

First record of cuttlefish *Sepia (Doratosepion) kobiensis* Hoyle, 1885 from the north-west coast of India

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Cephalopods are caught mainly as by-catch in the bottom trawl and due to the growing demand for cephalopods in the international market, they are exploited all along the Indian coast. In Maharashtra, cephalopods are mainly exploited by shrimp trawlers and stand second in the all India production. The main fish landing centres for cephalopods at Mumbai are New Ferry Wharf (NFW) and Sassoon Docks. Cephalopods contribute 10.6% towards the total fish catch in Maharashtra (CMFRI, 2009)

With the increased exploitation and expansion of fishing grounds, new records of cephalopods are reported from places all along the Indian coast. Out of the 60 cephalopod species recorded from the Indian waters, only 15 are commercially exploited (Silas *et al.*, 1985). A new entrant to the cephalopod fishery was observed in trawl landings at New Ferry Wharf and stray occurrences were observed at Sassoon Docks. The depth of operation was about

30-40 m at 70-80 km off north-west coast. Specimens were brought to the laboratory for identification. The species was identified as *Sepia (Doratosepion) kobiensis* Hoyle, 1885 (Fig. 1 and 2) commonly called as 'Kobi cuttle fish' based on the identification characters as described in Roper *et al.* (1984). The

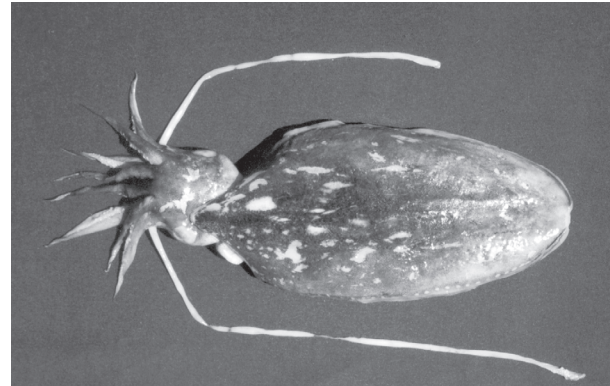


Fig. 1. Dorsal view of *Sepia (Doratosepion) kobiensis* Hoyle, 1885

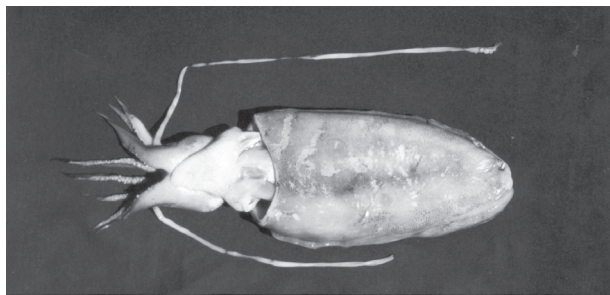


Fig. 2. Ventral view of *Sepia (Doratosepion) kobiensis* Hoyle, 1885

occurrence of *S. Kobiensis* is reported for the first time from this region. the species entered the fishery in Mumbai waters from the year 2001 to 2008 and the peak landings were observed in 2003. After 2008 the species was not observed at the landing centres. The occurrence was hingly seasonal and constituted a fishery during the period October-December with peak landings during November. Dorsal mantle length (DML) of 482 specimens were measured at the NFW landing centre during the period 2001 to 2008. The estimated mean for this period was 92.4 mm and a mode was observed in the size group 90-99 mm (Fig. 3).

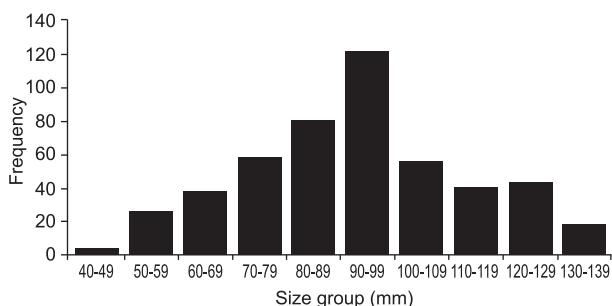


Fig. 3. Size frequency polygon of *Sepia kobiensis* landed at NFW, Mumbai, Maharashtra

Taxonomic position of the species is Class: Cephalopoda, Subclass: Coleoidea, Infraclass: Decapodiformes, Superorder: Decabrachia, Order: Sepiida, Family: Sepiidae and Genus: *Sepia*. *S. kobiensis* is a demersal cuttlefish inhabiting up to 160 m depth. It is known to be distributed worldwide in Western Pacific: South China Sea, East China Sea, and Yellow Sea to southern and central Japan (Roper *et al.*, 1984).

The mantle is elliptical with a mantle width 45-47% of the mantle length. The antero-dorsal margin is acutely and triangularly protruded, while the ventral margin is gently concave. The fins are

narrow, starting below the mantle opening and is about 86% of mantle length. The funnel is slender, reaches the base of the ventral arms and the funnel valve is short and conical in shape. The arms are tapering to fine points and the arm formula is usually 4:1:2:3. Swimming membrane is poorly developed in the ventral arms. The arms are short, attenuate and subequal. The arm suckers are globular quadriserial with those in the median rows larger than the marginal ones. Left arm in males is hectocotylised and suckers are greatly reduced in size. The oral surface is hollowed out and transversely ridged. Tentacles are long and thin, tentacular club short and narrow. Tentacular suckers are arranged in eight rows transversely with five suckers of the third longitudinal row much larger than the others. Swimming keel is broad extending proximally beyond base of club and the protective membrane is poorly developed.

The cuttlebone is lanceolate and largest in the striated zone area (Fig. 4 and Fig. 5). Shell taper towards the posterior end, acuminate at the anterior end and has a very narrow chitinous margin. The dorsal surface has faint median rib, whereas, the ventral surface has a median groove forming a broader depression in the anterior part of the loculus. The inner cone has narrow lateral limbs and the posterior portion is elongated. A cup-like widening formed by the outer cone surrounds the inner cone. The spine is long and directed upwards. The animal is dark brown in colour with the exception only in the



Fig. 4. Dorsal view of cuttle bone of *Sepia (Doratosepion) kobiensis* Hoyle, 1885



Fig. 5. Ventral view of cuttle bone of *Sepia (Doratosepion) kobiensis* Hoyle, 1885

periphery and the fins, where the chromatophores are very minute and distally placed with prominent small dots on the rim. The ventral side is pale in colour due to fewer chromatophores.

Twenty eight specimens were brought to the laboratory for biological analysis. Dorsal mantle length (DML) was measured using a digital caliper and total weight ($\pm 0.01\text{g}$) determined using an electronic balance after the specimens were dried on blotting paper. Measurements were taken as described in CMFRI Manual (1995). Stomach condition was ascertained as per Kore and Joshi (1975). Food items were in well-crushed and macerated condition and therefore were categorised into groups such as 'fishes' etc. The Index of preponderance was estimated as suggested by Natarajan and Jhingran (1961). Maturity studies were carried out as per Silas *et al.* (1985).

The DML ranged from 35-130 mm and the corresponding body weight ranging from 18.812 - 56.421 g (Fig. 6). According to Roper *et al.* (1984) the maximum mantle length is 90 mm and Okutani (1987) has reported the maximum dorsal length as 70 mm. Dorsal mantle length of the specimens collected from New Ferry Wharf seems to be larger than those occurring in other coasts. Majority had



Fig. 6. Length range of *Sepia (Doratosepion) kobiensis* Hoyle, 1885 from Mumbai waters, Maharashtra

guts with 'trace' and 'empty' condition and the food was finely macerated. The species seems to mainly feed on 'prawn' (70%) followed by 'fish' (20%) and digested matter (10%). About 60% of the specimens were in 'mature condition', 20% 'gravid' and 20% 'immature'.

Some cephalopods are known to make seasonal migrations, which are influenced by breeding activity. It seems that in all probability this species may have come to nearshore waters for breeding. Regional distribution and relative abundance of different species of cephalopods have not been studied extensively along the Indian coast and therefore efforts need to be taken in this direction to create a database.