Fishing Ground and Abundance Distribution of Kawakawa (*Euthynnus affinis*) by Purse Seiner Fisheries along the Andaman Sea Coast of Thailand, 2016

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Abstract

The fishing ground of purse sein which operated in the Andaman Sea Coast of Thailand was distributed typically in the area, and all of them was set the net outside the artisanal coastal area. The most of the fishing ground has a depth in the range of 40-80 meter, and it usually closed to their home or fishing port. Moreover, there was specifics area for FADs purse seine where in the west of Ranong, Phang-nga and Satun province. Kawakawa has an overall CPUE 111. 06 kg/day. There were not different on abundance in each area although the highest CPUE occurred in area 3 as 120.05 kg/day which followed by an area of 2, 4 and 1 as 112.97, 111.84 and 94.76 kg/day respectively. However, it was cleared that CPUE during the North-East monsoon (October – May) was higher than the South-West monsoon.

***Keywords*:** Kawakawa, abundance distribution, purse seiners, Andaman sea coast of Thailand

Introduction

In the Andaman Sea Coast of Thailand 2016, there were 6,689 tons of neritic tuna were loaded and most of them around 98.70% were caught by purse seine fisheries while the total catch for this kind of gear was 140,533 tons. The most proportion of fish which were caught by pure sein was round-scads (*Decapterus* spp.) and followed by mackerel (Scombridae) and trevallies (Carangids) as 26.30, 15.09 and 9.62% while neritic tuna has a little proportion was 4.70%. The total of the neritic tuna can be categorized to four species, Kawakawa 4,397 tons (66.60%), Frigate tuna 1,106 tons (16.75%), Longtail tuna 1,094 tons (16.57%) and Bullet tuna 5 tons (0.08%) (DOF, personal contact).

The study on stock assessment of pelagic fish in 2015 found that the current fishing effort is over about 16.5%. For a reason, Thailand has established the day scheme regulation to limit the fishing effort of purse sein to 235 days per year instead of free access to marine resources (DOF, 2015).

The registered purse seine in the Andaman Sea Coast of Thailand during 2009-2014 fluctuated between 208 to 349 fishing vessels. The lowest number occurred in 2008, and the highest was in 2012. After the new Royal Ordinance and the limited in the fishing effort were used in 2015, the number of purse seine vessel was slightly decreased in 2015 and 2016 (compared with 2014), but the total catch of neritic tuna was decreased significantly from 10,938 in 2015 to 6,689 tons in 2016.

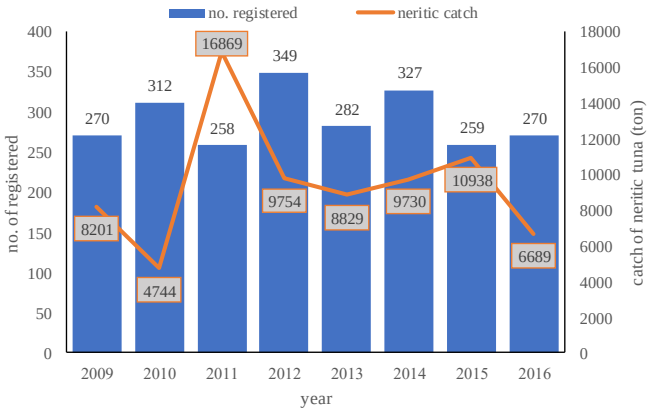


Figure 1 Number of purse seine registered and catch of neritic tuna along the Andaman Sea Coast of Thailand year 2009-2016 (DOF, 2011 – 2016) (sources of registered vessel number and neritic catch in 2015 – 2016 received by personal contact)

This study aimed to illustrate the fishing ground of purse seine fishing and the spreading of CPUE of Kawakawa in each area and month

Source of data

The data were supported by the Andaman Sea Fisheries Research and Development Center which has a regular task to collect purse sein fisheries data. The sampling data were collected every month at the main fishing port in 2016 (figure 2)

Methodology

1. To display the set net point of all sampling vessel. Some these points have to considered together with the Vessel Monitoring System data (VMS) to make sure that it is correct.
2. To make a table that obtains such the CPUE of Kawakawa (kg/day), time (month), fishing method (TPS, FADs, and LPS) and province port.
3. To plot the CPUE over the layer of depth, fishing area, and coastal line.
4. The CPUE will be presented by graduated symbols which classified to 5 class intervals for all months which derived from the Natural Break Values.

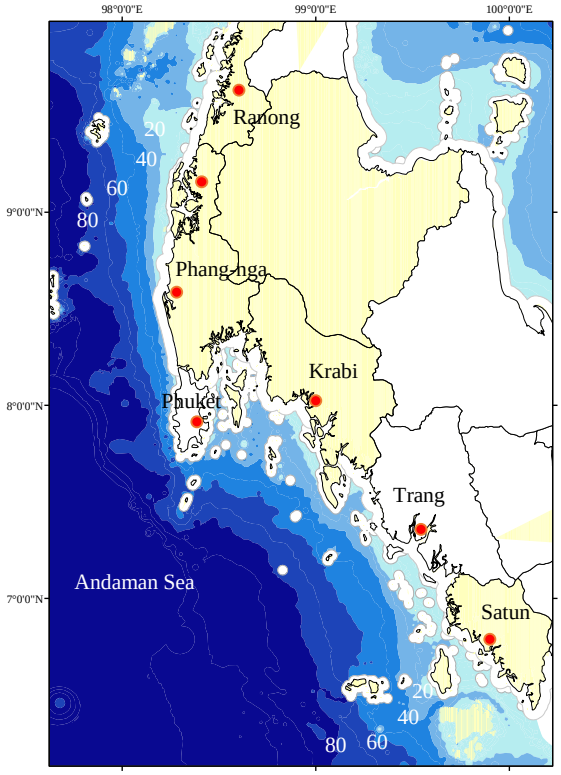
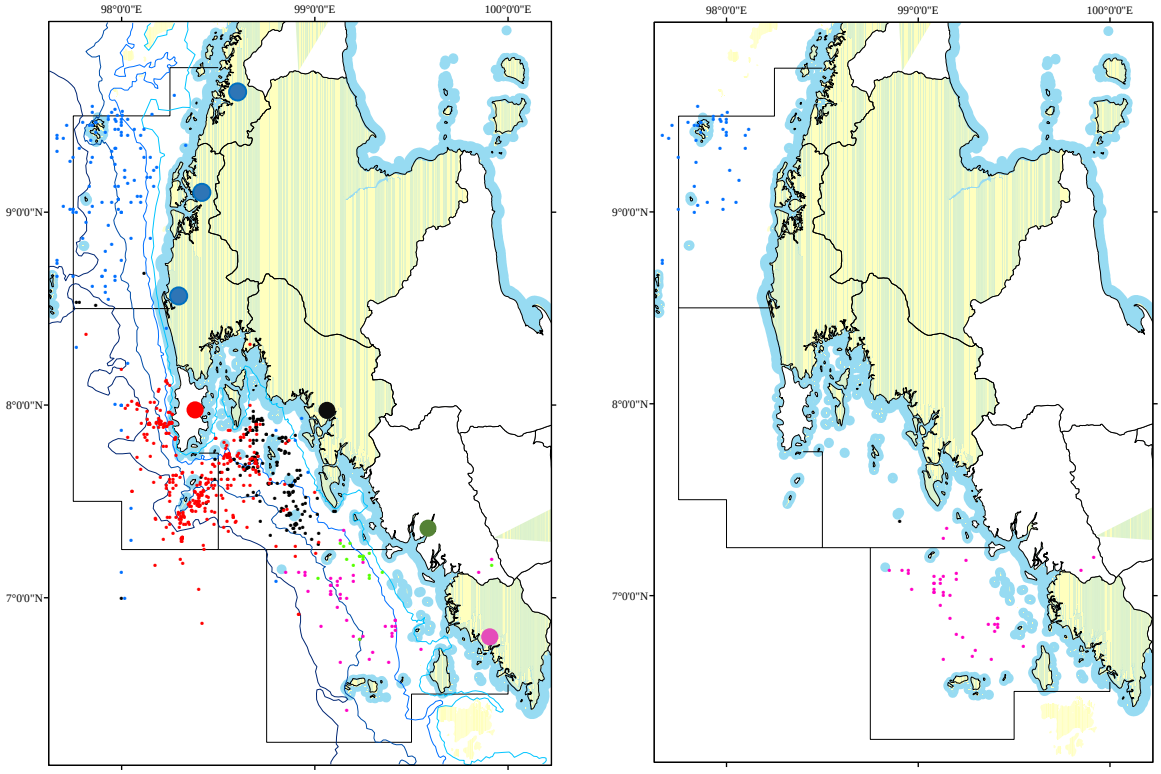


Figure 2 sampling site and depth profile.

Results

1. Fishing area of purse sein can be found thoroughly on the west coast of Thailand with some remarks.
   1.1 The purse sein has the fishing area where the distance was far from the coast of land and Island about 3.0 and 1.5 nautical mile (due to zoning regulation) and in the range of 20 - 110-meter depth which the most fishing area was of 40 - 80-meter depth.
   1.2 The fishing area was related to the fishing port. For example, the most vessel which loads their fish in Ranong and Phang-nga Province usually have the fishing area in area 1 (blue color spot). The vessel of Phuket and Krabi provinces had the fishing area in area 2 and 3 (red and black color spot), while Trang and Satun vessel had the central fishing area in area 4 (green and purple color spot). For this reason, they need to reduce the cost and time for keeping the fresh of fish profit. (Figure 3a)
   1.3 FADs fishing can be found only in area 1 and 4. (Figure 3b)



a b

Figure 3 Purse seiner fishing ground.

2. CPUE and distribution of Kawakawa

2.1 Kawakawa has an overall CPUE 111.06 kg/day. The highest CPUE was showed in the area 3 (Phang-nga Bay) as 120.05 kg/day which followed by the areas of 2, 4 and 1 equaled 112.97, 111.84 and 94.76 kg/day respectively. Moreover, the higher CPUE was met during the North-East monsoon (October – May), and the highest abundance occurred in April as 424.63 kg/day.

2.2 Kawakawa can be found in all area but it was different in abundance through the time. For instance, in Feb - May it has a high level in area 2, while during April and May was a high abundance in area 3 but in Nov – Dec has a high abundance in area 4. (Figure 4 and 5)

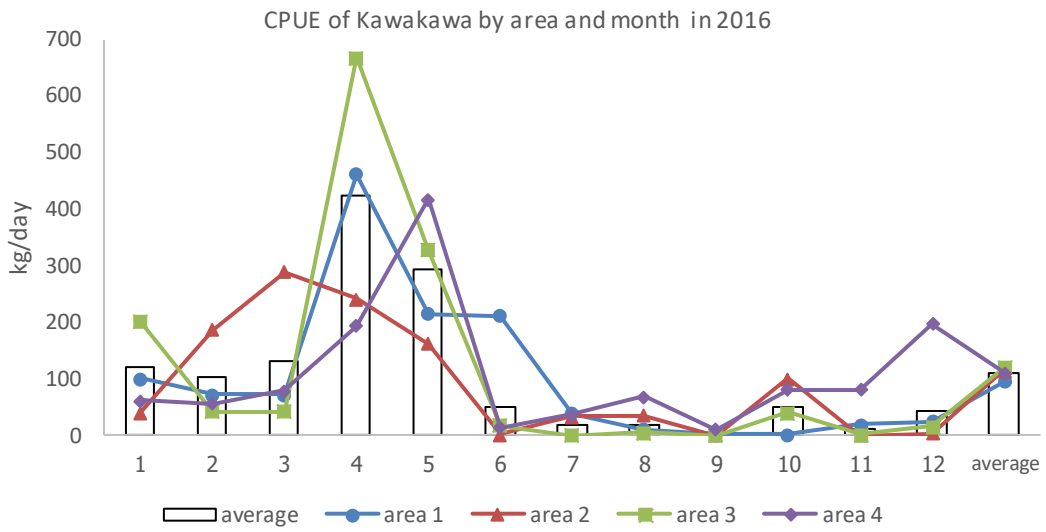


Figure 4 the monthly CPUE (kg/day) of Kawakawa for total area and each area in 2016

Conclusion

1. Purse seiner has a fishing ground distributed along the study area. Although the fisher operated the net out of the restrict area and in the depth range 40 - 80 meter, it will not far from their fishing port. Another reason is the fisher needs to reduce the cost of fuel and the high price of the fish.
2. There was a specific area for FADs purse sein fishing on the west coast of Ranong, Phang-nga and Satun province. The Thai government has planned to make a zoning for this kind of gear by using this information.
3. There were not a different of abundance for each area. However, the CPUE was different significantly for each time
4. Fishery scientist should be allowed to access the fisheries database that can check the fishing area of the sampled fishing vessel.

Reference

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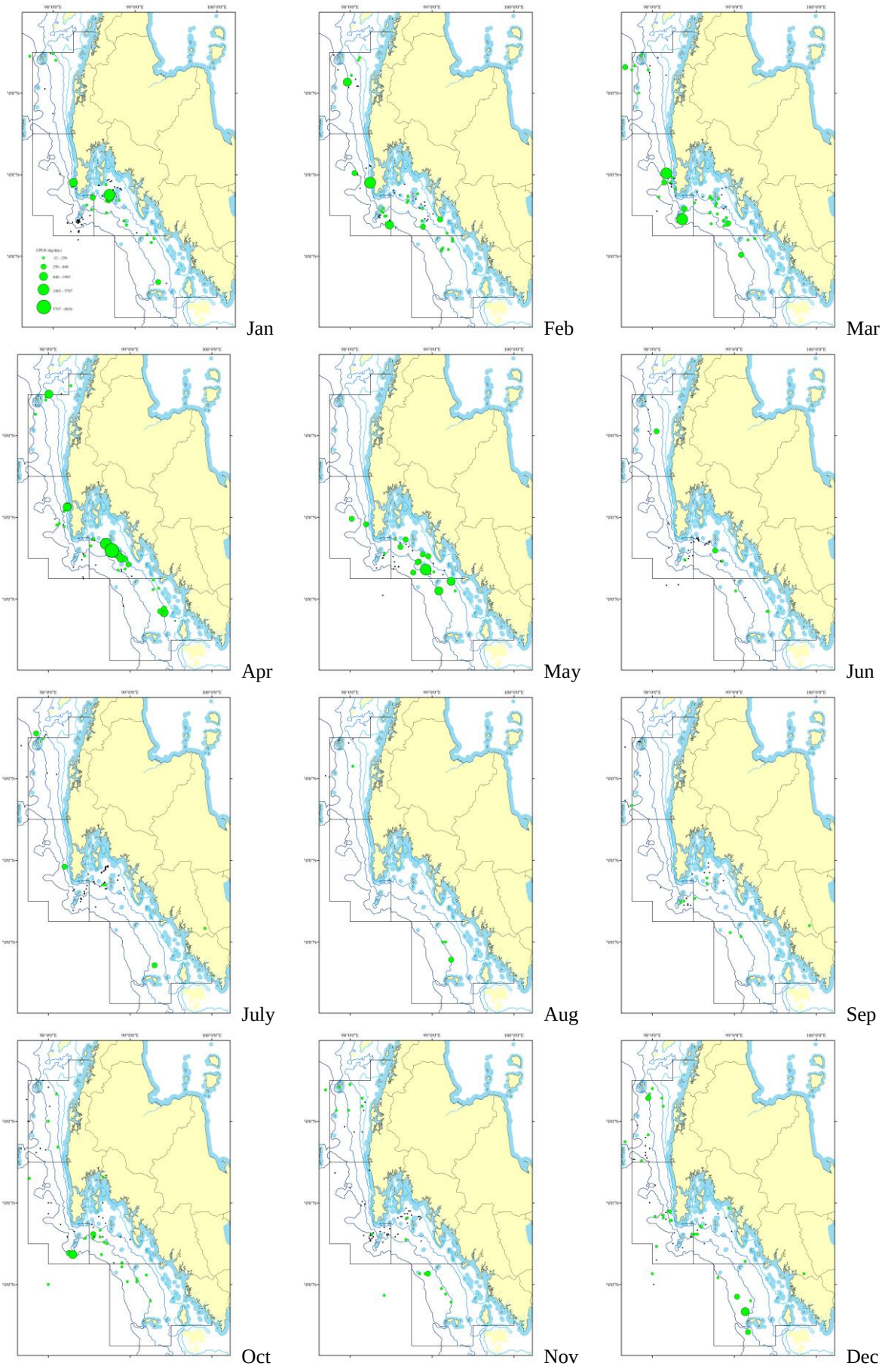

Figure 5 The monthly distribution of CPUE (kg/day) of Kawakawa were caught by purse seiner in 2016