Hook and Line Fishing with Motorised Boat: A study among the Digha harbour based fishermen

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Abstract:
Use of hook and line fishing tackles may be traced back to the Upper Palaeolithic culture of prehistoric period. This traditional method of fishing, with the addition and alteration of different types of associated gears, is continuing till today and considered as one of the economically viable fishing techniques to exploit large pelagic, column, and demersal predator fishes like Tuna, Shark, String Ray, Mackerel, Cat fishes, Rock cods etc. The present paper aims to highlight the existing form of deep sea fishing with hook and line found among the fishermen operating from the indigenous fishing harbour of Digha coast of Bay of Bengal in Purba Medinipur district of West Bengal. While dealing with the existing form of hook and line fishing, the authors have primarily concentrated on the division of labour associated with this kind of deep sea fishing, method of manipulation of hook and line, salient features of different fishing gears such as hook, line, float, anchor, buoy, boat etc. associated with hook and line fishing practiced by the marine fisherfolk of Digha.

Key words: Digha Fishing Harbour, Deep sea fishing, Predator fishes, Hook and line, Division of labour.

Introduction:
Use of hook and line fishing tackles may be traced back to Prehistoric period and evidences suggest that both the human races of Upper Palaeolithic and Mesolithic period used fish hooks made of different material like bone and shell (Clark, 1948 and Corbyn, 2011). Archaeologists in the Jerimalai cave in East Timor, Indonesia discovered in 2011 the world’s oldest fish hook, a shell hook between 16,000 and 23,000 years old (Corbyn, 2011).

From the prehistoric period to the present day, fish hooks have been crafted from all sorts of materials including wood, animal and human bone, horn, shells, stone, bronze, iron. In many cases, hooks were created from multiple materials to leverage the strength and positive characteristics of each material (ibid, 2011). This traditional method of fishing with the addition and alteration of different types of associated gears, is continuing till today and considered as one of the economically viable fishing techniques to exploit large pelagic, column, and demersal predator fishes like Tuna, Shark, String Ray, Mackerel, Cat fishes, Rock cods etc. Today, hook and line fishing with mechanised vessel is considered as highly fuel efficient, eco-friendly and size and species specific (Hameed and Boopendranath, 2000).

Hook and line gear can be further classified on the basis of their usage. There are four common methods for using hook and line gear: trolling, long lining, jiggling, as well as pole and line fishing.

Trolling lines are lines with baited hooks that are dragged behind mechanised vessel, as well as other types of vessels.

Longlines can be classified by how they are used for fishing and thus there are (a) Set longlines which are stationary lines anchored to the vessel, the seafloor or to an anchored buoy; (b) Drift longlines which are attached to floats that drift freely with the ocean currents. All longlines consist of a main line, which may be even more than one kilometer in length, with short lengths of hooked lines (called gangions) spaced evenly along the main line.

Jigger lines are a specialized type of vertical line, fitted with specialized ripped hooks, used primarily in the southern hemisphere Squid fisheries and some northern Cod fisheries.

Pole and line gear consists of a hook and line attached to a pole. If the line is much longer than the rod it is wound around a reel or moulinet. Poles are commonly made out of wood or fiberglass and can be operated either mechanically or by hand.
In India, total amount of marine fish catch by hook and line method constitutes about two percent of the total amount of marine fish captured by different methods like Trawling, Gill netting etc. (Marine Fishery Survey, 2014). The studies on different types of the hook and line fishing such as set longline and drift longline, hand line, pole and line etc. of coastal Indian waters by mechanised and non mechanised vessels were attempted by several writers like Luther (1982), Gopakumar (1986), Lal Mohan & Nandakumar (1988), Menon (1989), Sukumaran (1989), Grace Mathew & Venugopalan (1990), Jayasankar (1990), Rao (2010), Akhilesh (2009), Gabriel (2005), Hameed and Boopendranath (2000), Mathai (2009), Sainsbury (1971) and others. However, these studies were more concerned about the fishing gears and productivity associated with hook and line fishing in deep sea either with non-mechanized or mechanized vessels. And traversing these studies one may also be tempted to state that they did not sufficiently deal with the composition of the fishing units, features of the vessels, method of manipulation, storing system during fishing expedition, division of labor, indigenously innovated gears etc. associated with hook and line fishing in deep sea. Moreover, a very few of the studies mentioned above are based on a particular locality or fishing harbor from where the fishermen proceed for hook and line fishing in high sea.

The scenario presented in the preceding paragraphs tempted the present authors to highlight the methods and techniques of longlining category of hook and line fishing in deep sea with the help of mechanized vessel practiced by the fishermen operating from the fishing harbour of Digha on the coast of the Bay of Bengal in Purba Medinipur district of West Bengal, India. However, methods and techniques not only include the material culture of hook and line fishing but also include the resources, tasks, skills, labours and activities associated with such deep sea fishing since all these elements are considered as attributes of technology (Hunter and White, 1977). Stationary

**Materials and Methods of Study**

For the purpose of the present study, an indigenously established and developed fishing harbor has been selected. This harbour is located near the confluence of Champa River and Bay of Bengal near Digha coastal town in the Purba Medinipur district of West Bengal. The harbor is managed by a committee known as ‘Digha Fishermen and Fish Traders Association’ formed by the owners of the mechanized vessels. From the record of the office of this association it is found that there are about 1100 mechanized vessels of different varieties — in terms of engine capacities as well as crafts and gears – operating from this harbour (Souvenir of Annual Gangotsab, 2016). It is also evident from the record that the different types of vessels are used for different methods of marine fishing. The following table shows the distribution of the vessel types operating from Digha fishing harbor and their correlation with fishing apparatus, methods of fishing and areas of fishing within the sea.

<table>
<thead>
<tr>
<th>Type of Vessels</th>
<th>Number</th>
<th>Apparatus</th>
<th>Method and area of operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trawler</td>
<td>960</td>
<td>Trawl</td>
<td>Trawling in Deep Sea</td>
</tr>
<tr>
<td>Gill Netter locally called ‘Fishing body’</td>
<td>150</td>
<td>Gill net</td>
<td>Gillnetting in Deep Sea</td>
</tr>
<tr>
<td>Vessel with two-cylinder engine locally called ‘Bhut bhuti’ or ‘borsi body’</td>
<td>10</td>
<td>Line and hook</td>
<td>Trolling comparatively nearer to the coast.</td>
</tr>
</tbody>
</table>

The data on different aspects of longlining category of hook and line fishing in deep sea with the help of vessel powered by two-cylinder engine locally called ‘borsi body’ were collected from the fishermen associated with a particular ‘borsi body’.

The data on the technological aspects of deep sea fishing with hook and line as well as mechanised vessel has been collected by following various anthropological methods and techniques. These include participation observation, focus group discussion, interview technique etc. For the
purpose of participation observation, the first author of the present paper joined for a number of times in the weeklong expeditions in deep sea for fishing by hook and line method with the help of mechanized vessel conducted by a particular unit or team of fishermen.

Before joining in such expeditions, the first author of this article took a life insurance policy, as per the pre-condition laid down by the local office of the Fishery Department of the Govt. West Bengal.

**Technological Aspects of Deep Sea Fishing with Hook and Line:**

**Seasons and Duration of Fishing Expedition with Hook and Line:**

Deep sea fishing from Digha fishing harbour is practiced with different types of tackles and mechanized vessels almost throughout the year except from April 15th to May 31st. As per the Government rule, fishing with mechanised vessels in the deeper region of the sea is prohibited during this period since this period is considered the breeding time for the marine fishes. Therefore, to protect the gravid fishes the fishermen are not allowed to practise deep sea fishing with mechanised vessel during this period.

Usually, the duration of a hook and line fishing expedition in deep sea with mechanized vessel does not exceed a week since the vessels used for this purpose are smaller in size and lower in engine capacity compared to the vessels used for fishing with trawl and gill net. However, the climate and weather has bearing upon the duration of the expedition since these two factors have a close relation with the availability of fish on the one hand and the safe voyage on the other.

It is revealed from the prolonged field work that contrary to the fishing with trawl and gill net, duration of hook and line fishing is comparatively long during the monsoon owing to the less availability of large sized predatory fishes during this season. Since the sole target of hook and line method of fishing is always the large predatory fishes that are more available during the winter, the duration of a fishing expedition with hook and line during this season is shorter. However, even this shorter duration of expedition becomes sufficient to the fishing unit to catch the desired quantity of fishes in terms of number, volume and weight.

**Size and Engine Capacity of the ‘Bhut bhuti’/‘Borsi Body’:**

The term ‘Bhut Bhuti’ is used by the marine fisherfolk of Digha to designate those mechanized vessels which are used to catch fish with the marine help of hook and line. These are also called ‘Borsi body’ or ‘Kanta body’ by the local people since the iron made barbed fish hooks are locally called ‘borsi’ or ‘kanta’.

The body and deck of the vessel is always made of wood. The length of the vessel varies from 8 to 11 meter whereas width varies from 2.5 to 4 meter. The height of the vessel from the floor of its hold to the roof of the engine room varies from 3 to 4 meter. The vessel is powered by double cylinder (2 C.C.) engine. However, ‘borsi body’ is devoid of any permanently installed sonar or power driven winch. But during the expedition the vessel master/unit leader of the fishing expedition (locally called majhi) carry a GPS provided by the vessel owner.

**Space Utilization within the ‘Borsi Body’:**

The forward or stem post end or forecastle end of the ‘borsi body’ is locally called ‘ahnwik’ since the heavy wooden mooring bollard stands at this end is worshipped every morning by the vessel master during the entire duration of the fishing expedition. The bollard is imagined as the abode of different deities responsible for safe voyage and good amount of haul. However, mooring bollard so worshipped is used to secure ropes for towing, mooring and other purpose. It is exactly cylindrical, but typically has a larger diameter near the top to discourage mooring warps (docklines) from coming loose.

After the bollard there remains an open area on the deck of the vessel which is used to keep the diesel barrels. Usually the barrels are made of plastic and each barrel contains 600 litters of diesel. The quantity of diesel carried in a particular expedition again depends on the duration of the respective prescheduled trip.
The aft or stern end of the borsi body is locally called ‘pacha’ (Bengali equivalent of buttock). The toilet and privy of the vessel is located at the extreme margin of this end. Next to the toilet towards the fore part or forward of the vessel a manually operated iron steering oar locally called ‘haal’ is installed. The total length of the steering oar including the blade and the shaft varies from 4 to 4.5 meter depending on the size of the vessel. The rectangular blade of the steering oar remains submerged in the sea and its cylindrical shaft is inserted vertically through the stern post of the vessel to reach the deck. The portion of the shaft that stands on the deck has the height of about 0.8 meter. An iron tiller of about 1.5 meter length is horizontally welded with the tip of the shaft of the steering oar to rotate the oar as and when necessary.

By the side of the tiller of the oar there is a covered place on the deck which is used as kitchen of the fishing unit during their fishing expedition. The kitchen is equipped with Kerosene stove or clay made oven within a metal drum, fuel wood, crockery, stone mortar and pestle, chopper, knife, plastic jars for spices etc. Moreover, six big plastic drums each containing about 250 litre sweet water are also stored in the kitchen for the purpose of drinking and cooking. The kitchen is also used to store the ration required during the hook and line fishing expedition. The ration includes rice, lentils and pulses, spices, mustered oil, limited quantity of vegetables (primarily pumpkin, potato, onion, garlic, lemon etc.). Apart from these, the ration also includes betel leafs and nuts, first-aid medicines like digestive, anti-nausea and pain killer tablets etc. The amount of ration varies according to the pre-scheduled duration of the expedition.

After the iron tiller and the kitchen there is a passage on the deck of the vessel for the movements of the fishermen. Next to the passage there is the rest room for the unit members. The room is about 2.5 meter in length 1.5 meter in breadth with a height of about 1.5 meter. The rest room has a door with low height entrance and two small windows on either side of the wall with the provision of sliding door. In the rest room there are the spaces allotted to keep GPS, Magnetic Compass, and Television set etc. In one corner of the rest room a spot is specially allotted for the vessel master or Majhi who keeps statues and photographs of some Hindu Gods and Goddesses and worship them daily at noon after taking a bath. No offerings are made before the deities apart from placing burning incense sticks.

On the roof of the rest room a make-shift rectangular shade is erected with serried wooden razing and the top of the same is covered with a sheet of tin. The height of this shade is about 1.5 meter and the length and breadth is almost equal to the floor space of the rest room. This shade is used for storing different types of ready-to-use tackle namely floats (jerry can and hard plastic balls), grapnel-type iron anchors (used against drifting of the fishing line), buoy, kerosene lamp etc.

Just below the rest room there is another room located within the hold of the vessel. This room is called machine room since this is where the engine of the vessel is installed. However, the machine room is also used to store the fuel/diesel for the engine, standby floats and sinkers etc.

At the end of the machine room and the rest room the refrigerating chamber of the vessel is located. The chamber is in the shape of a cubicle that rises from the floor of the hold of the vessel with its upper rims touching the level of the deck. The entry to the refrigerating chamber is made through a rectangular opening which is covered with a movable wooden plank or lid. The length and breadth of the refrigerating chamber are respectively 1.5 meter and 2 meter whereas depth of the chamber is about 2.2 meter and the lid measures about 1 meter in length and 0.8 meter in breadth. This chamber is used to carry the ice slabs as well as to refrigerate the captured fishes during the expedition. The refrigerating chamber is insulated with varieties of materials. Thus, the outer walls of the chamber are made either of aluminium sheets or ply wood boards, whereas the inner walls of the chamber are insulated with one layer of ply wood board and one layer of thermocol board respectively.

As one looks forward, toward the bow of the vessel, one finds port and starboard on the left and right sides, respectively. The inner margins of the port and starboard respectively of the ‘borsi body’ are used for hanging the hooks on their points.
Hooks and their Varieties:

The type of hook used by the fishermen of Digha is called barbed J-hook. This is primarily a simple single hook. The hooks they use are made of aluminium coated iron. The barbed J-hook consists of different parts namely: eye, shank, bend, crook, barb and point. The following diagram exhibits a barbed J-hook and its parts.

The parts and sectors of a fish hook referred to above are as follows: it’s point — the sharp end that penetrates the fish’s mouth or flesh; the barb — the projection extending backwards from the point that secures the fish from unhooking; the eye — the end of the hook that is connected to the gangion; the bend and shank — the portion of the hook that connects the point and the eye; and the gap — the distance between the shank and the point.

The size of the hook used by the fishermen of Digha varies from 5/0 to 8/0. The size of the hook is determined by the length of the shank excluding the eye. It is to be mentioned in this context that in general the higher number indicates a smaller hook and vice versa. Usually No. 20 is the smallest size and hooks increase in size from No. 20 to No. 1, beyond which larger hooks are designated 1/0, 2/0 and so on, sometimes running up to 12/0.

The following table shows the correlation between different groups of the fishes, the range of weight of the group of fishes and the size of the fishing hook used for catching those fishes.

<table>
<thead>
<tr>
<th>English name of the fishes</th>
<th>Available local name of the each variety of fish</th>
<th>Range of weight of the fishes (kg.)</th>
<th>Size of hooks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engraved catfish</td>
<td>Tangra/Kanta/Samudrik aar</td>
<td>2–12</td>
<td>5,6,7</td>
</tr>
<tr>
<td>Blacktip shark</td>
<td>Hangor</td>
<td>3–15</td>
<td>6,7,8</td>
</tr>
<tr>
<td>Asian Sea Bass</td>
<td>Bhetki</td>
<td>3–22</td>
<td>4,5,6,</td>
</tr>
<tr>
<td>Cowtail Sting Ray</td>
<td>Shankar maach</td>
<td>4–20</td>
<td>7,8</td>
</tr>
<tr>
<td>Bullet tuna</td>
<td>Mackerel</td>
<td>5–15</td>
<td>7,8</td>
</tr>
<tr>
<td>Big Eye Tuna</td>
<td>Tuna</td>
<td>4–30</td>
<td>7,8</td>
</tr>
</tbody>
</table>

Lines and their Varieties:

It is observed that the fishermen of Digha employ an almost unlimited number of hooks (locally called borshi kanta) with a form of set line called the long line (locally called cod daon) operated in a more or less horizontal configuration. About 100 of hooks are fixed to a particular main line with a short line locally called ‘pichon’ at Digha. There are various English words for short line which are namely: cast, branch line, snood, leader, dropper-line, drop-line or dropper, gangion or gangin etc. One end of each gangion is knotted with the eye of the respective hook and the other end is tied with the main line. The fishermen of Digha have reported that they have observed that some fish can bite a line in two, especially after swallowing the hook, which may have a short shank. To avoid this, in most cases they use hooks with longer shanks which are respectively fixed to the gangion. The spacing of the gangions is maintained in such a fashion that their distances from each other remain at least twice that of their length to avoid entangling. Moreover, the fishermen of Digha have noticed that the bottom long lines with gangion set at larger spacings fish better than those with the branch lines set more closely together.

Fishing lines, either main or branch, used by the fishermen of Digha are of synthetic materials, especially transparent monofilaments of PA (polyamide) and twisted PE (polyethylene) which have...
high tensile strength as well as high specific gravity. However, material and linear density of the main line and branch line vary greatly according to the fishing conditions and target species. The fishermen make sure that the breaking strength of lines is high enough to cope with the weight of the fish to be caught to avoid losses by breaking. They also ensure that the lines are not excessively thick because this can decrease their efficiency in fishing. Neither should they be too fine for ease of handling. The thickness of the long line varies from 10 to 12 m.m. and length of each long line used by the fishermen of Digha varies from 92 – 140 meter. Similarly, the thickness of the short line or gangion varies from 3 to 4 m.m. and a fixed length of 1.2 meter is always maintained for each of the gangion. The branch lines or gangions are usually of equal length.

The fishermen of Digha use two types of long lines namely drift long line, bottom set long line. Drift long lines are operated close to surface or middle layers of the sea water for pelagic resources such as tunas, Indian mackerel, Spanish mackerel, pelagic sharks etc.; whereas, bottom set long lines are operated close to bottom for predatory demersal fishes such as sharks, groupers, snappers, cod, haddock, halibut.

**Preparation of the hook and line:**

During the beginning of the fishing season (i.e. 1st day of June as per Govt. Regulation) the already repaired vessel is worshiped in the morning of an auspicious day and the recruited members of the fishing unit except the vessel master/unit leader begin to stay and wait on the vessel for the forthcoming fishing expedition. During this period while Majhi remains busy in the harbour to collect ration, fuel, ice slab etc. required for the expedition, the other members of the unit remain busy on the vessel to make the lines and the hooks ready for fishing.

To make the hook and line ready for use the fishermen at the first stage knot one end of a particular gangion locally called ‘pichon’, with the eye of a particular hook. In this way altogether 2000 – 2500 hooks are prepared by the members of the unit. Now the members join hands to prepare a section or “set” of long line which measures about 140 – 150 meter in length with 90 – 100 branch lines each bearing one hook. For this they knot the bare end of each of the branch line or gangion with the mainline at an interval of 3 – 4.5 ft. depending on the size of hooks. The size of the hook is determined not only by the targeted fish but by the intervals to be allowed between two branch lines of a particular mainline. In this way, about 20 to 25 sections or ‘set’ of long lines are prepared for a particular fishing season.

**Operation of the longlines:**

When the ration, fuel, ice slabs etc. are loaded on the vessel and the hook and lines are made ready to use, then the vessel master announces the date of the voyage for fishing in high sea.

Before the voyage begins the vessel master worships on the spot near the bollard located at the stern end of the vessel. At first he smears the bollard with the thick mixture of vermillion and oil and then offers some sweets and basil leaf to the gods and goddesses and prays before them for safe voyage as well as good haul.

After about two hours of voyage the fishing unit enters such a zone of the sea where as per the guess and perception of the vessel master the depth of the water may be about 15.5 meter and above. After arriving in such a zone, the vessel master asks the engine operator of the vessel (locally called ‘driver’ or ‘side majhi’) to stop and anchor the vessel. Then the master measures the depth of the water by plunging a 2 m.m. thick nylon rope with a heavy piece of iron knotted at its tip. It is to be mentioned in this context that the word ‘baam’ is the indigenous term used by the fishermen of Digha to describe the measurement in terms of length, breadth, depth etc. According to them the total length of four ‘haat’ or forearms constitutes one ‘baam’ which is equivalent to 1.8 meter.

The vessel master ensures that the depth of the sea ranging from 15.5 – 48 meter is conducive to hook and line fishing. However, apart from the depth of the water of the sea the vessel master also considers the colour of the water since as per his experience and perception both the depth and the colour of the water has simultaneous bearing upon the availability of desired kind and amount of fishes.
After selection of the location for fishing and considering the suitable time and calmness of the sea the vessel master asks the engine operator to slow down the speed of the vessel. Thereafter, he directs the other members of the fishing expedition to throw one end of a ‘set’ or section of a main line attached with a Grapnel-type iron anchor weighing about 3 kg. and the first marker buoy bearing the flag (locally called pataka) and kerosene lamp locally called tua. Before throwing the lines into the water the hooks are kept baited with different type of fishes namely bomla (Harpadon nehereus), fiita (Lepturacanthus savala), fali (Sardinella gibbosa).

The vessel master now directs the unit members to knot the other end of the said section of the long line with the tip of another set of long line. A float in the form of plastic jerrycan of 10 litre capacity and a Grapnel-type iron anchor are knotted in the joint of two sets of long line. In this way five to ten sets of main line joined together are thrown in the sea. Thus the sum total length of the joined sets of long lines becomes around 750 to 1500 meters. After throwing the entire connected sets of long line, its end (that is opposite to first marker buoy) is also attached with a Grapnel-type iron anchor and a float in the form of plastic jerrycan of 20 litre capacity. Thus the long lines remain in the sea water without any connection with the vessel and the team members wait on the deck of the vessel which floats near the end of the long line. After allowing a soak time of about 3 to 4 hours the joined set of main lines are hauled up by hand by the members of the fishing unit save the vessel master as well as the engine operator and fishes are removed as the branch line comes up.

**Sorting and Storing of Fishes:**

While some members of the fishing unit are engaged in hauling and removing the fish from the hooks the others members of the unit remain busy putting each variety of fish in separate area of the floor of the refrigerating chamber. Since the hook and line method is primarily employed to catch large sized fishes therefore, it is not possible to store them in plastic crates since their available size are not suitable to store large sized fishes.

**Division of Labour**

‘Matsyajibi’ (or fisherman) is the common term used for all the members of fishing unit who go for deep sea fishing based on various technologies. The fishermen engaged in deep sea fishing with mechanized vessel are all employed by the owner of the vessel. The employment is offered on one year contract. The division of labour found among the unit members is as follows:

A person is appointed as the vessel master of the expedition team, locally called majhi whose advice is considered by the vessel owner in case of annual recruitment of the fishermen for deep sea fishing. Apart from this role, ‘majhi’ has the sole authority to take major decisions in the matters of scheduling each fishing expedition, selecting the spot and time for setting and hauling the hook and lines, steering the vessel during setting and hauling of hook and lines, time to be allowed to soak the hook and lines. Majhi is also solely responsible to select the size of hook, size of a ‘set’ of long line, total length of the joined long line, material and thickness of the lines. Apart from these, majhi also serves as the principal priest for daily worship on the vessel during fishing expedition.

Similarly, a person of the expedition team is assigned to operate the engine of the vessel and he is locally called ‘side majhi’. He is also responsible for the maintenance of the engine of the mechanized vessel. However, in case of exigency, the side majhi also steers the vessel.

Another person of the fishing unit/team is assigned the duty of cooking the food for the members of the unit during fishing expedition. However, apart from cooking he has also the obligation to participate in other works like setting and hauling of the hook and lines, removing the fishes from the hook as well as storing the captured fishes etc.

The other members of the unit are exclusively responsible for setting and hauling of the hook and lines, removing the fishes from the hook as well as storing the captured fishes.

**Conclusion**

An attempt has been made in the present paper to give an ethnographic account of the high sea fishing by hook and line method with mechanized vessel practiced by the fishermen functioning from
the indigenous fishing harbour of Digha on the coast of the Bay of Bengal in West Bengal. While doing so, the authors have considered technological aspects of such fishing not only in terms of tools and material culture but also in terms of resources, tasks, skills, labors and activities related with the practice with such fishing since all these elements are considered to be attributes of technology.

The account presented in the foregoing sections suggests that the material culture associated with the deep sea fishing with hook and line and the mechanized vessel is dominated by the presence of industrial products which include among many things the engine of the vessel, GPS, radio, wireless phone, rope, hooks, grapnel iron anchor, float in the form of plastic jerrycan, ice, thermocol, plywood etc. However, despite the use of so many industrial products the fishermen practising hook and line fishing in high sea with mechanized vessel largely depend on the indigenous knowledge, perception, skill and wisdom of a particular person. This person is locally called majhi who is on the one hand the leader of the fishing unit and on the other master of the vessel. Majhi is the ultimate or sole authority during every deep sea fishing expedition with the hook and line fishing with the help of mechanized vessel. Thus we find that the majhi is exclusively responsible for selecting fishing unit members for annual recruitment, scheduling each fishing expedition, collecting fuel and ration for expedition etc. Majhi also steers the vessel, directs the engine driver about the necessary control of speed of the vessel, selects the spot and types of hook to be used for long line fishing, schedules the time for setting and hauling the lines etc.

It is revealed from the present study that the passive method of fishing with hook and line is considered by the local people as the less expensive since much less amount of capital is required for the simple but effective gear and a vessel used for this method of fishing compared to trawling and gillnetting with mechanized vessel. Moreover, the method of fishing with hook and line is fuel efficient since no voyage is required during the soaking of the hooks and lines.

The present study is also reveals that there is lesser loss of marine biodiversity due to hook and line fishing since this method is useful to catch the fishes of large size only and thus the small size fishes and other aquatic animals of countless varieties as well as shrimps, crabs and molluscs etc. are spared.

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