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WHITE FISH GILL NETS OF SINDHUDURG, MAHARASHTRA

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ABSTRACT : Gill net fishing is one of the popular fishing methods along the west coast of India. However, there are regional variations in their design, specifications and operation. This paper deals with the design and general characteristics of whitefish gill nets operated from Sindhudurg district of Maharashtra. In Sindhudurg, whitefish gill nets were made up of PA monofilament of diameter 0.20 to 0.23 mm, the mesh size ranged between 46 to 48 mm and the hanging coefficient ranged between 0.40 to 0.55. The hung length of the drifting type of whitefish gill net ranged in between 108 to 124 m while the fleet length ranged from 1620 to 1860 m. Disc shape PVC floats of 28 to 32 number and sinkers of 14 to 16 number were attached for each unit. Whitefish gill nets were operated in the depth range of 36 to 38 m and a netting fleet comprised of 10 to 15 number of units.

Key words : Design, whitefish, gill net.

INTRODUCTION

Maharashtra is one of the major marine fish landing states in India having five maritime districts *viz*. Thane, Mumbai and suburban, Raigad, Ratnagiri and Sindhudurg. Sindhudurg district is located in the southern part of Maharashtra and has three coastal Taluka namely Devgad, Vengurla and Malvan. The small-scale fisheries sector comprising of the traditional craft and gear plays a significant role in Sindhudurg fisheries along the coast. Sindhudurg district has 121 km coast line with 1503 mechanized vessels and 698 non non-mechanized vessels engaged in fishery. In the year 2015-16, fish production by gill nets with mechanized vessels was 6439 tonnes and by non-mechanized vessels recorded was 581 tonnes (Fish Production Report, 2015-16).

Thomas and Hridayanathan (2006) studied the design and general characteristics of marine gill nets of Kerala and found that gill net was the most commonly used gear by the maximum fisherman in all the districts of Kerala. Nets of different mesh sizes ranging from 14 to 250 mm targeted at different groups of fishes were prevalent along the Kerala coast. The nets were classified into different groups and the technical specifications of each type including whitefish gill nets, were detailed. PA monofilament had almost completely replaced PA multifilament in all the nets except those targeted for anchovy, white sardine and seer.

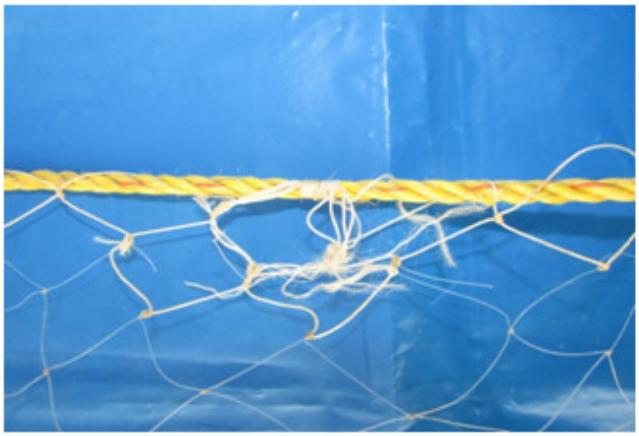
Many changes have taken place in the gillnets with respect to the material used, net dimensions, mesh size, mode of operation (Vijayan *et al*, 1993) etc. The present day gill nets are mostly resource specific. The present study is undertaken with the objective of documenting the design characteristics and technical specifications of the whitefish gill nets operated from Sindhudurg. Very few workers have studied design and technical aspects of aspects of whitefish gill nets in India.

METHODOLOGY

Interview schedule was prepared in proper way to collect required information to satisfy the objectives of the present study. Structured data collection schedule formulated for the present study comprised of two major sections. The first section dealt with the particulars of gill net owner and the fishing vessel used for gill net operation. The second section deals with the technical specifications design aspects, rigging and the mode of operation of the whitefish gill nets used by the fisherman of Sindhudurg district. The information included in the first section was recorded according to Kazi *et al* (2010) whereas; the information in the second section was physically collected and recorded according to Pravin *et al* (2009). The net designs of the whitefish gill nets was presented according to Nedelec (1975). In Sindhudurg District (16^0 34' 92'' N latitude and 73^0 55' 94'' E longitudes) three important fish landing centres namely Devgad, Malvan and Vengurla were selected for the present study.

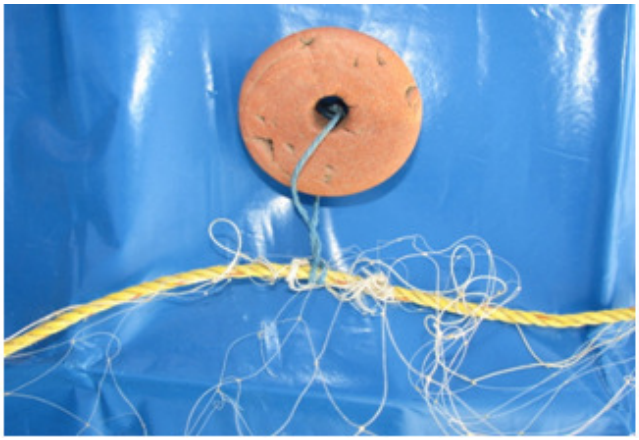
Table 1 : Technical Specification of Whitefish gill nets operated from Sindhudurg.

Station	**Sindhudurg**	
Local name	*Tiyani, Soundalyach Jal*	
Main webbing mesh size (mm)	46	48
Mean main webbing mesh size (mm)	47.19 ± 0.09	
Twine type	PA Mono	PA Mono
Twine specification / diameter (mm)	0.20	0.23
No. of meshes in depth	150-200	
Horizontal hanging coefficient (E)	0.40-0.48	0.50-0.55
Mean horizontal hanging coefficient (E)	0.48 ± 0.004	
Vertical hanging coefficient (1-E2)	0.77-0.84	0.70-0.75
Mean vertical hanging coefficient (1-E2)	0.76 ± 0.004	
No. of meshes per unit	2040-2600	
Mean no. of meshes per unit	2392.74 ± 14.89	
Hung length (m)	108-124	
Mean hung length (m)	115.66 ± 0.50	
Hung depth (m)	8-15	
Color of webbing	Colourless	
Selvedge twine type	PE	
Selvedge specification / diameter (mm)	2	
Selvedge mesh size (mm)	50	
No. of selvedge meshes in depth	3	
Selvedge hung depth (m)	0.07-0.08	
Total hung depth (m)	8.21-15.21	
Mean total hung depth (m)	9.53 ± 0.13	
Head rope material	PP	
Head rope diameter (mm)	6-8	
Float material	PVC	
Float dimension (mm)	125×10	
No.of floats per unit	28-32	
Mean no.of floats per unit	30.84 ± 0.17	
Foot rope material	PP	
Foot rope diameter (mm)	3-4	
Sinker material	Cemented	
Sinker dimension (mm)	135×10	
Sinker weight (g)	300-400	
No. of sinkers per unit	14-16	
Mean no. of sinkers per unit	15.42 ± 0.08	
Total fleet length (m)	1620-1860	
Mean total fleet length (m)	1726.39 ± 7.78	
Depth of operation (m)	36-38	
Fishing craft	Wooden and FRP Motorised, Wooden Mechanised	
Horse power of the engine (HP)	9.9-55	



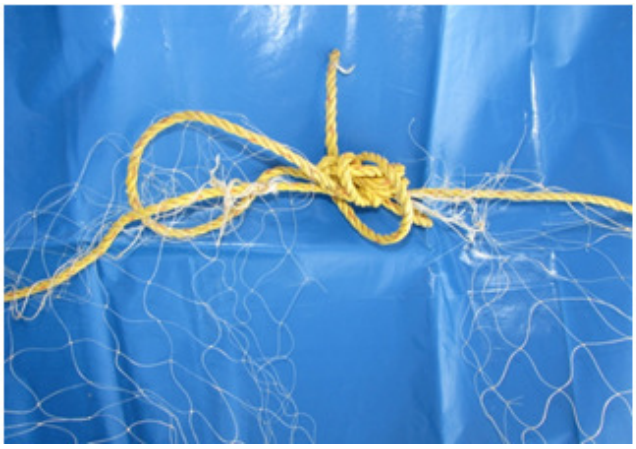
Selvedge meshes

Mesh stapling

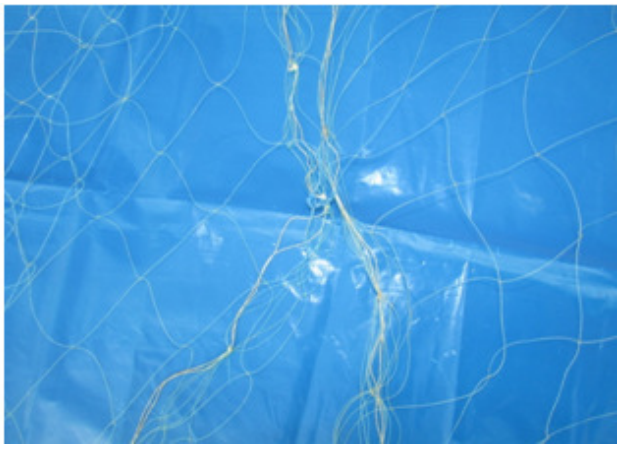


Rigging of float

Rigging of sinker



Joining of two unit at head rope



Seaming of two units

Photo 1 : Rigging of whitefish gill nets operated from Sindhudurg.

RESULTS AND DISCUSSION

Technical specifications of the typical whitefish gill nets operated from Sindhudurg district is mentioned in the Table 1 and its design aspects are presented in the Fig. 1. Whitefish gill nets were operated as drift gill net on the surface and mid-column according to the season and behaviour of the target species from motorized and mechanized gill netters of three coastal Talukas of Sindhudurg district namely Devgad, Malvan and Vengurla.

Whitefish gill nets of Sindhudurg were made up of PA monofilament of diameter 0.20 to 0.23 mm while PA multifilament 210d×1×2 was used in Kerala as recorded by Thomas and Hridayanathan (2006). The mesh size for whitefish drift gill nets ranged from 46 to 48 mm in present study, while Thomas and Hridayanathan (2006) recorded the mesh size of 33 and 35 mm, which is less in

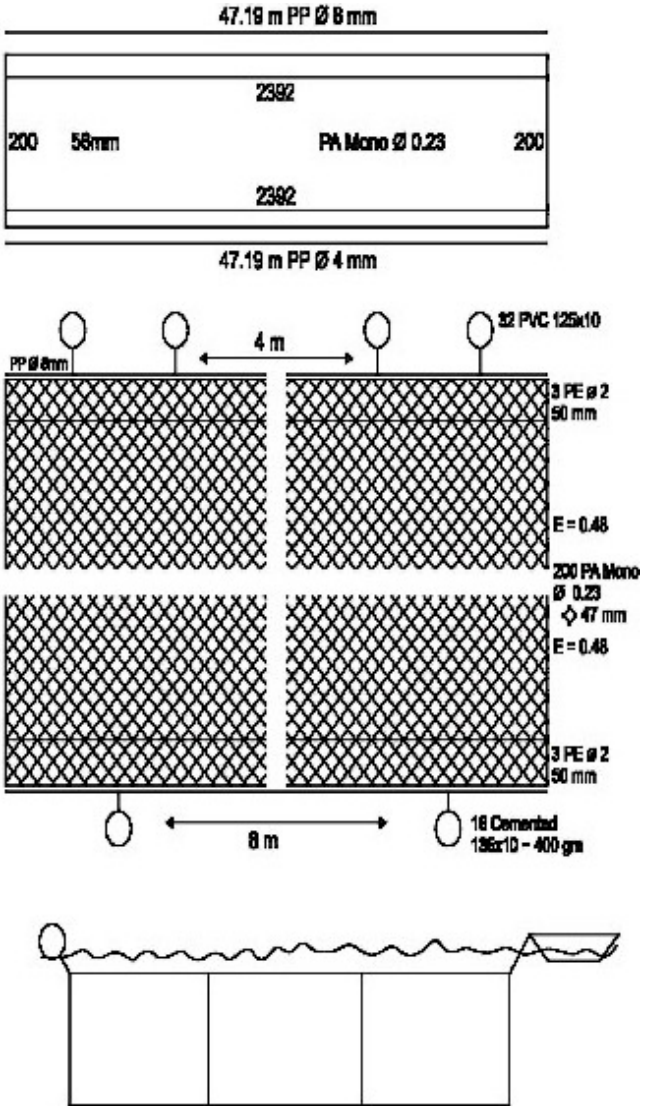
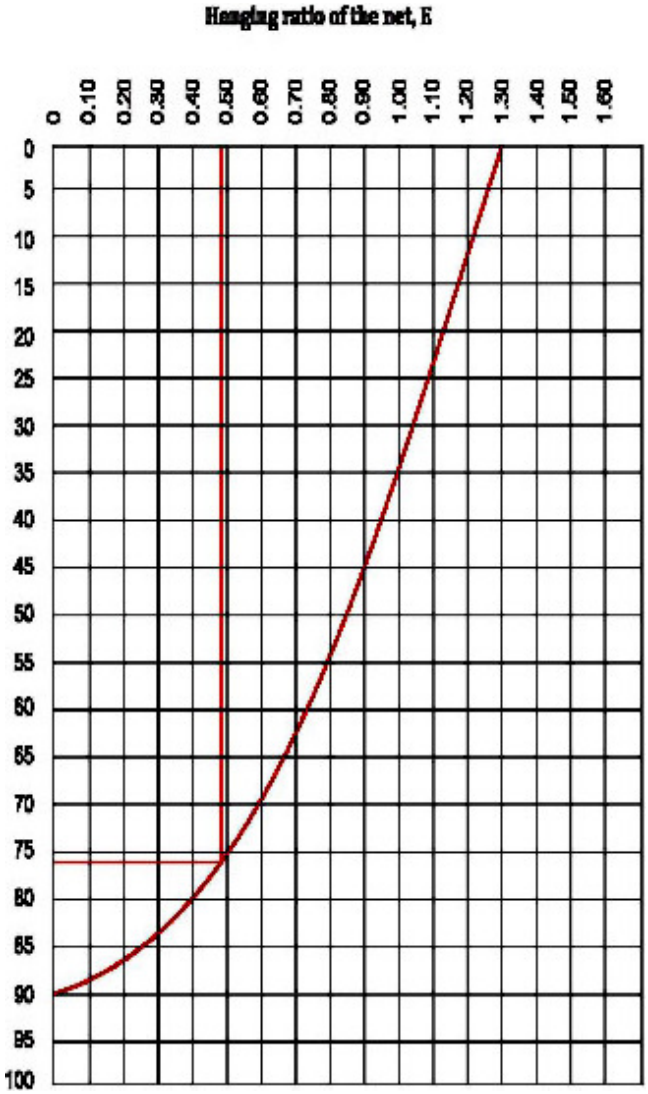


Fig. 1 : Design of whitefish gill nets operated from Sindhudurg.



Graph 1 : Mounted height for whitefish gill nets operated from Sindhudurg.

comparison.

Hanging coefficient of whitefish gill nets as recorded by Thomas and Hridayanathan (2006) of 0.71 was more than as observed during the present study (0.40 to 0.55). Similarly, the hung length of 114 m for whitefish drift gill nets as observed by the same author from Kerala was found to be within the range of hung length during the present study.

The fleet length of drift whitefish gill net ranged from 1620 to 1860 m and the depth of operation ranged between 36 to 38 m. The head rope and foot rope consisted of polypropylene (PP) of 6 to 8 mm and 3 to 4 mm diameter, respectively.

The arrangement of floats and sinkers generally depend on the depth of operation of the whitefish gill net. Drift whitefish gill nets were operated at the surface with, expanded PVC of disc shape (*bhakri, bhend*) (Photo 1), of 28 to 32 numbers per unit (average of 30.84 ± 0.17). It was recorded that, in surface as well as column drift type of net, sinkers of concrete material, weighing 300-400 g circular in shape (*ring, golte, khapre and dagad*) of 14 to 16 in number, were commonly used. Whitefish gill nets units were joined end to end to form a fleet during the operation. It was calculated that average area covered by each unit in drift whitefish gill net was 346.88 m^2.

It was estimated that the twine size-mesh size relationships in whitefish gill nets was 0.004 to 0.005, the distance between floats as percentage of hung depth of net ranged from 25 – 50 with an average of 41.11.

The documented information on the technical specifications and design of whitefish gill nets of Sindhudurg district of Maharashtra, would serve as a base line information for the technological modifications the

gear may undergo to increase their efficiency in the coming years.

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