

**RESEARCH ARTICLE**

# Bobbing and hand line fishing methods of Ratnagiri, Maharashtra

■ **MAYURI U. DONGARE, ASHISH S. MOHITE, MAKARAND T. SHARANGDHAR AND SHRIKANT T. SHARANGDHAR**

## ABSTRACT

The present study encompasses some line fishing methods practiced in Ratnagiri, Maharashtra. The bobbing line locally known as *Sarsara* was operated at a depth ranging from 10 to 18 m to catch Scad fish (*Kokeri*). Its main line was made up of PA monofilament twine of length varying from 6 to 12 m and diameter ranging from 0.16 to 0.25 mm. Bob was made up of 15 to 30 cm PA monofilament of same specification as that of the line. Hand line consisting of a line and bait with hook was operated at a water depth of 4.5 to 12 m and was made up of PA monofilament twine having a twine diameter varying from 0.23 to 1 mm of length ranging from 5 to 16 m. Barbed 'J' shaped steel hooks of 7 to 13 number were normally used.

**KEY WORDS :** Line fishing methods, Bobbing, Hand line

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## 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).

Saxena (1966) studied hook and line fishing techniques of middle reaches of Ganga river system, in which line was made up of a thin but stout rope generally 155 meters long which had 150 hooks and were attached with a small string. Snails, earthworm or small fishes were attached to the hooks as bait. Menon *et al.* (1993) studied the hook and line fisheries in the coastal waters of India. He observed that hand line fishing conducted along uneven coastal grounds of coral reefs, rocky outcrops during selected season by migrating fishermen. Srivastav *et al.* (2002) recorded the information about fishing methods in streams of the Kumaon Himalayan Region of India; they described hook and line fishing method in which they found that, most of the fishermen use hooks to catch big fishes. Generally, 10–20 hooks were tied to a nylon rope of 1-2 cm thickness. Kar *et al.* (2007) described the traditional line fishing methods to catch riverine fish operated in the rivers of Assam. Thomas *et al.* (2007) described the fishing hooks which stand out among the simplest and the oldest of such devices. Gurumayum and Choudhury (2009) studied the various traditional fishing

methods in the rivers/hill streams of northeast India, the community practicing hook and lines. Srivastava and Srivastava (2011) described the indigenous hook and line (*Bansi*) fishing method adopted by the fishermen in Suraha lake, Uttar Pradesh. Immanuel and Rao (2012) studied social status of hook and line fishermen of Visakhapatnam.

Chakravartty and Sharma (2013) described the different types of line fishing methods of Nalbari district. Upadhyay and Singh (2013) reported that, the line fishing gear with traditional devices is an age old practice followed by fisher folk of Tripura. Ahmed *et al.* (2013) worked on the gears like hand lines, it is one of the most popular fishing methods of the *Nicobarese* tribes. It consisted of 3 to 20 m long monofilament line having one or more barbed hooks. Purkayastha and Gupta (2014) surveyed the fisher folk of Chatla floodplain area, in Barak Valley of Assam and reported the various traditional fishing gears like hooks and fish gorges locally known as *Borsi* and *Lar* for catching fishes. Das and Barat (2014), studied different types of fishing gears like hook and lines (*Barshi*) employed by fishermen in lentic and lotic water bodies namely beels, ponds and rivers of Cooch Behar district of West Bengal.

The present study is an attempt to document the variations observed with respect to the design, technical specifications, material used, mode of operation, etc in some of the traditional line fishing methods of Ratnagiri, Maharashtra.

## **EXPERIMENTAL PROCEDURE**

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 comprising of sampling stations namely Bhagwati Bandar, Mirya, Karla, Kalbadevi, Mandvi and Bhatye. 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 gears and mode of operation were recorded. Collected data was statistically analyzed as required (Snedecor and Cochran, 1967).

## **EXPERIMENTAL FINDINGS AND ANALYSIS**

### **Bobbing line :**

The bobbing line locally known as *Sarsara* was used, where bait and hooks were absent. In Ratnagiri, bobbing line fishing method is popular fishing method particularly targeted for Scad fish locally known as *Kokeri*. During the present study bobbing line was seen in operation from Mirya landing centre at a depth ranging from 10 to 18 m. Specifications of the bobbing line operated from Ratnagiri are presented in the Table 1 and the gear depicted in Fig. 1. It was observed that, PA monofilament main line of length, varying from 6 to 12 m and diameter ranging from 0.16 to 0.25 mm was commonly used. The bob was made up of 15 to 30 cm PA monofilament of same specification as of the line. One oval shaped lead weight of 14 to 22 g and 2.5 to 3.5 cm length with 3 to 5.4 mm diameter was used as sinker. It was attached to the line of about 10 to 15 cm above the bob to facilitate throwing and helped to prevent drifting of bob as well as to keep it at required place. It was observed that, sometimes small irregular shaped stone or nut and bolt were also used as sinkers for this type of fishing method.

The monofilament line with one end wound and bunched to make small bundle is normally carried to the fishing location from where it is operated. The small lead sinker was attached at the bunched end of the line. The sinker with line was thrown into the water from the shore and pulled immediately with the speed. Fishes were attracted by the moving line and tried to gulp the bunch of line thus, getting their teeth entangled in the bob. The line was then pulled with the entangled fish on to the shore. The throwing and pulling of the line was repeated for several times. The fisherman may not get the fish on every throw but kept on trying to get sufficient fish catch during the operation.



Attachment of bobbing



Attachment of sinkers



Sinker along with bobbing



Bobbing along with reel of wooden block



Operation of bobbing line

**Fig. 1 :** Gear accessories, rigging and operation of bobbing line (*Sarsara*)

<b>Table 1 : Technical specifications of bobbing line</b>	
Local name	<i>Sarsara</i>
Specifications of main line	
Twine type	PA Monofilament
Twine diameter (mm)	0.16 to 0.25
Mean twine diameter (mm)	0.20 ±0.01
Length of twine (m)	6 to 12
Mean length of twine (m)	6.64±1.26
Colour of twine	Transparent green
Gear accessories	
Specifications of bob	
	<b>Bob</b>
Twine type	PA monofilament
Twine diameter (mm)	0.16 to 0.25
Mean twine diameter (mm)	0.20 ±0.01
Length of twine (m)	15 to 30
Mean length of twine (m)	22.30±1.6
Specifications of sinker	
	<i>Shise / Guli</i>
Material	Lead
Shape	Oval
Diameter of sinker (mm)	3 to 5.4
Mean diameter of sinker (mm)	4.34± 0.22
Weight of per sinker (g)	14 to 22
Mean weight of sinker (g)	18.8± 0.72
Length of sinker (cm)	2.5 to 3.5
Mean length of sinker (cm)	2.9± 0.17

### Hand line :

In Ratnagiri, hand line *i.e.* hook and line fishing method is popular fishing method locally known as *Gari* was observed in operation from landing centers namely Bhagwati Bandar, Mirya, Karla, Kalbadevi, Mandvi and Bhatye. Specifications of the hand line are stated in the Table 2 and the gear depicted in Fig. 2.

It was observed that, hand line having a length ranging from 5 to 16 m was operated from Ratnagiri. Thin line was preferred over thick line as the later was more visible in water and made the fish reluctant to take the bait. Hand line made of polyamide (PA) monofilament twine with a twine diameter varying from 0.23 to 1 mm was used. The breaking strength was maintained so as to be more than the weight of the target size of fish. It was observed that, generally 1 or 2 hooks were tied to the end of the line. In case of two hook, 15 to 20 cm distance was kept in between two hooks. In Ratnagiri, barbed hooks made of ordinary steel or iron (sometimes stainless steel) and coated or plated with bronze, tin or nickel to prevent it from rusting, of number 7 to 13 were commonly used for hand line fishing. A small stone, a piece of steel, a nut bolt or lead, weighing 10 to 22 g was tied to the end of fishing line and was used as sinker.

Hand line with hook was operated in the shallow waters of Ratnagiri at a depth ranging from 4.5 to 12 m. At the time of operation, the line was wound to the small piece of wood or thermocoal or plastic bottle. The hook attached with the bait along with the line, was thrown in the water and allowed to sink, upto the bottom. The fisherman waited



Attachment of hook



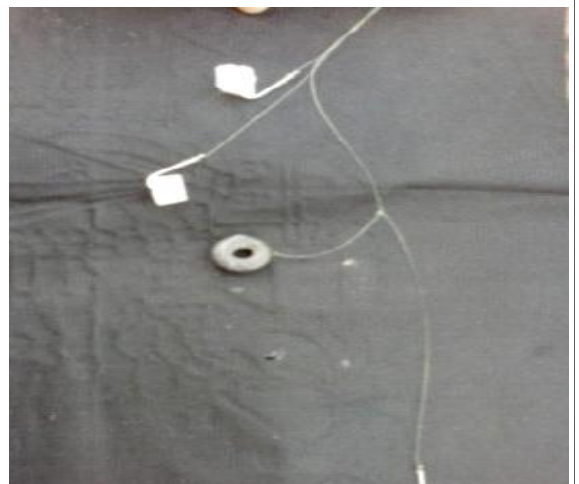
Attachment of sinkers



Attaching bait to hook



Wounding of main webbing to pipe



Hand line

**Fig. 2 : Hand line along with its accessories**

<b>Table 2 : Technical specifications of hand line</b>	
Local name	<i>Gari</i>
Depth of operation (m)	4.5 to 12
Specifications of main line	
Twine type	PA monofilament
Twine diameter (mm)	0.23 to 1
Mean twine diameter (mm)	0.43 ±0.99
Length of twine (m)	5 to 16
Mean length of twine (m)	11.53±1.07
Colour of twine	Transparent green
Gear accessories	
Specifications of hook	
	Hook, <i>Gari</i>
Material of hook	Iron, Steel
Hook type	Barbed hook
Hook number	7 to 13
Length of hook (cm)	2 to 4.7
Diameter of hook (cm)	3.52±0.08
Mean diameter of hook (cm)	1.43±0.24
Number of hooks in a unit	1 or 2
Specifications of sinker	
	Sinker, <i>Shise / Guli</i>
Material / type	Lead, iron nut bolt, small stone
Weight of lead sinker (g)	10 to 22
Mean weight of lead sinker (g)	16.3± 1.32

for the fish to attack the bait and pull the line once he experienced the pulling force exerted by the fish. The baits used in this method were small trash fishes, wheat flour, cooked rice or bivalve meat.

### **Bobbing line :**

The bobbing line is the simplest form of line fishing operation, where the bait and hooks were absent. In Ratnagiri, bobbing line fishing method is a popular fishing method particularly targeted for catching Scad fish. Not much study has been carried out on bobbing fishing method in India. Srivastava *et al.* (2002) reported similar type of fishing method locally known as '*Suraka*' made of 10 to 25 m length nylon rope was operated in the streams of the Kumaon Himalayan region of India, where fisherman use nylon rope with several knots at regular intervals instead of a bob of PA monofilament of 15 to 30 cm as observed in the present study.

### **Hand line :**

In Ratnagiri, hand line fishing method is a popular fishing method locally known as *Gari*. Remesan (2009) studied the inland fishing gears and methods of north Kerala and reported that, the hand line was the simplest form of hook and line gear consisting of a hand held single line and with one or more hooks spaced along the far end of the line. Similar type of hand line fishing technique was recorded by Gurumayum and Choudhury (2009) in the rivers of north east India, Ahmed *et al.* (2013) in Car Nicobar, Chakravartty and Sharma (2013) in Suraha Lake, Uttar Pradesh, Kumar and Kumar (2013) in Dhaura reservoir, Uttarakhand, Dutta *et al.* (2012) in Brahmaputra river, Assam, Srivastava *et al.* (2002) in streams of the Kumaon Himalayan region of India.

Srivastava *et al.* (2002) recorded 1 to 2 cm thick nylon rope in operation as a fishing line of hand line fishing gear in streams of the Kumaon Himalayan Region of India. On the contrary, in Ratnagiri, hand line with hook made up of polyamide (PA) monofilament twine with diameter varying from 0.23 to 1 mm and length ranging from 5 to 16 m was operated. Similar observations were mentioned in studies conducted by Ahmed *et al.* (2013) in Car Nicobar, where 3 to 20 m long monofilament line was used for construction of hand line. Gurumayum and Choudhury (2009) studied hooks and line fishing from the rivers of north east India in which a rod was tied with indigenous fibre or cotton thread or nylon twine and the end was fixed to a hook.

The material used for construction of hook was ordinary steel, iron or stainless steel. Barman *et al.* (2013) observed indigenous technique of line fishing in Goalpara district of Assam. They observed that the *Bodo* community employed traditional type of un-barbed hook which was developed by them for catching mud eel, locally known as *Kuchiaboroshi*. In Ratnagiri, for hand line fishing technique barbed hook of 7 to 13 number were commonly used. Use of slightly bigger hooks of number 6 to 20 were reported by Remesan (2009) in backwaters of Kerala. Similarly, Ahmed *et al.* (2013) has also observed that in Car Nicobar for hand line fishing technique, one or more barbed hooks of size ranging between 1 and 20 were used.

In Car Nicobar Ahmed *et al.* (2013) reported that while operation of hook and line fishing gear, one end of the line was held in hand and the hook with bait was thrown in the water and allowed to sink. The sudden jerk felt on the line indicates that the fish has been caught. Slightly similar to their observations, in Ratnagiri, during operation of this fishing technique the line was wound on a small piece of wood or thermocoal or plastic bottle. In Assam, the hook was tied with a synthetic twine to a float made of twig. Earthworm, insects, frog meat were generally used as bait to lure the fish. The baited hook is lowered near the muddy eel holes, with the help of a thin bamboo stick and the float is continuously watched. The drooping movement of the float indicates hooking of the fish (Barman *et al.*, 2013). Gurumayum and Choudhury (2009) stated in their study that, for line fishing method earthworms, nymph of beetle were used as bait to attract fish. On the contrary hook attached with spoiled bait was observed by Dutta *et al.* (2012) in Assam.

### Conclusion:

The documented information on the technical specifications and operation of some line fishing methods would serve as a base line information for the technological modifications these methods may undergo in the coming years.

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MEMBERS OF RESEARCH FORUM

**AUTHOR FOR CORRESPONDENCE :**

**Mayuri U. Dongare,**  
Department of Fisheries Engineering, College of  
Fisheries, Shirgaon, RATNAGIRI (M.S.) INDIA

**CO-OPTED AUTHORS :**

**Ashish S. Mohite and Makarand T. Sharangdhar,** Department of  
Fisheries Engineering, College of Fisheries, Shirgaon, RATNAGIRI  
(M.S.) INDIA  
Email: ashishmohite@yahoo.com; makarand.sharangdhar@gmail.com

**Shrikant T. Sharangdhar,** Department of Fish Processing  
Technology, College of Fisheries, Shirgaon, RATNAGIRI (M.S.)  
INDIA