Pre caudal length - 72
Pre first dorsal length - 39
Pre second dorsal length - 57
Head length - 26
Pre branchial length - 14
Pre spiracular length - 12
Pre orbital length - 8
Pre pectoral length - 21
Pre pelvic length - 44
Snout vent length - 51
Pre anal length - 57
Inter dorsal space - 23
Dorsal caudal space - 12
Pectoral pelvic space - 16
Pelvic anal space - 9
Anal caudal length - 12
Vent caudal length - 38

Pectoral length - 19
Pectoral base - 7
First dorsal length - 10
First dorsal base - 8
Second dorsal length - 4
Second dorsal base - 3
Dorsal caudal margin - 22
Ventral length - 6
Ventral width - 4
Ventral caudal margin - 8
Anal Length - 4
Anal width - 2.5
Width of mouth - 10
Total weight - 3.8 Kg


1036 Unusual landings of large-sized *Sepia pharaonis* from the coastal waters of Saurashtra

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, Jaleshwar, Dwaraka, Muldwarka and Dhamlej. The aggregations could be spotted from the shore itself. The animals were found to move slowly at depths less than 1m. The best observation points were the break-walls and jetties. Theses 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 trawl nets were very poor on the whole. Regular gillnet operations yielded minor catches of resources like perch 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.


1037 On a swarm of sargestid shrimps near Chennai

A massive swarm of sargestid shrimp (Acetes spp.) appeared close to the shore along Pannayur kuppam, 20 km south of Chennai. The swarm existed for 11 days during 20-30 April 2002 and fishing was carried out daily for about six hrs between 0500-1200 hrs.

A local gear called ‘Aeru valai’ or ‘Mosquito-net’ operated by two catamarans, was employed for the fishing. The overall catch comprised primarily of Acetes spp (80%). The bycatch included silverbellies (10%), juvenile sardines (5%), Stolophorus spp. (3%) and miscellaneous group consisting of juveniles of high value finish and crustaceans (2%). The most dominant species supporting the fishery was A.indicus (90%) and the remaining catch was shared between A. japonicus (6%) and A. erythræus (4%).

A total of 337 units operated over 11 days, landed 141 t of Acetes spp. at the catch rate of 419 kg/unit. Both appearance and disappearance of the swarm were abrupt. On 20th April, the first day of exploitation of the swarm, the catch and catch-rate were 12125 kg and 379kg/unit respectively which increased to 21120 kg and 603 kg/unit/day on 25th April. After 5 days on 30th April, the catch decreased steeply to 5250 kg at a catch rate of 210 kg/unit/day and thereafter the fishery ceased. The catch was sold, at the landing site at the rate of Rs. 30-60/kg. At an average rate of Rs. 45/kg, the entire catch of 141t fetched about Rs. 63 lakhs. It worked out a daily earning of Rs. 1855/- by each fisherman.

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