

## **A preliminary study on fishing crafts and gears of Mangrove regions of South Andaman**

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### **Abstract**

The present study documented the fishing crafts and gears utilized in the eight selected mangrove regions of South Andaman. Total of two fishing crafts traditional and motorized was recorded, of which traditional craft (locally known) dongi, was the most important and commonly operated crafts. The traditional craft over motorized craft was due to the entangled masses of mangrove strands which cause difficulty in operation. Besides, shallow depth and fishing for domestic requirement could be the reason for existence of fewer crafts in this region. Fishing gears recorded in the study area included cast net, gill net, hook and line, scoop net, trap, crab rod, crab net and long lines. There were no seasonal difference of fishing crafts and gears. Comparatively, the cast net was the most frequently used gear.

**Keywords:** *Fishing Craft; Fishing Gear; Mangrove; Cast Net; South Andaman*

### **Introduction**

Andaman and Nicobar Islands, one of the union territories of India, holds third largest mangrove coverage in India reported being best and most intact in our country (Venkataraman and Wafar, 2005; Mandal and Naskar, 2008). These islands are divided into two groups namely Andaman group and Nicobar group of Islands, occupying 644sq. km and 27 sq. km of mangrove coverage, respectively (FSI, 2009). Furthermore, these islands mangrove areas are one of the richest in the world in terms of quality of vegetation and biodiversity. South Andaman is most populous and urbanized district of this union territory. The dependence of coastal community on this ecosystem is not as that of mainland India and is mainly restricted as a food source rather than livelihood. Mangrove regions are considered as one of the most difficult regions to venture for fishing due to harsh environmental conditions. The absence of tiger, unlike Sunderban, makes the islands mangrove region comparatively safer to venture for fishing. So, the fishing techniques and equipment such as crafts and gears play an important role in mangrove fishing activities. The present study was initiated to understand and document the fishing craft and gear used in the mangrove regions of South Andaman.

### **Materials and Methods**

The present investigation of fishing craft in Mangrove regions of South Andaman was conducted for a period of one year from October 2012 to September 2013. Field visits were made to the Manjeri, Chouldari, Sippighat, Shoal Bay, Carbyns Cove, Beodnabad, Ograbranj and Kadakachang areas in south Andaman district. Each location, the details regarding the crafts operated were collected by personal interviews, discussions, questionnaires and personal observation.

### **Results and Discussion**

#### **Fishing Crafts**

Traditional boats are known as dongi and motorized boats were the fishing crafts used by the artisanal fishermen in South Andaman mangrove creeks. Traditional crafts (54 No) were the most important and commonly operated fishing crafts in the study area compared to (30 No) motorized crafts. Traditional crafts were recorded in all study sites, except Beodnabad. while motorized crafts were recorded from Manjeri (5 No), Chouldari (3 No), Sippighat (2 No) and Shoal bay (20 No). Motorized crafts were not recorded from Carbyns Cove, Beodnabad, Ograbranj, and Kadakachang.. Motorized boats were equipped with 1-10 horsepower motors whereas

traditional boats were deprived of the motor and were operated using the wooden Oar.

Traditional crafts were constructed of wood; length varied from 4 to 10m, width from 1 to 4m and depth from 1 to 2m and costs about Rs 1 to 3 Lakh INR (Fig. 1). The absence of propeller and small size makes it convenient to move into the mangrove forest and halt conveniently. They are operated manually with a help of two long wooden oars and generally, two persons are required to run the craft, one to operate the craft and other to operate fishing gear.

Motorized crafts (Fig.2) were also constructed of wood, length varied from 7 to 18m, width varies from 1 to 4m, and depth (3 to 4m) and cost about Rs 20,000 to 50,000 INR and are comparatively better than tradition crafts in endurance, capacity, stability and size. However, they are less commonly used than traditional crafts due to the presence of propeller and large size which cause difficulty in operation inside the mangrove forest.

### Fishing Gears

Gears are important fishing equipment utilized by fishermen to capture the fishery. The fishing gears recorded in the study area (Table 1 and 2) included cast net, gill net, hook and line, scoop net, trap, crab rod, crab net, and long lines. Among these, cast nets (249 Nos.) dominated followed by crab rod (115 Nos.) and hook and line (68 Nos.), while traps (6 Nos.) and scoop nets (2 No's) were the least. The cast net was the most important fishing gear used in the study area. Only two types of gears were observed in Manjeri (5 Nos.), whereas a maximum number of gears was observed at Shoal Bay (170 Nos.). Traps and scoop nets were the only gear not recorded from Shoal Bay. Fishing gear traps and scoops were only recorded from Chouldari. Cast net, hook, and line and crab rods were recorded in all the stations. Gill nets were recorded mostly in Shoal Bay (15 Nos.) and Sippighat (9 Nos.), however, they were not recorded from Beodnabad and Kadakachang.

**Table 1 Number of Fishing Crafts from the Mangrove Habitats**

No	Station	Motorized	Traditional
1	Carbyns cove	0	3
2	Beodnabad	0	0
3	Manjeri	5	2
4	Chouldari	3	5
5	Ograbranj	0	2
6	Sippighat	2	10
7	Kadakachang	0	2
8	Shoal Bay	20	30
<b>Total</b>		<b>30</b>	<b>54</b>

Carbyns Cove recorded the highest number of cast net (20 Nos.) followed by hook and lines (10 Nos.), Gill net (6 Nos.) and Crab rod (6 Nos). Crab net only 2 Nos., while Traps and scoop nets were not recorded from Carbyns Cove. All the station, cast nets was the most preferred fishing gear followed by Crab rods I In Shoal bay both Crab rod and longlines constituted the second highest number of gear. Seven gears were recorded from Chouldary. Except long lines, which were recorded only from Shoal Bay, all of the fishing gears were recorded from Chouldary. Highest number (170 No's) of gears were operating in Shoal Bay followed by Sippighat (104 Nos.), Chouldary (79 Nos.), Manjeri (61 Nos.), Carbyns Cove (44 Nos.), Ograbbranch (34 Nos.) and least in Beodanabad (27 Nos.) and Kadakachand (26 Nos.).

Cast nets were generally used to catch finfish irrespective of size and shape. They varied from 1.5 to 3.5 m in depth; 10 to 20 mm mesh size, stringless and stringed. The nets are spread on the surface of the water with the help a person holding one end of the net tied with rope and retrieved with the help of the rope (Fig. 3). It is operated from the craft in the deeper regions of the creek and without a craft in shallow regions.

**Table2: Types and Number of Fishing Gears used in South Andaman Mangrove Ecosystems**

Station	Cast net	Gill net	Hook & line	Traps	Scoop net	Crab rod	Crab net	Longlines	Total
Carbyns Cove	20	6	10	0	0	6	2	0	44
Beodnabad	10	0	5	0	0	7	5	0	27
Manjeri	29	5	7	0	0	20	0	0	61
Sippighat	50	9	10	0	0	27	8	0	104
Chouldari	42	5	7	6	2	11	6	0	79
Ograbranj	18	4	4	0	0	8	0	0	34
Kadakachang	15	0	5	0	0	6	0	0	26
Shoal Bay	65	15	20	0	0	30	10	30	170
<b>Total</b>	<b>249</b>	<b>44</b>	<b>68</b>	<b>6</b>	<b>2</b>	<b>115</b>	<b>31</b>	<b>30</b>	<b>545</b>

**Figures****1 a)****1 b)****Figure 1 Traditional fishing crafts operated in mangrove habitats of South Andaman**

Gill nets were operated in most of the stations but less frequently (Fig.4). The design includes a head rope attached with floaters, foot rope attached with weights generally made of iron or lead and these two ropes connected with mesh. The mesh size varied from 0.1mm to 0.5mm and was generally used to capture fin fishes of various sizes. However Crabs also gets entangled in the

net accidentally. These gears were mostly laid vertically across water bodies during the evening and removed next day early in the morning or laid for few hours. These nets were recently banned by Fishery Department because along with the targeted species, juveniles to large size crocodiles also used to get entangled accidentally. However, these nets are still in use.



2 a)



2 b)

**Figure 2 Motorized craft fishing crafts operated in mangrove habitats of South Andaman**



3a)



3 b)



3 c)



3 d)

**Figure 3 Cast nets**

Hook and line were the most popular fishing gear among the local community, including small children, as a means of recreation as well as for catching fishery for own personal consumption

(Fig. 5). The gear consists of a metal hook is tied at one end of a tread and another end of the rope tied with a stick. Finfishes, mainly of large size, were caught by these gears. Gastropod flesh, small sized shrimps or fingerlings were used as bait.





4 a)



4 b)

**Figure 4 Gillnets**



5 a)



5 b)



5 c)

**Figure 5 Hook & line**

Traps (Fig. 6) and scoop (Fig. 7) nets were recorded only from Chouldari in very less number and were used very rarely. Traps are cylindrical nets made of bamboos and are open at both the ends. Scoop nets are made of “oval” shaped wooden or plastic frame to which net is attached. Traps are used for all kind of finfishes and Scoop nets for small sized fishes.

Crab rods are traditional fishing gears made of an iron rod with a hook like a bend at one end and a small wooden handle at the other (Fig. 8). This special gear was exclusively used to capture crab i.e. *Scylla* spp. The gear is held by a handle at one end and the hooked end will be inserted inside the crab holes to pull the crab out. Once the crab is caught, slowly, the rod is retrieved and immediately claws are tied with the twine and stored.



Figure 6 Traps



Figure 7 Scoop nets



Figure 8 Crab rod



a)



b)

Figure 9 Crab Nets

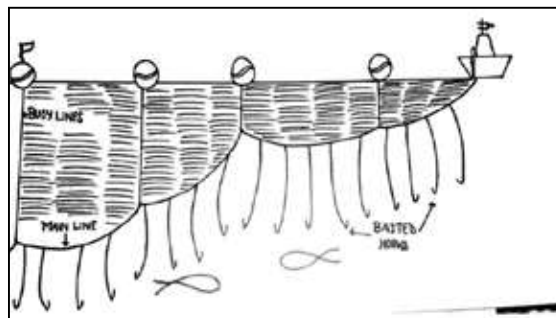


Figure 10: Longlines

Crab net is also a traditional fishing gear, which is made up of roughly square shaped wooden frame, to which net is attached (Fig. 9). The gear is dipped inside the water with one hand and a rope tied with bait is lowered into the water with another hand. As soon as a crab holds the bait with its claws the net will be lifted carefully to avoid escaping of crabs. Generally, crabs of small size were captured with the help of this gear.

Longlines are advanced gears generally operated in the open sea (Fig. 10). During the study, these gears were recorded only in Shoal Bay as these gears require a large area for operation. The long ropes are fitted with numerous hooks all along the line and placed at different depths where one end of the rope will be attached to the weight and other to floats to keep it in position. They were used mainly for large sized fishes and were found to be highly productive gear.

### Species Targeted

The existing crafts seem not to have much importance in fishing activities in most of the mangrove regions of South Andaman. The cast net was used generally for all the species of fin fishes irrespective of size. It is of different mesh size, material and length. Hook and line were used for bigger fishes and its usage was less compared to cast net as it was time consuming hence used for recreation. Gill net was generally used for capturing fin fish even though crabs also got caught in this gear accidentally. The gear is laid during the evening time and

removed next day early in the morning or for nearly 3 to 9 hours. Traps are used for all kind of fin fishes and hand net is used for small sized resources. Crab rods are exclusively used for single-species (*Scylla* spp.) capture and are a special type of iron rod having a bend at one end similarly crab net is having more or less square shape and is also used for crabs. Shrimps are generally caught by cast nets with smaller mesh size.

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