



## STUDIES ON CRAFTS AND GEARS USED FOR MARINE FISHING OPERATIONS ON DEVGAD COAST, SINDHUDURG

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### Abstract

Fishing is the main occupation of approximately more than fifty percent population in Devgad tehsil. From ancient periods, fishing has been carried out in sea as well as in estuaries. Fishing operation is usually done in open sea and estuaries throughout the year except the ban period. In Maharashtra, ban period is from 1<sup>st</sup> June to 31<sup>st</sup> July. Along Devgad coast it extends up to Naralipournima. Fishing operation is carried out with and without gears. Two types of crafts are used mainly as traditional and mechanized. Selection of craft and gear depends upon the type of substratum, depth of water column for the targeted species, nature of the sea shore, type of fish etc. Six gears and four crafts are used for fishing in Devgad region. Some gears are operated by single person whereas some require organized group of fishermen. Depending upon the economic condition of the fishermen, selection of craft and gear is done.

**Keywords:** Devgad, Marine fishery, craft, gear

### A] Introduction:

Fishing industry is the main source of food and income for large group of population residing in Devgad. To cope up with demands of growing population, though mechanization is essential, some fishermen are totally dependent on traditional fishery throughout the year. Lower economic group of fisher flock generally use non-mechanized devices. Crafts and gears used on the east and west coast of India are different. They depend on the nature of the sea shore and speed of water drain by the rivers. As compared to eastern coast, western coast is calm and less affected by cyclonic storms. Crafts are the devices that provide platform for fishing and to carry gears and crew to the fishing grounds. Gears are the equipments used to capture fish. Fishing is carried out either with gear and without gear, similarly with crafts and without crafts. Selection of craft and gear is done according to the nature of sea shore, types of fish to be caught, season and fishing season. Various types of mechanized and non-mechanized gears as well as crafts are used for fishing along Devgad coast. Devgad tehsil is situated on the western coast of Konkan region of Maharashtra. Here, the sea shores are steep and deep. Beaches of Devgad are of three types namely sandy, muddy and rocky. At some places, mixture of two or all three types is observed.



### **B] Objectives:**

- 1] To visit the various fishing centers as well as landing centers frequently as per the time availability throughout the study period
- 2] To obtain the necessary information from the fishermen flock, business agents and other related community involved in the fishing business through a well-set questionnaire as well as oral interviews.

### **C] Material and Methods:**

#### **a) Study area:**

Sindhudurg district is situated in South Konkan on west coast of Maharashtra. Out of eight tehsils of Sindhudurg, three (Devgad, Malvan and Vengurle) are gifted by sea shores. Area covered by Devgad tehsil 5219 sq. km. and is endowed by sea coast of approximately 32 km. Fishing is exclusively carried out in the creeks and the open sea. Specific area selected for the present study includes Wadatar-Malai creek, Devgad port, Anandwadi, Taramumbari, Mithmumbari, Kunkeshwar, Vijaydurg, Tambaldeg, and Morve.

#### **b) Methodology:**

Most of the area of the Devgad tehsil represents more or less similar use of crafts and gears. The data for the proposed study was collected from different fishing areas of Devgad tehsil using well set questionnaire. Informal discussions were done with fisher flock to gain relevant information by visiting the landing centers. Data was gathered through frequent visits to area under study.

### **D] Result and Discussion:**

Fishery and related businesses are the major income and employment generating resources in Devgad tehsil of Sindhudurg district. The actual act of fishing is carried out on the coastal lines of Arabian Sea in the tehsil and related estuaries since ancient periods. Estuarine fishing is done significantly during rains; but yet it is not a major commercial source in all fishing centers in tehsil as compared to deep sea fishing. In addition to that, in most places, estuarine fishing is restricted mainly to molluscan harvesting rather than actual fish catch. (Jambale 2018). About 75% molluscan fishery comprises of bivalve collection without using any craft and gear mainly by low economic fisher flock. Those having their own vessel use it for collection of bivalves at greater depths. Fishermen community, expert in swimming of all age groups above the age of 8 years, are involved in hand picking of bivalves of different species such as *Katelysiaopima*, *Meretrixmeretrix*, *Paphiaaala-papilions* by touching and sensing bivalves beneath muddy substratum with their toes. They are expert in this



collection, after sensation of bivalve shell they just bent down in water to collect it in bag tied to their waist or in a non mechanized fishing vessel such as Pagar. Besides these, other common molluscan species harvested in this area are green mussels (*Pernaviridis*), and oysters *Soletellinaviolacea* without using craft and gears. Main oyster species collected in this region are rock oysters (*Saxostreacuculata*) is collected by opening shell with the help of sickle and *Crassostreamadranensis* is directly handpicked from deeper waters.

In Devgad, fishing boat or craft used for operation are basically of two types. One is non-mechanized and other is mechanized. Different types of boats used on the coast are as follows...

- 1. Pagar (Dugout canoe):**Most commonly used and affordable fishing craft in this region is Dug-out canoe locally known as Pagar. The length of this boat ranges between 28 – 32 feet. This type of boat is prepared by scooping out wooden material from wooden logs of large Ain tree. But so as to reduce the weight of vessels now a days mango tree logs are used. Fishing crafts used in the estuarine region are mainly non-mechanized.
- 2. Rampani boat (Plank built boat):** Rampani is long plank-built boat, measuring about 15x3 m. Mostly used for operating Rampani net. In this area such as Kunkeshwar, Mithmumbari, Katvan, Tambaldeg, Padavane and Munge. Previously boat was built by stitching wooden planks. In this region, rampani boat is used with an outrigger so as to balance weight of the main boat. The outrigger is a frame work projecting from main boat sides. This type of vessels requires more space in the port. Therefore their number is gradually reduced in this region. At present rampani boats are modified with fiber material, as they are easy for maintenance and balance. The cost of the modified fiber rampani boat is reduce with the benefit of durability. Being non-mechanized the boat is rowed. This type of boat is used to operate shore seines, boat seines, drag nets and gill nets.
- 3. Fiber boat:** Fiber boat is a manually operated and economical boat used in this region. The size of the boat ranges between 55-60m and is fitted with 2-4 cylinders sometimes. It requires one year duration to build and the life span of the boat is about 10 years. Two factories are situated in this region for manufacturing of these vessels. These types of fiber materials are supported internally by wooded bars. Such 200 vessels are employed in gill net operation in Devgad port. Few fishermen used pocket GPS device during fishing operation.
- 4. Trawler:**Trawler is a mechanized type of fishing vessels used particularly to operate trawl net. Length of the new trawlers is about 50-60 feet, whereas old one was 30-45 feet. These vessels are fully mechanized and well equipped. Most of them are with vessels tracking system (VTS) and with GPS, fish



finder and having government help through DAT (Distressed alert transmitter). This device is used to obtain help from coast guard during emergency. This type of craft is mainly used to operate trawl and purse seine nets and nearly 120 trawler are involved in fishing in Devgad port.

Gears used for fishing on Devgad coast varies according to fish to be caught. Various types of indigenous and special nets are used by fishermen. The nets used on Devgad coast mainly include.

- 1. Cast net:** It is operated from pagar and small fiber boats or sometimes directly standing in shallow water near sea shore. Most often cast nets are used in Taramumbari, Kunkeshwar and Mithmumbari. These types of nets are used to catch shoals of small size fish where substratum is muddy or sandy. These nets are circular in shape and operated by holding cord and throwing the net after citing fish shoal. The net is operated by a single person. The net sinks down to the bottom due to iron or lead sinker attach to lower margin.
- 2. Gill net:** Gill nets are operated by fiber glass vessels. Gill net is rectangular piece of net made up of various mesh sizes. This rectangular piece of gill net possess head rope with floats and foot rope is present at the bottom. To the foot rope sinkers are attached, sometimes stones are used. The fish get entangled in net in the gill region and dorsal fin in hole of the gill net. The catch consists of sear fish and cartilaginous fishes etc.
- 3. Hooks and lines:** Hooks and lines are used for capturing individual fishes having commercial high value or during monsoon. It is also practiced as hobby or home consumption. A long line is made up of one major line with several small branched lines. The long line is made up of smaller units known as baskets. To each basket, 3-5 small branch lines are attached. The length of each basket is decided by type of fish to be caught. At the end of each branch snood wire is connected to a hook. Each unit of long line (basket) is denoted separately by attaching float and a flag at the top.
- 4. Trawl nets:** Trawl net is used in inshore and offshore fishing activities. Trawl net is fully mechanized net operated from trawler. The shape of the trawl net is like a half open umbrella tapering towards the end. The mesh size at the mouth region is more whereas, smaller at the tail region. The tail region where targeted species are caught in the net is known as cod end. The mesh size at the cod end by rule is 40mm, but the rule is not followed practically. The mesh size at cod end region is lowered to 20mm, that results in death of immature catch. Towards the mouth region chances for escaping fish are more due to large mesh size. But as the mesh size gradually decreases towards the cod end. The mouth region is kept open by otter boards attached to both ends made up of glass fiber material. The foot rope is attached with



metallic chain of lead balls, whereas the head rope possesses floats made of fiber material. Depending upon targeted species trawlers are of three types, namely pelagic, midwater and demersal trawls. Mainly used for prawn, sole fish, dhoma, etc.

5. **Dol net:**Dol net is fixed type of trap net used in water with less wave action in estuarine region. It is basically conical bag like structure without wings. The mesh size gradually goes on decreasing from mouth end towards the cod end.The large bag like net is fixed in the sandy bottom of the sea with the help of stout bamboo poles or with the help of thick ropes attached to heavy anchors. The net is kept open in horizontal position facing towards the tidal flow. When change in the tidal flow occurs the catch is emptied by hauling operation. The length of the net is about 56m. The width near mouth region is approximately 30m and height nearly 18m. Bamboo pole is about 32m long out of which 8m remain buried under the substratum. The mesh size at the mouth region is 200mm and which is gradually reduce to about 10mm at the tail region.
6. **Seine nets:**Seine nets are the large size nets with wings and towing warps. The mode of operation is by encircling a particular area and towing the gear with both ends fixed to a point either on the shore or craft. Usually these nets are used for bulk fishery and requires more man power for its operation. The seine nets used in this region are of two types, purse seine net and shore seine (rampani).
  - a. **Purse seine:**It is large bag like net basically used for pelagic fishery. The fishes are captured by encircling them,both horizontally and vertically. The length of the net measures about 450m and 40-45m depth. And the weight varies depending upon mini or large purse seine. The maximum range is about 1-1.5 tones. The mesh size of the net is uniform throughout the main body and it is the largest part of the net. It lies between wings and bunt. Bunt is end portion of the net from which fishes are collected. A single operation yield catch of Rs. 80,000 to 1,00,000. Small and large size all fish varieties are caught with the help of purse seine. This leads to indiscriminate fishing of all fish varieties resulting in overexploitation of fish resources.
  - b. **Shore seine:** Shore seine requires large man power up to 80-100 men. Locally used shore seine in Devgad is known as rampani. This type of net is used to catch all variety of fishes ranging from small to large size. The net is without bag portion. It is made up of 100 to several 100 rectangular pieces joined together. The size of the mesh is smaller at the central part then at the both sides. In the central region it is 12mm and at the side 30mm. the fiber floats are attached to head rope and stones are as sinker at the foot rope.



### **E] Conclusion:**

The types of crafts and gears used in study area are changed from time to time with the mechanization. Mechanized vessels such as trawlers and nets such as purse seine are used to increase fish crop but immature catch result in over exploitation. This greediness of human being may leads to extinction of several species of marine life beyond recovery. Non mechanized crafts and gears are replaced by the mechanized ones so as to meet the growing demands of the large population. Restricted number of vessels in a particular estuary and Devgad port is essential for sustainable fishery. Over exploitation of fishery resources have marginalized the traditional fishermen. Studies of crafts and gears gives present scenario and impact of modern techniques and mechanization. Previous traditional fishery is gradually replaced by mechanized fishery. In all four crafts and six gears are used in and around Devgad tehsil.

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