

KADALEKUM KANIVUKAL

(Bounties of the Sea)

Farm School Series on marine fisheries
broadcast by All India Radio, Thrissur

Edited by

**K. RAVINDRAN
KRISHNA SRINATH
K.K. KUNJIPALU
V. SASIKUMAR**

Published by



CENTRAL INSTITUTE OF FISHERIES TECHNOLOGY
Matsyapuri P.O., Cochin - 682 029

&



ALL INDIA RADIO
Ramavarmapuram, Thrissur - 680 631

PELAGIC FISH

T.M. Yohannan

*Calicut Research Centre of CMFRI
Calicut - 673 005*

Pelagic fish such as oil sardine, Indian mackerel and white baits are very popular among the people of Kerala, especially those living in the coastal belt, since time immemorial. These fish often saved them from malnutrition and starvation. Even today these are the favourite food fish of the poor and middle class people. In Maharashtra and Gujarat the popular pelagic fish is the Bombay duck. Pelagic fish include different varieties of sardines, carangids, seerfish and tunas of different sizes and taste that we love to include in our daily meal.

The Indian mackerel and oil sardine are the most important single species resources that contribute maximum to the total marine fish catch of India. But their catch exhibits wide fluctuations from year to year. The place of oil sardine which ranked first among the different species that contributed to our fish catch in 1980s was taken over in 1990s by Indian mackerel. The average annual marine fish catch in India during 1991-1993 was 2.25 million tonnes. With 1.7 lakh tonnes of average annual catch, Indian mackerel is the species that contributes maximum to the total catch. Oil sardine which was contributing on an average 1 lakh tonnes to the total marine fish catch in Kerala declined in 1990 to 50,000 tonnes. On the other hand the catch of Indian mackerel increased from 30,000 tonnes in 1980s to 68,000 tonnes in 1990s. Such wide fluctuations in the catch of important pelagic fish often cause problems to the fishing industry as well as to the consumers.

Let us first understand what is a pelagic fish. A fish that normally lives in the upper water column of the sea is called a pelagic fish. The fish that live at or near the bottom of the sea are known as demersal fish and they are caught by trawl nets. Trawl nets that catch demersal fish by moving slowly over the bottom cannot normally catch the pelagic fish. The reason is not only that the pelagic fish are found at the surface

waters but they move faster than the trawl net in water. Pelagic fish are caught by other special nets. The major gears used presently to catch pelagic fish are purse seine and ring seine. These are large nets with very small meshes. Even the smallest fish will not pass through these meshes. These nets are operated from large mechanised boats or plank built boats fitted with powerful outboard engines. One end of the net is put against the fast moving pelagic fish shoal. When the fish reach this net they change their direction. But by this time the very fast boat encircles the shoal with the whole net. Thus the fish shoal gets trapped in this large well of net. The bottom of the net is sealed by the rope running through the rings attached to the net. From this net fish are transferred to the boat. But large pelagics like seerfish and tunas are caught by different methods. Nets with large meshes are put like a wall in the sea during night. Large fish moving fast in water get caught in the meshes of these nets. Baited hooks are also used to catch these fish.

Why do pelagic fish stay mostly in the surface waters? One important reason is that they get their food there. The basic food in the sea is phytoplankton. Phytoplankton are microscopic plants without roots. They drift with the currents in the surface water. Sunlight is an important pre-requisite for the growth of plants. Hence, the phytoplankton live only up to a depth where they get enough sunlight. As the plants multiply on the land during monsoon the phytoplankton also multiply in favourable environment. They need fertilisers just as plants on the land. Sea bottom is rich in nutrients such as phosphates and silicates. The bottom water in the Arabian sea is brought up to the surface by a phenomenon called upwelling during monsoon. The river flow also brings plenty of nutrients to the sea during monsoon. Phytoplankton multiply in this nutrient-rich sea water with the help of sunlight. When phytoplankton increase the zooplankton which feed on them also multiply. Young ones of fish feed on the plankton. Most of the fish do not care for the eggs they lay. The eggs drift in water. The larvae coming out of these eggs are not capable of moving in search of food. Due to the bloom of plankton during monsoon the fish larvae get plenty of food and grow fast. A large percentage of fish larvae will die due to starvation if the plankton supply is poor. With abundance of plankton large number of young ones of plankton feeding fish such as oil sardine and Indian mackerel survive and grow

fast during monsoon. The fish spawn intensively during this period when their young ones get enough food. With the abundance of the young fish the situation becomes favourable to carnivores such as seerfish and tuna which feed on them.

The tropical seas around us are highly productive due to high temperature, abundant sunlight and the phenomenon called upwelling. The pelagic fish here grow fast and reproduce at an age of one year. Most of them live for only about two years and are exploited at less than one year before they get a chance to reproduce even once. We catch them in the same year of their birth. The annual variations in the intensity and duration of upwelling and the resultant plankton bloom, the number of fish surviving to reproduce and the surface currents in the sea that transport plankton, fish eggs and larvae, are the conditons which influence the number of fish produced in any year. This situation influences the availability of different varieties of fish for exploitation.

Pelagic fish form the most important component of the marine fish catch. In the total exploited fishery resources, fish form 77%, crustaceans including prawns and lobsters 18% and molluscs including mussels and oysters form 5%. Among fish the pelagic fish form about 65%.

Fluctuations in the yield of pelagic fish caused by variations in the environment are beyond our control. But overfishing of any variety of fish is dangerous. Bigger boats fitted with powerful outboard engines exploit the young ones of oil sardine and Indian mackerel in large quantities during monsoon using large ring nets. These fish if allowed to live for another 2 or 3 months would increase in weight manifold. Uncontrolled fishing leads to a loss of huge quantity of yield. Moreover, the situation becomes unfavourable to large fish that feed on these small ones. Due to certain peculiar environmental conditions during monsoon these small fish are forced to stay at the very surface of the sea and become highly vulnerable to surface gears. If we exploit this situation we will destroy them before they reproduce. This will end in the total collapse of the resource and the fishery.

Fishery resources are a gift of nature. It is our duty to protect them from over-exploitation and destruction. Over-exploitation is like killing the goose that lays golden eggs. The rules for protecting a fishery resource are:

- Do not exploit the young ones. Exploit them only after they grow to an optimum size.
- Each variety of fish has its own reproductive potential. Leave enough spawning stock for reproduction on the basis of this potential.
- We are not the only claimants of fish resources. There are fish and other animals in the sea that feed on fish. The food chain in the sea should not be broken.

Follow these rules so that we do not deny this tasty and nutritious food to the posterity by our greed.