	24.14	6.32
Sardinella	21.68	2.85	198.28	12.98
Squid	2.27	0.75	4.31	2.26
Pampus sp	119.09	19.63	-	-
Ilisha elongata	58.25	38.41	-	-
Megalaspis cordyla	45.31	4.27	159.48	9.28
Sphyraena sp	-	-	25.86	13.54
Elagatis bippinulatus	-	-	4.31	2.26
Mix spp	186.73	2.57	196.55	4.12

CONCLUSIONS

Results from analysis of catch and effort data of FAD and FS purse seines vessels from Kuala Perlis (the State of Perlis) were considered preliminary as they involved only limited size of data and covered within a short period of time. Further study is essential that will cover a long period of data collection and from large number purse

seine vessels (>70 GRT) from states along the Malacca Straits. The study will determine the difference in catch composition and CPUEs especially for small tuna species such as longtail and kawakawa in the Malacca Straits and south of Andaman Sea. Since May 2014, the data collection on catch and effort, size frequency from different purse seine vessels operating with FAD and FS landing at Kuala Perlis have started.

REFERENCES

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