

# Emergence of oilsardine fishery as an alternative resource for dolnetters at Arnala

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Arnala is one of the major dolnet landing centres in Thane District of Maharashtra. Dolnet is a gear exclusively used in Maharashtra and Gujarat. In Maharashtra, they are anchored to poles fixed to the sea bottom and are generally operated from August to May. At Arnala, approximately 375 dolnets are operated and the operation is generally confined to a depth range of 18-22 m.

Of the total fish catch, 60% is sun dried and the rest sold in fresh condition. The sun dried fish is sold through three outlets *viz.*, petty merchants (70%), dry fish market (25%) and at retail market (5%). At Arnala in the year 2002, the most dominant fishery was of Bombayduck followed by *Coilia dussumieri*, non-penaeid prawns and *Acetes* spp. (Fig. 1).

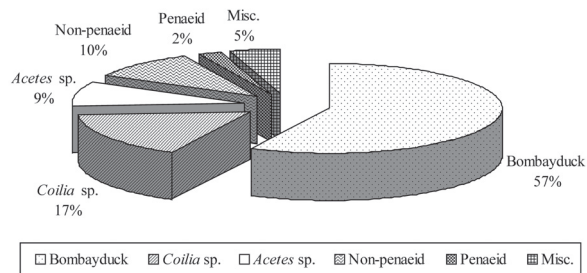


Fig. 1. Species composition of dolnet catch at Arnala in 2002

Of late, the Indian oilsardine, *Sardinella longiceps*, has started appearing in large quantities in the dolnet catches. The species composition during the year 2006 was more or less the same except for the increase in sardine percentage (Fig. 2). Unusual and unprecedented landings of oilsardine by dolnetters were observed at Arnala during January

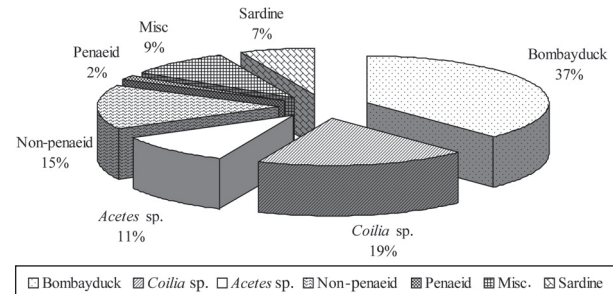


Fig. 2. Species composition of dolnet catch at Arnala in 2006

and February 2007. On 19-1-07, a total of 18,360 kg of sardines landed with a catch per unit effort of 270 kg boat<sup>-1</sup> (Fig. 3). A total of 68 units were operated on that day. The dolnet was of 50 m length with a cod end mesh size of 25 mm. The boat was 14 m in length and were operated at 20 m depth towards the north-west direction. A total of 104 fishes were measured for length frequency. The length of sardines ranged between 77 and 178 mm with a mode at 160-169 mm (Fig. 4). Most of them were lean with the head comparatively



Fig. 3. Heap of oilsardine landed by dolnetters at Arnala

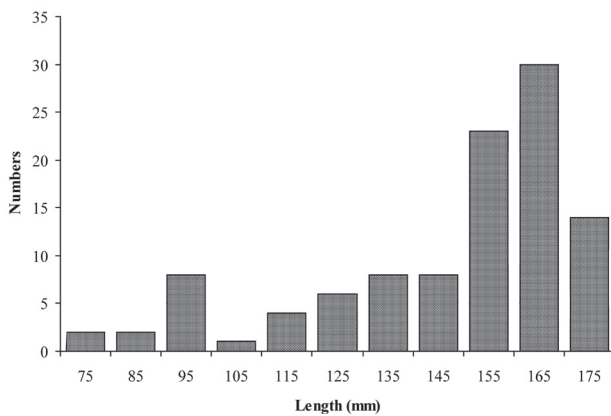


Fig. 4. Frequency distribution of *S. longiceps* landed at Arnala

looking larger than the body and showed a starved appearance (Fig. 5).



Fig. 5. Oilsardine *Sardinella longiceps* landed at Arnala

The catch of oilsardine by trawlers also increased substantially at all the major landing centres of Mumbai such as New Ferry Wharf and Sassoon Dock. However, for better comparison, dolnet catches were considered (Fig. 6). It was observed that the period of abundance was during September-December. The annual catch of sardines by dolnetters at New Ferry Wharf increased from 6,067 kg (2005) to 31,972 kg (2006) and at Sassoon Dock from 35,446 kg (2005) to 69,799 kg (2006). A similar trend was observed in Arnala also but with a larger magnitude. The catch increased from 2,150 kg in 2005 to 1,33,180 kg in 2006.

Oilsardine forms 10-18% of total fish landings of India mainly caught along the south-west coast. Hence the role it plays in the economic life of the fishermen is significant. Except for Kerala and Karnataka, oilsardine fishery is not a major resource in other states. Due to the advent of synthetic fibres

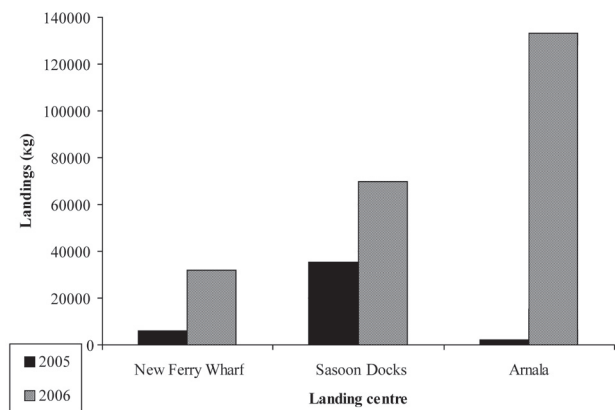


Fig. 6. Landings of *S. longiceps* by dolnets during 2005 and 2006

for net making and mechanisation of fishing crafts especially purse seines, the fishing strategy for the major pelagic fishes including oilsardine has changed. Oilsardine is known to occur in the Indian waters in large schools in the inshore waters.

Sporadic instances of heavy landings of sardine was recorded earlier along both east and west coasts such as Pondicherry, Chennai, Cuddalore, Pazhapan, Rameswaram, Pamban, Srikakulum, Tuticorin, Uchila and Ullal including Saurashtra. The fishery season for the oilsardine is generally during June-December, when about 90% of the annual catch is obtained, though it occurs throughout the year. Even though the period of spawning extends from May to November, its peak is from June to August. Oilsardines have a very high fecundity ranging from 37,000 to 80,000 with the egg diameter ranging between 1.20 and 1.23 mm. Distribution of oilsardine is restricted to certain localities having rich production of phytoplankton which forms the main food of this species.

In the past several decades, the oilsardine fishery has shown fluctuations spatially, seasonally and annually. Out of the many reasons for fluctuations, one of the reasons might be changes in diatom production. An increase in the strength of the monsoon over its critical limit would be favourable for an increase in the catch and below the critical value the catches were found to decline. In general, the south-west monsoon and the resultant biological, oceanographic and meteorological conditions seem to be responsible for the catch fluctuations to a large extent. Resource potential of oilsardine of the west coast is high despite its inherent fluctuations.

Oilsardine never formed a sizeable fishery along the Maharashtra coast earlier and the present report deals with the emerging fishery along this coast. Due to lack of demand for fresh fish, the bulk of the catch was sun dried on the beach and later sold to agents who supplied the same to some companies for the manufacture of poultry feed or as manure.

The shoals of oilsardine can either be migrating from south-west coast of India or from the off shore. The wind driven surface currents of the west coast, seawater temperature and salinity appear to influence the oilsardine migration. Conservation of the resource and proper management of the fishery need attention in view of its wide fluctuations coupled with increasing intensity in fishing effort.