

CHAPTER III

AN ANALYSIS OF SOME FACETS OF THE FISHING INDUSTRY

Fish Production

The outstanding achievement of the industry in recent years is the mechanisation of fishing boats and improvement in fishing gears. Both these developments have enabled the fishermen to fish more efficiently. Since 1959, the annual production of fish has increased by about 20,000 tons annually from 112,100 tons in 1958 to 170,000 tons in 1962 (see Table 4). The output of marine fish for 1962 is nearly $1\frac{1}{2}$ times that of 1958.

TABLE 4

MALAYA: OUTPUT OF MARINE FISH IN TONS

Year	Production inTons
1958	112,100
1959	118,600
1960	139,500
1961	150,600
1962	170,200

Source: Figures taken from Annual Reports of the Fishing Industry, 1958 - 62.

This increase results from the development of the inshore fisheries. Off-shore fisheries are hitherto left untapped and if developed, the increase in annual output can be more significant in the future.

Main Types of Fish Caught

The most important types of fish caught in Malaya in

order of importance by tonnage are the kembong, udang, tamban, udang baring, bilis, selayang, tenggiri, merah, parang and selar kuning (see Table 5).

TABLE 5

MALAYA: MAIN TYPES OF FISH
CAUGHT IN 1962 IN PICULS

Fish		Output
Local Name	Scientific Name	
Kembong	Rastrelliger Kanagurta	344,000
Udang	Crustacea	220,000
Tamban	Clupia spp.	166,000
Bilis	Stolephorus spp.	126,000
Udang Baring	Crustacea	125,000
Selayang	Decapterus russellii	105,000
Tenggiri	Scomberomorus spp.	104,000
Merah	Lutianus spp.	93,000
Parang	Cherocentrus dorab	86,000
Selar Kuning	Selaroides leptolepis	83,000
Total		<u>1,452,000</u>

Source: Figures are taken from the 1962 Annual Report of the Fishing Industry.

These eight types of fish and two types of prawns make up slightly over 50% of the annual output of fish for Malaya for 1962 (1962 annual production is 2,859,000 piculs). If we exclude fish produced but are unfit for human consumption because they are too small and are used to make fertilizers (buat baja) or feed poultry and pigs as manure (ikan champor), the ten types of fish listed above make up 75% of the total output of fish produced for human consumption (total output of buat baja and ikan champor for 1962 is 686,000 piculs).

Where These Fishes Are Caught in Malaya⁺¹ (see Table 6 on page 24 and Map 2 on page 25)

a) Kembong: This fish is mainly caught in the northern part of the Straits of Malacca and the South China Sea. On the West Coast, Perlis, Kedah and Perak contribute 43% or 147,000 piculs of the total Malaya production of kembong for 1962. In the East Coast, Kelantan and Trengganu are the two important states producing 83,000 piculs (24% of total). On the West Coast, it is caught almost entirely by the seine-net group especially the purse seine net (Pukat Jerut) and on the East Coast, it is caught by the lift nets. Together, the two types of gear catch 90.4% of the total Malayan production of kembong for 1962.

b) Udang and Udang Baring: The udang and udang baring are almost entirely caught from the Straits of Malacca off the coast of Penang, Perak, Selangor, Malacca and the West Coast of Johore. Seventy-four per cent of the total landings for 1962 is caught by the scoop/push net, bag net and seine-net. The East Coast contributes insignificantly to the Malayan production.

c) Tamban: Most of the tamban is produced by the East Coast states. In 1962, they produce 132,000 piculs or 80% of the total Malayan production. Except for Kedah and Perak, which produce 31,000 piculs (19% of total), this fish is unimportant in the West Coast.

d) Bilis: This fish is very important in Trengganu, Pahang and East Johore. Together, they produce 71,000 piculs in 1962 or 57% of the total Malayan production. Except for Perak, which produces 45,000 piculs (27% of total), it is unimportant in the West Coast. Ninety-nine percent of the total output of bilis is caught by seine-net and large fishing stakes.

e) Selayang and Selar Kuning: Malayan output of both these fishes is produced exclusively by the East Coast states. The lift-net catches 83.3% and 94.4% of the total Malayan production of Selayang and Selar Kuning respectively in 1962.

⁺¹This is my analysis after looking at the production figures for each type of fish by state and by gear in the Annual Reports of the Fishing Industry, 1956 - 62.

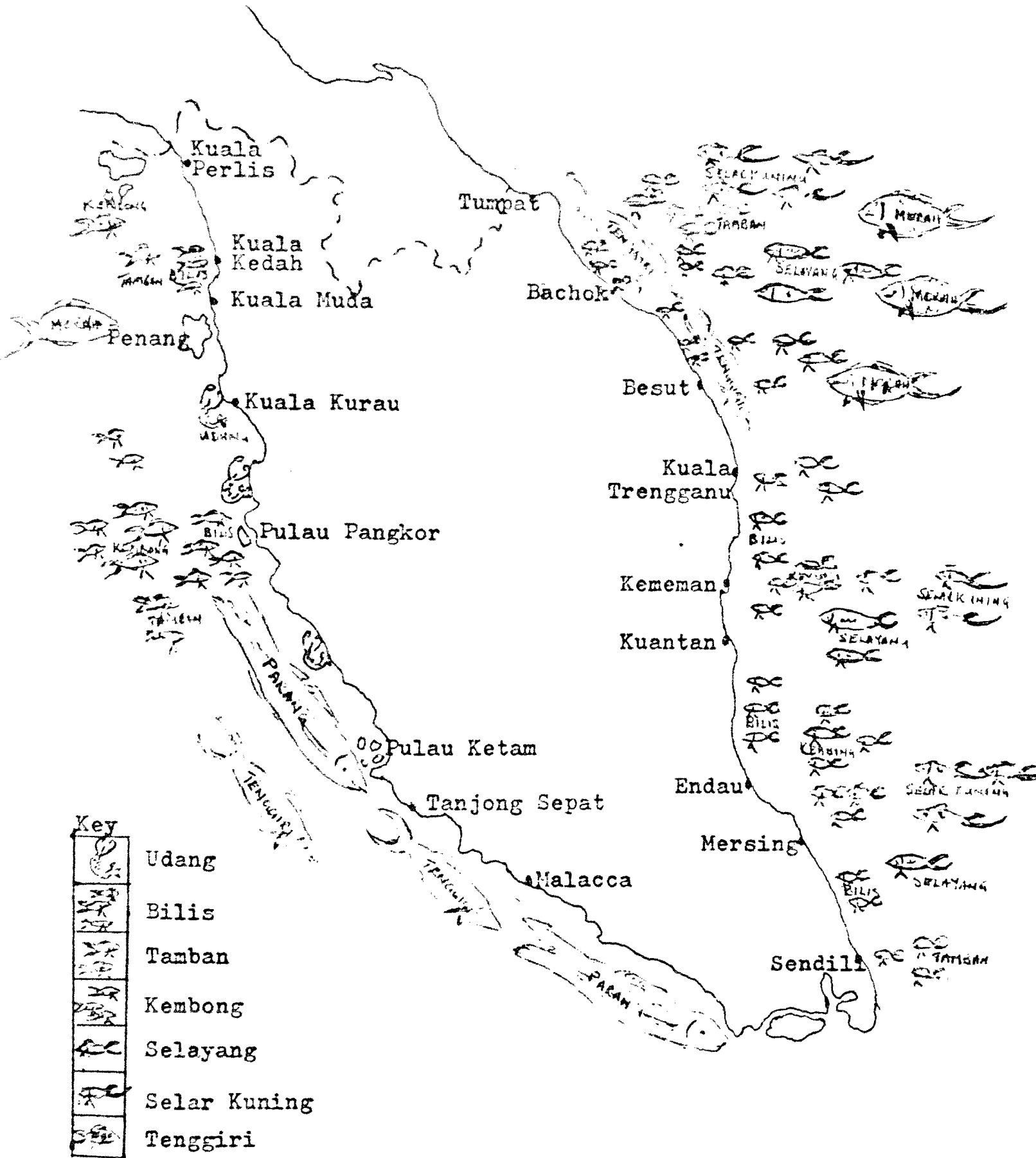
TABLE 6

MALAYA: TOTAL LANDINGS OF SELECTED TYPES
OF MARINE FISH IN 1962 BY STATE
IN PICULS

State	Kembong	Udang and Udang Baring	Tamban	Bilis	Selayang	Tenggiri	Merah	Parang	Selar Kuning
Perlis	14,400	2,500	700	-	-	2,800	700	3,800	-
Kedah	47,300	9,200	16,400	-	-	4,200	7,500	3,600	-
Penang	1,100	30,800	1,000	3,000	-	1,900	27,600	1,200	-
Perak	185,300	146,400	14,400	45,400	1,800	5,100	22,400	6,400	-
Selangor	-	105,900	1,600	1,900	-	29,000	3,200	31,800	-
N.Sembilan	200	300	100	100	-	700	300	900	-
Malacca	-	7,100	-	-	-	8,900	200	10,300	-
Kelantan	9,000	2,000	10,100	4,400	3,400	3,700	14,900	400	13,600
Trengganu	74,300	4,600	90,200	33,100	90,700	19,800	8,600	1,100	23,900
Pahang	3,100	900	5,500	21,400	1,900	6,600	4,500	2,300	8,600
Johore	9,400	35,700	26,400	16,200	7,200	21,600	3,300	24,100	37,200
Federation of Malaya	344,100	345,400	166,400	125,500	105,000	104,300	93,200	85,900	83,300

Source: Figures taken from the 1962 Annual Report of the Fishing Industry.

MALAYA: LOCATION OF MAIN FISHERIES



Key	
	Udang
	Bilis
	Tamban
	Kembong
	Selayang
	Selar Kuning
	Tenggiri

f) Tenggiri: This fish is very important in South-western Malaya. The major fishing states are Selangor, Negri Sembilan, Malacca and West Johore which together produce 60,000 piculs in 1962 or 58% of the total Malayan production. Trengganu is the only important state in the East Coast. It produces 20,000 piculs (19% of the total) in 1962. Handline and Gill/Drift-net contribute 96% of the total output of tenggiri in 1962.

g) Parang: This fish is caught mainly from the central and southern part of the Straits of Malacca. In 1962, Perak, Selangor, Negri Sembilan, and Johore together produce 74,000 piculs or 86.5% of the total Malayan production. Gill/Drift-net catches 88.7% of the total parang landed.

g) Merah: All the above mentioned fish landed in Malaya are of the pelagic and mid-water types and are found in waters not deeper than 30 fathoms. They are caught almost entirely by nets and/or fishing stakes. The merah is a demersal fish found in waters over 30 fathoms deep and is important only in northern Malaya. On the West Coast, Penang and Perak together land 50,000 piculs (54% of the total) in 1962. On the East Coast, Kelantan and Trengganu land 23,000 piculs (25% of the total) in 1962. Traps and pots (bubu) and to a minor extent lines contribute 99.3% of the total output of merah for 1962.

Mechanisation

Until 1950, there was virtually no powered fishing craft in Malaya. But in 1956, the first serious attempt to mechanise our fishing crafts with inboard motors like the Japanese cylinder Yanmar engines, the English Petter engines and the Lister engines was undertaken by the Ministry of Agriculture as a result of the recommendation of the Committee to Investigate the Fishing Industry (1955) which found a clear need to mechanise our fishing crafts for three reasons.

Firstly, most of the productive fishing grounds lie within 35 miles off the coast but the use of non-mechanised crafts confines fishing to coastal waters. Mechanisation permits fishermen to fish in deeper, more distant and more productive waters.

Secondly, mechanised boats are not so subject to the vagaries of wind and weather. Mechanised boats can fish in much worse climatic conditions than would normally be possible for non-powered crafts. There is conservation of

physical labour from rowing for fishing purposes entirely. Formerly, the fishermen had to row for hours out to the fishing ground.

Lastly, mechanisation enables a quicker means of getting the fresh fish to the fishing village.

Since 1955, the Malayan fishing industry has developed from a primitive industry based on boats dependent on human labour for propulsion designed to fish in coastal waters close to base towards mechanisation. This is clearly indicated in Table 7 and the accompanying Graph 2 on page 28.

The pace of mechanisation in Malaya has been rapid. In 1955, powered crafts make up only 20% of the total registered number of boats but since 1955, the rate of mechanisation has been maintained and to a certain extent accelerated. In 1962, powered crafts make up 44.4% of the total number of registered boats (see Table 7 and Graph 2).

For three main reasons, the process of mechanisation has been highly satisfactory.

Firstly, the proportion of mechanised boats to the non-powered boats become more impressive when it is realized that a significant proportion of non-powered boats are only for communicational purposes in mangrove swamps and estuaries and offers little potentialities for mechanisation⁺¹.

Secondly, while the number of powered crafts has risen steadily in recent years, the number of non-powered crafts has steadily declined. The graph shows that the trend is likely to continue and in the near future, mechanised boats will outnumber non-powered boats. The trend is towards more and more mechanisation and lesser use of non-powered boats.

Finally, the table and graph show that since 1955, inboard motors are increasingly being used and are gradually replacing outboard motors on ground of better reliability and economy. Inboard engines use diesel as fuel while outboard motors use petrol but petrol is three times more expensive than diesel. The year 1962 is significant in that for the first time, the number of inboard motors outnumbers the number of outboard motors in Malaya by about 1,100. The present trend is towards more usage of inboard motors which means lower operating cost.

⁺¹ See Annual Reports of the Fishing Industry, 1956-59.

TABLE 7

MALAYA: POWERED AND NON-POWERED BOATS

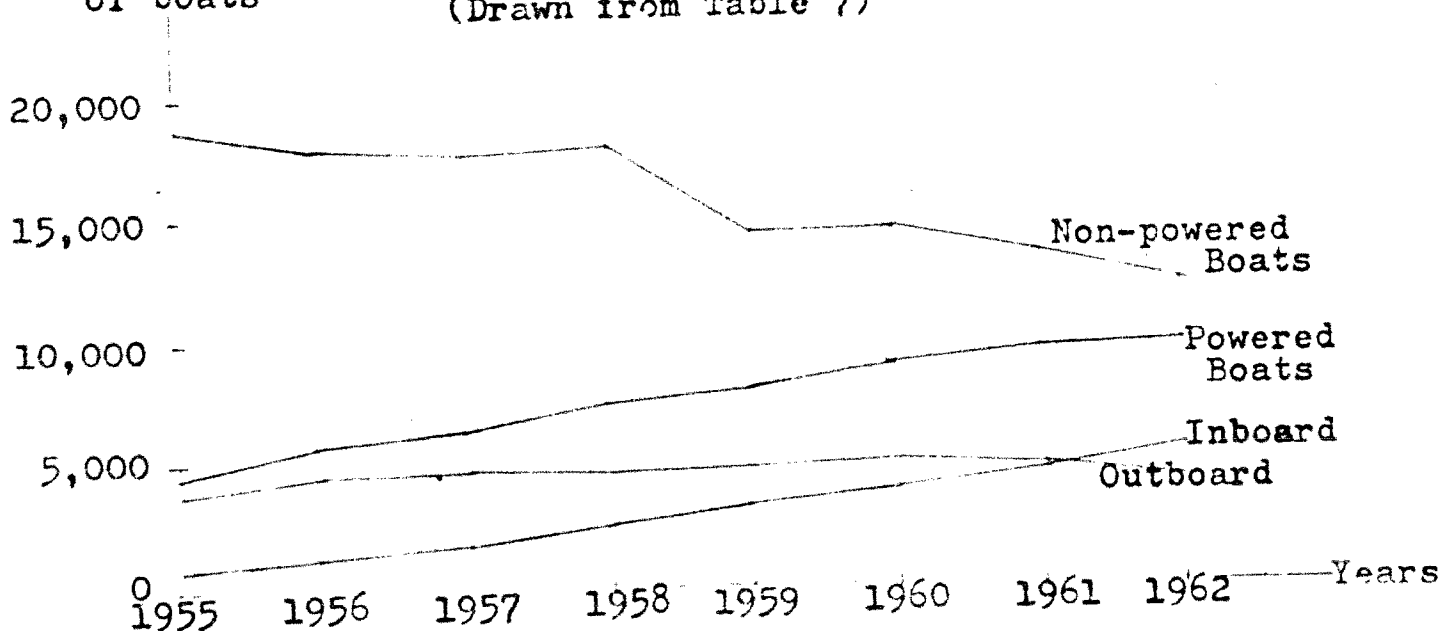
Types of Boats	Year							
	1955	1956	1957	1958	1959	1960	1961	1962
Powered:								
Inboard	603	996	1,541	2,284	3,123	3,938	4,824	5,426
Outboard	3,947	4,645	4,742	5,012	4,746	5,002	4,841	4,346
Total Number of Powered Crafts	4,550	5,641	6,283	7,296	7,884	8,940	9,665	9,772
Non-Powered	18,879	17,730	17,541	17,749	14,379	14,608	13,293	12,338
Total Number of Boats Licensed	23,429	23,371	23,824	25,045	22,263	23,548	22,958	22,110

Source: Figures taken from Annual Reports of the Fishing Industry, 1955 - 62.

GRAPH 2

Number
of boats

(Drawn from Table 7)



Importance of Mechanisation

Fishing grounds all round Malaya have been widely extended with mechanisation as the boats are able to go further away from base to fish. Mechanisation has greatly increased the mobility of the fishermen and has enabled them to travel to the best fishing grounds to fish. Now, it is common for the fishermen to migrate from one area to another in search of fish. In the East Coast, the fishermen travel further south in their mechanised crafts during the North East Monsoon to fish⁺¹. This is an exceptional practice before mechanisation.

Mechanisation makes possible for the use of larger boats. Formerly, boats were small because they were propelled by human labour. Mechanisation makes fishing less vulnerable to climatic conditions. Under the worst climatic conditions, fish is present but the greatest challenge to the fishermen is to reach the fishing grounds in the face of strong winds and big waves. It is impossible for small human propelled boats to put to sea but this is possible for bigger mechanised boats which are mechanically propelled⁺². In the East Coast, during the North East monsoon, the fishermen frequently go out to fish in their mechanised crafts in conditions unsuitable for non-powered crafts for it is no longer impossible nor hazardous⁺³.

Much human energy is spent in rowing the boats to the fishing ground to fish and then row back home. By the time, the fishermen reach there, they will be too tired to fish efficiently. Mechanisation means the conservation of human energy for fishing entirely.

It has been estimated that one mechanised craft can land 2-3 times more fish than a non-mechanised craft⁺⁴.

⁺¹ See Annual Reports of the Fishing Industry, 1956-59. The fishermen whom I interviewed in Penang agreed that they are able to range the sea now in search for fish due to mechanisation. Formerly, they were unable to do so and had to be contented with visiting a usual spot close to shore to fish daily,

⁺² See D.G. Stead: General Report of Fishermen in British Malaya.

⁺³ See Annual Reports of the Fishing Industry, 1956-59.

⁺⁴ See IBRD: Economic Development of Malaya.

The average output per fishermen in all Malaya in 1949 was 2,200 lb but in Perak where mechanisation was most advanced, it was 5,700 lb in the same year.

The tremendous increase in fish production since 1959 has been due to mechanisation largely. We look forward to the day when all our fishing crafts are mechanised and from the trend indicated in Graph 2, it appears that the day is not too far off.

Fishing Gears

The Fisheries Department is also concerned with improving output of fish by increasing the efficiency of gears used. In recent years, it has been encouraging the fishermen to change from the use of natural fibre (cotton and ramie) nets to synthetic fibre nets. These nets, though more expensive⁺¹, are more durable. The nets do not get torn easily and therefore save the fishermen much time from mending them and they are more efficient in fish catching⁺². These synthetic fibre nets are imported from Japan, United Kingdom, United States of America and Nationalist China.

It is heartening to note that the attempt to replace natural fibre nets with synthetic fibre nets has been highly successful⁺³. Since 1958, the import of natural fibre nets has dropped considerably from 485.3 tons to 44.1 tons in 1962 while the import of synthetic fibre net has been increasing and since 1960, its import has exceeded the net import of natural fibre net (see Table 8 on page 31).

⁺¹In 1962, Malaya imported 65.6 tons of natural fibre nets valued at \$367,000. This is equivalent to \$2.50 per lb. In the same year, Malaya imported 311.7 tons of synthetic fibre nets valued at \$2,095,000. This is equivalent to \$4.16 per lb. All figures are taken from Table 8. The values are taken from the Record Book.

⁺²The advantages of durability and of not having to dry these synthetic nets after use are recognised by those fishermen whom I interviewed in Penang. The reason given by those still using natural fibre nets for not changing over is that they do have sufficient capital. As such, they prefer to use two natural fibre nets than with one synthetic fibre net.

⁺³See Annual Reports of the Fishing Industry, 1956-59.

TABLE 8

MALAYA: IMPORT AND RE-EXPORT OF NETS
IN TONS

Year	Ramie and Cotton Nets			Synthetic Fibre Nets		
	Import	Re-export	Net Import	Import	Re-export	Net Import
1956	351.5	32.1	319.4			
1957	368.1	34.0	334.1			
1958	543.2	57.9	485.3			
1959	368.9	33.2	335.7			
1960	131.1	39.6	91.5	291.2	14.3	276.9
1961	95.1	30.9	64.2	292.4	16.0	276.4
1962	65.6	21.5	44.1	311.7	5.8	305.9

Source: Record Book of Fisheries Department, Kuala Lumpur.

(Note that figures for the import and re-export of synthetic fibre nets for 1956-59 are not available).

The use of synthetic fibre nets and lines for fishing has shown a remarkable increase in recent years and in the West Coast, synthetic drift-nets have almost completely replaced natural fibre nets in the main drift-net fishing centres. A similar process is now under way in the East Coast⁺¹.

There is no doubt that synthetic fibre nets have a greater efficiency in the catching of fish (see Table 9 on page 32). Since 1960, there has been a gradual decline in the number of Gill/Drift nets licensed in Malaya (see Table 9, column 2) but the output by this gear has increased tremendously since. The number of gears licensed has decreased from 5,513 in 1960 to 4,776 in 1962 but the output has increased from 251,000 piculs to 329,000 piculs. This increase in productivity can be shown more significantly in the average output per gear column (column 4). In 1962, the average output per gear is 68.9 piculs per annum compared to 45.5 piculs in 1960 - a 50% increase in productivity.

⁺¹ See Annual Reports of the Fishing Industry, 1956-59.

TABLE 9

MALAYA: OUTPUT BY GILL/DRIFT NETS
IN PICULS

Year	Number of Gill/Drift Nets Licensed	Total Output of Fish by Gill/Drift Nets	Average Output per Gear
(1)	(2)	(3)	(4)
1960	5,513	251,000	45.5
1961	5,493	293,000	53.4
1962	4,776	329,000	68.9

Source: Figures are taken from the Annual Reports of the Fishing Industry, 1960-62.

Gill/drift net specialises in the catching of tenggiri and parang and the increase in the efficiency of synthetic fibre nets is reflected also in the increasing output of both these fishes. This is illustrated in Table 10.

TABLE 10

MALAYA: OUTPUT OF TENGGIRI AND PARANG
BY GILL/DRIFT NET IN PICULS

Year	Output of	
	Tenggiri	Parang
1960	47,100	49,900
1961	56,900	62,800
1962	73,600	76,100

Source: Figures are taken from the Annual Reports of the Fishing Industry, 1960-62.

Table 10 shows that the Malayan out put of tenggiri and Parang has increased from 47,100 piculs and 49,900 piculs in 1960 to 73,600 piculs and 76,100 piculs in 1962 respectively. (I agree that this increase in catches by Gill/drift nets is partly due to mechanisation).

Productivity of the Fishermen

Due to mechanisation and improvement in fishing gears, annual production of fish in Malaya has increased since 1957. This increase has been accelerated since 1959. This results in a steady increase in the productivity of the fishermen since (see Table 11 and Graph 3).

TABLE 11

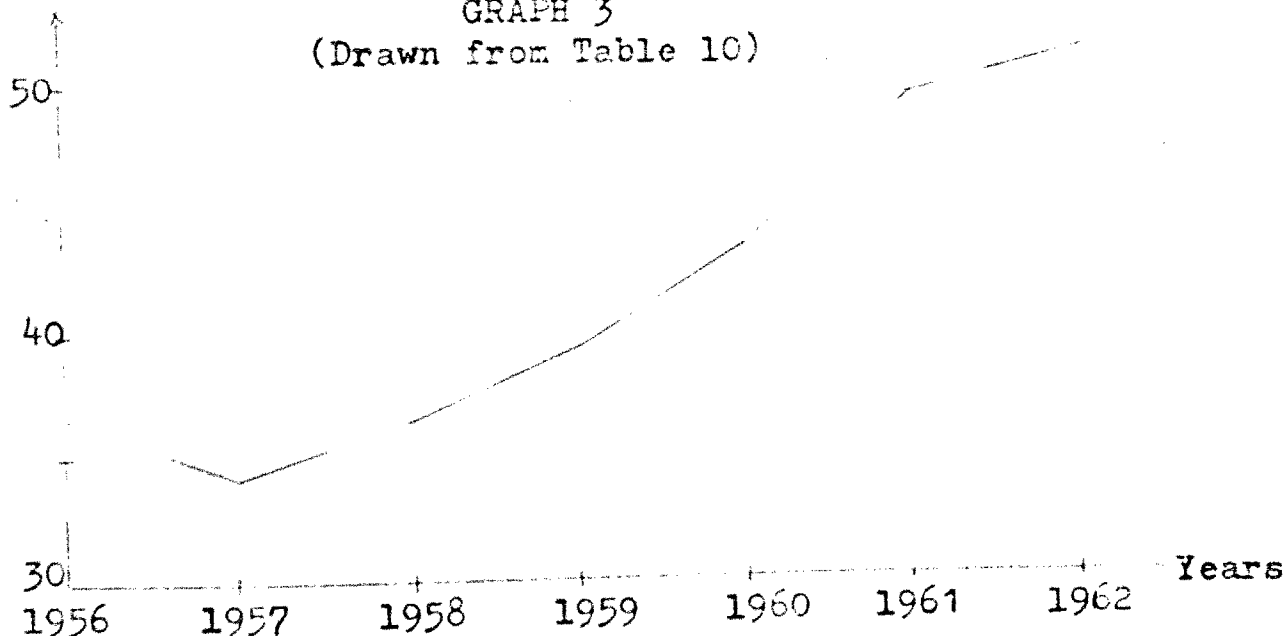
MALAYA: AVERAGE OUTPUT PER FISHERMAN IN PICULS

Year (1)	Total Annual Production (2)	Total Number of Fishermen (3)	Average Output per Fisherman (4)
1956	1,866,200	50,700	36.8
1957	1,862,500	49,400	34.1
1958	1,883,400	51,600	36.5
1959	1,992,900	50,500	39.5
1960	2,343,100	53,800	43.6
1961	2,530,900	53,100	49.6
1962	2,859,500	55,500	51.5

Source: Figures are taken from the Annual Reports of the Fishing Industry, 1956-62.

Productivity
per Fishermen

GRAPH 3
(Drawn from Table 10)



From Table 11, while the number of fishermen has increased by about 6,000 since 1957, the increase in annual fish production in Malaya has been more than proportional. The productivity of the fishermen has increased by slightly more than 50% since 1957 from 34.1 piculs per fishermen per annum in 1957 to 51.5 piculs in 1962. (see column 4)

Trawler Fishing

Another direction in the development of the fishing industry is the introduction of trawler fishing into Malaya. The depth of the seas around Malaya is not more than 60 fathoms and this is suitable to trawler fishing. The only drawback is the presence of corals which damage the trawler nets but this drawback can be overcome by surveying the seabed and charting out the places where corals exist⁺¹.

Since 1926, there had been many sporadic experiments on trawler fishing by the Fisheries Department but these experiments failed miserably. The reason offered is that Malayan demersal fish do not move in large shoals unlike the English demersal fish. To the Department, trawler fishing is an uneconomic proposition⁺²

The real reasons for the failure are that, being a Government sponsored experiment, there is no incentive for serious experiment and that the experiments are conducted on a small scale and sporadically. The recent success of trawler fishing in northern Malaya undertaken commercially has dispelled the conclusion of the Fisheries Department. The trawler fishing on an experimental basis undertaken last year by the Chinese fishermen in North-western Malaya based at Penang proved a tremendous success immediately. The success attracted more than 2,000 fishermen to turn to trawler fishing. Trawler fishing brought in so much fish that its price in North-western Malaya fell alarmingly threatening the livelihood of the inshore fishermen, like the Kuala Kedah fishermen, who made strong representation to the Government to have it banned. Trawler fishing was immediately banned for political reasons. The 2,000 trawler fishermen were left unemployed and all the trawler boats left standing idle.

⁺¹See D.G. Stead: General Report of Fishermen in British Malaya.

⁺²See Annual Reports of the Fishing Industry, 1956-59.

Economically, the ban is a poor one as it attempts to preserve the livelihood of the many at the expense of progress. It is hoped that the ban will be temporary allowing time for the inshore fishermen to convert to trawler fishing. The advantages of trawler fishing should not be the privilege of the capitalists but should be made available to the poorer fishermen. The Government should help them by urging them to form cooperative societies, supply these societies with the necessary capital to purchase trawler boats, nets and other fishing equipments and thus allow the poorer fishermen to participate in trawler fishing which otherwise would not be possible. Whatever expenses should be paid by the cooperative societies and deducted from the ^{sales} proceeds from the catches⁺¹. In this way, the poorer fishermen can be given the opportunity to reap the advantages of trawler fishing and at the same time, there will be progress in the fishing industry.

Development of Off-shore Fisheries

Traditionally, Malayan fishing has been entirely confined to the inshore fisheries⁺² which have been so intensively exploited in the past and today with mechanisation and improvement in fishing gears that they hold no promise for further development in the near future to meet the growing demand for fish from the expanding population. Development of inshore fisheries has almost reached the saturation point.

There is an urgent need to develop the hitherto untouched off-shore fisheries, particularly the tuna fisheries of the Indian Ocean. The Indian Ocean has one of the richest tuna fisheries in the world. It is at the moment

⁺¹Che Ibrahim, Cooperative Officer at the Cooperative Department, Penang agree with me that this is the best way to enable the fishermen to participate in trawler fishing. In his opinion and that of Che Selverajah, Technical Research Officer at the Fisheries Research Centre, Glugor, Penang, trawler fishing is one of the most productive gears in Malaya today.

⁺²See Annual Reports of the Fishing Industry, 1956-59.

See L. Berube: Memorandum: Economic Research Report: Suggested Programme of Fisheries and Marketing Development in Malaya.

See R. Firth: Malay Fishermen: Their Peasant Economy.