

CHAPTER SIX

TUNA INDUSTRY IN MALAYSIA

The tuna fishery in Malaysia is presently being developed from a traditional fishery into a commercial scale operation. Troll lines, drift or gill nets and purse seiners are the main gears in use. In 1994 tuna accounted for only 2% of the landings of marine fish which amounted to 25,821MT. (Table 4) There are however fluctuations in the landings of tuna. In 1987 there was a high of 29,230MT.

The declaration of the 200 mile Exclusive Economic Zone (EEZ) by the Malaysian Government has greatly increased the opportunities for harvesting the available fisheries resources in the country. The extended jurisdiction greatly expands the fishing grounds of the country and this offers possible openings for the development of an offshore fishery.

TABLE 4**LANDINGS OF TUNA IN MALAYSIA****1994****(Metric Tons)**

TYPE OF NETS	TOTAL	P.M'sia*	W. Coast	E. Coast	E.M'sia**
Frawl Nets	134	66	36	30	67
Purse Seine	9043	5896	2532	3364	1230
Purse Seine (anchovy)	191	191	-	191	1918
Other Seine	4890	-	-	-	4890
Drift / Gill Nets	6187	1585	371	1174	4642
Lift Nets	671	114	-	114	557
Hook & Lines	4703	3461	-	3461	1242
Push / Scoop Nets	2	-	-	-	-
TOTAL	25821	11273	2939	8334	14548

* Peninsula Malaysia includes the West Coast and East Coast.

** East Malaysia includes Sarawak, Sabah and Labuan.

Source : Annual Fisheries Statistics, Dept. of Fisheries, Malaysia.

The present fishing grounds commonly exploited by our local fishermen extend from the shore-line to about 30 nautical miles (nm) from the shore.

The bulk of the fisheries however operate in a narrow coastal belt no more than 10 to 15 nm from the shore. Consequently this narrow coastal belt has become intensely exploited. It is timely that the possibility of developing an offshore fishery i.e., a fishery that operates beyond the 30 nm limit and off the presently exploited fishing grounds be evaluated. There are opportunities for development in the South China Sea where the bulk of the Malaysia EEZ lies. There is strong possibility that tuna is available here.

The present status of the tuna stocks available to Malaysia is not exactly known. Though information on the landings of tuna are available in the sea around, other biological information are difficult to collect. It has to be noted that the highly migratory nature of tuna means that the status of the stock can only be assessed using data covering the entire geographical range of the species being investigated. It is almost certain that all the tuna species found within the Malaysian EEZ would be species shared with other countries and, therefore the biomass present in any one EEZ would be a function of the relative distribution and fishing pressure between zones as well as the overall abundance.

6.1 OCEANOGRAPHIC

The distribution of tuna is frequently correlated with oceanographic conditions which are related to current and bottom topography. The area off the east coast of Peninsular Malaysia has relatively flat sea bottom seldom deeper than 100 m (metres). The currents are governed mainly by the monsoons. During the south west monsoon (May to October) the surface currents run north up into the Gulf of Thailand and during the north east monsoon the current direction is reversed. The discontinuity layer or thermocline is normally around 45 m. Inshore in the northern part of the east coast of Peninsular Malaysia there is a significant fresh water influence from the rivers in the area. The west coast of Peninsular Malaysia has a similar bottom topography and oceanography to the east coast and again the depth of water seldom exceeds 120 m within the Malaysian EEZ.

There is deep water off the north coast of Sarawak where at around 120 nm offshore the depth exceeds 1,000 m. The deep water is closer to the shore off Miri where it is only 60 nm from the port. This deep water brings oceanic conditions as well as the deep water tuna such as Bigeye and Yellowfin. Most of the tuna caught in western Sarawak are caught close inshore and as such are typical of casual species assemblages.

In the west and north of Sabah a deep water trench comes in from the north east and runs parallel to the coast. The trench has steep sides and the depth of water exceeds 2,000 m. This kind of bathymetric feature usually has tuna associated with it and indications are that this trench is no exception. Interviews with local fishermen indicate that foreign longliners have frequently been seen in the area prior to the declaration of the EEZ. The currents are reputed to be strong but large schools of tuna have been seen in the area. Off the east coast of Sabah the depth of water quickly exceeds 1,000 m within 18nm off Semporna. This area is attracting a lot of local and overseas interest. The size of the EEZ is very narrow to the north and north-east of Sabah, with the only extensive areas of sea being to the west of Sabah and the south-east of Semporna.

6.2 SPECIES CAUGHT

There is a distinct variation in the species composition of the species of tuna landed between East and West Malaysia. There is a transition from coastal to the oceanic species of tuna as one moves from west to east. The landings on Peninsular Malaysia are dominated by the coastal species typical of shallow waters whereas the landings in Sabah are made up almost entirely of the deepwater oceanic species. Sarawak is between the two extremes of Peninsular Malaysia and Sabah.

with western Sarawak being similar to West Malaysia and eastern Sarawak being similar to Sabah. The distribution of longtail tuna, can be seen in Map 1. The distribution of Yellowfin and Bigeye are shown in Map 2 while that of Skipjack is shown in Map 3.

6.3 PENINSULAR MALAYSIA

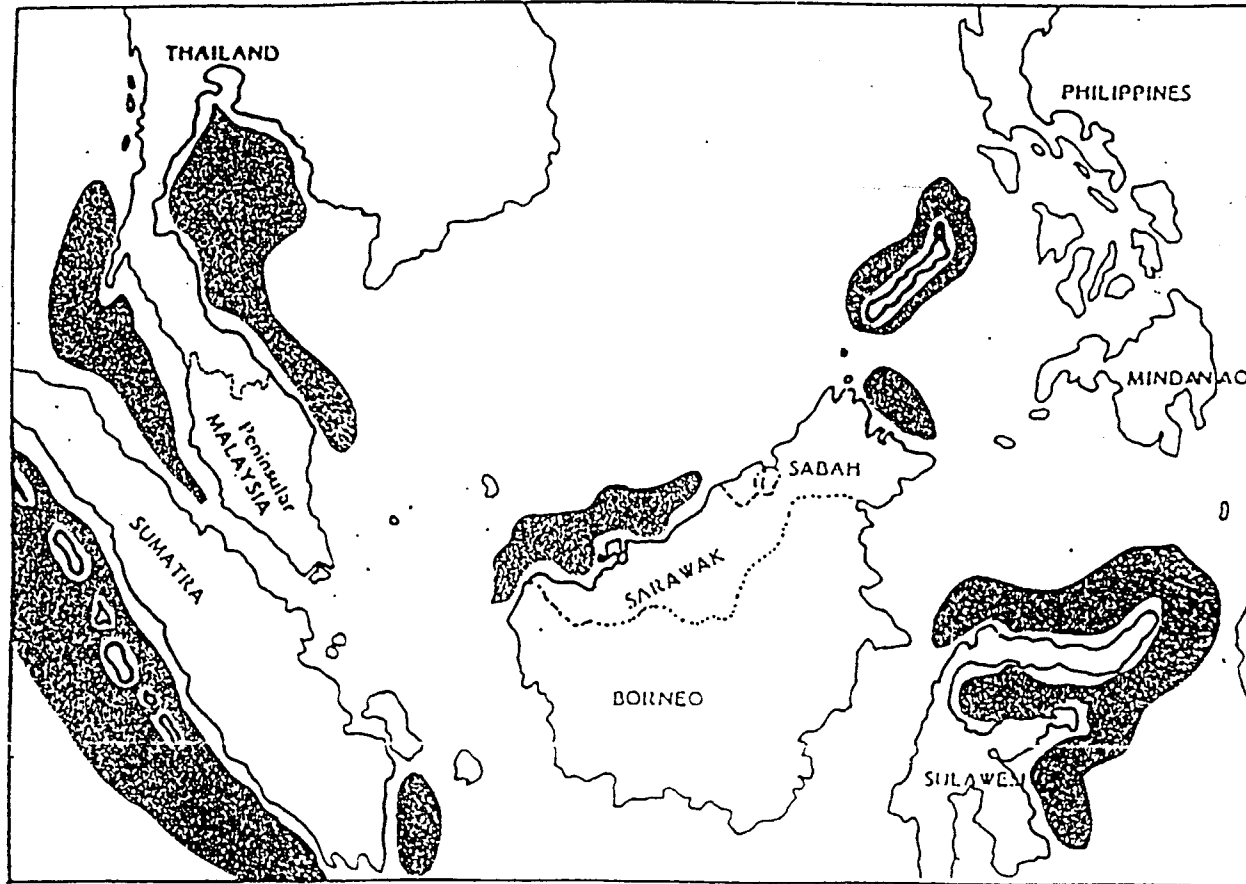
The composition of landings of species in Peninsular Malaysia are typical of shallow water and are very similar to the landings in Thailand. The principal species landed are Longtail tuna (*Thunnus tonggol*), Kawakawa (*Euthynnus affinis*), Frigate tuna (*Auxis thazard*), and Bullet tuna (*Auxis rochei*). Small quantities of Skipjack and Oriental Bonito (*Sarda orientalis*) are caught occasionally, but not in commercial quantities.

6.4 SARAWAK AND SABAH (EAST MALAYSIA)

The species landed in Sarawak vary along the coast, becoming more oceanic the further east the landing site. In the west the species mix is essentially the same as Peninsular Malaysia but in the east, significant quantities of Skipjack are landed. The two ports where Skipjack are landed are Bintulu and Miri.

MAP 1

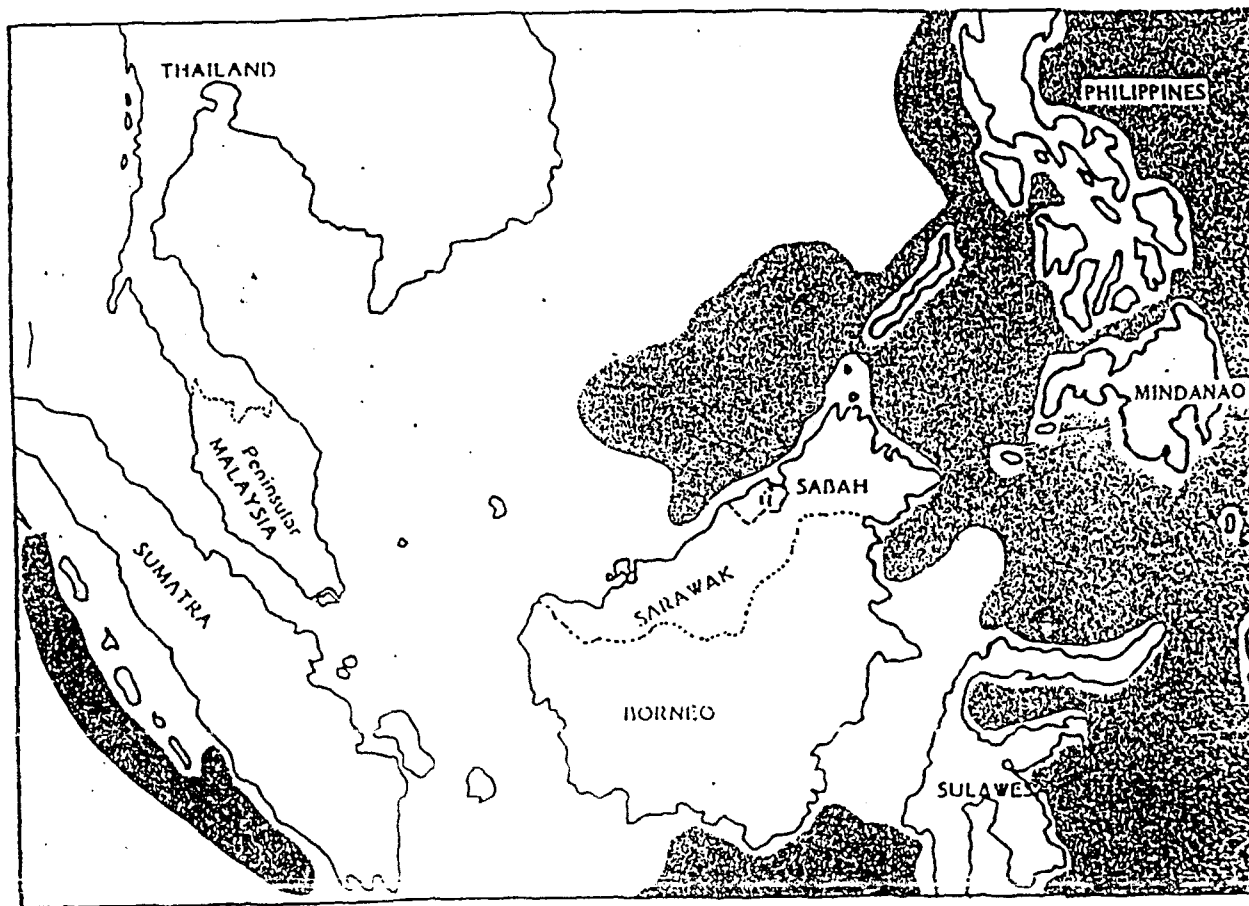
MAIN DISTRIBUTION AREAS OF LONGTAIL TUNA



Source : Jabatan Perikanan, Kementerian Pertanian, "Tuna Fisheries Resource And Development,"

MAP 2

MAIN DISTRIBUTION AREAS OF YELLOWFIN AND BIGEYE TUNA

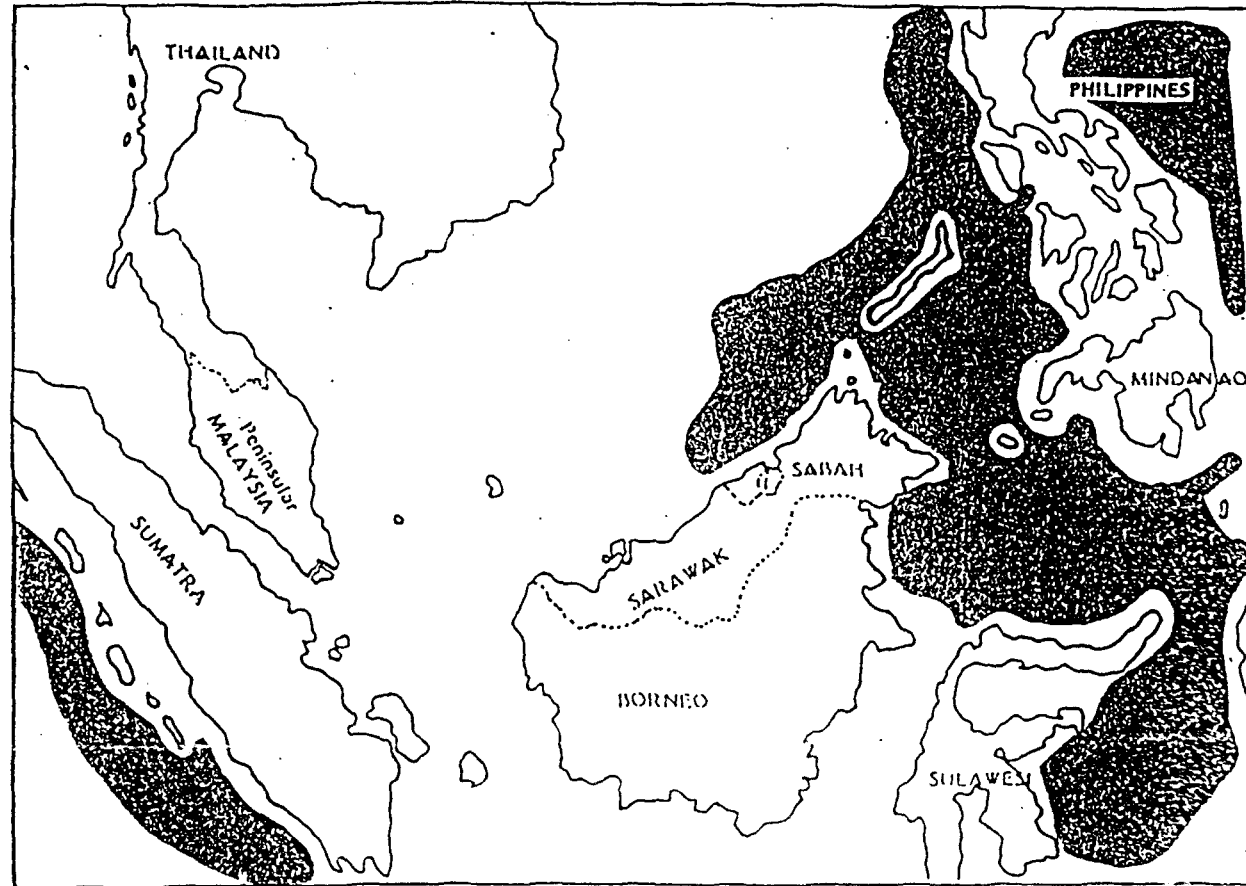


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Source : Jabatan Perikanan, Kementerian Pertanian, "Tuna Fisheries Resource And Development,"

MAP 3

MAIN DISTRIBUTION AREAS OF SKIPJACK TUNA



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Source : Jabatan Perikanan, Kementerian Pertanian. "Tuna Fisheries Resource And Development."

Sabah is the state with the greatest area of deep oceanic water off the coast and this is reflected in the species composition of the tuna catch. Longtail tuna, Kawakawa, Skipjack, Yellowfin and Bigeye make up most of the landings.

Large tuna and other large pelagic fish were rarely caught by purse seine. Most of the large tuna were more than 20 kg in weight and were mostly caught by tuna long line.

Tuna longline fishing assessment between Pulau Layang-Layang and Luconia Shoals and the Western Coast of Sabah has an average catch rate of 0.41 tails per hooks per set ranging from 0.31 to 1.30 tails per 100 hooks. More than 90 percent of tuna caught consisted of Yellowfin, *Thunnus albacares*. The other species caught were Bigeye, *Thunnus obesus*.

Small tuna are caught by purse seine and trolling. They are usually below 20 kg in weight.

There are six main tuna species in Sarawak : Kawakawa (*Euthynnus affinis*), longtail (*Thunnus tonggol*), Frigate (*Auxis thazard*), Skipjack (*Katsuwonus pelamis*), Yellowfin (*Thunnus albacares*), and Bigeye (*Thunnus*

obesus). Tuna catches are dominated by the smaller neritic species, Kawakawa, Longtail, Frigate and Skipjack.

Albert Chuan Gambang, in his paper on the status of the Fish Resources of South China Sea off East Malaysia, informs that a very rough biomass estimate for the EEZ waters of East Malaysia is 50,000 mt giving a potential yield of 25,000 mt.

6.5 FISHING METHODS USED

6.5.1 TROLLING LINE AND HAND LINE

A common fishing gear that is used to catch tuna in Peninsular Malaysia is the troll line. This gear is used off the coast of Terengganu, the most important state for tuna landings on the east coast. In 1986, half the amount of tuna landed were troll lines (Annual Fisheries Statistics 1986). Trolling boats that operate off Terengganu are small usually between 10 and 20 GRT (Gross Tonnage.) These are powered by engines less than 40 hp. These boats make trips lasting 4 to 5 days. Each boat usually carries four men each handling one line. The number of hooks per line varies between two and twenty-five depending on the size of the school of tuna sighted. The hooks are usually covered by tufts of raffia.

Fishing for tuna in the deeper areas for the larger-sized fish is usually done using the vertical hand line. This method is practiced off the coast of Sabah. Usually hand-lines are operated around payaws. Payaws are fish aggregating devices (FAD) that are originally used in the deep waters off the Philippines. The traditionally payaw uses a bamboo float from which is suspended an anchor line that anchor the raft to the sea-bed, and a luring line that carries a number of coconut fronds tied at regular intervals. Modern payaws have boat-shaped or cylindrical steel pontoons as floats. While the anchor line reaches the sea-bed, the luring line reaches possibly 200 to 300 m in depth.

The success of payaws in aggregating tuna can be exhibited in the increase in the quantities of tuna landed in the Philippines since 1975 when they were first introduced. The tuna landings increased from around 30,000 tonnes in 1975 to a total of 260,000 tonnes reported in 1985. Presently there are about 5,000 payaws set throughout the Philippines but 70% of these are located in the southern part of the islands.

Payaws are now being used in Malaysia. The use of FAD however is not a recent development in Malaysia since the traditional “unjang” or “tuas”

have been used for a long time by local fishermen in shallow coastal waters. Figure 11 shows the various types of payaws that are in use.

6.5.2 GILL NETS

Gill nets presently being used have 7.5 cm (three-inch) meshes and average two km in length. They are about 10 metres deep. Gill nets are not operated as far out at sea as the troll lines by our local fishermen. The boats used for gill netting are about the same size and power as those operating troll lines.

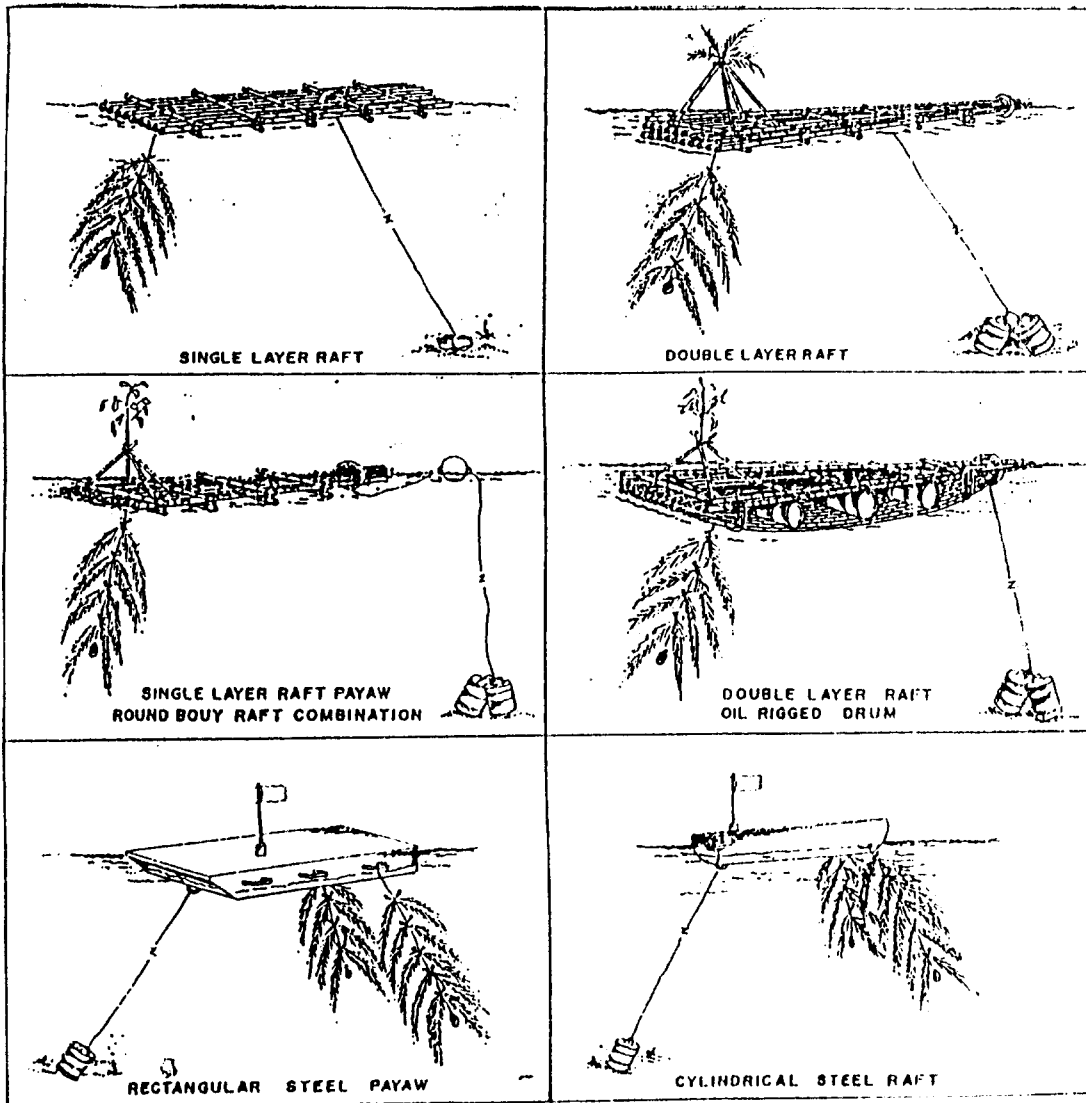
Gill nets operated off the east coast of Peninsular Malaysia contributed to 17% of the total tuna landings in Peninsular Malaysia, while on the west coast the contribution was only 2% in 1986. In Sarawak gill nets landed most of the tuna there (Annual Fisheries Statistics 1986).

6.5.3 PURSE SEINE

Currently very few foreign made purse seiners operating in our waters. They operate in the waters off Sabah and catch the tuna using FAD and light for attracting the tuna.

Figure 11

FISH AGGREGATE DEVICES (FADS)



Source : Arsenio S. de Jesus (1982), "Tuna Fishing Gears Of The Philippines,"
Philippines : Indo-Pacific Tuna Development And Management Programme

There are also local purse seiners which are much smaller. These are operated only off the Terengganu coast. The ordinary fish purse seine catch tuna as a by-catch. On the east coast of Peninsular Malaysia nearly all purse seiners are operated in conjunction with lures (“unjang” or “tunas”), usually made from coconut leaves and lights.

6.6 CURRENT OUTLETS

The majority of the Kawakawa and longtail tuna is consumed locally while the Yellowfin, Skipjack and Bigeye are exported frozen in brine to the Philippines, Thailand or Japan. The *sashimi* market and other processes have not been tried to-date, because of the lack of access to the required technology.

6.7 CURRENT CANNING SITUATION

Currently there are only a few canning companies in Malaysia that do canning of tuna. All of their supply of tuna, Skipjack and Yellowfin, are delivered by Taiwanese longliners who fish in the Indian Ocean. However the quantities acceptable at any one time are small, up to 100 MT per trip. This is mainly due to the limited cold storage facilities and their capacity to process the supply. All of

these companies have their factories in the North of the Peninsula. It is interesting to note that some of these companies have other factories in Southern Thailand and Indonesia. Canned tuna in these countries are sent to be labelled in the factories in Malaysia. They take the advantage of “Made in Malaysia “ in their marketing strategy when exporting. As such when compared to Thailand, there is very, very little canning of tuna done in Malaysia.