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**CATCH ESTIMATION OF PELAGIC SHARKS BY CHINESE LONGLINE
OBSERVER IN THE EASTERN PACIFIC OCEAN**

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Abstract

This document provide some information of shark and ray bycatch in the tropical longline fishery targeting bigeye tunas. There are eleven species of shark and rays of the catch in the tropical Eastern Pacific Ocean. Blue shark is very abundant shark and discarded due to low economic value, The ratio of blue shark catch to bigeye tuna catch amounted to 0.52 in weight. The ratio of fin weight to round weight of blue shark is 5.35%, But as to white tip shark, ratio is 7.03%. The document also present total length distribution.

Key words: Deep Longline fishery, Sharks, ratio of fins weight to body weight.

Introduction

Deep longline fishery targets adult bigeye tuna and meanwhile a number of pelagic sharks are caught. Sharks and rays are top predators in the open seas and they are very important to pelagic ecosystem stability in the Eastern Pacific Ocean (EPO). However, so far little information is available on the catch data of pelagic sharks by longline fishery in the EPO. China began to operate longline fishery in the EPO in 1999. Since 2003, China dispatched scientific observers on longline fishing vessels. The document presented catch information of pelagic sharks in the Eastern Pacific Ocean.

Materials and Methods

Survey period lasted from July 13, 2003 to November 30, 2003. Survey areas located at 03°S~17 °S, 96°W ~146°W (Fig. 1).

A set of shark fins include a dorsal fin, a caudal fin and a pair of pectoral fins.

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Weight of a set of shark fins, processed weight and round weight were measured. Total length and fork length of shark was measured.

Results and Discussion

1) Elasmobranch species in the catch

There are totally 11 species of elasmobranch in the catch of longline fishery (Table 1). Both body and shark fins of short fin mako, scalloped hammerhead, oceanic white tip shark, silky shark are retained. Only shark fins of blue shark are retained, shark bodies are discarded. Both body and shark fins of longfin mako, crocodile shark, bigeye thresher, velvet dogfish, pelagic ray, mantas are discarded..

2) Shark catch estimation

Table 2 are catch records during survey. Bigeye tuna is dominant catch species accounting for the 48.05% of the catch. Catch of economic shark such as short fin mako, scalloped hammerhead, oceanic white tip shark, silky shark are recorded in the logbook, but not by species, they attributed to OTH column.

Discarded shark and ray weight amounted to 21287kg and blue shark weight accounted for 88.8% of the total weight. It should be noted that actual removal by longline fishing gear exceed sampled discard because some fish without economical value can not be lifted on board.

Total catch of sharks and rays (retained and discarded) amounted to 24941 kg. The ratio of blue shark weight to bigeye tuna weight amounted to 0.52:1.0.

3) Ratio of fin weight to body weight of sharks

Table 5 shows samples of blue shark fin weight and round weight. The ratio of fin weight to body weight of blue shark range from 4.21% to 6.67%. Mean ratio for blue shark is 5.35%.

Mean ratio for oceanic white tip shark is 7.03%

Mean ratio for Silky shark is 4.84% (n=2).

4) Length frequency of blue shark

Fig 2 and Fig 3 are total length distribution of blue shark by female and male respectively. Female total length of blue shark range from 165 cm to 290 cm mean total

length 232.9 ± 22.1 cm (n=97); Male total length of blue shark range from 205cm to 330cm, mean total length 258.9 ± 28.4 cm (n=120).

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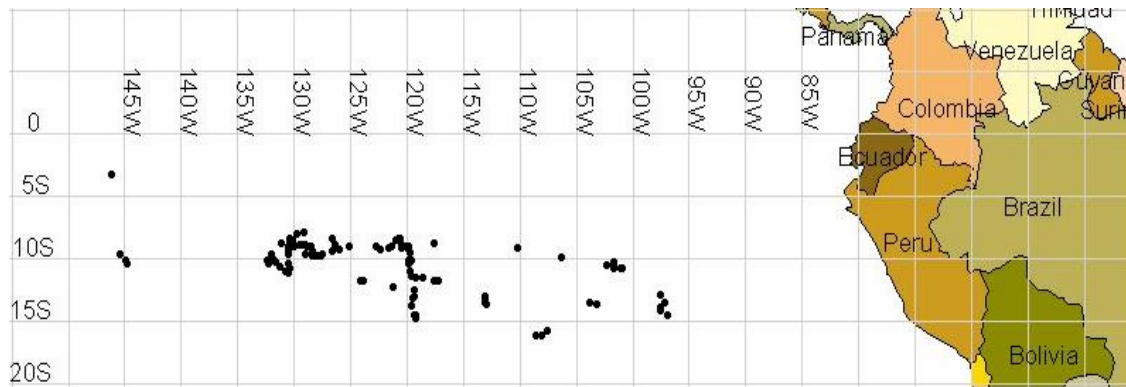


Fig. 1

Surveyed stations of scientific observer

Table 1 Species of elasmobranch by longline fishery in the EPO

English Name	Scientific name	Body Status	Fin status
Short fin mako	<i>Isurus paucus</i>	Retained	Retained
Long fin-mako	<i>Isurus paucus</i>	Discard	Discard
Crocodile shark	<i>Pseudocarcharias kamoharai</i>	Discard	Discard
Bigeye thresher	<i>Alopias superciliosus</i>	Discard	Discard
Scalloped hammerhead	<i>Sphyrna lewini</i>	Retained	Retained
Oceanic white tip	<i>Carcharhinus longimanus</i>	Retained	Retained
Silky shark	<i>Carcharhinus falciform</i>	Retained	Retained
Blue shark	<i>Prionace glauca</i>	Discard	Retained
Velvet dogfish	<i>Zameus squamulosus</i>	Discard	Discard
Pelagic ray	<i>Dasyatis violacea</i>	Discard	Discard
Mantas	<i>Mobulidae</i>	Discard	Discard

Table 2 Catch by longline fishing vessel during survey Unit:kg

Species	BET	YFT	SWO	OTH	Total
Processed Weight	36444(981)	11069(395)	4378(91)	23950	75841

Note: value in the bracket stands for number of catch;
OTH included processed weight of shortfin mako, white tip shark, silky shark and hammerhead

Tab. 3 Economic shark catch in the logbook

Species	Shortfin mako	white tip shark	Silky shark	hammerhead	Total
Number	22	33	22	4	81
Processed weight	951	702	483	234	2370
Round weight	1431	1211	693.5	318	3653.5
Mean weight	65	36.7	31.5	79.5	

Tab. 4 Catch estimation of discarded shark and rays

Species	Blue shark	Crocodile shark	Bigeye thresher	Longfin mako	Pelagic ray	Mantas	Total discards
Number	291	146	55	2	6	2	
Mean weight	64.94	4.13	27.67	13	3	110	
Total Weight	18898(291)	603(146)	1522	26	18	220	21287

Tab. 5 Ratio of fin weight to body weight of blue sharks

No.	Fin weight (F)	Round weight (R)	Ratio (=100*F/R)
1	4	85	4.71
2	4	63	6.35
3	4.14	90	4.6
4	2.3	45	5.11
5	2.45	48	5.10
6	4.4	66	6.67
7	3.1	58	5.34
8	2.75	56	4.91
9	3.1	72	4.31
10	2.4	57	4.21
11	3	54	5.56
12	1.9	33	5.76
13	3.9	63	6.19
14	3	55	5.45
15	3	57	5.26
16	3	50	6.00
Mean			5.35

Tab. 6 Ratio of fin weight to body weight of white tip shark

No.	Fin weight (F)	Round weight (R)	Ratio (=100*F/R)
1	2.6	28	9.29
2	5	83	6.02
3	3.6	48	7.50
4	3.5	52	6.73
5	2.8	44	6.36
6	3.9	55	7.09
7	2.8	45	6.22
Mean			7.03

Fig 2 Length frequency distribution of female blue shark in the EPO

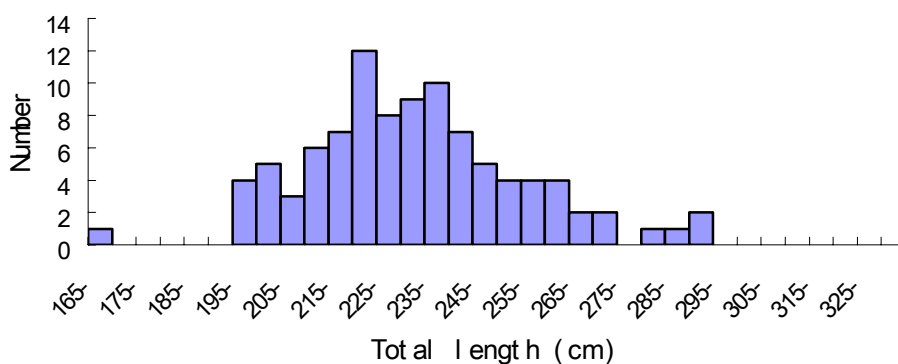


Fig 3 Length frequency distribution of Male blue shark in the EPO

