

Research on Demersal Fishes on the Continental Slope
in the Northern Part of the South China Sea
The cruise result of R/V KAIYO-MARU

by
Tsuneo Aoyama

Seikai Regional Fisheries Research Laboratory
Nagasaki, Japan

1. INTRODUCTION

During the period from May 16 through June 2, 1971, the research cruise for the trawl fishing ground was carried out by R/V Kaiyo-maru (2539 GT) of the Japanese Fisheries Agency in the northern area of the South China Sea between the margin of mainland China continental shelf and continental slope. Experimental trawl fishing operation was done 33 times, and three oceanographic observation lines vertical to the coastal line. Though this cruise was done rather on a small scale, the result might have some valuable suggestions for the future operations of trawling, since the trawl operations in such area as continental slope has been scarce.

The areas A, B and C in the East China Sea were included in this research cruise for two purposes: (1) to obtain some idea of the difference in stock assessment between the south China Sea and the East China Sea and (2) to compare the fishing efficiency of Japanese commercial trawlers.

The sea depth at the stations and number of hauls by area are summarized briefly as follows:

Area	Sea depth	Number of hauls
East China Sea	A 105-118	3
	B 53-76	2
	C 94	2 Total 7
South China Sea	D 87-158	8
	320-328	2
	695-860	2 Total 12
	E 120-158	5
	170-240	2 Total 7
	F 98-127	5
	165-186	2 Total 7

2. RESULTS

1) In the South China Sea, the amount of dissolved oxygen was less than 3.5 ml/l at the depth between 100 and 150 metres and less than 3.0 ml/l at the depth of more than 300 metres. This suggests that there would be less expectation for the large latent fish resources in the depth greater than 300 metres were composed of abyssal fish species for the most part, indicating the

similar results at the continental slope in the East China Sea.

2) Topographical survey by echo sounder indicates that in the areas D and E the continental slope is fairly weak in gradient and forms two or three steps of deep sea terraces. The trawl fishery would be suitable geographically at the flat plane portion, but not possible at the shoulder part of terrace where it is fairly rocky.

In the area F, the topographic survey showed rather steep gradient of the slope.

3) Abundance of the fish was best at the shoulder part of the continental shelf.

4) The catches of this cruise was comprised of larger individuals than those in the East China Sea. The fish were classified and totaled up to 170 species. The main fishing results by area are:

Area D fairly good catch with large sized porgy,* Isaki, rudderfish, and sea bass in the water shallower than 200 metres. On the contrary, very poor fishing was noted in the deeper waters with small amount of abyssal fish species.

Area E poor fishing with small amount of Japanese threadfin bream, rudderfish, big eye snapper and sea bass.

Area F Poor fishing with large sized porgy, hairtail, big eye snapper, Nagasaki snapper and lizard fish.

5) The productivity of the sea area deeper than 350 metres seems to be poor, for the following reasons: 1) the current is not distinguished, 2) there is no strong upwelling, 3) vertical mixing in winter is weak, 4) the thermocline is developed well in general and 5) therefore, the dissolved oxygen is very little in content. The catch in the area were abyssal fishes that seem to be not valuable commercially, only.

In the area of 200 - 350 metres in depth, we caught some large size commercially important fishes, although the amount were not large. As many traces of fishes were observed on the echosounder, it was supposed that there

*porgy	<i>Chrysophrys major</i>
isaki	<i>Parapristipoma</i> spp.
rudderfish	<i>Seriola</i> sp.
sea bass	many spp.
Japanese threadfin bream	<i>Nemipterus</i> sp.
big eye snapper	<i>Priacanthus</i> sp.
hairtail	<i>Trichiurus lepturus</i>
red snapper	<i>Lutianus</i> spp.
Nagasaki snapper	<i>Pristipomoides</i> sp
lizard fish	<i>Saurida</i> spp

were considerably large amount of small fishes which might have escaped through mesh of the net (as the stretched mesh size was 90 mm).

Large sized valuable fishes were caught considerably at the area situated near the edge of the continental shelf, the depth of which was shallower than 200 metres. Especially good catch was encountered at Area D.

The catch per 30 minutes trawling are shown as under :

Area	No. of hauls	Catch per 30 min. haul in ton.
East China Sea	A	3
	B	2
	C	2
	Total	7
South China Sea	D (deep)	9
	D (shallow)	4
	E (d)	6
	E (s)	1
	F (s)	5
	Sub total (d)	20
	" (s)	5
Total	25	

The fishing efficiency of the R/V Kaiyo-maru was rather low compared to the Japanese commercial pair trawlers, as shown below: the value of catch per 80 minutes' trawling which is the standard trawling duration of pair trawlers.

Area	Commercial pair trawler				Kaiyo-maru	
	May 1970		June 1970		H	CPH
	H	CPH	H	CPH	H	CPH
A	1156	0.30	463	0.30	3	0.26
B	4156	0.32	1853	0.44	2	0.25
C	16	0.37	7	0.32	2	0.15

H, number of hauls; CPH, catch per 80 minutes' trawling.

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Fishing Condition and its Oceanographic Interpretation in Bottom Long Line Fishing Grounds

by
Otohiko Suzuki

Marine Fisheries Research Department
Southeast Asian Fisheries Development Center

Abstract

During the experimental bottom long line fishing conducted in June and September, 1972, near the Gulf of Thailand and off Kuching, Sarawak respectively, simultaneous oceanographic surveys were also carried out. The analysis of the data suggested possible relation between oceanographic and fishing conditions. Throughout the two trips it was a common feature that good catches were often obtained near the boundary between the nearshore warm water and the deeper cold water.

Through oceanographical consideration of the data obtained, the following conclusion was deduced. There is a possibility that good fishing grounds are located along the canyon off Kuching throughout all seasons. However, their locations may be altered with the change of oceanographic conditions. In the area off the Gulf of Thailand, good fishing grounds may be formed only in certain specific seasons.

INTRODUCTION

Studies on the feasibility of bottom long lining in the South China Sea were conducted by the research vessels CHANGI in June and September, 1972. One of the two survey cruises was made near the Gulf of Thailand during

17-25 June, and the other off Kuching, Sarawak between 16 and 27 September. Systematic surveys on oceanographic condition were also carried out simultaneously with the experimental bottom long line fishing.

The purpose of these studies was to investigate the existence of possible relationship between oceanographic and fishing conditions.

SURVEYS

During the June trip, the experimental bottom long linings were made at six different locations within the area enclosed by 6°20'N and 8°15'N in latitude, and 102°20'E and 103°45'E in longitude. Except for one operation at the final location, two operations using different types of long line were made repeatedly at each location. The number of units used in each operation ranged from 14 to 21. Twenty oceanographic stations were arranged at almost regular intervals to cover this area, while six other stations outside the area were arranged at intervals of about 30 nautical miles along the east coast of the Malay Peninsula. At each station serial and BT observations were made.

During the trip in September, bottom long line opera-