

A REVIEW OF THE STATUS OF MARINE FISHERIES IN 1981

PENINSULAR MALAYSIA:

Past Trends In Marine Fish Landings:

The marine fisheries sector in Peninsular Malaysia has recorded a spectacular growth in landings during the last 15 years. From 306,686 tonnes in 1967 landings had increased to 649,315 tonnes in 1981. However, such a growth though impressive, merits serious consideration because it had taken place almost exclusively with territorial waters. Given that the fishery resources within territorial waters are finite with the limit of exploitation determined by the maximum sustainable yield (MSY), this increase in landings brought about by increased fishing pressure has to be closely monitored to prevent over-exploitation of the fisheries resources.

For the purpose of this analysis shellfish (which is almost exclusively cockles) is excluded from total landings since it is mainly a product of coastal aquaculture. The West Coast and East Coast of Peninsular Malaysia are also separately analyzed as the resources in these two areas are distinct from each other.

West Coast

The West Coast, bordering the Straits of Malacca, accounts for about two-thirds of total Peninsular Malaysian landings. This is the result of the greater expansion in this area, compared to the East Coast, from the late sixties until as late as the late seventies. During the last 15 years, landings have increased by 78% from 203,175 tonnes in 1967 to 362,282 tonnes in 1981.

Fig. 1 indicates the existence of three distinct peaks during this period, i.e., in 1968, 1974 and 1980, with an interval of six years between peaks. The first and third peaks were mainly due to exceptionally high landings of pelagic species while the second peak was caused mainly by higher landings of demersal species. Also, unlike the 1968 and 1974 peaks, the 1980 peak experienced a high increase in landings sustained over a longer period of time. The analysis of these trends by type of fisheries resource is given below.

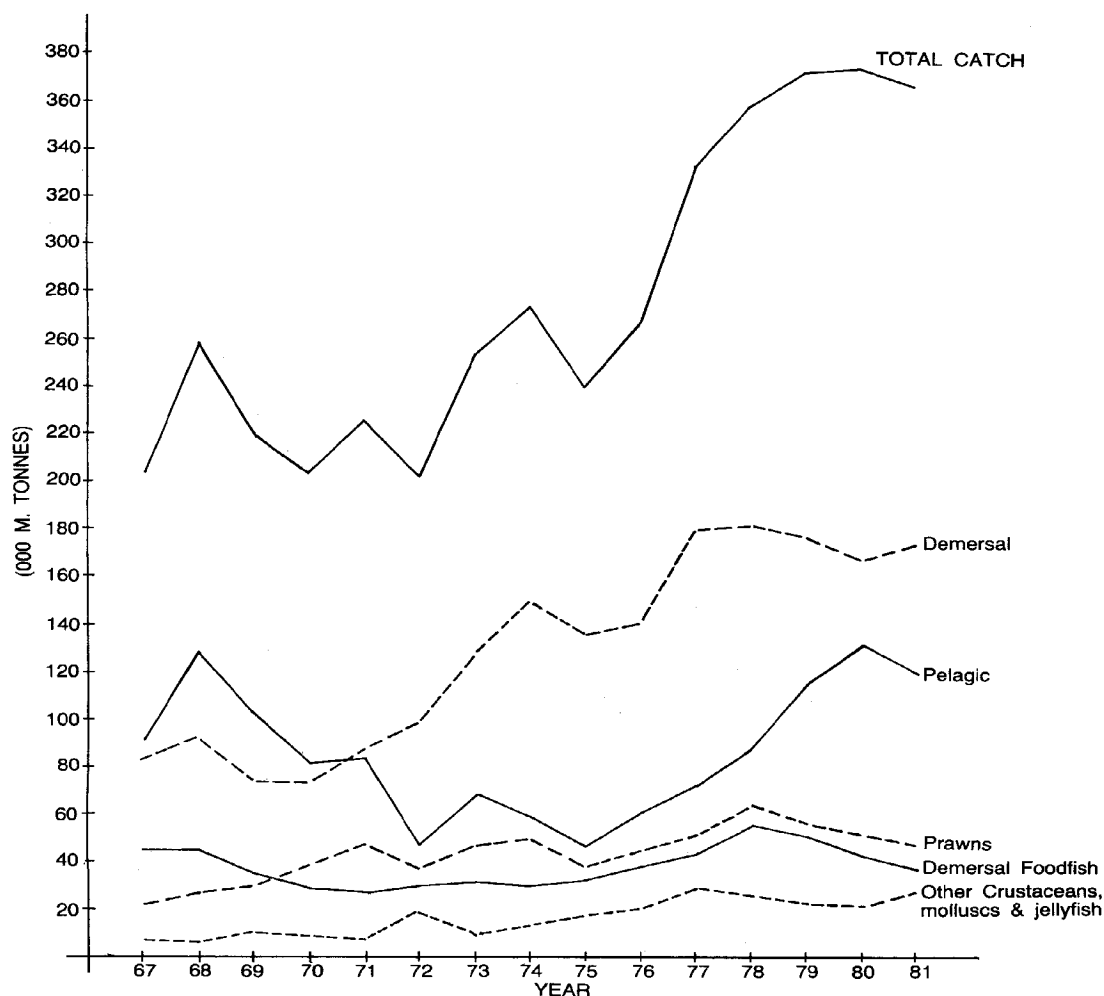


FIG. 1: WEST COAST — TREND OF LANDINGS, 1967 — 1981

Demersal fish landings, mostly by trawlers, increased from 83,317 tonnes in 1967 to 171,995 tonnes or 40% of total landings in 1981. This was mainly caused by trashfish landings, a trawl by-catch, which increased from 38,658 tonnes in 1967 to 135,192 tonnes in 1981. The foodfish component of demersal landings, on the other hand however, has been declining since the 1968 peak and reached a low point in 1975. After 1975, for three consecutive years demersal foodfish landings increased until they attained a high point in 1978 and subsequently they again continued to decline. The proportion of foodfish in demersal landings has consequently continued to decline. Whereas foodfish comprised 54% of total demersal landings in 1967, in 1981 it only accounted for 21%. The balance being trashfish. This trend in trashfish landings was mainly caused by the increase in the number of mini trawlers fishing for prawn during this period. The total number of trawlers in operation increased from 928 in 1967 to 5,266 in 1981. In 1981 trawlers alone were responsible for 89% of total trashfish landings on the West Coast. This fact is further compounded by the increase in trawl fishing time during the last few years. Whereas in the late sixties and early seventies trawlers went out only on daily trips and carried out hauls of one hour duration per haul, in the late seventies, they went out on trips of more than a days duration and their average duration per haul during these trips was of 3 hours. Though the number of trawlers increased by about six times between 1967 and 1981, actual fishing effort was further increased by this change in trawler operations. Despite this increase in the trawl fishing effort, the catch has not been proportional to the fishing effort; the increase in landings was at a decreasing rate and for some years now the increase in landings has been arrested and a decline has set in.

The FAO/SCSP workshop on fishery resources in 1976 estimated the demersal fish stocks in the Straits of Malacca with a MSY of 160,000 tonnes, of which 110,000 tonnes are located in the inshore waters and 50,000 tonnes in the offshore area. The offshore resources are poor and do not contribute significantly to the landings. Fishing is confined mainly in the inshore area where the resources are grossly overfished. Landings here have exceeded the MSY of 110,000 tonnes ever since 1973. The MSY of the whole Straits of Malacca (i.e. 160,000 tonnes) had been surpassed since 1977. After a marginal increase in demersal landings in 1978, total demersal landings have begun to steadily decline since 1978. Within this decline it is noticed that trashfish has increased in 1981, while demersal foodfish continue to decline. The status of the demersal resource in the Straits of Malacca is one of an over-exploited resource and the increase in trashfish in 1981 could be the result of a desperate attempt by trawlers to remain in the fishery through very intensive fishing, though detrimental to the existing demersal resources.

The trend in prawn landings is of late quite similar to that of demersal fish landings. Prawns had good years in 1971, 1974 and 1978. Since they are also mainly landed by trawlers, the increase in the number of trawlers, also resulted in increased prawn landings during this 15 years period. But recently the proportion of prawns landed by trawlers steadily declined compared to other gears like drift/gill nets and bagnets which have increased their proportion of prawn catch. While in 1978 trawlers accounted for 71% of all prawns landed yet in 1981 trawlers landings of prawns were only 48%, and prawns landed by other gears increased to 52% of the total prawn landings. This change was probably the result of strict enforcement of the laws prohibiting trawlers from fishing very near the shore in recent years. Whatever the reason, the fact is prawn landings after 1978 have steadily declined. The MSY for prawn stocks has been estimated at 53,000 tonnes by the FAO/SCSP workshop in 1976. However this estimate seems to be too high. The Fisheries Research Institutes estimate of 40,000 tonnes in 1973 seems to be more realistic. Though this estimate of the MSY for prawns was surpassed in 1971, subsequently prawn landings had oscillated around this MSY until 1978 when they reached an all time high of 63,017 tonnes and thereafter steadily declined during the last three years.

The growth of the West Coast fisheries in the late sixties and in the seventies was mainly the result of the introduction and subsequent development of the trawl fishery. Trawling was the main catalyst for this growth. However, with the steady decline in demersal foodfish (though trashfish landings were increasing) and prawn landings, both of which are primarily landed by trawlers, seem to indicate that the era of trawler growth on the West Coast has come to an end. Trawl landings' proportion of total landings (excluding trashfish) between 1978 and 1981 clearly indicates this. Whereas at the peak of trawler landings in 1978 trawler contribution to total foodfish landings was 55%, in 1981 it had declined to only 35%.

Pelagic fish landings, after reaching a peak in 1968, had generally declined until 1975. But since 1976 pelagic landings had steadily increased and culminated in an all time high in 1980. By coincidence the 1980 peak landings of 131,354 tonnes was almost as high as the 1968 peak of 129,448 tonnes. Though the MSY for pelagic fish resources has been estimated at 88,000 tonnes by the 1976 FAO/SCSP Workshop, total landings had exceeded the MSY in the 1967-1969 period and in the 1979-1981 period. From 1970 to 1978 pelagic landings had remained well below the MSY. Taking the seasonality of pelagic species and past trends as an indication, pelagic landings which declined in 1981 will continue to decline for a few years until it reaches a point near the MSY level after which it probably would oscillate around the MSY ceiling. It could take another decade before another peak similar to the 1980 peak is reached.

Unlike the demersal resource based fisheries, it is not likely for the pelagic fisheries to collapse because pelagic resources are migratory as well as seasonal by nature. Moreover, the bulk of the pelagic species are landed by purse seiners, whose numbers change according to the season. This automatic effort adjustment on the part of the purse seine fleet to the resource available is a self regulating mechanism which makes over-exploitation of pelagic resources very remote.

Among the other crustaceans and molluscs (including jellyfish) the trend has been increasing in recent years, especially since 1973. The most important among this group are the sergestid shrimps and squids and cuttlefish. Sergestid shrimps with average annual landings of about 5,000 tonnes in the sixties (5,805 tonnes in 1967), today average around 10,000 tonnes per annum (9,299 tonnes in 1981). Squids and cuttlefish which on the other hand used to average an annual landings of less than 1,000 tonnes in the sixties (709 tonnes in 1967), today average around 10,000-11,000 tonnes per annum (8,923 tonnes in 1981). Their trends are expected to continue for some years to come.

East Coast:

The East Coast, though bordering the vast expanse of the South China Sea, has its fisheries concentrated mainly within territorial waters. As development arrived on the East Coast only in the seventies, the profile of the fisheries here is quite distinct from that on the West Coast. Communications, markets and capital were either undeveloped or lacking. The development of infrastructure and other inputs by the government in the seventies finally broke the vicious circle of underdevelopment on the East Coast.

Three distinct peaks are also evident on the East Coast during the period 1967-1981, namely, in 1974, 1978 and 1981 as seen on Fig.2 supra. However, with the exception of 1978, the other two peaks do not correspond to the West Coast peak years. Furthermore, it is yet uncertain whether 1981 is a peak year. Probably only the 1982 landings can confirm this. However, observations of landings in 1982 do indicate that landings will slightly decline in 1982 to confirm a peak in 1981.

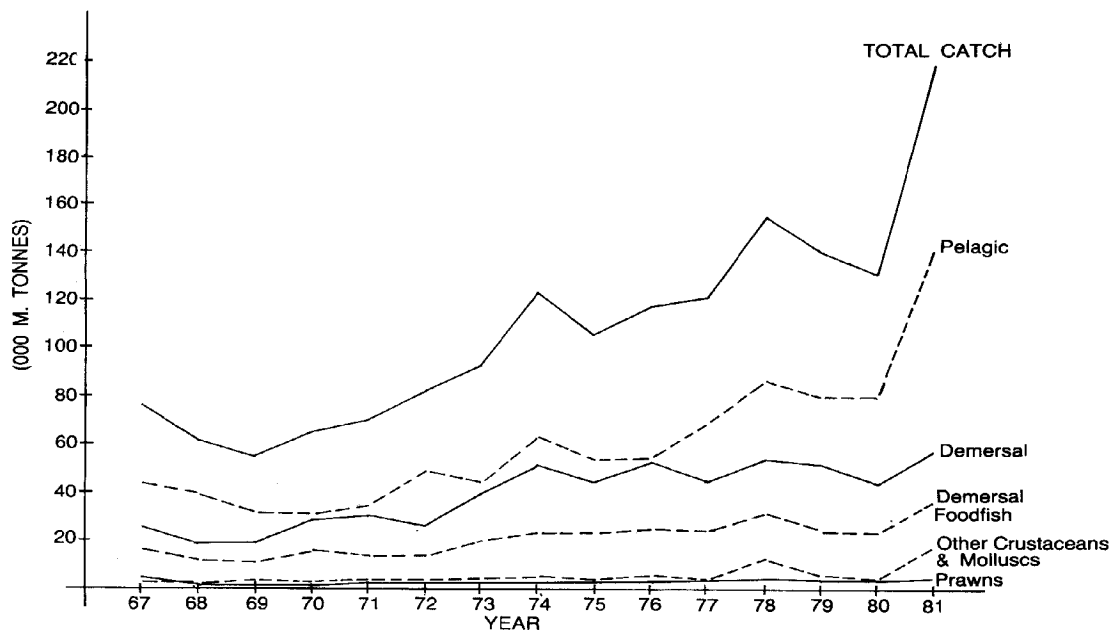


FIG. 2: EAST COAST — TREND OF LANDINGS, 1967 — 1981

Demersal fish resources here were relatively underdeveloped until the introduction of trawlers in the early seventies. Corresponding with the introduction of trawlers, demersal landings increased until 1974 when a peak landing of 51,476 tonnes was reached. Subsequent to 1974, demersal landings had continued to oscillate around the 1974 peak landings-i.e., around 50,000 tonnes per annum. The bulk of demersal landings were by trawlers and to a lesser extent by drift/gill nets and portable traps. Whereas in 1968 trawlers only accounted for 27% of total demersal landings, in 1981 they accounted for 40%. The balance being landed by drift/gill nets and portable traps.

The MSY for demersal fish stocks here is estimated at 80,000-120,000 tonnes (Pathansali 1976). As present landings are only around 50,000 tonnes, there is therefore room for further development contrary to the situation on the West Coast. However, with the exception of portable traps, the trawlers and the drift/gill netters tend to concentrate in the fishing grounds nearer to the coast. They avoid venturing further out to sea, claiming their catch rates are lower when they venture further out due to a fall in fish concentrations. This has resulted in over exploitation of existing fishing grounds causing a familiar problem of a high trashfish content in demersal trawl landings. Whereas in 1968 trashfish consisted of 50% of total trawl demersal landings, in 1981 it was 74%. Despite this trend demersal landings, as an important contributor to total landings, have come to stay on the East Coast since the introduction of trawling.

Unlike the West Coast, prawns are relatively not an important resource on the East Coast. Their annual landings have consistently remained below 5,000 tonnes. The bulk of these prawns are landed by trawlers (63% in 1981). Though there is a sizeable coastal semi-resident prawn stock on the East Coast, which is quite well exploited by drift/gill nets and bagnets, there is also a substantive migrant stock which appears in the coastal waters during the monsoon months, which is exploited by the trawlers. Due to monsoon conditions, this migrant stock is not quite well exploited. The MSY for prawns is estimated at 5,000-6,000 tonnes (Pathansali 1976) and as such there is capacity for exploitation of a further 1,000-2,000 tonnes per year. However, it is forecasted that the present trend in prawn landings will remain unchanged in the near future.

Pelagic fish have always dominated landings on the East Coast. They were the reason for the peaks in 1974, 1978 and 1981. The maximum potential for pelagic fish has been estimated at 80,000 tonnes which was reached in 1978. Although for the last three years pelagic landings have remained around this maximum potential level, however in 1981 they reached an all time high of 141,229 tonnes. The bulk of the pelagic landings were by purse seiners, and to a lesser extent by liftnets, drift/gill nets and trolling. This huge increase comes mainly from Trengganu. Besides the exceptionally good year for pelagic species, the vastly improved data collection system during 1981 also was a contributory cause. Indications are that catches above 90,000 tonnes are expected to continue for a few more years, though they may not reach the 1981 peak level. The maximum potential yield, in the light of this, has to be revised if this trend continues.

The other crustaceans and molluscs have, until very recently, remained at almost the same levels as prawn landings and were thus quite insignificant. However, in 1978 and again in 1981 substantial quantities of sergestid shrimps and squids and cuttlefish were landed. The significant increases in 1978 and in 1981 in sergestid shrimps were chiefly due to the use of small purse seines for catching these tiny shrimps, while jigging and trawling were the cause for the increases in squids and cuttlefish landings in 1981.

Marine Fish Landings In 1981

West Coast:

Marine landings in 1981 declined by 2% from 370,105 tonnes in 1980 to 362,282 tonnes in 1981. In fact this was the first decrease ever since marine landings began increasing in 1976. The period 1976-1981 was the longest sustained increase in landings during the last two decades. The main reason for this decline in 1981 was the decline in pelagic fish and prawn landings. Demersal fish and other crustaceans and molluscs on the other hand recorded an increase in landings in 1981.

Pelagic landings declined by 10% from 131,354 tonnes in 1980 to 118,202 tonnes in 1981. This was brought about by decreases in the major species like hardtail scads by 54%; anchovies by 3%; sardines by 23%; tuna by 44%; and chub mackerel by 13%. The decline of these major species brought down pelagic landings in 1981. Purse seiners, being the main gear catching pelagic fish, were greatly affected by this decline. Whereas the decline in anchovy landings decreased the anchovy purse seiners by a marginal 3%, the fish purse seine landings decreased by 30%. Trawlers using high opening trawl nets and driftnetters, which also land substantial amounts of pelagic fish, were generally less affected as they are not entirely dependent on pelagic resources. Thus the purse seine fishery which had been enjoying an extraordinarily sustained good period for the last six years had, compared to 1980, a slightly poorer season this year. However, the landings even now are still good to sustain a viable purse seine fishery for a few more years unless this good period ends abruptly as it did in 1972 and in 1975.

The prawn fishery, the most important resource to trawlers and some other gears like drift/gillnets and bagnets, continued to decline in 1981. Prawn landings declined by 11% from 51,081 tonnes in 1980 to 45,521 tonnes in 1981. This trend has been going on since 1979 and it is expected to continue in view of the tremendous fishing pressure on prawns on the West Coast. This decline will affect the trawl fishery most seriously as it is the prawns which have sustained the profitability in trawling. The decline in prawns and the ever increasing cost of fishing operations spells a bleak future for the trawlers on the West Coast.

Demersal landings apparently showed an increase in total landings by 3% from 166,437 tonnes in 1980 to 171,995 tonnes in 1981. However, this increase was really brought about by an increase in trashfish landings which increased by 9% in 1981. (90% of these trashfish were landed by trawlers). The foodfish content of demersal landings however, declined by 13%. Demersal foodfish landings have been declining since 1978. Trawlers which account for 84% of demersal foodfish landings are seriously affected by this slide. Minor gears affected by this decline are hooks and lines, portable traps and drift/gillnets. Among the major demersal fish species, the threadfin bream was the only species that recorded a slight increase in 1981, while landings of marine cat-fishes remained almost unchanged. Among the major species whose landings decreased were tonguesoles, jewfish and ray.

Among the other crustaceans and molluscs the most important were squids and cuttlefish and sergestid shrimps. This group as a whole increased by 25% from 21,233 tonnes in 1980 to 26,564 tonnes in 1981. The main increase in this group was caused by the increase in sergestid shrimp landings. These are mainly caught by palisade traps and bagnets. The former usually caught quality demersal fish in the past while the latter used to land mainly prawns. Today these tiny shrimps are the mainstay of these two fishing gears.

With declining pelagic, demersal foodfish and prawn landings, the West Coast fared poorly in 1981. As this has been the trend for the latter two resources, there is going to be some hard times for fishermen on the West Coast in the coming years.

East Coast:

Before any analysis of landings for the East Coast is made a qualification regarding the data collection methodology is necessary. In the past poor data collection methods resulted in either an over-estimation or an under-estimation of total landings. With the introduction of a two-stage sampling survey method in 1981 catch data were adjusted to a more realistic estimate resulting in drastic increases or decreases in catches of some East Coast States, especially Trengganu in the case of the former and Kelantan in the case of the latter.

East Coast landings increased by 66% from 130,403 tonnes in 1980 to 215,944 tonnes in 1981. This increase was mainly brought about by the big increase in landings in Trengganu where landings increased by about 140% in 1981.

The main increase was in pelagic landings which increased by a hefty 80% from 78,646 tonnes in 1980 to 141,229 tonnes in 1981. Almost all the major pelagic species, like goldbanded scads, anchovies, sardines, tuna and chub mackerels increased in 1981. The main beneficiaries of this good season were the purse seines, and to a lesser extent the liftnets, drift/gillnets and hooks and lines. The bulk of these pelagic landings were landed by purse seines, with the exception of tuna which were landed by drift/gillnets and trolling. The increases in the landings of pelagic fish by the major gears in 1981 over 1980 are as follows: fish purse seines by 57%; anchovy purse seines by 110%; liftnets by 190%; drift/gillnets by 13%; and trolling by 67%. These substantial increases in pelagic landings brought about the unprecedented peak on the East Coast in 1981.

Demersal landings too increased by 30% from 42,938 tonnes in 1980 to 55,611 tonnes in 1981. The most important gear landing demersal fish is still the trawler, though in 1981 it landed much less than what it landed in 1980. Whereas in 1980 trawler landings of demersal fish was 60% of total demersal landings, in 1981 trawlers share of total demersal landing was only 46%. The balance were landed by drift/gill nets, portable traps and hooks and lines. However, demersal landings on the East Coast were never as significant as pelagic landings. As such they play a smaller role in influencing landing trends.

Unlike on the West Coast, trashfish landings on the East Coast only accounted for 36% of total demersal landings. Whereas demersal foodfish landings increased by 49% from 23,929 tonnes in 1980 to 35,720 tonnes in 1981, trashfish landings increased by only 5% from 19,009 tonnes in 1980 to 19,891 tonnes in 1981. On the East Coast, where there are less trawlers as compared to the West Coast, trashfish therefore are never landed in big quantities. It is interesting to note that the trawlers accounted for only 10% of total demersal foodfish landings, whereas they were responsible for landing 96% of trashfish landings.

Prawn landings increased by 8% from 3,660 tonnes in 1980 to 3,965 tonnes in 1981. Trawlers landed 63% of these prawns, the balance being landed by drift/gill nets and bagnets. The bulk of these prawns were landed during January-May and November-December which coincide with the North-East Monsoons.

The landings of other crustaceans and molluscs in 1981 increased by 193% from 5,157 tonnes in 1980 to 15,086 tonnes in 1981. The main reason for this three-fold increase was the very good season for sergestid shrimps and squids and cuttlefish. The bulk of this group was landed in Trengganu where the good season, coupled with the use of small purse seines for sergestid shrimps and jigs for squids and cuttlefish, increased tremendously their landings in 1981.

The fisheries on the East Coast, unlike the West Coast, thus has some more potential for further development, especially in the pelagic resource and to some extent in the prawn resource. Demersal resources however do not offer much potential as it exists, because most of the fishing is concentrated in certain fishing grounds within territorial waters which are already heavily fished. Further off shore uncertainty over available resources compounded by the depth of the waters here prohibits any new development in the immediate future.

EAST MALAYSIA

Marine Landings in 1981:

Due to limitation of data on East Malaysian fisheries, a detailed analysis of the status of fisheries in this region is not possible. However some inference can be drawn from the limited data that is available. Fig. 3 below indicates the general trend of marine landings in the East Malaysian States of Sabah and Sarawak.

SABAH:

With the exception of 1976 and 1980, landings have been gently increasing over the last ten years. As there was no significant change in the number of fishing boats, it can be only inferred that the decline in 1976 and 1980 were due to a poorer fishing season.

Compared to the immediate past year (i.e., 1980) landings in 1981 fared slightly better. Total marine landings increased by 16% from 32,700 tonnes in 1980 to 38,000 tonnes in 1981. The bulk of these landings were finfishes which amounted to 28,200 tonnes, while the rest were crustaceans (8,500 tonnes), Molluscs (500 tonnes) and other aquatic plants and animals (800 tonnes). The group with the biggest increase in landings in 1981 was the unsorted and unidentified fishes which increased by 113% from 800 tonnes in 1980 to 1,700 tonnes in 1981. Mackerels, billfishes etc. too increased by 14% from 6,000 tonnes in 1980 to 7,000 tonnes in 1981. Other finfishes too recorded marginal increases in 1981, however none of them were significant. Crustaceans, the bulk of which were prawns, increased by 13% from 7,500 tonnes in 1980 to 8,500 tonnes in 1981. Molluscs and aquatic plants and animals had very insignificant increases in 1981.

Total value of marine landings in 1981 was \$119 million, which was a 19% increase over last year. The most important group being the crustaceans, which amounted to 46% of total value landed or \$55 million. The other important species groups were mackerels, billfishes etc., Jacks, Mulletts etc., and Redfishes, Basses and Congers etc., each amounting to 16%, 15% respectively of total value.

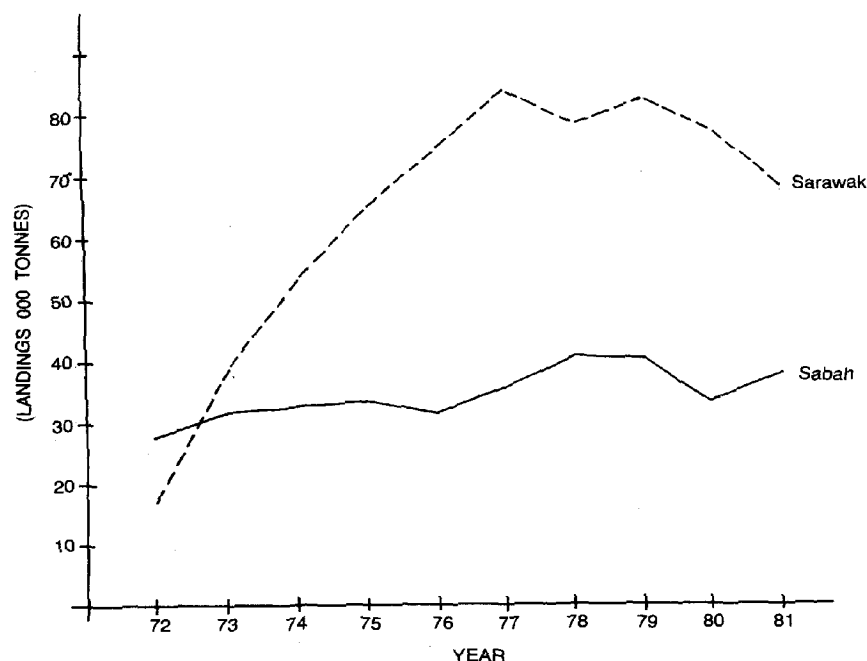


FIG. 3 TREND of LANDINGS, 1972 - 1982

SARAWAK:

During the last ten years, marine landings have been increasing at a tremendous pace in Sarawak. From a mere 16,000 tonnes in 1972, landings reached a peak of 83,000 tonnes in 1977. This increase was brought about by the developments in the industry, especially the introduction of trawlers. The development of other ancillary facilities such as communication and infrastructure too contributed to this development. However, during the last five years, the trend had slightly changed. In 1978 landings declined by 7%, brought about by the decline in jellyfish landings. Landings recovered in 1979 by an increase of 6%. But since 1980, landings have begun to slide again. There was a decline of 6% in 1980 and in 1981 landings further declined by 12% from 77,070 tonnes in 1980 to 68,043 tonnes in 1981.

The major gears affected by this decline in 1981 were trawlers whose landings declined by 20%, bagnets declined by 50% and palisade traps by 56%. All the other gears recorded increases in 1981. As trawlers account for 63% of total marine landings, the 20% decline in trawl landings was the main cause for the decline in total landings in 1981. As the bulk of trawl landings were demersal fish, it can be inferred that demersal fish landings declined in 1981. As palisade traps and bagnets also mainly catch demersal fishes, their landings too declined.

Though bagnets also land prawns, prawns landed by bagnets also declined. However, total prawn landings increased in 1981. Among the major demersal species that declined in 1981 were marine catfishes, jewfish, sharks and rays. Trashfish, which is also demersal, declined in 1981.

Landings of pelagic fishes were not significantly affected in 1981. Among the major pelagic species, pomfrets increased slightly in 1981, while spanish mackerel landings on the other hand decreased marginally.

The general decline in overall landings was brought about by the decline in demersal landings. The reason for this trend in the demersal landings could be either a temporary poor season in the fishery, or it could be due to over fishing by the Sarawak trawlers. Though Sarawak resources are still underexploited, the present fishing is mainly concentrated in specific coastal areas, where there has been some intensive fishing by trawlers. Landings could improve if new fishing grounds are ventured into.

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