

Record of an Oil Sardine *Sardinella longiceps* Valenciennes 1847 Without Pelvic Fins

¹Tasaduq Hussain Shah, ¹Sushanta Kumar Chakraborty, ¹Ashok Kumar Jaiswar,

¹Geetanjali Deshmukhe and ²Ashish Suresh Mohite

¹Fisheries Resource, Harvest and Post Harvest Management Division,

Central Institute of Fisheries Education (Deemed University),

Indian Council of Agricultural Research, Panch Marg, Off Yari Road, Andheri (West),

Mumbai, 400-061 Maharashtra, India

²Department of Fisheries Engineering, College of Fisheries,

Shirgaon, Ratnagiri, 415629 Maharashtra, India

Abstract: The present communication is a record of an abnormal specimen of oil sardine *Sardinella longiceps* which lacked the pelvic fins. The specimen measures 170.04 mm in total length. Comparison of the abnormal specimen with a normal one does not show any considerable change in its shape, size or other morphological aspects. The anomaly which may be congenital has not affected the growth of the fish.

Key words: Oil sardine, *Sardinella longiceps*, morphological abnormality, pelvic fin, specimen, India

INTRODUCTION

Morphological abnormalities in fish reported in various species are not rare but they are limited to sporadically caught specimens. These anomalies have been widely described (Tutman *et al.*, 2000; Jawad and Hosie, 2007; Jawad *et al.*, 2007) and attributed to various factors like nutritional deficiency, stressed conditions and genetic factors. Development errors are also responsible for deformation in fishes (Uma and Waghay, 1988; Dutta *et al.*, 1993). Anomalies in fins both paired and unpaired are widely reported and well documented as compared to abnormalities of other body parts. In the wild, anomalies involve absence of fins (Honma and Noda, 1987; Dulcic and Soldo, 2005) or their compression (Lemly, 1993).

The oil sardine *Sardinella longiceps* Valenciennes 1847 has a wide distribution along the coasts of Somalia, Seychelles, Gulf of Aden, Red sea, Gulf of Oman, Persian Gulf, Pakistan, India, Srilanka, Malay Archipelago, around Indonesian and Philippine waters as well as off Vietnam (Rosa Jr. and Laevastu, 1960). It is characterized by an elongate, fusiform body and a rounded belly with a low keel of scutes. Its other distinctive characters include a long head (29-35% of standard length), long and numerous gill rakers (150-255 on the lower limb of the first gill arch) and a large greenish gold spot on the upper margins of the opercle and the pre-opercle. It is a major

neretic fishery resource of India with an annual landing of 3.92 million ton (about 12% of total marine landings) in 2009. Oil sardine ranks as a very valuable commercial fish owing to its food value and industrial use. The present communication describes a specimen of oil sardine *Sardinella longiceps* Valenciennes 1847 without the pelvic fins. Several cases of fin anomalies have been reported from Indian waters (James and Badrudeen, 1968; Murty, 1972; Nair and Radhakrishnan, 1973; Pillai, 1979; Khan and Deshmukh, 1984).

MATERIALS AND METHODS

A specimen of *Sardinella longiceps* which lacked pelvic fins was collected on 24th of January, 2011 from landings of purse seine operating in Ratnagiri waters (South of Mumbai) in Maharashtra, India during the routine collection of samples for investigation on the various aspects of the biology and stock assessment of the fish. The specimen measuring 170.04 mm in total length, 139.12 mm in standard length and weighing 40.88 g is preserved in the museum at the Central Institute of Fisheries Education, Mumbai.

A normal specimen of the species (Total length 176.28 mm standard length 144.50 mm) was collected from the same locality for comparison (Fig. 1). Age of the specimen was determined by examining scales under a light microscope.

Corresponding Author: Tasaduq Hussain Shah, Fisheries Resource, Harvest and Post Harvest Management Division, Central Institute of Fisheries Education (Deemed University), Indian Council of Agricultural Research, Panch Marg, Off Yari Road, Andheri (West), Mumbai, 400-061 Maharashtra, India



Fig. 1: Normal fish specimen (TL 176.28 mm and SL 144.50 mm) showing pelvic fins



Fig. 2: Abnormal fish specimen (TL 170.04 mm and SL 139.12 mm) showing absence of pelvic fins

RESULTS AND DISCUSSION

The meristic counts of the abnormal specimen revealed 17 dorsal fin rays, 15 pectoral fin rays, 16 anal fin rays and 17 Caudal fin rays along with 31 scutes.

The morphometric features like total length was found to be 170.04 mm, standard length 139.12 mm, pre-dorsal length 70.13 mm, pre-pectoral length 43.08 mm, pre-anal length 108.15 mm, head length 45.23 mm, snout length 12.17 mm, post-orbital length 24.23 mm, maximum body depth 31.20 mm, inter orbital length 8.29 mm, eye diameter 8.73 mm, pectoral fin length 22.13 mm and caudal fin length 32.04 mm (Fig. 2).

In percentages of standard length, body depth was found to be 17.48%, head length 32.51%, eye diameter 6.27%, pre-dorsal length 50.40%, pre-pectoral length 39.96% and pre-anal length 77.13%. On the basis of study of the annual rings formed on the scales, the age of the fish was estimated to be 2⁺ years. The length-at-age estimate of the species as reported by various researchers is approximately 2 years for a fish of this length (Raja, 1969; Kurup *et al.*, 1987; Annigeri *et al.*, 1992). The paired pelvic fins, located ventrally on a fish (Fig. 1) are homologous to the hind limbs of the higher vertebrates and assist the fish in going up or down through the water, turning sharply and stopping quickly. They have been subject of few studies.

Standen (2008, 2010) challenged the earlier notion that pelvic fins have very limited and mainly passive stabilizing function during locomotion. He reported active function of the pelvic fins in rainbow trout at slow speeds and during manoeuvres. In addition, pelvic fins also aid in courtship and spawning (Ostrand and Ward, 1985) as well as in communication (Cole and Ward, 1969).

Similar cases concerning total fin absence, partial abnormal absence and incomplete formation in general have been recorded for the pectoral, ventral, dorsal, anal and caudal fins in various fishes (Marr, 1945; Nelson, 1971; Hussain, 1979; Alvarez-Leon, 1980; Valente, 1988; Jawad *et al.*, 2010).



Fig. 3: Abnormal specimen showing scales covering the area of insertion of pelvic fins alongwith a normal specimen

A number of factors, physical, chemical and biological have been reported by different researchers to cause such deformities in fish. In the instant case, since the place of origin of pelvic fins is covered with normal scales (Fig. 3) and without any external marks of injury, it has to be assumed that the abnormality is not the result of any physical injury but may be congenital. There is neither any external abnormality in the specimen nor any change in its body shape because of this abnormality.

CONCLUSION

A comparison of morphometric characters of a normal specimen shows no marked differences with that of the abnormal specimen. The absence of the pelvic fins has not affected the growth of the fish which is evident from the length, it has attained being consistent with the length-at-age reported by Hornell and Nayudu (1924), Balan (1968), Raja (1969, 1970), Kurup *et al.* (1987) and Annigeri *et al.* (1992).

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