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DESIGN AND TECHNICAL SPECIFICATIONS OF CAST NET WITHOUT CENTRAL LINE AND WITH POCKETS OF RATNAGIRI, MAHARASHTRA

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Abstract:

The present study encompasses the traditional fishing method of cast net practiced in Ratnagiri, Maharashtra. Cast net without central line and with pockets locally known as Khamlyacha Pagala were fabricated with PA monofilament having diameter of 0.5 to 1 mm for the main webbing whose mesh size ranged from 35 to 70 mm. Selvedge meshes of PA multifilament of 210D×3×3 were provided at bottom edge of the net. No selvedge meshes were provided at the apex end. Cast net of this type was made up of 3 to 4 panels joined together vertically. The total depth of the net varied from 2.59 to 4.55 m. PP twisted multifilament rope of 21 to 31.2 m in length having diameter of 2 to 5 mm was used as a sinker line. A total of 180 to 260 no. of sinkers each weighing 18 to 22 gm were attached at a distance of 11 to 13.5 cm.

Key Words: Traditional Fishing Methods, Design, Technical Specifications, Cast Net & Khamlyacha Pagala

Introduction:

The design and efficiency of traditional fishing gears draw strength from a practical knowledge accrued over several generations of human enterprise and they remain valid and effective even today. Thus, the present generation has still a lot to learn from this treasure of traditional knowledge (Remesan, 2009). The west coast of India is rich in tradition related to fisheries for two reasons. Firstly, the traditional fishing communities and the like, have a rich legacy of traditional knowledge and secondly, there exists a very wide continental shelf on the west coast enabling better harvesting of fish (Sharma *et al*., 2012).

The present study is an attempt to document the variations observed with respect to the technical specifications, material used, mode of operation, etc in the traditional fishing method of Cast net with central line and without pockets practiced in Ratnagiri, Maharashtra.

Materials and Methods:

Ratnagiri (16°58'57" N latitude and 73°18'43" E longitude) an important fishing centre was selected as the sampling area for the present study. Structured interview schedule comprising of two major sections was formulated to collect data required for the present study. The first section dealt with the particulars of the traditional gear owners and second for the detail specifications of the respective traditional gears operated. The information included in the first section was recorded according to Sreekrishna and Shenoy (2001) whereas; information in the second section was collected according to George *et al*. (1983) and Akerman (1986). The technical specifications of the traditional gear and mode of operation were recorded. Collected data was statistically analyzed as required (Snedecor and Cochran, 1967).

Results and Discussion:

Cast net was a very simple method employed to catch near shore fishes, in shallow waters of Ratnagiri. Technical specifications of the Cast net without central line and with pockets locally known as *Khamlyacha Pagala* which are operated manually

with or without using fishing craft, are stated in the Table 1, its design in Fig 1 and its rigging and operation are depicted in Photo 1 and Photo 2, respectively.

Cast net of this type was made up of 3 to 4 panels joined together vertically to form main conical webbing. Since hand braiding requires lot of time, machine made netting was shaped by cutting the webbing in panels of required specifications and then the panels were joined together by following appropriate take up ratios. PA monofilament having diameter of 0.5 to 1 mm was commonly used for construction of main webbing of cast net. Three selvedge meshes of PA multifilament of 210D×3×3 was provided at bottom edge of the net. No selvedge meshes were provided at apex end. For all panels of main webbing and for selvedge section, mesh size varied from 35 to 70 mm. Total 84 number of meshes were present in upper (Apex) and lower edge of first panel. At apex, all meshes were closed together and were tied to the pulling chord. Number of meshes in depth were 10 in this panel. For panel 2, 3 and panel 4 upper and lower end meshes were 168, 336 and 772, respectively while 20, 40 and 80 meshes were present in depth in panel 2, 3 and 4. For first three panels, joining was carried out by 1:2 ratio, while in panel no. 4 the ratio maintained was 2:3.

The total depth of net varied from 2.59 to 4.55 m. It was recorded that depth of panel one ranged from 0.35 to 0.59 m while for panel 2 it was recorded in between 0.65 to 0.95 m. Depth of panel 3 was measured from 0.75 to 0.99 m and for panel 4 depth recorded ranged from 1.25 to 1.95 m. PP twisted multifilament rope of 21 to 31.2 m in length having diameter of 2 to 5 mm was used as sinker line to which oval shaped lead sinkers having 2 to 5 mm diameter at center were used as weight for faster sinking of the Cast net. Total 180 to 260 no. of sinkers weighing each 18 to 22 gm were attached to the sinker line at a distance of 11 to 13.5 cm.

PA monofilament twine of 0.5 to 1 mm diameter and 2.59 to 4.55 m length was used for pockets. Total 60 to 80 no, of pockets were found in this type of cast net. The pocket had depth of 25 to 35 cm, length 33 to 48 cm, meshes of 6 to 12 no. and sinkers 3 to 4 in no. The mesh size of pockets was same as that of the panels. PP twisted multifilament rope of 3 to 5 mm diameter and 3 to 6.9 m length was joined to the pulling chord, which was used for hauling the net.

Design, construction and operation of Cast net without strings and with pocket were studied by Saxena, (1966) in a section of the middle reaches of Ganga river system of India, Balan, (1980) from Kerala, Remesan (2009) from north Kerala and Manna *et al.,* (2011) in river Krishna.

Slightly lower mesh size was reported by Saxena, (1966) in a section of the middle reaches of Ganga river system of India for the similar type of Cast net. He also stated that, the Cast net locally known as *Bhawnar Jal* consisted of 50 number of meshes at the apex and 1000 at the periphery. On the contrary for the similar type of Cast net in Ratnagiri, 84 and 772 number of meshes were present at apex and periphery; respectively. Total 60 to 80 no, of pockets were found in this type of Cast net in Ratnagiri. Whereas, total 90 number of pockets were reported by Saxena, (1966) from Ganga river system which were made by folding the net inwards to about $6^{1/2}$ meshes in depth.

Conclusion:

The documented information on the technical specifications and operation of the traditional fishing method of Cast net without central line and with pockets locally known as *Khamlyacha Pagala* practiced in Ratnagiri, Maharashtra would serve as a base line information for the technological modifications the net may undergo to improve its efficiency in the coming years.

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Table 1: Technical Specifications of Cast Net Without Central Line with Pockets / Khamlyacha Pagala

Panel	Sampling Stations in Ratnagiri			Mirya, Karla, Mandavi, Bhatye,			
	Local name			*Khamlyacha Pagala*			
	No. of panels			3 to 4			
	Specifications of Panels						
	Section	No. of meshes		Mesh size	Specification Of Selvedge	Selvedge Meshes No.	
		In length	In depth				
1	Upper	84	10	Range	Material PA multifilament	Top	Bottom
	Lower	84				Absent	3
2	Upper	168	20	3.5 to 7			
	Lower	168					
3	Upper	336	40	Average			
	Lower	336					
4	Upper	772	80	5.55 ± 0.36			
	Lower	772					
Specifications of Twine							
Material				PA monofilament			
Diameter (mm)				0.5 to 1			
Mean (mm)				0.99 ± 0.10			
Specifications of Depth of net							
Depth of Panel 1(m)				0.35 to 0.59			
Mean (m)				0.459 ± 0.021			
Depth of panel 2 (m)				0.65 to 0.95			
Mean (m)				0.79 ± 0.031			
Depth of panel 3 (m)				0.75 to 0.99			
Mean (m)				0.90 ± 0.22			
Depth of panel 4 (m)				1.25 to 1.95			
Mean (m)				1.72 ± 0.082			
Total depth of net (m)				2.59 to 4.555			
Mean (m)				3.66 ± 0.22			
Specifications of Sinker line							
Material				PP multifilament			
Diameter (mm)				2 to 5			
Mean (mm)				3.15 ± 0.325			
Length (m)				21 to 31.2			
Mean (m)				25.15 ± 1.10			
Specifications of Sinkers							
Material				Lead / *Shise*			
No. of sinkers used				180 to 260			
Mean				217 ± 8.00			
Wt per sinker.(gm)				18 to 22			
Mean (gm)				19 ± 0.53			

Distance between sinkers(cm)	11 to 13.5
Mean (cm)	11.85 ± 0.28
Specifications of Pockets	
No. of pockets	60 to 80
Mean	68 ± 2.11
Material	PA monofilament
Length of pocket (m)	33 to 48
Mean (m)	37.85 ± 1.61
Depth of pocket (cm)	25 to 35
Mean (cm)	29.8 ± 1.07
Meshes no. per pocket	6 to 12
Sinkers no. per pocket	3 to 4
Specifications of Pulling chord	
Material	PP multifilament
Diameter (mm)	3 to 5
Mean (mm)	3.85 ± 0.23
Length (m)	3 to 6.9
Mean	5.3 ± 0.33

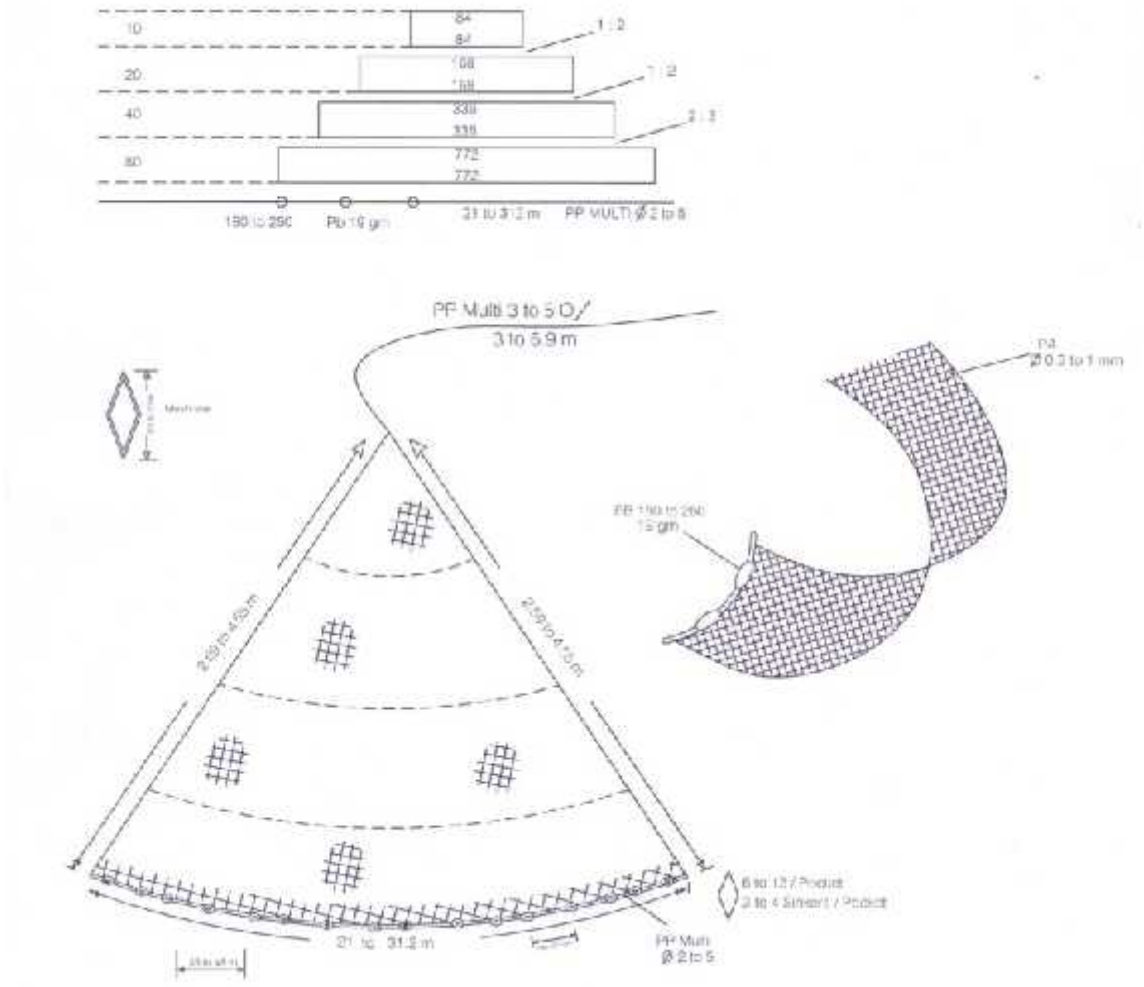
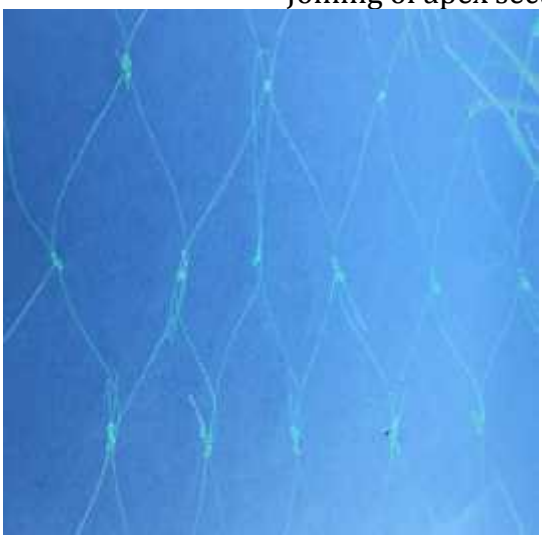
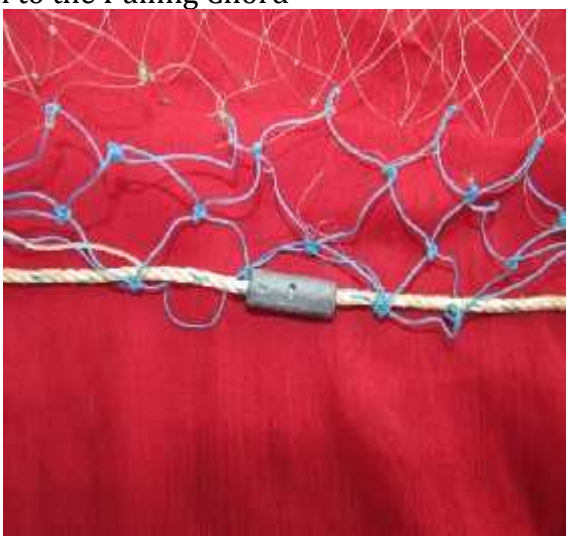


Figure 1: Design of Cast Net Without Central Line with Pockets / Khamlyacha Pagala

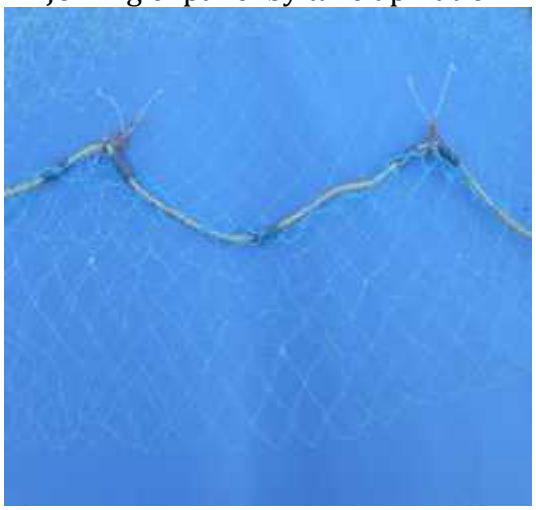
Joining of apex section to the Pulling Chord



Joining of panel by take up Ratio



Attachment of Sinkers



Arrangement of Pockets

Forming of Pockets by joining of Sinker line

Photo 1: Gear Accessories and Rigging of Cast Net Without Central Line with Pockets / Khamlyacha Pagala

Operation of Cast Net
Photo 2: Operation of Cast net

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