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SQUARE MESH COD ENDS IN DEMERSAL TRAWLS:
FABRICATION, RIGGING AND ADVANTAGES

The size and shape of meshes in the cod end are main factors which determine the selectivity of trawls The filtering ability of a trawl can be enhanced either by enlarging the mesh size or by restricting the closure of the lumen of the mesh under tow. The size of mesh cannot be increased beyond a certain limit. Hence the other alternative is to effect changes in the shape of mesh to keep the meshes open under trawling operation. The method of maintaining square shape for the cod end meshes facilitates easy escape of juveniles and enhances the filtering efficiency.

A series of experimental fishing operations were conducted off Cochin from 1988 onwards using 20 mm and 30 mm mesh size in the code ends, of both diamond and square shape, in different demersal trawls, operated from CIFT research vessels — MFV Matsyakumari Sagar Shakti and Fish Tech VI. Invariably, the total catch and individual catch of many species have been more in square mesh code ends than that of the conventional diamond mesh cod ends (Table 1). It has been found that the size of mesh has been more critical and selective in deciding the size groups of fishes landed by trawls Thus the mean selection lengths found out for commercially important fishes like sciaenids, silverbelly, Engraulids, Rainbow sardine, Thread fin Breams, Saurids, common squid, "Karikkadi" *(Parapenaeopsis stylifera)* and 'Poovalan,

Table – 1. *Total catch of fish as retention in cod end and escapement in cover in diamond and square mesh cod ends of 20 mm and 30 mm mesh size.*

a) Result with separate code ends (1988-91)	Diamond mesh			Square mesh		
	Total catch (Kg)	Retention in inner cod end (Kg)	Escapement in cover (Kg)	Total catch (Kg)	Retention in inner cod end (Kg)	Escapement in cover (Kg)
i) 20 mm mesh size	67.800	63.050	4.750	88.260	79.100	9.160
ii) 30 mm mesh	535.400	410.500	124.900	679.600	494.300	185.300
iii) Results with trouser code ends (1992-94)						
i) 20 mm mesh size	166.683	148.639	18.044	340.679	284.340	56.339
ii) 30 mm mesh size	245.354	200.402	44.952	382.177	306.995	75.182
Total	1015.237	822.591	192.646	1490.716	1164.735	325.981

Square mesh cod end, trouser cod end and cover in Trawls fabrication and rigging

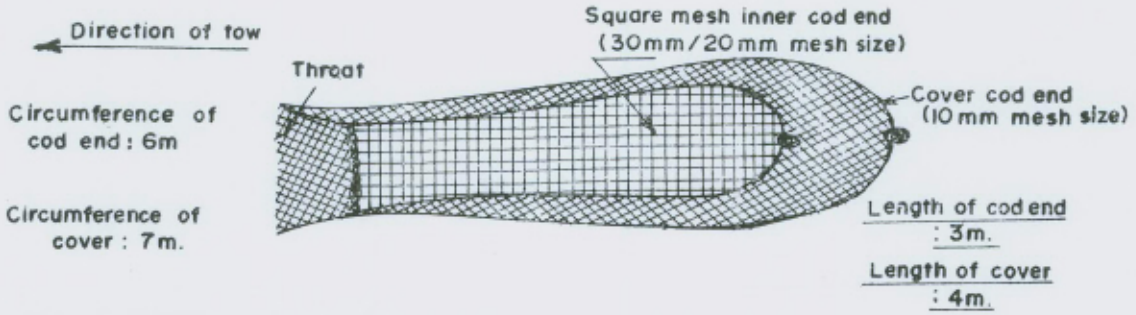

Fig. 1. Rigging of a square mesh cod end with cover

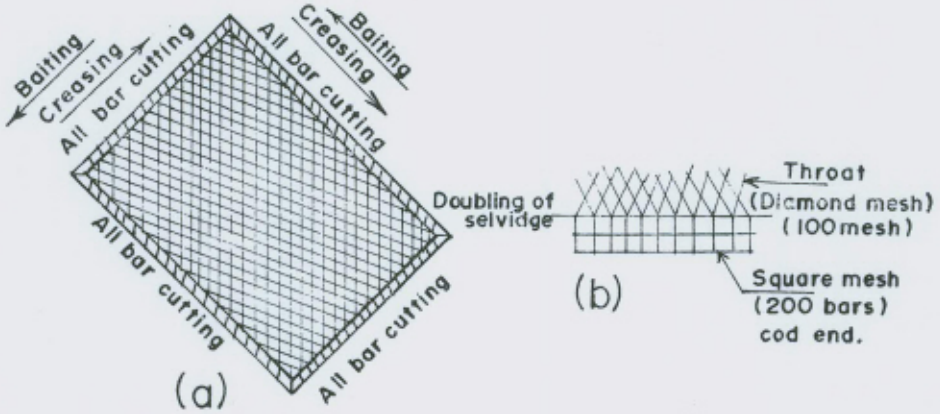

Fig. 2. Cutting (fabrication) of a square mesh panel (a) and rigging with diamond mesh throat (b)

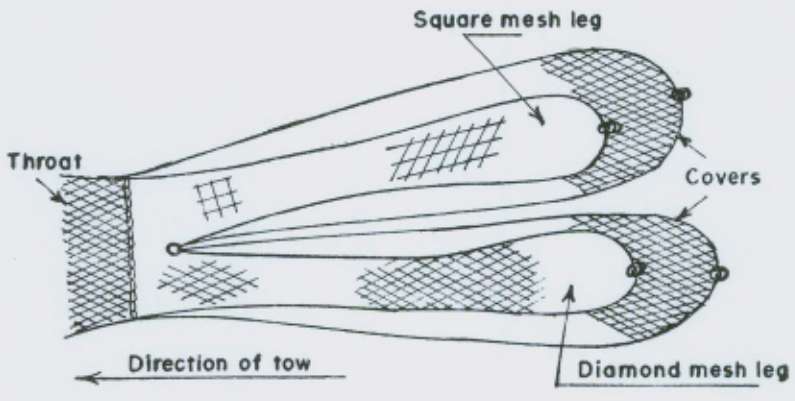

Fig. 3. Trouser cod with separate covers for two legs

(*Metapenaeus dobsoni*) were all of juvenile size groups of uneconomic importance in the case of 20 mm mesh size cod end, whether diamond or square in shape. On the other hand, it has always been above the commercial size (economic size) with regard to most species studied in the case of 30 mm mesh size cod end both in diamond and square meshes. Hence, it has been found that 30 mm mesh size in the cod end of demersal trawls, whether diamond or square in shape, is sufficiently large enough to provide escapement for certain percentage of commercial size groups. 20 mm mesh size whether it is diamond or square in shape, is small and it prevented the escapement of 50 per cent juveniles.

Enhanced catch rates of square mesh cod ends as can be seen from Table 1 may be attributed to better water flow and filtration through square mesh when compared to conventional diamond mesh cod ends, which retard easy water flow and slow down filtration.

Figures 1 to 3 show the method of fabrication/cutting of webbing, rigging and construction of square mesh cod end, trouser cod end and cover fitted on, for assessing comparative escapement and retention of size groups of different species of fish of commercial importance.

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