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The clupeoids, which constitute about a third of the marine fish caught in India, are chiefly represented in Indian waters by the sardines (*Sardinella*), anchovies (*Thrissocles*), whitebait (*Anchoviella*), rainbow sardine (*Dussumieria*), white sardine (*Kowala*), etc. Of these, the sardines, represented by nine species, constitute an important fishery along the West and South East Coasts of India. A few species like *S. longiceps*, *S. fimbriata*, *S. gibbosa and S. albella* occur in large shoals.

From very early times, the oil sardine, *S. longiceps*, has ranked as a very valuable commercial fish owing to its food value and industrial uses. It is known to occur off the Coasts of Arabia, Iran, Pakistan, Ceylon, Andamans, Java and Bali Straits, but is restricted in its distribution in India to the West Coast and very rarely along the East Coast. Large shoals of the species are known so far only from the Kanara and Malabar Coasts. The fishery starts immediately after the commencement of the South West Monsoon, and lasts from August to March; the September-December portion being the best period for the fishery. The nets used in the sardine fishery are the seines, including the large shore seines, and the gill nets.

Statistics of oil sardine landings and its by-products available from the beginning of this century show an irregular fluctuation in abundance at intervals ranging from two to six years up to the 1941 - 42 season,

after which the fishery has proved to be a complete failure. These fluctuations have made this fishery very undependable, with consequent disastrous effects on the oil and guano industries which flourished during the years of plenty. An improvement in the fishery was, however, noticed during the 1949 - 50 season. The fluctuations in the oil sardine fishery have been attributed to various causes but the significant ones, apart from the adverse factors influencing the rate of survival and recruitment to the stock, appear to be the indiscriminate capture of shoals of small-sized immature sardines during the years of abundance and of the three-year old active spawners during the short spawning period. Considering the restricted shoaling of the oil sardine along the West Coast and also its short life-span of three to four years, unlike that of allied forms of other countries, the disastrous effects of indiscriminate destruction of immature fish and the spawners become obvious. Legislative measures were introduced in 1943 to prohibit the capture of oil sardine during the spawning period from August to September and of the immature fish below 15 cms. This legislation was in force for four years but was not continued owing to practical difficulties experienced in its enforcement.

The oil sardine fishery appears to have some influence on the other fisheries of the West Coast, notably that of the mackerel. The records of landings of these two fishes show inverse trends of variations, a good year for the one is generally coincident with an unsuccessful fishery for the other.

The oil sardine is esteemed as a very valuable food fish but since it putrefies quickly, only limited quantities are used for consumption, the major portion being cured

with salt. Canning of oil sardine was successfully done for many years by a private canner at Mahe, and a State cannery was subsequently opened in 1914 at Chaliyam near the mouth of the Beypore river. The canning of oil sardine in different sauces suited to Indian tastes, was tried in the State cannery and the products were in demand both in and outside India. Difficulties experienced during the post-war years necessitated the closing of the factory in 1933.

During early times, the oil sardine, along with other sardines, was used only for manuring coconut plantations and tobacco fields, but by the middle of the last century when there was scarcity of animal oils, attention was directed to the oil sardine for the extraction of its oil. This was done in a primitive and crude way by allowing the fish to putrefy in dug-out canoes. The high price prevalent at that time sustained this industry up to the end of the century, when it declined owing to the erratic appearance of oil sardine along the Coast. An improved method of oil and guano manufacture by boiling the sardines in cauldrons over fire and pressing them in coir mat bags in indigenous screw presses was introduced in 1908 and it produced oil of good quality and guano of good manurial value. This success led to the opening of a number of small factories along the 240 mile Coasts of South Kanara and Malabar and the peak figure of 647 factories, with an output of 32,000 tons of guano and 12,000 tons of oil was reached during the 1922 - 23 season. Malpractices in the manufacture of oil and guano, together with the capricious nature of the fishery in subsequent years and its complete failure during the last decade, have resulted in the closing down of almost all the factories.

The crude oil was used locally as a preservative for boats. The better quality oil obtained by the

improved method was found to compare favourably with the menhaden or the Japanese sardine oil and was used in the leather, jute and steel industries, in arsenals and as base for good quality insecticides. For over a century the oil was also exported to Great Britain, Germany, Turkey and other countries.

The high nitrogen and phosphate contents of sardine guano have made it a valuable manure, which was in demand in coffee, tea, coconut, sugarcane and tobacco plantations and also exported to Ceylon and Japan. Sardine fish meal, specially prepared in factories, was also in demand with livestock owners.

The fishery of the sardine, *S. fimbriata,* has come to the fore in recent years. This is a smaller sardine, the commercial size ranging from 10 - 15 cms. The fishery of this sardine also is subject to fluctuations. Very heavy catches are usually obtained from September to January mixed with *S. albella,* another common sardine of the West Coast. This sardine is less valuable as a source of oil and the surplus is largely used in the fish manure industry. It is also caught in fairly large quantities on the East Coast, along with another sardine, *S. gibbosa,* which is more common in the Palk Strait.