

# Polypropylene sheet otter board: Innovation in the trawl sector of Veraval, Gujarat

Prajith K.K. and Ramachandra Khileri

Veraval Research Centre of ICAR-Central Institute of Fisheries Technology, Veraval

The trawlnet designs and related accessories are undergoing random changes all over the world. Otter boards are not exceptional. Otter boards are sheer devices, which are used to keep the trawl mouth, bridles and warps horizontally open, during the tow. They keep the bottom trawl in contact with the seabed and help to maintain the fishing depths of mid-water trawl. Otter boards contribute about 25% of the total drag of the trawl system and are responsible for 16% of the total fuel consumption. Before the introduction of otter boards, the trawl net was kept open by means of a beam. But as the size of the boats and trawls increased it was not possible to use correspondingly longer beams as it created problems of handling onboard fishing vessels. There are several designs of otter boards used in our country. The major otter board types of India are rectangular flat otter boards, rectangular cambered otter boards, oval otter boards and rectangular V-shaped otter boards.

Rectangular flat otter boards of wood and steel construction are one of the earliest known designs and are still widely used for bottom trawling in India (Fig. 1). Rectangular cambered

otter boards were introduced for bottom trawling in Gujarat waters. But these otter boards did not attain the expected popularity in spite of their better hydrodynamic properties, probably due to additional skills required to fabricate them. Oval otter boards with an oval profile are known to have improved performance on rough or hard bottoms. Rectangular V-shaped otter boards are simple in design and are constructed in mild steel. Main advantages are ability to tide over hard stony grounds, inherent stability and long service life compared to conventional flat rectangular boards.

Among these, rectangular flat otter board is widely used by Veraval trawl fishermen. Dimensions of typical wooden rectangular otter board are given in Table 1. The common timbers used for fabrication are imported Malaysian and Indonesian teak (₹ 1800/cubic feet), Valsadi (local name) (₹ 2200/cubic feet) and Burman wood (₹ 3000/cubic feet). Initially locally available babool wood (*Vachellia nilotica*) was used for the otter board construction. Babool wood is less durable and easily susceptible to bending and other damages.



Fig. 1. Dorsal and ventral view of traditional rectangular flat wooden otter boards of Veraval coast

Table 1. Details of rectangular flat wooden otter board used in Veraval coast

Sl. No.	Length (m)	Width (m)	Weight (kg)/Pair	Cost (₹)/Pair
1	1.30	0.68	80-100	15500-18500
2	1.45	0.76		
3	1.50	0.76		
4	1.60	0.83		
5	1.50	0.90		

In Veraval, the board is assembled by joining planks and fixing them together with long bolts or mild steel straps. A wide iron metallic shoe is used to prevent digging into the mud and is

rounded off at the leading edge so that it can ride over obstructions. Sometimes a gap is left in between the planks which is said to prevent turbulence on the other side of the board. These boards are comparatively cheaper, easy to handle and easy to fabricate. However, these boards are hydro-dynamically not very efficient and also not suitable for rough grounds as they cannot slide over obstacles. Besides this, there are some operational and maintenance difficulties in the case of rectangular flat otter boards. Important problems are need for annual maintenance or replacement of wood and steel frame; increase in the weight on soaking in water; during off season, the wooden otter board get exposed to external climate which will lead to bending; and the iron frame of wooden otter board undergoes rusting.

Recently a progressive fisherman of Veraval, Gujarat Shri Prabhudas Bensala replaced the wooden otter board of his trawler with poly propylene (PP) (Fig. 2 and 3). Shri Bensala says "we need to replace and purchase the material for wooden otter board yearly due to many reasons. Once I noticed the radar of one of the boat of Maharashtra coast constructed with PP, later on I thought why we can not replace the wooden otter board with the same material".

Few months back Shri Bensala constructed 20 pairs of otter boards with PP and distributed among the fishermen of Veraval. From the trial of four months, he opined that the orientation and balancing of the PP otter board was good and the resistance was lesser compared to the traditional wooden otter boards. The construction cost of PP otter board is ₹ 25000-26000 whereas that of the wooden otter board is ₹ 15500-18500 only. But considering the durability and drag reduction,

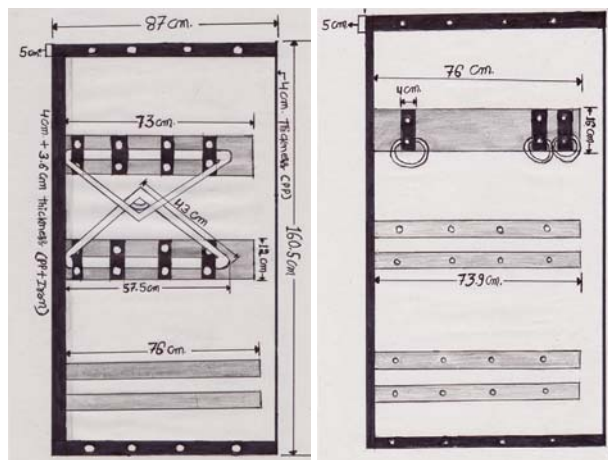


Fig. 2. Diagrammatic representation of dorsal and ventral view of rectangular flat PP otterboard

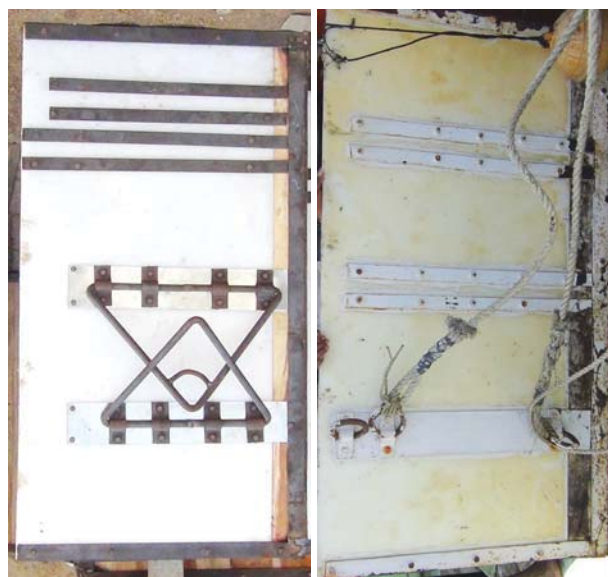


Fig. 3. Dorsal and ventral view of rectangular flat PP otter board of Veraval coast

economically, the PP otter board design is likely to perform well in the long run. However, the efficiency and performance of the new otter board need to be studied for a long duration.