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Fishing grounds for cuttlefishes off Gujarat coast are beyond 50m depth zone, off Dwaraka. Trawlers have to perform a journey of more than 10 hours from Veraval to reach these grounds. However, for the first time in the history of coastal fisheries in Gujarat, aggregation of large-sized *Sepia pharaonis*, each weighing between 1 kg and 3.5 kg, were noticed in the coastal waters of Saurashtra. This phenomenon was observed from 12/12/01 to 20/01/02 in different centres like Veraval, Mangrol, Sheel, Navibander, Jaleswar, Dwaraka, Muldwarka and Dhamlej. The aggregations could be spotted from the shore itself. The



Sepia pharaonis

animals were found to move slowly at depths less than 1m. The best observation points were the break-walls and jetties. These aggregations caught the attention of fishermen along the Saurashtra coast, who used different fishing methods for exploiting them.

In the coastal waters of Veraval, ordinary lines without hooks were used. Any available fish served as bait. These lines were operated from the shore itself. The cuttlefish, lured by the baits, move towards them and use their suckers to attach to the bait. The cuttlefishes attached to the baits were lifted up using a small scoop. These operations were also done from canoes. The time of fishing was usually at high tides at dawn (8.00-9.30 a.m.) Catches by a single person through shore operations averaged about 8-14 kg per day, while a team of 2 persons in a canoe brought average catches of 10-20 kg per day. Fishermen in other landing centres like Mnagrol and Navibander operated small pieces of monofilament gillnets from small wooden canoes. The operations were done in the early hours at depths of 1-2 fathoms. Some fishermen laid the gillnet pieces at night and lifted them in the early morning hours. About 10-15 boats were in operation at

Navibander and Sheel and the catch per boat averaged 40-60 kg per day. The characteristic features of this sporadic fishery were the large size ranges of the cuttlefishes (300-350mm, ML), possible to market the fresh catches at high rates of Rs. 75/- to 90/- per kg and high profit margin with very low input costs.

The total landing of *S. pharaonis* from the coastal waters of Saurashtra was estimated to be around 20 tonnes. A peculiar observation made during this period was that the fish landings by gillnets and trawlnets were very poor on the whole. Regular gillnet operations yielded minor catches of resources like perches and smaller sciaenids which usually occur in deeper waters beyond the gillnet fishing grounds. The occurrence of pelagic fishes like clupeids, ribbonfishes, seerfishes and tunas were altogether very negligible. These observations indicate a sporadic migration of demersal resources from deeper waters to the coastal areas due to some hydrographic phenomenon. The surface water temperature decreased sharply from 30°C in the first week of December to 23°C in the first week of January, clearly indicating a change in water currents.

Studies on water quality revealed very low

productivity levels in the coastal waters, ranging from 0.009 to 0.03 mg C/L/hr (Net productivity). The transparency levels were high, upto about 5m depth. The DO levels ranged from 4.0 to 4.5 ml/L. Surface-water salinity and pH ranged from 34 to 35 ppt and 8.0 to 8.3 respectively. Nitrate-nitrogen and phosphate-phosphorus levels ranged from 1.0 to 1.2 mol/L and 0.5 to 0.9 mol/L respectively. The zooplankton collections during the period was very poor. Fish eggs, and crustaceans like *Leucier*, copepods and brachyuran larvae were the dominant forms.

Local enquiry revealed that the phenomenon of a minor 'upwelling' has been experienced in the coastal areas at the time of reversal of current direction every year, but so far, there has not been a similar instance of migration of deeper water forms to coastal surface waters. Moreover, the 'upwellings' noticed by the fishermen usually occurred in pre-monsoon period of March/April and never as early as December/January.

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