

# THE INDIAN MACKEREL



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The Indian mackerel, scientifically called *Rastrelliger kanagurta*, is one of the most important food fishes. We do not know for how many centuries it has been enjoyed as food, but in 1803 it derived its scientific term from the Telegu name *kanagurtulu* of the Andhra Pradesh. The fish is known in Maha-

rashtra and Mysore as *bangada*, in Kerala as *ayila* and in Tamil Nadu as *kumbala*.

The Indian mackerel is widely distributed in the Indo-pacific region. According to scientists, there are at least 3 kinds of mackerel in our waters, the most important of them being the

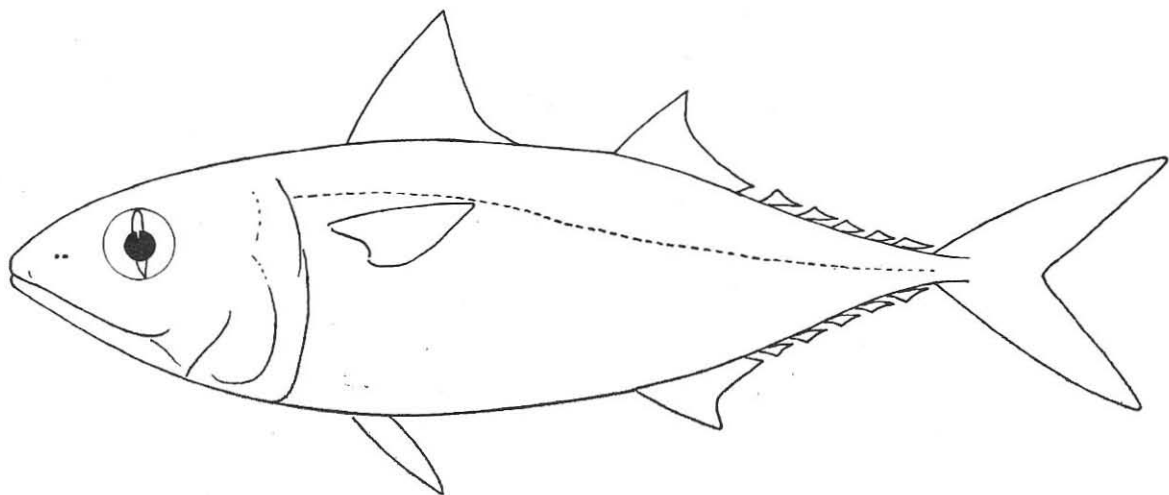


FIG. 1 The Indian Mackerel

*Rastrelliger kanagurta*. Of course this is the only mackerel caught in large numbers in our waters.

The annual catch data of the mackerel in India for the past 22 years show that the fishery is highly fluctuating. The

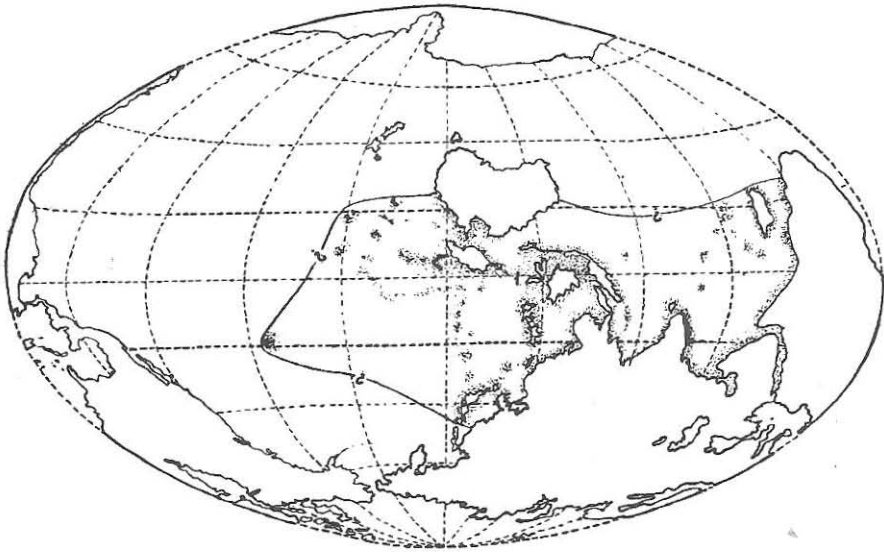


FIG. 2

World distribution of the mackerel.

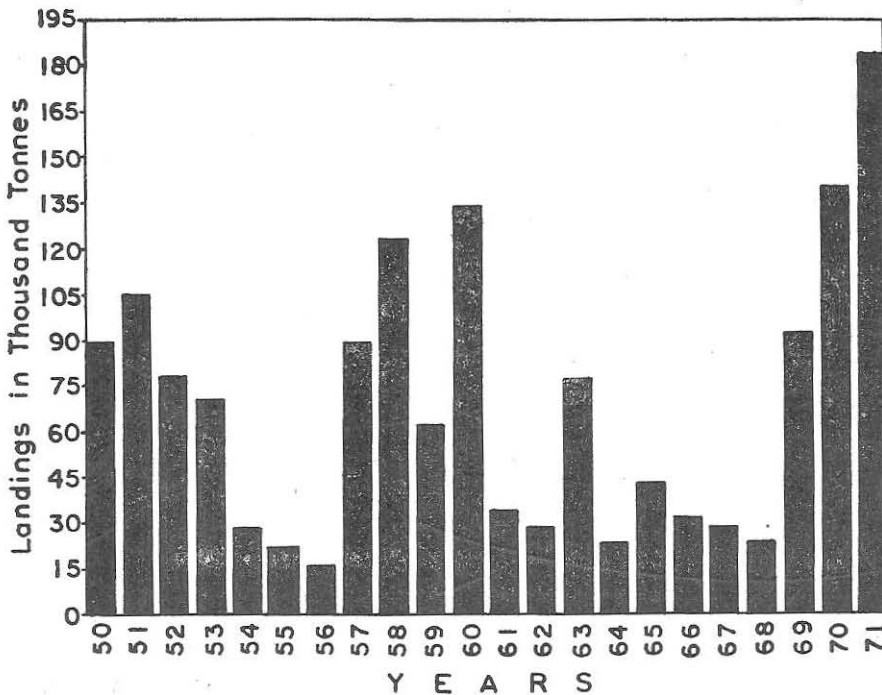


FIG. 3

Mackerel landings in India (Data for 1971 is provisional only)

landings were the lowest in 1956 and the highest in 1971. The annual average catch is estimated to be 69 thousand tonnes and it has been found that 9 per cent of the marine fish landed in India is the mackerel. It is essentially a west

52 per cent respectively. It forms 36% of the marine fish catch of Mysore State. A good share of the mackerel caught in the country (39%) come from Kerala alone. Nevertheless, it forms only one tenth of its marine catches.

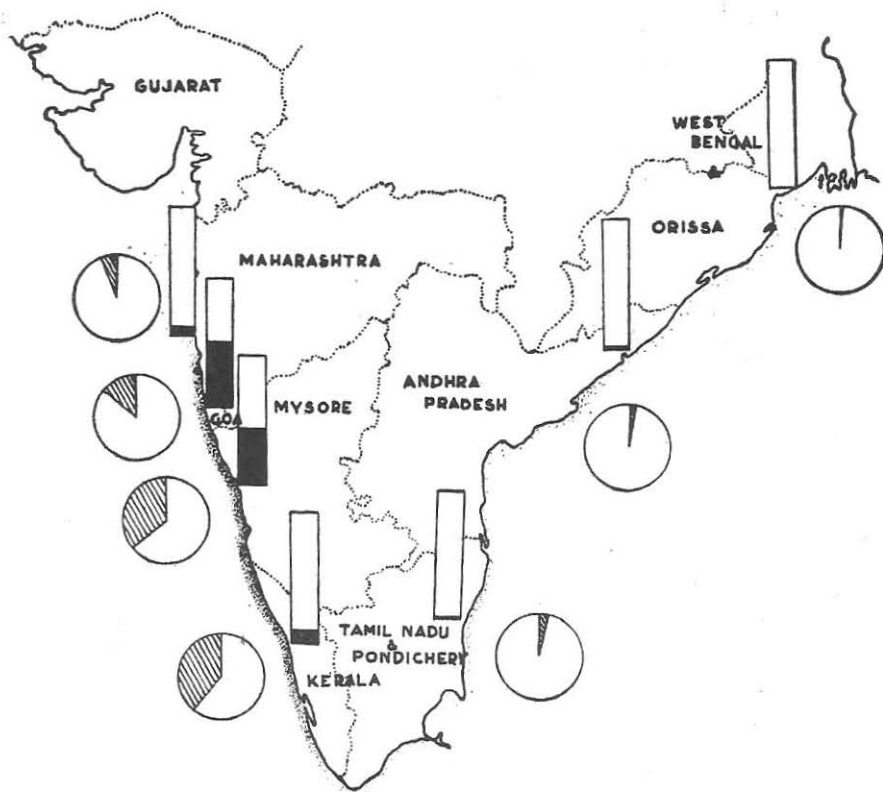


FIG. 4.

Mackerel fishery in India. Percentage of mackerel in the States' marine fish landings (dark part of bars), States' percentage in all India landings of the mackerel (grilled portion of circles), and the fishing zone (stippled coast-line).

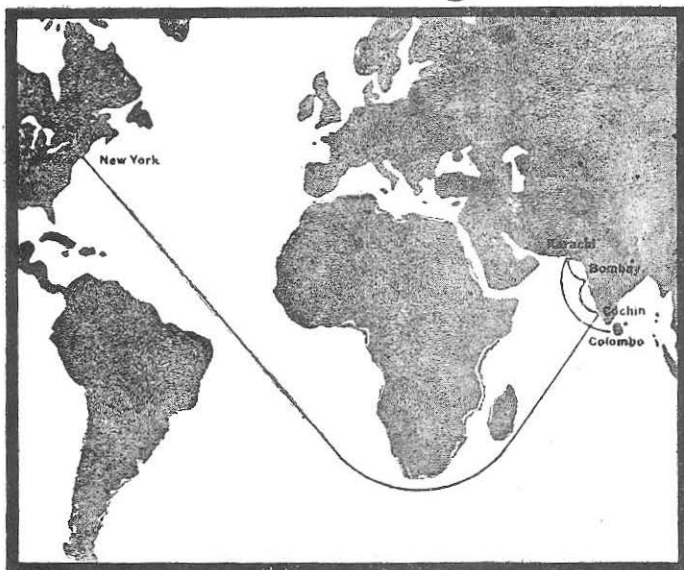
coast fishery, only 5 out of a 100 being got from the east coast.

In the west coast itself the fishery is mostly seen between Quilon in Kerala and Ratnagiri in Maharashtra. It is very important to the States of Mysore and Goa where the mackerel, among the marine fish landings, amount to 41 and

The mackerel season may begin in August and end by April. Its height occurs in November-December. The season starts early in the south west coast and lasts long. In the north it commences late and ends early. The whereabouts of this fish during the off-season is not known, though they are believed to be in the offshore waters.

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The mackerel is a delicious fish rich in easily digestible protein, minerals and vitamins. In years of glut in the past it was converted into fish meal famous as cattle and poultry feed, and manure good for plantations. The manure still being made from the guts and gills of those fish used for processing is very good.

practices of sun-drying, salt curing and Colombo pickling are on the decline. In fact, the market for pickled mackerel in Sri Lanka has also declined. Only a very small portion of the mackerel caught is at present canned and used.

The mackerel is a sturdy pelagic fish. It occurs in shoals which move in semi-

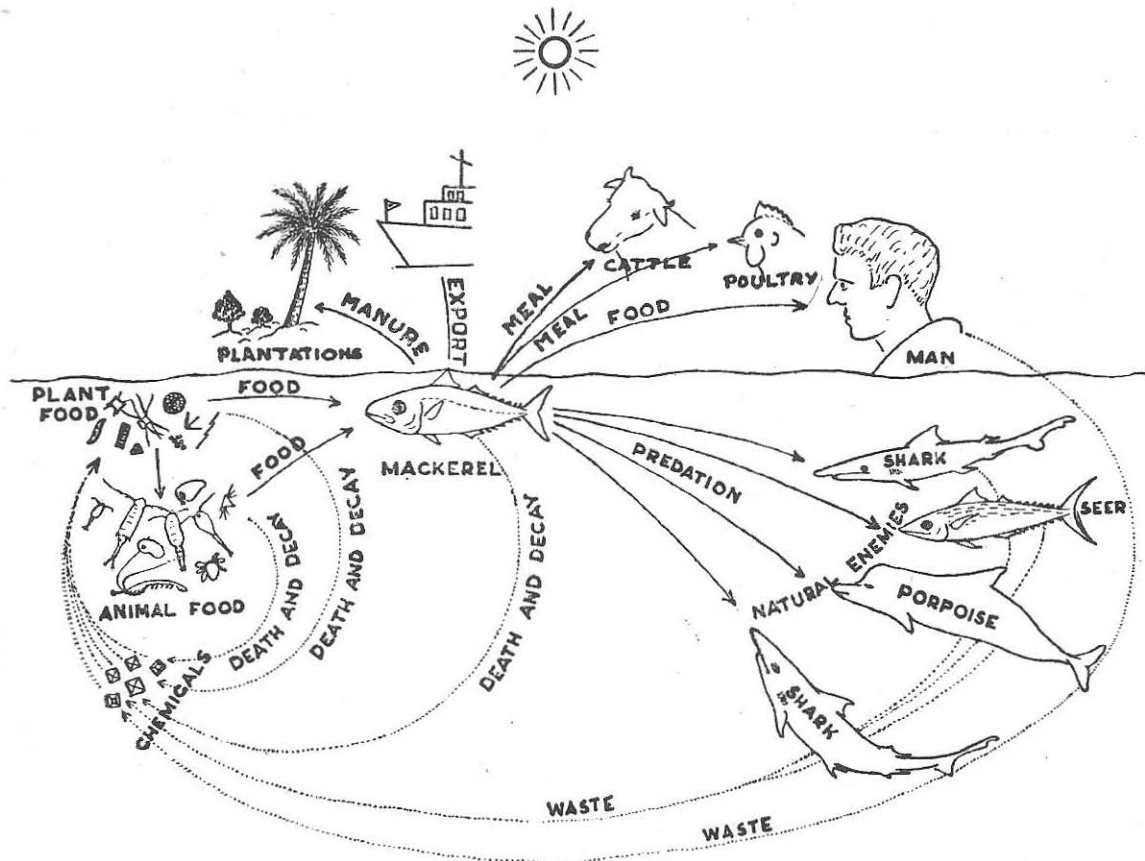


FIG. 5 The mackerel, a link in food cycle

The mackerel now caught is mostly being consumed fresh. With improved transport and refrigeration facilities it reaches many new interior markets in the country. Consequently its price has trebled during the last decade. The

circular or arrow-head formations along the current of water at high tide at a speed of about 12 to 16 km an hour. The mackerel is green in colour at the back and silvery below. But their shoals are visible as dark patches at sea sur-

face during day time and by phosphorescence at night. The fishermen take advantage of these to locate them during fishing.

Big fishes like the shark, seer, etc. and the porpoise (Fig. 5) are natural enemies of the mackerel. During an attack by them the mackerel shoals disappear to the bottom and the fish disperse to all directions. The porpoises are often seen as a pest, spoiling the

ing capacities used in the Kanara and Konkan coasts needs special mention.

A century ago, a Portuguese Parish Priest called Fr. Rampani introduced in the South Kanara coast a net later named after him as the *Rampan*. It is a very big version of the *kara vala* or *chavittu vala* of Kerala, and runs as much as 8 km in length. In operation it walls in a semicircular portion of the sea adjacent to the shore, from the beach itself. A net of the said size requires



FIG. 6 Impounding of mackerel shoals with *Rampan* net in the North Kanara Coast

nets and stealing the catches during fishing operations.

Country boats and indigenous nets are the implements still being widely used for fishing the mackerel. The *kolli vala* (boat-seine) and *ayila chala vala* (gill net) of the Kerala coast are very efficient nets. However, a particular shore-seine with immense fish-

80 persons working over 6 hours to complete one operation. But it can catch huge quantities of fish at a time and keep them alive, impounded in the sea, for over a week waiting for good price and suitable market. Up to 25 lakhs of mackerel have been caught in a single operation of a net. But being operated from the beach it can be used only when the fish come very close

to the shore, and it is economical only when huge numbers of fish appear in the area at a time.

The mackerel in India is now caught only from the narrow coastal belt. For further development it is necessary to venture out into the ocean with modern mechanised fishing devices. The purse-seine is being tried along the coast at some places.

The mackerel fishery is supported every year by the new young fish entering the coastal waters during the season. For its rational exploitation a thorough knowledge of the fish concerning its growth, age, feeding, breeding, its races and population, the environmental conditions in which they live and form a fishery, etc. are essential pre-requisites.

The data on the landings and the catch in relation to the effort are yardsticks to measure the abundance of population in the sea. Yet it is too early to assess the strength of the stock on account of the missing informations on its life history and survival rate. Whether the mackerel we catch come from the same stock or from different local races, are also important informations intended to improve stock taking.

In mackerel, the male is distinguished from the female by internal examination of sex organs. In fish below 12 cm even this is not possible. Mackerel of the same size move together. Roughly half of them may be males and the rest females.

Precise knowledge on the age and growth of the fish enable us to understand the structure of the population and the seasonal and annual variations in its fishery. The growth is studied by observing their monthly length increments in the commercial catches. The age is

either calculated from this, or from the number of rings in scales, developed exactly the same way annual rings are added in trees.

From the studies made so far the mackerel is presumed to grow to 18 cm or so in one year. The commercial fishery is supported mostly by fish of the size range 18 to 22 cm. The mackerel seems to grow to 24 cm by the end of the second year of life. Though we have seen mackerel up to 32 cm, a fully grown one generally attains a size of about 26 cm only. The total life span of the mackerel is not definitely known.

The mackerel at the beginning of the season are immature. As the season progresses they start maturing and reproduce at the age of 2 years. It is believed to lay the eggs in batches at night. A mackerel is calculated to lay as much as 94,000 eggs in a season. We do not know where exactly they breed. It is away from the coast.

The ripe unfertilised egg seen from the ovary of the mackerel is spherical in shape, colourless and transparent and almost 1 mm in diameter. It carries plenty of yolk for the young mackerel to feed on and has an oil globule to keep it buoyant in the water. These eggs hatch out into small larvae. The larvae grow very fast in the early stages.

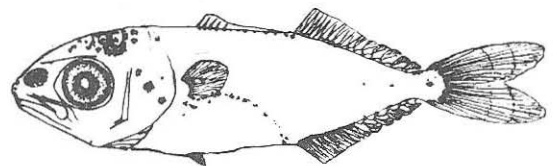
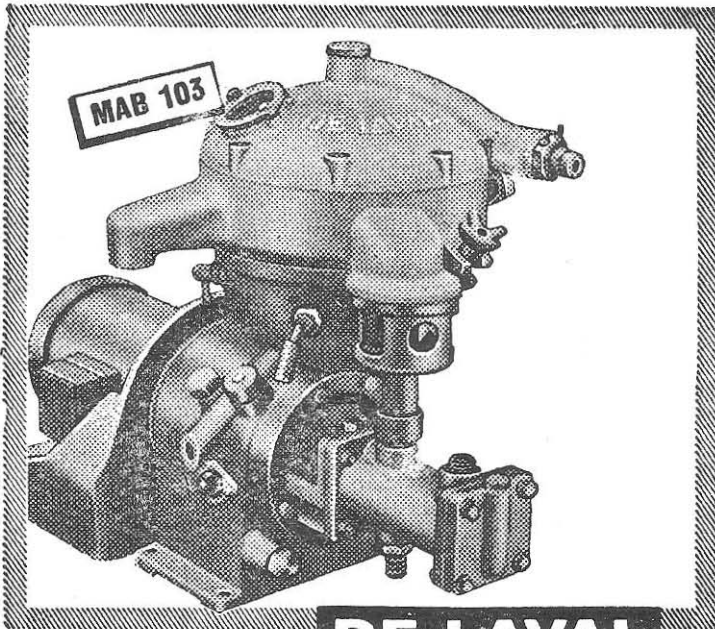


FIG. 7 A mackerel larva of 8.7 mm length

The mackerel appear to breed in and around the monsoon season in a





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year. The spawned mackerel are often found to have been starving or eating only very little.

The minute microscopic plants and animals floating in the water are the food of the mackerel (Fig. 5). They catch them by filtering the water through the gills in the mouth. More animal matter is consumed than plant material, and it is believed to relish certain food items and avoid certain others. The mackerel is believed to come to the inshore waters to feed on these food organisms when they are abundantly found. Therefore the significance of the studies on the occurrence, abundance and seasonal vari-

ations of these food items needs no special mention.

The mackerel is very sensitive to changes in the temperature, salinity and dissolved oxygen of the sea water. During the period of fishery, all these are at the optimum level. Changes in the environmental conditions and the associated current patterns influence the seasonal occurrence of the mackerel fishery. However, the magnitude of the catch depends upon the availability of the fish in the sea. It is governed by the survival rate right from the egg stage and the rate of exploitation which is not well understood. A survey of the mackerel resource starting from the

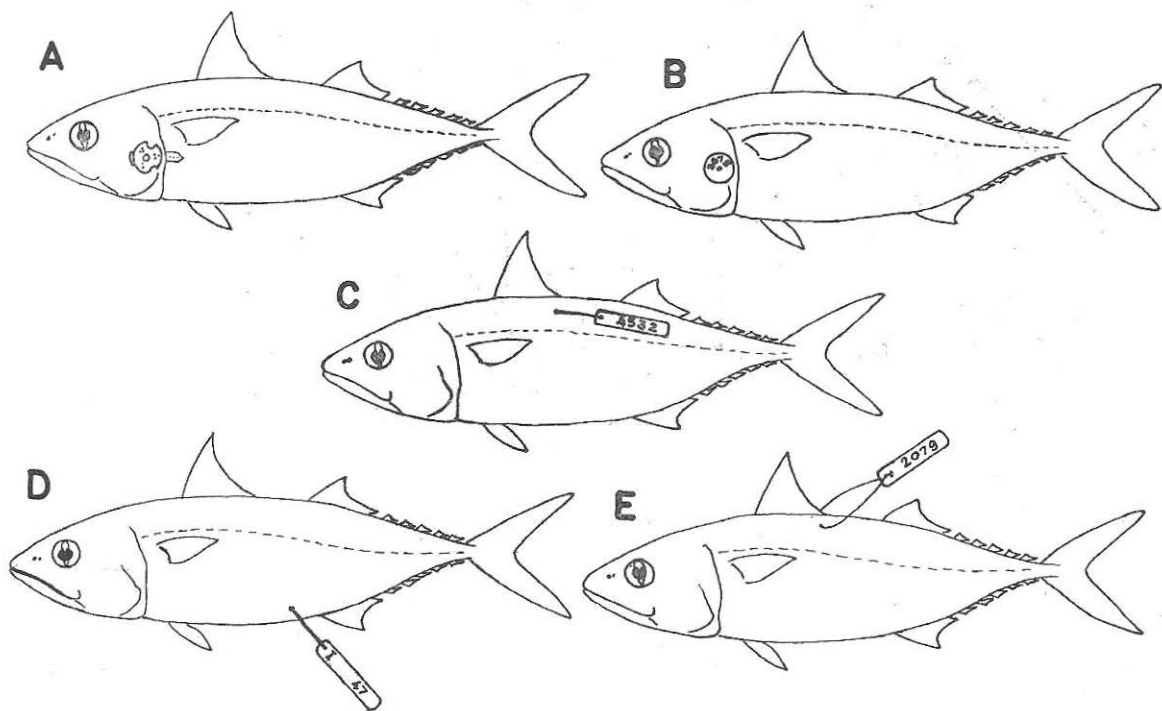


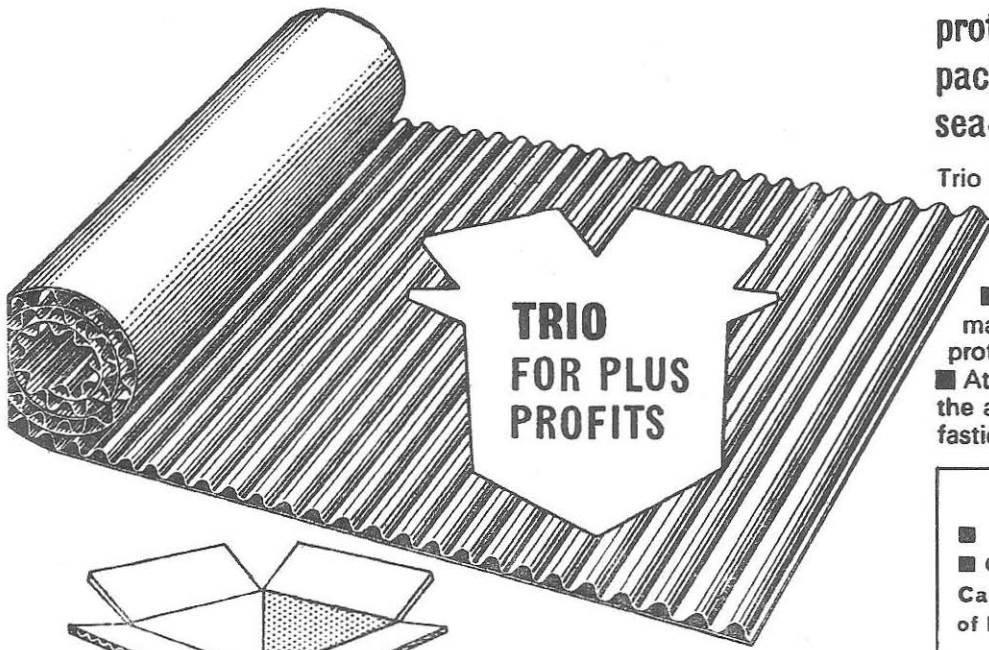
FIG. 8 Mackerel with A: Opercular tag, B: Opercular button tag, C: Dart trailing, D: Semi-internal tag, and E: Loop tag.

eggs and larvae may be undertaken in this context.

Marking live mackerel with plastic tags and releasing them back into the sea to study their growth and migration are tried by the Central Marine Fisheries Research Institute very recently. From the number of fish released and recaptured in a year, the rate of survival and the rate at which they are commercially exploited can be calculated. Making use of this the mackerel population in the sea may be assessed from the catch data. But the fishermen

and the industry have to pass on to the scientists correct informations of the fish catches. Prompt return of the tagged fish, and supply of related informations like the place, time and condition of recapture are other ways in which they can co-operate with the scientists.

The mackerel forms only a capture fishery. Culturing them in the sea may remain a wild desire. However, its scientific development may surely become a reality with the full co-operation of the fishermen, the help of the fishing industry and the encouragement of the general public.



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