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Bumper catch of oil sardine *Sardinella longiceps* along Cuddalore coast

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Introduction

The oil sardine *Sardinella longiceps* constitutes the most important pelagic resource sustaining the marine fishery on the west coast of India. Two decades ago, the occurrence of this species along the east coast was considered sporadic and rare. In early eighties, there was report on the unusual landing of this species along Puducherry region. Over the years, there has been an increase in the landings of this species on the east coast especially along the Coromandal coast. In July 2008, there were reports in the local daily news papers that the oil sardine shoals were found to move towards the shore off Devanampattinam fishing village and small boys were also able to have easy access to the fish shoal who handpicked the sardines. Some fishes were also stranded and found dead on the beach. This occurrence is linked to upwelling phenomenon which brings the oxygen depleted cold water from the bottom of the sea due to churning by the water current. Similar phenomenon has been found to occur off Cuddalore and Pondicherry coast during July when due to sudden change in the environmental factors, the underwater current churns

the bottom of the coastal region, where the submarine canyons are located resulting in turbidity and low oxygen content. The sardine shoals might have entered the water current with turbidity and low oxygen. In order to escape from the water mass with low oxygen, the shoals might have moved in the shoreward direction where the oxygen content of the water was better due surf beating in the neritic region resulting in heavy catches of oil sardine by the ring seine units from the nearshore waters.

Ring seine fishery

It was interesting to note that the shoals of oil sardine were caught very near to the shore within 5 km distance. After the introduction of ring seines about three years back along the Cuddalore and Pondicherry coasts, heavy catches of oil sardine have been reported to land now for the first time. A battery of ring seines was operated with circumference varying between 700 and 1000 m with a hanging wall of 80 m and mesh size of 20 mm. The ring seines were operated at a depth ranging between 30 and 50 m, which encircled the shoal and hauled the catch directly into the carrier boats to land at the fishing harbour. The duration of the haul was around one

hour. Totally 25 - 50 fishermen were deployed for shooting and hauling the net with the help of powered winch. The area of operation was off Pondicherry towards south up to Pazhayar region. The catch comprised of oil sardine only except in certain units where mackerel and tunas were also landed.

Trend of the catch

The average catch per unit had gradually increased from 2.8 t on 5th July to 3.8 t on 9th, 3.9 t on 17th and attained the peak of 4.2 t on 25th July. There after the catch showed a declining trend. It has been estimated by Fishery Resources Assessment Division of CMFRI that the landing of oil sardine during July '08 at Cuddalore Fishing Harbour was around 8353 t.

On 25th of July 2008, 73 ring seine units were operated off Cuddalore exclusively for oil sardine by deploying mechanized boats. The catch varied between 4 and 5 t per unit and it was loaded into 4-5 FRP carrier boats of 1.2 - 1.5 t capacity and brought to the fishing harbour for sale. The estimated total catch on that day was 306.6 t, landed at an average catch rate of 4.2 t per unit. Similarly 14 more ring seine units landed mackerel catch, which varied between 3 and 4 t with an average catch of 3.1 t per unit. Around 300 kg of oil sardine was also landed as by-catch along with mackerel by these units.

Size composition

The total size and weight of the fish varied from 118 to 185 mm and 14 to 58 g respectively. The mean size was 150 mm with the dominant modal size group of 172 mm.

Length-weight relationship

A sample of 97 specimens of *S. longiceps* was examined for length-frequency analysis. The length-weight relationship was determined separately for

both the sexes by linear regression analysis and it is described by the following formula in the exponential form:

$$W = a L^b$$

Where W is weight in grams, L is total length in mm, 'a' is a constant and 'b' is the regression coefficient. The 'a' and 'b' values obtained for male, female and unsexed samples of *S. longiceps* which are expected to describe the length-weight relationship of this species adequately by the equation.

Male	a = 0.000001518	b = 3.349789
Female	a = 0.000002705	b = 3.234373
Unsexed	a = 0.000002366	b = 3.261257

Biology

Females were dominant in the catch and the sex ratio of male : female was 1:2.6. Among the males, immature stage dominated (51.9%) followed by maturing (33.3%) and mature fish (14.8 %). Immature and early maturing stages were dominant (92.9 %) among females with 7.1% in advanced stages of maturity. The examination of guts of 27 males and 70 females revealed that the fish had fully fed on plankton especially on phytoplankton with a fraction of zooplankton. The incidence of empty stomach was 14.4%.

Marketing

The catch was sold in the local market at Rs. 4-5 per kg. The sale proceed on 25th July '08 for oil sardine alone is estimated to be Rs. 12,43,200/- and for mackerel, the value was Rs. 13,02,000/- at an average rate of Rs. 30 per kg. The majority of the catch was ice packed and transported to Kerala by road in trucks. The surplus catch which could not be preserved for lack of ice was sun dried in the beach.