

Neritic Tunas from Purse Seine Fishery in the Andaman Sea Coast of Thailand, 2012

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Abstract

Neritic tuna in the Andaman Sea was caught mainly from purse seine fishery, namely Thai purse seine (53.12%), light luring purse seine (19.76%) and purse seine with aggregating devices (15.20%). Operate net made from black nylon with mesh size as 2.5 cm. The peak of fishing season for neritic tunas took place during Northeast monsoon season. The fishing grounds were distributed along the coast at 30-80 m depth of water.

The species composition was found four species, namely kawakawa (*Euthynnus affinis*) 8.11%, longtail tuna (*Thunnus tonggol*) 5.31%, bullet tuna (*Auxis rochei*) 3.73%, frigate tuna (*Auxis thazard*) 2.95% of total catch from purse seiners. Thai purse seine caught *T. tonggol* (39.49%), *E. affinis* (6.09%), *A. thazard* (4.67%) and *A. rochei* (2.87%). Light luring purse seine caught *A. affinis* (9.28%), *A. rochei* (4.35%), *A. thazard* (3.09%) and *T. tonggol* (3.04%). Purse seine with aggregating devices caught *A. affinis* (6.79%), *A. rochei* (4.37%), *A. thazard* (2.43 %) and *T. tonggol* (1.61%).

CPUE of purse seiner during January to July 2012 was 412.68 kg/day. The peak of CPUE was from March to May. CPUE of kawakawa, longtail tuna, bullet tuna and frigate tuna was 261.68, 141.87, 120.33 and 70.85 kg/day, respectively

Size distribution of neritic tunas from each fishing gears was studied and presented in this paper. Thai purse seine was caught the bigger size of neritic tunas than other gears.

Introduction

In Thailand, neritic tunas were exploited by variety of fishing gears. The main fishing gears used for catching neritic tunas were the purse seines and king mackerel drift gill net. In the past fisher used small purse seines and traditional fishing gears for the small pelagic fish species in coastal areas. At present fishing gears and techniques are developed by using light luring techniques, FADs and advance technology fish finder equipment.

Neritic tunas are gaining more important economically species. They had become the main target species for Thai fishermen since 1982 because of attractive prices offered by tuna canneries. Catch of marine fishery in report of Department of Fisheries statistics showed the total catch of neritic tunas in Andaman sea was 10,711 tons in 2008 and increase to 11,861 tons in 2009 (DOF, 2009 and 2010). The rapid development may lead to the deterioration of neritic tunas fisheries in Thailand. Thus, the studies on tuna stock urgent in finding out the current problems, situation occurred and status of neritic tunass in Thailand.

DOF of Thailand has concerned on the importance of neritic tunas, consequently the research project on "Nertic Tuna Resources in Thai Waters" has been conducted during 2011-2013.

Materials and Methods

Port sampling in Ranog, Phang Nga, Phuket, Krabi, Trang and Satun provinces. has been conducted to collect biological data of nertic tunas, e.g species composition, fishes were random to measured the individual body weight (kg), fork length (cm) during Janyary to July 2012. For fishing data, e.g catch (metric ton), effort (number of trip), fishing areas, number of hauls were taken by interviewed from fishing master.

Fishing gears and fishing ground

Purse seines of neritic tunas fishery along the Andaman sea coast of Thailand are basically classified in to 3 main types namely, Thai purse seine (TPS), light luring purse seine (LPS) and purse seine with fish aggregating devices (FADs) and Tuna purse seine (TUN), this fishing gear was rarely found. Fishing boats are 21-25 m LOA with 500-525 hp of power engine showed in Figure 1.



Figure 1 Purse seines in Andaman sea coast of Thailand

Three types of purse seine use same type of net: black nylon with mesh size 2.5 cm, length of net 1,000-2,000 m, depth of net 100-150 m (Figure 2). The difference of TPS, LPS, and FADs was classified that TPS caught fish by purse seine and using fish finder, such as eco-sounder and sonar to detect fish school. While LPS and FADs caught fish school by purse seine and using one or two light-luring boats to aggregated fish. LOA of this boat ranged 14-16 m, using 100-150 hp of power engine and 40 kw of electric generator with 50-56 lamps of 400-500 w (Figure 3). The FADs caught fish by using fish aggregating devices and light luring boat. Fish aggregating devices constructed of bamboo poles, rope and coconut leaves fastened to a concrete block (Figure 4). The fishing method of TPS, LPS and FADs are showed in Figure 5.



Figure 2 Fishing net of purse seines in Andaman sea coast of Thailand



Figure 3 Light luring vessel for aggregated fish school of purse seines



(A) Bamboo poles

(B) Concrete block



(C) Coconut leaves

Figure 4 Construction of FADs; bamboo poles (A), concrete block (B) and coconut leaves (C)

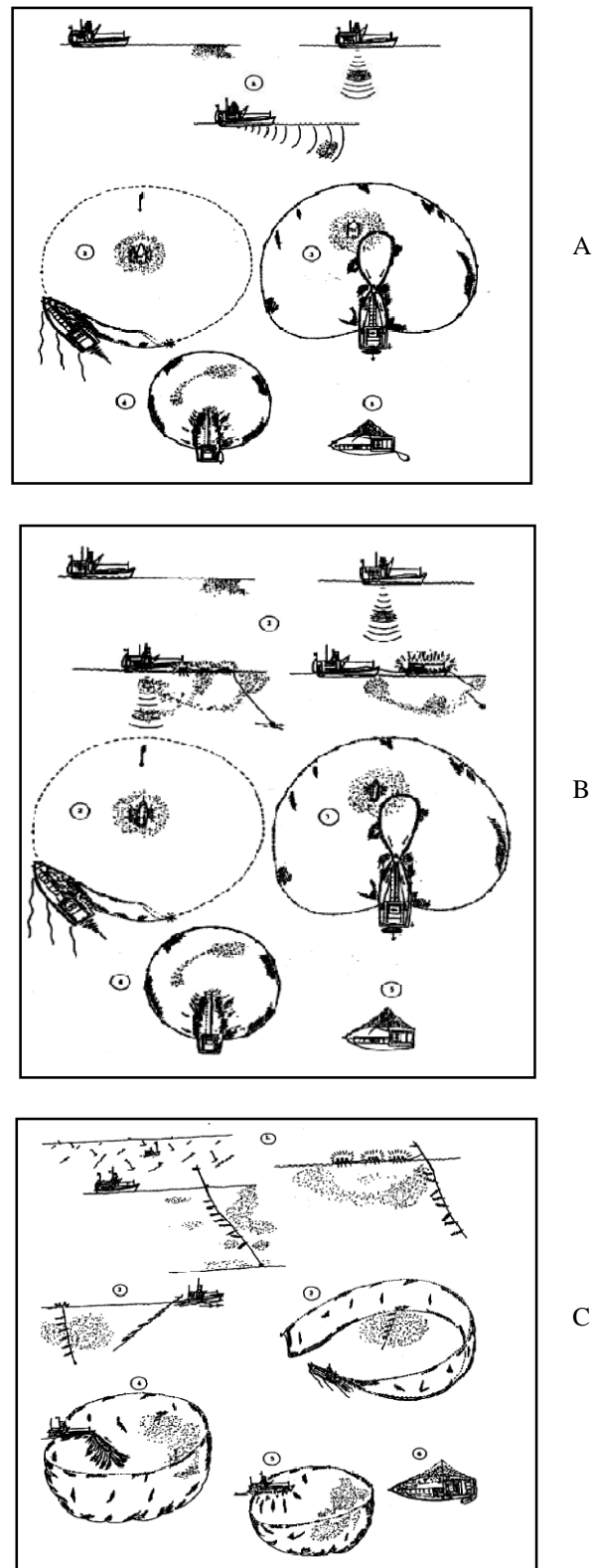


Figure 5 Fishing operation of TPS (A), LPS (B) and FADs (C) in Andaman sea coast of Thailand
source: Masatake *et al.*,1986

The fishing grounds were distributed along the Andaman Sea Coast. Whereas, the main fishing ground of LPS and TPS were found along the coast of Ranong, Phang-nga, Phuket and Krabi provinces, while FADs was operated in Phang-nga province and Trang and Satun provinces at 30-60 m depth (Figure 6). Boonragsa (1990) reported, fishing ground of neritic tunas was distributed over the offshore and along the coast, depth of water more than 40 m. The fishing season was all year round where the highest season was during November to May.

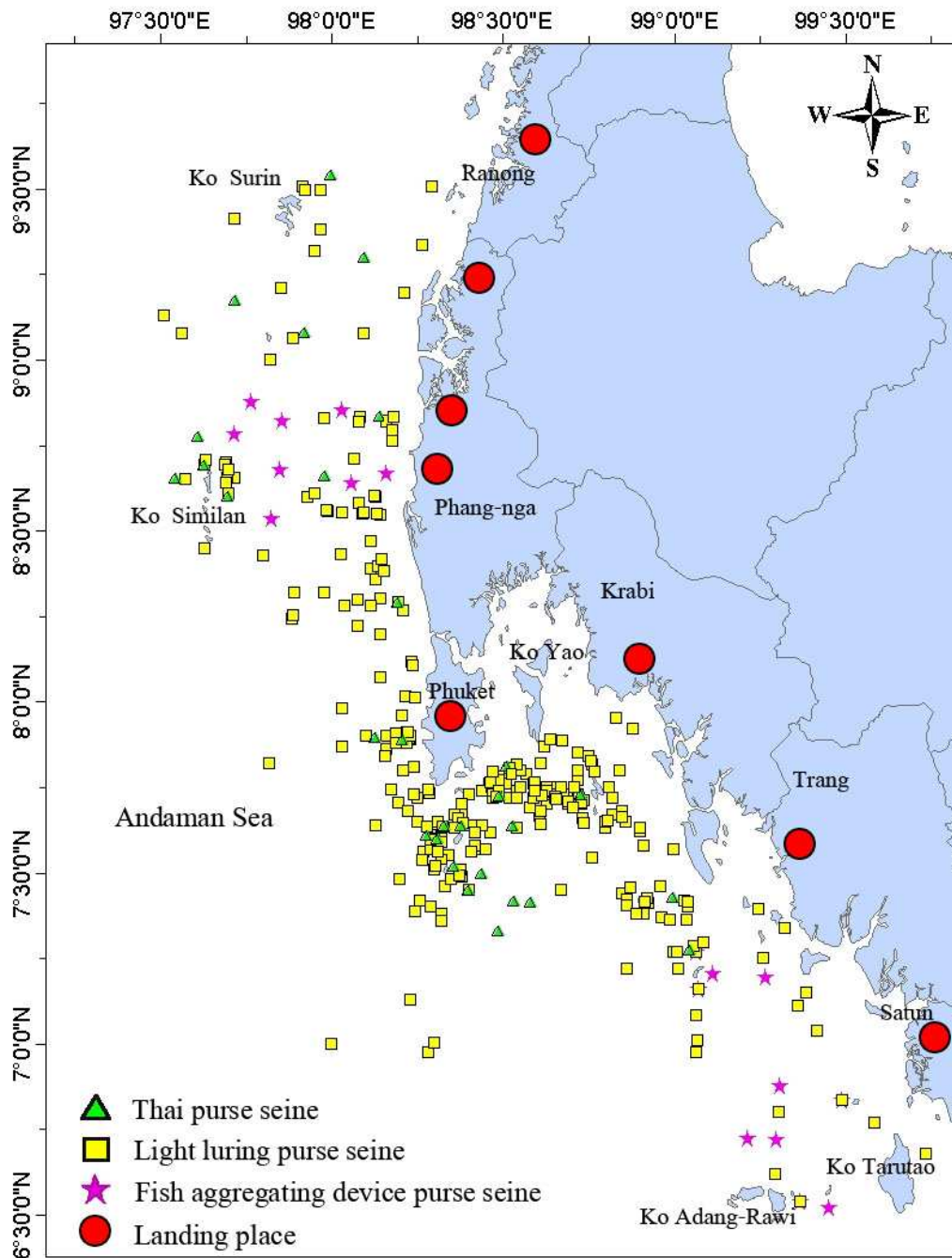


Figure 6 Sampling area and fishing grounds of neritic tunas by type of gears along the Andaman Sea Coast of Thailand

Species composition

Neritic tunas are pelagic species which are widely distributed throughout tropical waters. Four species of commonly found in the Andaman sea coast of Thailand, namely kawakawa (*Euthynnus affinis*), longtail tuna (*Thunnus tonggol*), bullet tuna (*Auxis rochei*) and frigate tuna (*Auxis thazard*).

The percentage of neritic tuna was 20.10 of total pelagic fish from purse seine. Eastern little tuna was the main composition 8.11%, followed by 5.31%, 3.73% and 2.95%, respectively (Figure 7).

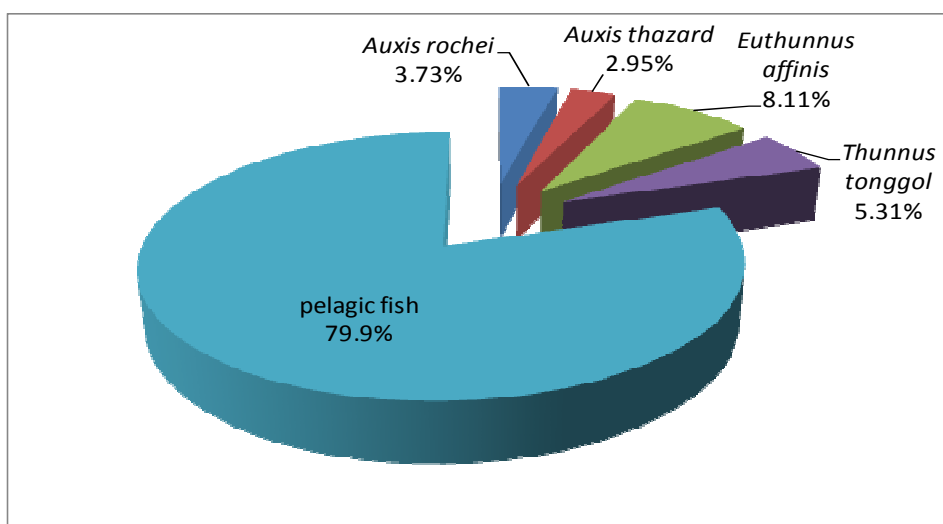


Figure 7 Percentage of neritic tunas caught by purse seiner along the Andaman sea coast of Thailand in January to July 2012

Figures 8-10 show species composition of neritic tunas by fishing gears. TPS caught longtail tuna (39.49%), kawakawa (6.09%), frigate tuna (4.67%) and bullet tuna (2.87%). LPS caught kawakawa (9.28%), bullet tuna (4.35%), frigate tuna (3.09%) and longtail tuna (3.04%). FADs caught kawakawa (6.79%), bullet tuna (4.37%), frigate tuna (2.43 %) and longtail tuna (1.61%).

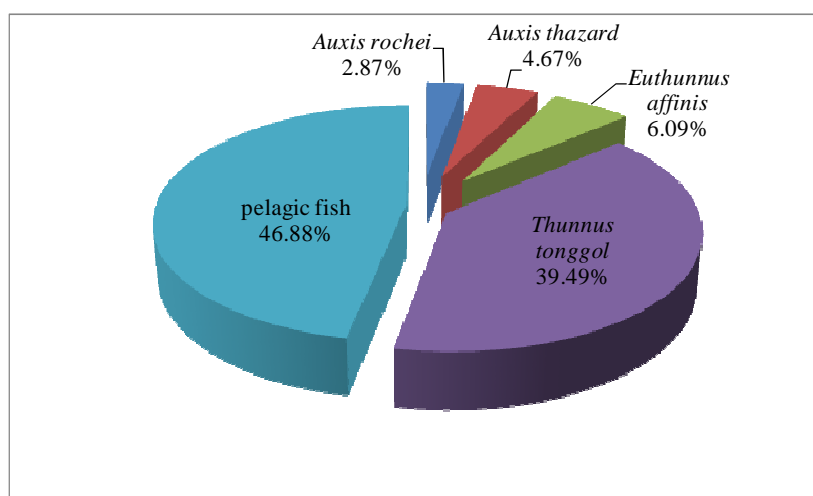


Figure 8 Percentage of neritic tunas caught by TPS along the Andaman sea coast of Thailand in January to July 2012

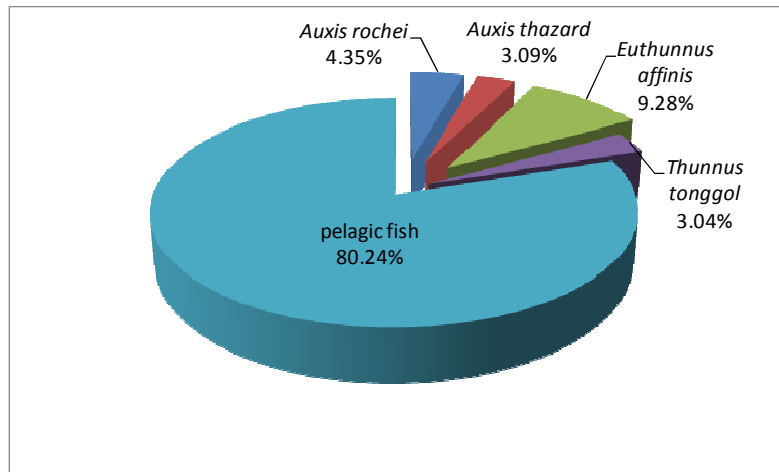


Figure 9 Percentage of neritic tunas caught by LPS along the Andaman sea coast of Thailand in January to July 2012

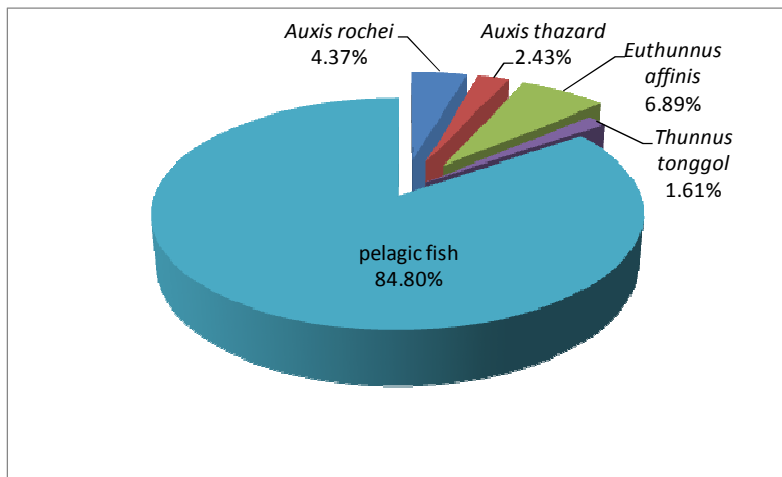


Figure 10 Percentage of neritic tunas exploited by FADs along the Andaman sea coast of Thailand in January to July 2012

Catch per unit effort

Catch per unit effort (kg/day) from TPS, LPS and FADs shows in Table 1. The peak of CPUE shows during March (578.0 kg/day) to May (1019.42 kg/day). Kawakawa was the highest abundance from January (309.57 kg/day) to June (272.02 kg/day), especially in May (541.3 kg/day). Following by longtail tuna shows the highest CPUE in March (290.62 kg/day), bullet tuna caught the highest in April (394.54 kg/day), and frigate tuna found high CPUE in February (156.45 kg/day).

Table 1 Catch per unit effort of neritic tunas caught by purse seine during January to July 2012

Species	CPUE (kg/day)							
	January	February	March	April	May	June	July	Average
<i>Auxis rochei</i>	10.12	25.65	61.65	394.54	243.23	51.17	55.93	120.33
<i>Auxis thazard</i>	136.57	156.45	27.12	69.65	18.89	29.31	57.97	70.85
<i>Euthynnus affinis</i>	309.57	152.60	198.62	272.53	541.30	272.02	85.12	261.68
<i>Thunnus tonggol</i>	36.67	135.61	290.62	74.33	216.01	91.02	148.80	141.87
Total	492.93	470.31	578.00	811.06	1019.42	443.52	347.82	412.68

Size composition

-Longtail tuna

Size distribution ranges from 16.0-50.0 cm in the fork length from all fishing gears. The average size from TPS was 23.14 cm, while modes of length were 34.0-37.0 cm and 40.0-46.6 cm. LPS caught the average size 26.01 cm, whereas modes of length were 20.0-22.0 cm, 28.0-31.0 cm and 42.0-45.0 cm. FADs caught the average size 32.05 cm, while modes of length were 27.0-34.0 cm and 42.0-44.0 cm (Figure 11).

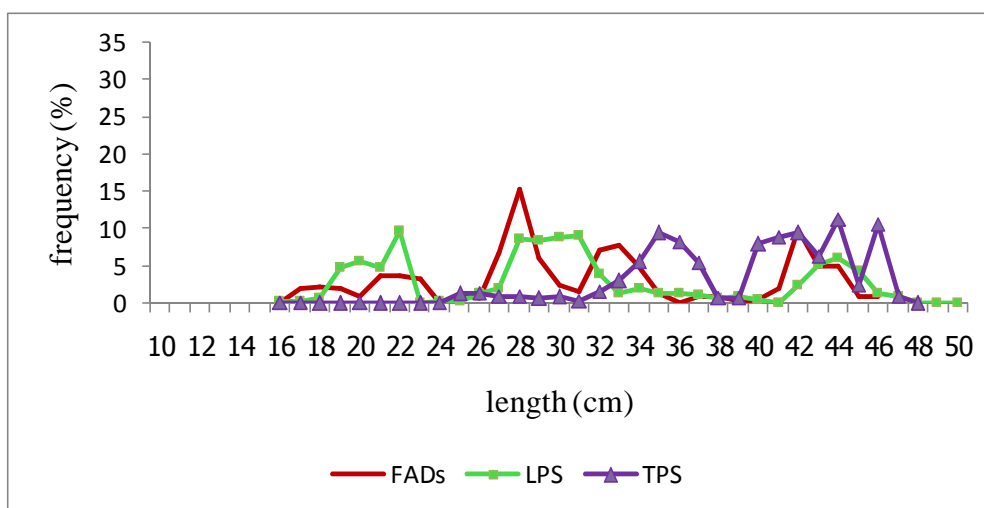


Figure 11 Length frequency of longtail tuna caught by purse seiner during January to July 2012

-Kawakawa

Figure 12 show the size distribution, which fork length varied from 16.0-50.0 cm of all fishing gears. The average size from TPS was 29.38 cm, while modes of length were 23.0-25.0 cm and 27.0-30.0 cm. LPS caught the average size 28.71 cm, whereas modes of length were 20.0-32.0 cm, 46.0-49.0 cm. FADs caught the average size 26.01 cm, while modes of length were 20.0-25.0 cm and 28.0-31.0 cm (Figure 12).

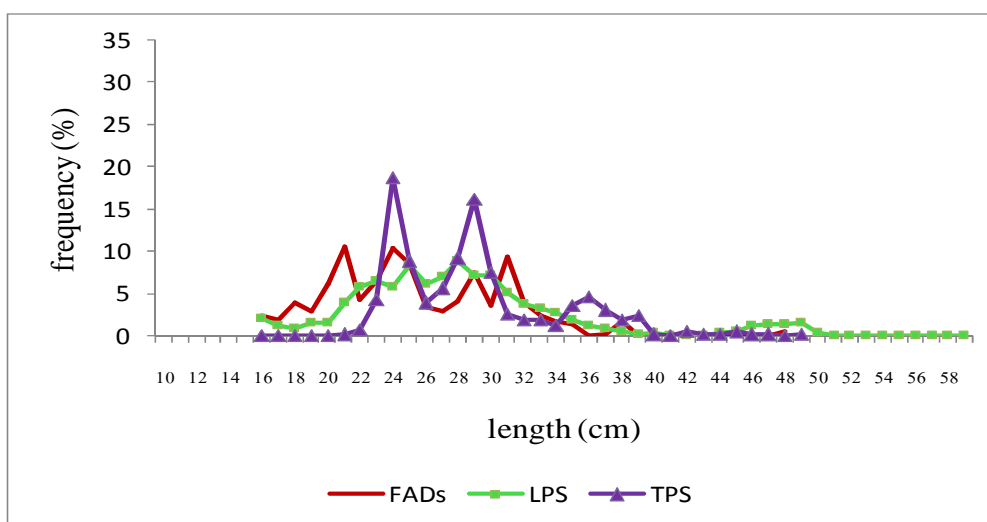


Figure 12 Length frequency of kawakawa caught by purse seiner during January to July 2012

-Frigate tuna

Size distribution varied from 24.0-37.0 cm caught by all fishing gears, average size and major modes that caught by TPS, LPS and FADs was 34.34 cm (31.0-37.0 cm), 29.56 cm (21.0-27.0 and 27.0-33.0 cm), and 27.74 cm (18.0-22.0 and 24.0-27.0 cm), respectively (Figure 13).

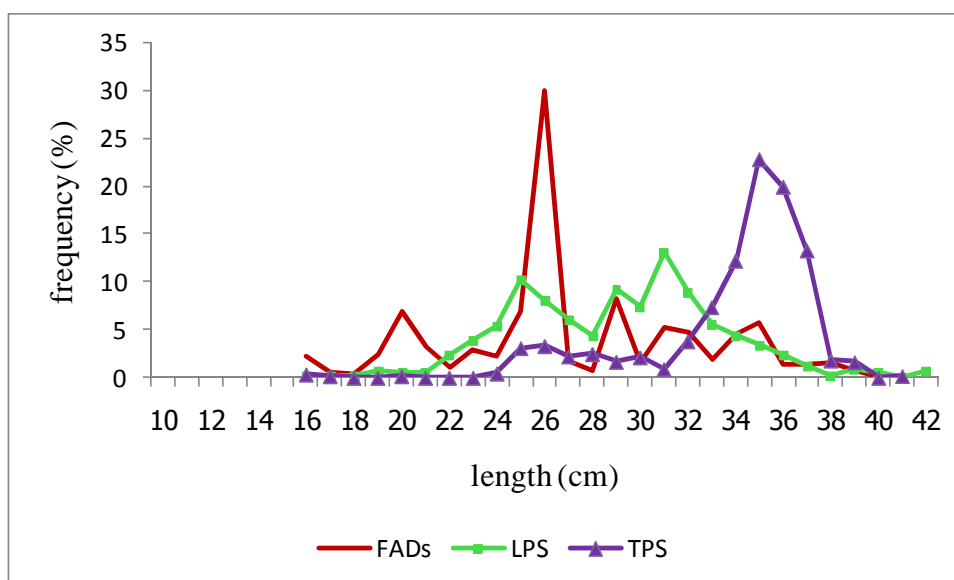


Figure 13 Length frequency of frigate tuna caught by purse seiner along the Andaman sea coast of Thailand in January to July 2012

- Bullet tuna

Size distribution varied from 16.0-27.0 cm, average size that caught by TPS, LPS and FADs was 22.56 cm, 23.14 cm and 22.60 cm, major modes of total length was 31.0-37.0 cm, 16.0-27.0 cm and 19.0-25.0 cm, respectively (Figure 14).

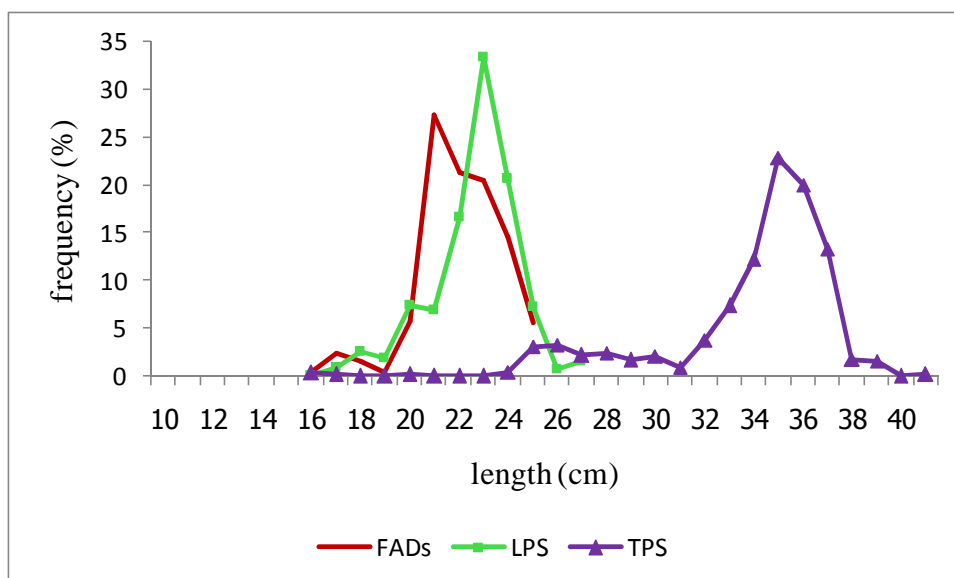


Figure 14 Length frequency of bullet tuna caught by purse seiner along the Andaman sea coast of Thailand in January to July 2012

The result from size composition of neritic tunas showed that big size of bullet tuna, frigate tuna are caught from TPS and LPS while FADs caught the big size of longtail tuna. Same as the previous study from Boonragsa (1990) reported neritic tunas caught by LPS appeared to be smaller than those caught by TPS.

Recommendation

This report is a part of the project “Nertic Tuna Resources in Thai Waters” that collected data from January to December 2012. The project will study on fisheries biology and stock assessment of neritic tuna in Thai waters. This project will fulfill the constrain information and neritic tuna status in the Andaman Sea.

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