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# NEW TRENDS IN THE TRADITIONAL MARINE FISHERIES AT TUTICORIN

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## ABSTRACT

Quiet changes have taken place during recent years in the fishery by traditional crafts and gear at Tuticorin. This study refers to the changes taken place in the commercial fisheries of Tuticorin due to the introduction of mechanisation of traditional fishing crafts. Started in 1985 over 90 Tuticorin type boats have been fitted with inboard engines of 10 HP mainly of the Kangaroo make. These boats operate drift nets and hook & lines for demersal as well as pelagic species of fish. Data collected two years prior and two years after the introduction of mechanisation of indigenous crafts have been compared. Operational parametres and benefits of mechanisation are discussed. The fishermen are benefitted by increased catch per unit as well as increased price for the catch by arriving earlier.

During the past two decades revolutionary changes have taken place in the craft and gear employed in the coastal indigenous fisheries. An important ingredient in the craft development in indigenous fisheries was the introduction of mechanisation on a large scale with the financial support of Governmental agencies in the 1960s. Encouraged by the Government many small scale fishermen took up mechanisation of craft. However, this has developed into industrialisation of lucrative pelagic and demersal fisheries benefitting few people who could operate large fishing boats. Small scale and indigenous fishermen were left in the same old state with their traditional methods of fishing. Artisanal fishermen have withstood the onslaught by large scale mechanisation of fishing operations and have rallied round in recent years to introduce power to their traditional crafts. This study deals with the introduction of machines to traditional craft employed at Tuticorin with inboard engines and is confined to observations spread over a period of four years from 1983 to 1986. The impact of introduction of engines to traditonal crafts are brought out and discussed.

## *TRADITIONAL FISHING CRAFT OF TUTICORIN*

A large number of people are engaged in small scale fishing at Tuticorin using traditional plank built boat called Tuticorin type boat. A total of 360 Tuticorin type boats were in use during 1983, the number has increased to 431 in 1984; 458 in 1985 and 472 in 1986. Boats of three sizes namely 8.6 metres, 9.0 m and 9.5 m were in use. Detailed description of Tuticorin type boat is given by Chacko and Rajendren (1955). These boats are highly efficient all weather crafts and the introduction of machines for propulsion has enhanced considerably their range of operation.

## *MECHANISATION OF TRADITIONAL FISHING CRAFT*

Adequate berthing and landing facilities are available in the region by way of fishing harbour for larger mechanised fishing craft. On the other hand, smaller craft operating indigenous gear are landed on the beach itself. Hence the engines for propulsion fitted on the indigenous crafts are suited in such a way that they are kept safe inside the boats or taken home for repairs and safe keeping when not in use. Traditional fishery is labour intensive and spread all along the coast. It forms the principal production means of the fisheries of the Tuticorin area and remained a dominant small scale industry. Faced by the demand for shrimp in international market many of the once traditional fishermen became private industrial fishermen operating large mechanised crafts and gears suited to fish mainly shrimp. There was popular fear that the industrialised and highly organised mechanised sector was likely to wither out the traditional sector in course of time (Bapat and Kurian, 1978). On the contrary the traditional sector also strengthened itself and adapted to the changing times by introducing inboard and outboard engine propellants to the fishing crafts. The Tuticorin type boats are suited for fitting mechines and gradually many boats have been fitted with inboard engines with least modification in the boats.

## *TYPE OF ENGINES FITTED IN TUTICORIN TYPE BOATS*

Many manufacturing firms have come forward to provide engines suitable for the traditional crafts. Substantial loans are also given by three nationalised banks to purchase and install marine engines on the boats. During the two years 1985 and 1986 about 90 Tuticorin type boats bave been fitted with engines. The major constraint was in the case of joint ownership where in one or the other owner was unable to pay his share. Table 1 shows the type of engines used in Tuticorin type boats. The Kangaroo vertical type engine is most popular with boat owners at Tuticorin. On the whole it is easy to purchase a marine engine suitable for one's taste and easier to install and operate.

TABLE 1

*Types of engines fitted in Tuticorin type boats*

| Name of engine | Coolant | Horse power | Price(approx) in Rupees |
|---|---|---|---|
| Sakthi | Air | 9 (8.8) | 7500 |
| Lambedi | Air | 9 | 7500 |
| Kangaroo | Water | 8, 10 | 6500 |
| Field master | Water | 8 | 5300 |
| Kirloskar | Water | 8 | 6500 |
| H. T. C. | Water | 8 | 5500 |
| Indo western | Water and air | 10 | 6000 |
| International | Water | 10 | 7300 |

Average cost of each Tutiocorin type boat fitted with inboard engine comes approximately to Rs. 44000 (including cost of boat Rs. 30000; price of engine Rs. 7000 and charges for fitting the engine Rs. 7000). Fishing operations are carried out with drift nets and hook & line costing around Rs. 40000. Normally the boats fitted with engines go for fishing around 15.00 hours and return next morning by 7.00 hrs. They carry a complement of three fishermen and go to a distance of 20 to 30 miles. On the contrary, traditional fishermen using boats without engine leave for fishing between 13.00 and 15.00 hrs and come back next day around 8.00 to 12.00 depending on the direction and strength of the wind. They carry five people and fish in the 20 mile area.

## *CATCH AND EFFORT*

Data for two years preceding the introduction of machines on Tuticorin type boats and for two years of operation with machanised boats were considered. Contribution of non-mechanised Tuticorin type boats with drift nets and hook & lines from 1983 to 1986 and mechanised Tuticorin type boats with driftnets and hook & lines from 1985 to 1986 were compared Table 2.

During 1983 a total of 4142 drift net units were operated from non-mechanised boats landing 364. 2 t of fish. The catch-per-unit being 87.9 kg of fish. Hook & line boats during the year operated 11530 units landing

TABLE - 2.

*Comparative statement of catch, units operated and catch per unit by indigenous boats using drift nets and hook & line during 1983 to 1986.*

| Year | Non-mechanised units | | | | | | mechanised units | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Drift net | | | Hook & line | | | Drift net | | | Hook & line | | |
| | Catch kg. | Units operated | Catch per unit kg. | catch kg. | units operated | catch per unit kg. | catch kg. | units operated | catch per unit kg. | catch kg. | units operated | catch per unit kg. |
| 1983 | 364283 | 4142 | 87.9 | 832212 | 11530 | 72.2 | Not operated | | | | | |
| 1984 | 447456 | 4790 | 93.4 | 1023780 | 13615 | 75.2 | Not operated | | | | | |
| 1985 | 297650 | 3598 | 82.7 | 750480 | 10076 | 73.5 | 274798 | 2833 | 96.9 | 435957 | 4898 | 89.1 |
| 1986 | 68853 | 1124 | 61.2 | 303788 | 5460 | 55.6 | 155452 | 2486 | 62.5 | 724887 | 10091 | 71.8 |

832.2 t with the catch-per-unit at 72.2 kg. In 1984 a total of 447.4 t of fish were landed by 4790 drift net units with the catch-per-unit of 93.4 kg. The hook & line fishery during 1984 recorded an annual catch of 1023.7 t of fish from 13615 units and the catch-per-unit during the year was at 75.2 kg.

During 1985 both non-mechanised and mechanised Tuticorin type boats were operated in the traditional sector. Total landings by non-mechanised drift nets came to 297.6 t by 3598 units. The catch per unit being 82.7 kg Hooks & line during 1985 landed 750.4 t of fish by 10076 units with the catch rate of 73.4 kg. mechanised Tuticorin type boats operated both drift nets and hook and & lines during 1985. Total drift net units operated came to 2833, landing 274.7 t of fish. The catch per unit was 96.9 kg. During 1985 hook & line units numbering 4898 were operated from mechanised boats. Total catch came to 435.9 t with the catch per unit at 89.1 kg.

In 1986 there were 1124 non-mechanised drift net units operated at Tuticorin, landing 68.8 t of fish with the catch per unit rate of 61.3 kg. During the year 5460 hook & line units were operated from non-mechanised boats landing 303.7 t of fish. The catch per unit during the year was 55.6 kg. Mechanised boats during 1986 operated a total of 2486 drift net units landing 155.4 t of fish and the catch per unit was 62.5 kg. Total fish landed by 10091 mechanised hook & line units in 1986 was 724.8 t with the catch per unit at 71. 8 kg.

Catch per unit equivalent to catch per day's fishing was used as an index of fishing success A general decline in catch per unit was noticed in the 1986 fishery. A comparative observation between non-mechanised and mechanised units show a definite increase in the catch per unit by mechanised boats during 1985 and 1986 two years of introduction of mechanised units in the traditional sector (Table 2).

## *SPECIES COMPOSITION*

The non-mechanised and mechanised Tuticorin type boats tend to fish in the same areas at different times of the year and the fishing conditions are also similar. The principal components of the drift net catch were seer-fish, carangids, tuna, perches barracuda and sharks, perches from the most important component of the hook & line catches followed by nemipterids, seer, fish, sharks and carangids, No conspicuous changes in species composition are evident between the craft. Furthermore, the various species are equally vulnerable to different gears irrespective of the type of of craft used. Because of the longer stay in the fishing ground catch by the mechanised boats are proportionately more than that of non-mechanised boats.

## REMARKS

The traditional fishermen operating indigenous crafts and gears along the Tuticorin coast have been greatly benefitted by

mechanisation of Tuticorin type boat. The results achieved over a period of two years are encouraging. Benefits of introduction of motor to traditional crafts are much. Especially important is the time saved in reaching the fishing ground and returning to shore. Vagaries of wind and current have been overcome to a large extent and the fish reaches to the market in time to fetch higher price.

There is a fairly well established traditional system of fishing along the Tuticorin coast with indigenous Tuticorin type boat as the principal craft. Socio-economic conditions have placed the traditional sector on a lower footing than the fully mechanised industrial sector. A significant improvement in the socio-economic structure of the traditional sector is the creation of mechanisation to the existing crafts. Though it is partial mechanisation in its true sense the fitting of motor to the boat added new dimension in the exploitation of nearshore fishery resources.

It is not yet possible to say for certain whether there is any wastage in fuel or man power in operating mechanised boat. Many of the boats switch over to sail when the wind is favourable. Number of persons on fishing trips have been reduced to three from the normal compliment of five in non-mechanised Tuticorin type boats. Reduction in fishing hand is not a common feature as many of the boats are family owned and able bodied family members go for fishing irrespective of the need. The earnestness with which motors are fitted on to the existing boats is itself an indication of the apparent benefits. This rapidly increasing trend is likely to extend the fishing grounds and bring in more fish for the consumers.

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