

## Large Mesh Demersal and High Opening Trawls for Finfish and Cephalopods

K.K. KUNJIPALU, M.R. BOOPENDRANATH, N. SUBRAMONIA PILLAI,  
M.D. VARGHESE, T. JOSEPH MATHAI and B. MEENAKUMARI  
*Central Institute of Fisheries Technology, Cochin 682 029*

Large mesh demersal and high opening trawls were developed for better exploitation of finfish and cephalopods. A 40 m large mesh trawl, a 32 m high opening trawl of six seams and a 32 m demersal trawl of hybrid version were developed and their selective actions studied with respect to different species of fish and shellfish.

**Key words:** Large mesh, high opening, resource specificity

Trawls have been found selective in catching certain species of fish according to design and rigging patterns. Kunjipalu *et. al.* (1979 a, b) found large mesh trawl efficient in catching quality fishes in the Northwest coast of India. Efficiency of large mesh trawls, high opening trawls of six and eight seam types, for some particular fish like ribbonfish has been reported (Kunjipalu *et. al.*, 1984 a, 1989, 1990, 1996). Laurent (1996) compared the catch composition of a shrimp trawl and a fish trawl in St. Vincent Bay. Based on the above, three trawls were developed and tested in the field for assessing specific efficiency and the results are reported in this paper.

### Materials and Methods

Three designs of demersal and high opening trawls were developed with design features shown in Figs 1, 2 and 3. All gear were operated from MFB Matsyakumari, a 17.5 m OAL steel trawler with 278 BHP and MFV Sagar Shakti, a 15.2 m OAL wooden trawler with 220 BHP. Trawls were rigged with V form steel otter boards of 1500 mm x 890 mm weighing 150 kg described by Kunjipalu *et. al.* (1984 b). Otter boards were connected with double bridles of 20 m each on either side. All trawls were made with large meshes (150 mm-200 mm) in the forepart and 30 mm in the codend.

### Results and Discussion

229 hauls were made during the period May, 1993 to May, 1996 and landed 4900 kg fish. The catch rate obtained were 21.6, 16.6 and 25.0 kg per h of trawling respectively by 40 m large mesh demersal trawl, 32 m high opening trawl and 32 m demersal trawl of hybrid version. Operational details and catch composition are given in Table 1. Table 2 gives the percentage composition of species represented in the catch of different trawls.

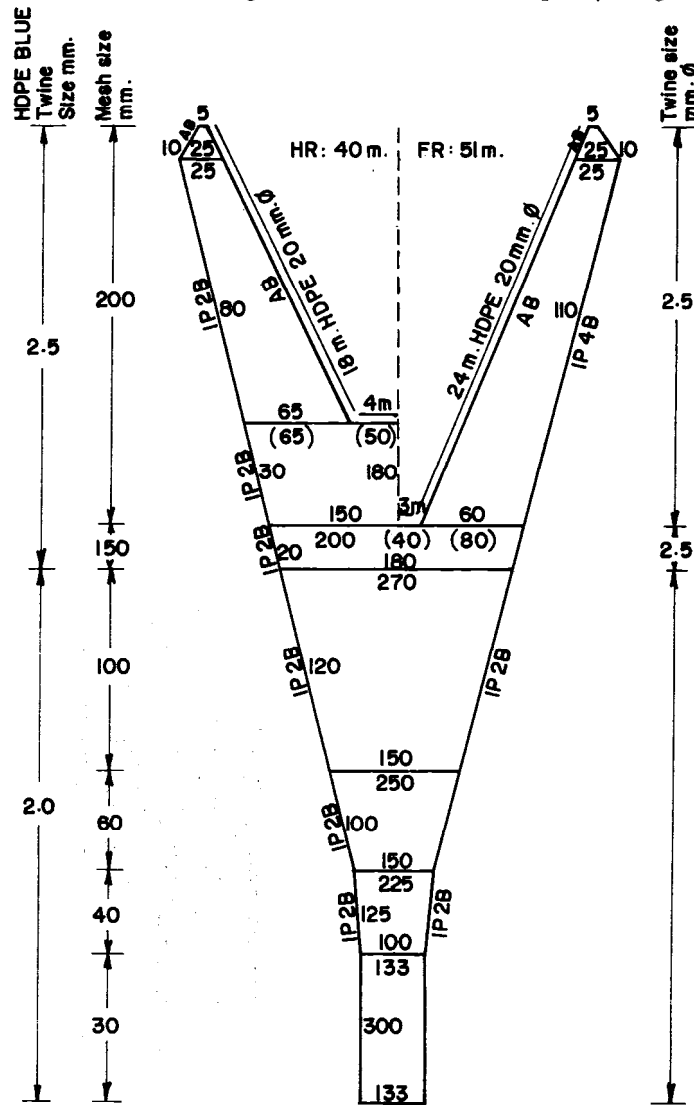


Fig. 1. Design details of 40 mm demersal trawl

Quality fishes consisting of pomfrets, seer, polynemids, perches, mackerel, large carangids and clupeids contributed 27% of the landings of 40-m large mesh hybrid trawl. Representation of quality fishes in 32 m high opening trawl and 32 m demersal trawl was less than 15%. More than 50% of the total catch of quality fishes by the three trawls were landed by 40 m large mesh trawl.

Ribbonfish and saurids together contributed about 7% in 40 m large mesh trawl while in the other trawls representation of this group was less than 2%. Over 70% of the total catch of ribbonfish and saurids obtained were from 40 m large mesh trawl.

Cephalopods contributed about 7% of the landings of 40 m large mesh trawl while it was less than 4% in the other trawls.

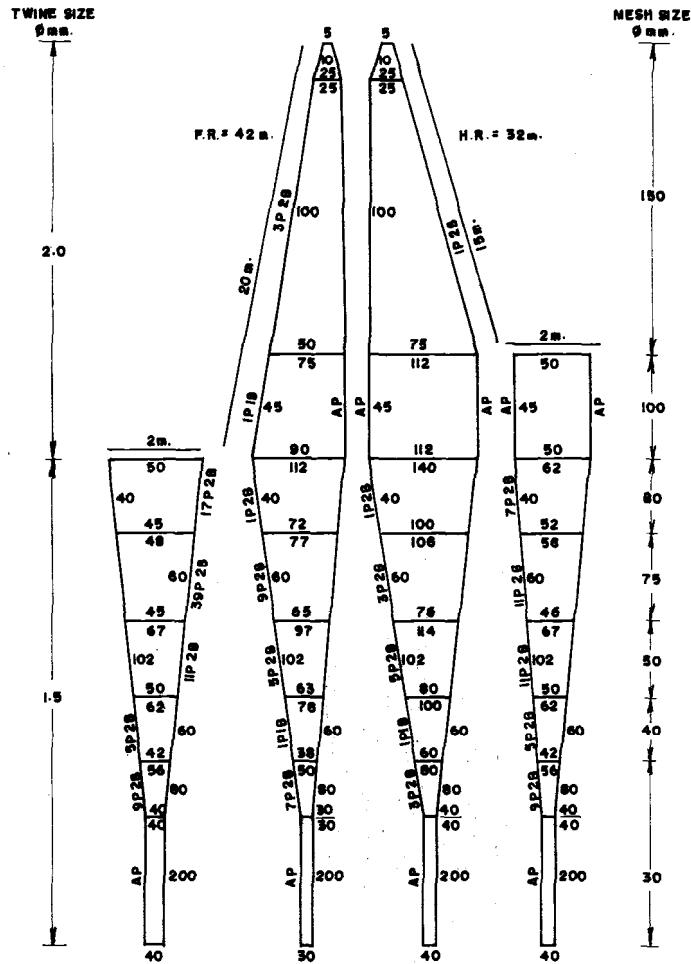


Fig. 2. Design details of 32 mm demersal trawl

Shrimp contributed 3% in the total landings of 40 m large mesh hybrid trawl whereas it was less than 1% in the other two trawls (Table 2). Over 60% of the total shrimp catch was landed by 40 m large mesh trawl.

Sciaenids, leiognathids and carangids together formed 28% in the landings of 32 m hybrid trawl. In 40 m large mesh demersal trawl and 32 m high opening trawl the percentage representation by this group was 21 and 18 respectively. More than half (51%) of the total catch of these species was obtained by 32 m hybrid trawl.

The catch rate of engraulids was better in 32 m hybrid trawl (6%) compared to the other two and over 70% of the total catch of this species was obtained in this trawl.

Taking into consideration the species dominance in the landings among the three trawls, the fishes excluding the miscellaneous were grouped into two categories as

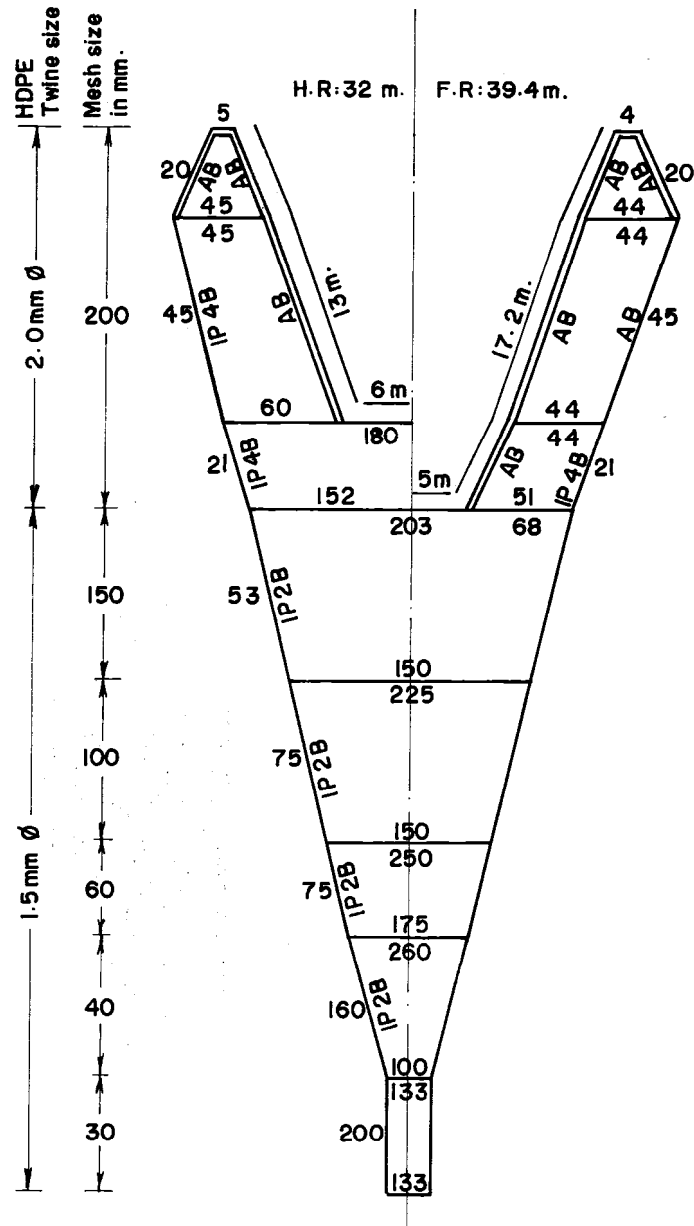


Fig. 3. Design details of 32 mm demersal trawl

given in Table 2. Category 1 consisting of quality fishes like ribbonfish, saurids, cephalopods and shrimp were landed more by 40 m large mesh trawl than the others, contributing 56% in the total landings by the three trawls. This indicated better resource specificity of the gear for this category of fishes. The other category consisting of sciaenids, leiognathids and carangids formed 51% of the total catch in 32 m hybrid trawl, indicating greater resource specificity of the gear for this category of fishes.

**Table 1.** Species composition of the catch of different trawls

	Trawls used		
	40 m large mesh demersal	32 m high opening	32 m hybrid
No. of operations	59	80	90
Period of operation	May, 94 - Sept, 96	May, 93 - March, 96	Dec, 94 - May, 96
Total catch, kg	1272	1329	2246
Catch per haul, kg	21.6	16.6	25.0
Catch composition, %			
Quality fish	27.2	14.8	11.4
Sciaenids	13.7	10.7	14.6
Leiognathids & Carangids	7.7	7.4	13.5
Cephalopods	7.1	4.3	1.3
Ribbonfish	3.3	0.6	0.1
Saurids	3.3	0.0	1.9
Shrimp	3.0	0.9	0.6
Engraulids	0.0	3.4	6.3
Miscellaneous	34.7	57.9	50.3

**Table 2.** Composition of different species in different trawls

Fish group	40 m large mesh	32 m high opening	32 m hybrid
Quality fishes (ribbonfish, saurids, cephalopods, shrimp)	56.2	20.7	23.1
Sciaenids, leiognathids, carangids, engraulids	27.6	21.2	51.2

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