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# Different Types of Fishing Gears Used by Meity Community of Manipur

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## ABSTRACT

This present study deals with the different types of fishing gears used by the Meitei Community of Manipur. The Meitei Community use their traditional fishing gears to catch fishes for domestic consumption as well as to earn their livelihood. A total of about 16 different types of Fishing gears were recorded such as Gill net, Cast net, Dip or lift net, Drag net, Scoop net, Surrounding net, Taijeps, Tekhao-Lu, Kao, Soralu, kabo-Lu, Longup or Plunge cover basket Khoitek thaba, Khoisang Thakpa or Longline, Angling or Khoi Choppa or Pole line and wounding gear. The present study reveals that the fishermen of Manipur use primitive traditional fishing gears and these include wounding gears, pole and line, Hooks, Traps, Nets for fishing and also provides information for proper conservation and management of the gears with development of the modern fishing gear which is very much important for upliftment and betterment of socio-economic condition of the fishing community.

**Key words:** Fishing gears, Loktak lake, Traditional, Fishermen, Livelihood

Manipur is situated in the north-eastern corner of India bordering with Myanmar within the Latitude 25.83 degrees North and 93.93-degree East Longitude. The valley covers about an area of 1920 sq.km out of total 22,327 km<sup>2</sup> in area of the state land and the rest belongs to the hills, which is characterized by dense forest and inaccessible terrains. Manipur is blessed with immense ichthyofaunal diversity due to different geographical entity and the aquatic resources [3]. The plain valley area of Manipur state is rich in diverse fish fauna concentrated mostly in major rivers, natural lakes, reservoirs, ponds, tanks, marshy swampy areas, submerged cropland, low laying fields also serving the habitat of the fishes [3]. Fishes form an important food of the people living in Manipur. Non-vegetarian people among the Meitei's take fish in their diet. Majority of people of the state obtain the fish commodity from the ponds, riverine, fishery farms, etc. Fisheries sector plays an important role to provide fishes as main source of animal protein, employment opportunities, incomes and socio-economic improvement [1]. The tools are used to earn their livelihood by catching as many fishes as possible for sale. Long and big fishes are rarely seen in the plain of Manipur, except in the lakes and reservoirs. Fresh water fishes are available in the lakes, ponds, rivers, streams, marshy swampy areas in Manipur. According to the size, type of fishing gears, number of manpower used is few to many.

The study of fishing gears is important to know how the fishing gears help the fishermen to catch the fishes easily from the fish habitats. The present fishing technique and devices are the results of knowledge and experience gained by the fishing community from the ancestors [6]. Proper catch of fish fauna depicts the success of fisheries in a country [2]. Fishermen themselves design, make their own fishing tools/ gears made of local materials and products for catching fishes from their habitat. These fishing gears are not very expensive as they are made of cheap local materials. The fishing tools/gears are varied and so made according to the type, size, and habitat of the fishes. Of late, some parts of the traditional fishing tools/ gears are replaced by modern materials, such as nylon nets for wollen nets, fibre or plastics or iron handle for bamboo/ wooden handle etc for long durability. Fishermen are skillful and innovative to use different fishing gears and technique in fish culture and management [5]. In the present study an attempt has been done to record the information regarding fishing gears used by the Meity community of Manipur.

## MATERIALS AND METHODS

The areas which are selected for the study are Moirang, Thanga karang, Thoubal, leimapokpham and Wangoi.

### Collection of data

All the relevant data and information about the different fishing gears such as the local names, materials used for construction of fishing gears, size, weight of fish species, fishing season, types of species caught etc. are collected from the field directly by measuring, viewing and direct conversation

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with the fishermen community and the local people of the districts concerned. The data are collected during the study period of July 2019 to April 2020. During the survey, the different types of gears used at particular period/time and the description provided by the fishermen about the types of fishes caught by the particular gear are recorded.

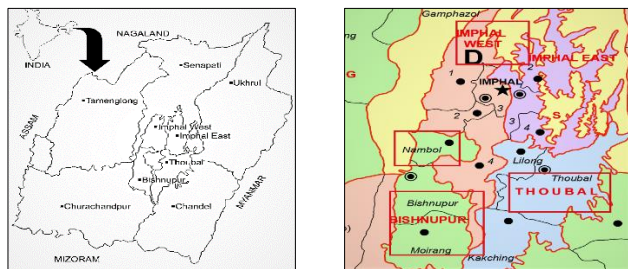


Fig 1 Map showing the position of the districts covered by the survey (source internet)

## RESULTS AND DISCUSSION

Based on the functional properties, the fishermen of Meitei Community in Manipur use various types of fishing gears as per convenience season, types of fishes and nature of water habitat. These fishing gears may be classified according to the manner of use and operational methods as here under.

- A. Nets
- B. Traps
- C. Line fishing
- D. Wounding gear.

### A) Nets

Different types of nets are used by the Meity people to catch the fishes.



Fig 2 Operation of woman using gill net at Loktak lake (Moirang)

### I) Gill net:

Gill nets are single walled nets with a mesh opening in such a way that sizes of the mesh are made to allow fish to get only their head through the mesh opening while hanging in the water. The fish's gills get caught in the mesh as the fish tries to move out of the net. Thus, gill nets catch fish by their gills. Nets may be used singly or in series as per convenience. Netting have vertical walls set out in a straight line. Floats and sinkers are attached to the gill nets. Head ropes and foot ropes are made of plastic ropes. This is the most widely used fishing gear. The gill nets are used as passive gear as they are set hanging down in water for few hours before hauling up. To increase the fish catches, fishes are driven towards the gill nets.

Mesh sizes are various from smaller to larger size which are numbered from 0 to 120.

Nets of larger mesh sizes are few used by the fishermen in Manipur.

The gills nets along with the accessory materials like foot rope, head rope, float, sinker etc. are available at the market of Imphal. These are transported from the border of Myanmar to Moreh.

The net is thrown at the surface of the pond or lake and set for few hours to allow fishes to get entangled in the net. The net is hauled from the dyke or from the boat.

### II) Cast Net (*Shangbren* or *Nupa-il*)

Cast Net also known as throw net is a conical or circular net with small weights (sinkers) attached around the lower end edge. The lower end edge is provided with foot rope to which a number of sinkers made of mercury are attached. A portion of the lower extremity of the net is folded up and is stitched at regular intervals to the upper part to form a peripheral pocket. A strong rope is attached to the apical portion of the net for hauling the net from the water. The cast net is thrown over the fishes by hand in a way that before sinking into the water it spread out. Cast net falls on the water surface in the form of an umbrella and it sinks to the bottom of the water immediately covering the fishes with the pulling force of the sinkers. The net is hauled up by means of apical rope. One man usually operates the net in the lakes, rivers, canals and streams and in the ponds.

Locally depending upon the size, whether small or big, Cast Net can be categorized into two types:

- (a) "*Nupa-il*" (*Shangbren*): "*Nupa*" means man and "*il*" means net in Manipuri. It is a small size cast net operated by a one man. The fishermen hold the net, twists the body and hand throws the net in a swing over shoal of fish. The net sinks to the bottom due to the sinkers in the form of umbrella and covers the fish. This is one of the common gears seen and used in Manipur. The smaller net costs around Rs 300 /- in the market.



Fig 3 Cast net (*Shangbren*)

- (b) *Bigger Cast Net "Inphul"*: *Inphul* is the bigger size Cast net (3-4m long). As such, it requires 2 or 3 persons to operate it. To begin, the upper portion of the net is held by hand and drag, while half rim of the net is immersed at the bottom of the fishing water. After covering a short distance, the upper portion is lowered. The net is pulled out of the water by means of string fixed at the cone end. The cast net may catch mix species of fishes. The smaller size net costs around Rs. 300/- and the larger size *Inphul* costs around Rs 1200/- at the market depending on the size.



### III) Dip or lift net

This is a rectangular net of size '8 x 6' made of cotton or nylon which is supported by the four ends of the two-bamboo crossing at right angles at the centre along with a long bamboo pole as fulcrum (lever). A rope is fastened to the fulcrum (lever). The net is submerged in water near the bank of river, pond by means of a rope and is lifted out of water by the rope. It is a rectangular net made of cotton or nylon and consists of a bamboo cross work which is movably joined in the middle and a loop is also formed.

It is operated in two ways namely: i) With rope (strings) and ii) without rope (strings).

(i) *With rope (strings)*: The net is lowered and lifted by means of rope tied at the top of fulcrum (lever). It can be operated from the bank of the lakes, rivers, ponds or from dyke or dugout boat.

(ii) *Without rope (strings)*: The net is lowered by using the bamboo pole. For hauling from water, the bamboo pole is fastened between the thigh and the bamboo is lifted using hand. It is operated from the dugout boat or shore and is commonly seen in the Loktak Lake of Manipur. Small and big fishes are caught by this gear.

(a) *Nupi-il*: In the word Nupi – il, Nupi indicate woman and il indicate net in local language of Manipur.



Fig 4 Women fisherfolks lifting Nupi-il at Moirang (Loktak Lake)



Fig 5 Tunggol

It is mainly used by the women folks, hence known as NUPI-IL (NUPI-WOMEN, IL-NET).

The net is made of cotton or nylon. Long half-cut off of bamboo about 3-3.5 m length are bent at right angles, fastened to the four corners of the net, a bamboo pole (known as POURA in Manipuri) is tied to the middle of the bamboo frame acting for support. The end of a rope made of nylon or cotton about 7 m in length is tied to the fulcrum/ support to haul up the net as when needed.

At the time of fishing, the fisherman lowers the net using the bamboo support (POURA) inserting on the bank or in the dyke firmly. Thighs can tighten the bamboo pole or tied to the support on the boat. The net is lifted with the pulling of the rope attached to the middle of bamboo frame (POURA) and the catch is collected and put in the fish container or Tunggol (fish container made of bamboo). The net is again lowered to water for next catch. It is used throughout the year.



Fig 6 Woman lifting Nupi-il at Wangoi (Imphal West District)

(b) *Il Jao (Big size dip net)*: Another type of dip net bigger than Nupi-il is also used. It is known as IL-JAO in local name. Literally IL-Jao means big net (IL= net, Jao= Big). About 9 to 12 numbers of small dip nets are stitched together in a rectangular form and the four corners of the net are tightened to four poles, which are all supported by another pole to give a secure position. On one side a floating phoom acts as a source of a platform.

The IL-Jao (Big Dip Net) is mainly used in the area of floating, mass of aquatic weeds called locally as **Phoomdis** situated at the Loktak Lake where the bamboo poles are fixed to the floating mass (Phoomdis). The floating phoom acts as platform. The net is fixed to the bamboo poles and the rest of the net is immersed under water for 4 to 5 hours or even a day without disturbance. Dough of rice bran is spread over the net to attract the fishes in search of food. Usually, two fishermen from two boats start lifting the net towards the Phoomdis. This net is lifted up after untying the lower two ropes and pulling the ropes above the water surface. Smooth bamboo pole known as POU are used to beat the net one after another by two persons to drive the fishes to the place where they are to be collected.

Il Jao is used in the month of May to September at the Loktak Lake. All types of fishes are catch with this gear.



Fig 7 Operation of catching fishes with il-gou at Leimapokpham

### IV) Drag net (Moonamba)

Drag net is made of a bunt (net bags or loose netting) which are stitched and is provided with sinks and floats at the head and foot ropes. The length and type of fishes to be caught determine the floats, sinkers and size of the mesh. Net

numbering No 20 and 120 are used to catch fishes from the fish ponds. Fisherman use small drag net 0 mesh size for catching fingerlings from the rearing pond. Dry season is the convenient season, when water is shallow or dried up. Fishes from the shallow water or dried area are dragged out with the net. Fishes of various sizes are caught in the net. Usually, two persons can handle the net. This net is used during November to June.

#### V) Surrounding net / Encircling net (*Moirang lang*)

A Surrounding net is a fishing net which encircles or surrounds fishes and other aquatic animals on the sides and underneath to prevent the escape of fishes and thus to be caught. The fishing method is similar to that of purse seine, which is a large wall of netting around an entire area or around shoals of fish as well setting of gill net in water.

About 5 to 10 number of gill nets are joined together and set to form encircling net for catching fish shoals. This net is convenient to use in large water bodies to catch fish. Meitei Community practice a traditional fishing method called “Phum Namba” using surrounding net of smallest mesh size at the Loktak Lake. The size of the phum (The floating mass of weeds) determines the depth and length of the net. The fishes are kept surrounded by the net and their escape is prevented.

Surrounding net is used when water level reduces to minimum, from the month of November to June. Shoals of fishes are identified by seeing the color of the water as well as the movement of the aquatic weeds or fishes in the water. Net is encircled around the fish shoals. Fishes are driven to the encircled net by creating noise due to beating the edge of the boat or by beating on the water surface with pole or by using spears from inside the centre of the encircled net. The mesh size determines the type of fishes to be caught.



Fig 8 The operation of Phum -Namba at Loktak Lake (Moirang)

#### VI) Scoop Net (*Longthrai fishing*)



Fig 10 Big Taijep



Fig 11 Small taijep



Fig 12 Various sizes of Taijep

(II) *Tekhao-lu*: The gear is tubular in shaped tapering at one end and is made of bamboo splits. The mouth of the trap is fixed with a round valve having inwardly projected pointed

*Longthrai*: Similar to the encircling net excepting the handle supporting the frame. The bag is entirely made of nylon netting with mesh size of 2.3 mm while the depth of the net is 1m. It is operated in the shallow water by pressing among the weeds. In the deeper waters it is operated from the boat. The gear is used throughout the year. The catches are mixed species.

#### B) Traps

These are the stationary devices that are kept to the shore or in Estuaries or running stream and allow the fish to enter into the device but prevented from coming out. Devices like funnels are fitted into these implements so that fishes are allowed to move in freely but prevented from moving out. The following are some of the traps used in Manipur.



Fig 9 Longthrai scoop net

(I) *Taijep*: It is a rectangular trap made of bamboo splits fastened by polythene straps and has longitudinally open mouth at one end side of the trap where the fish can enter. This is commonly known as Shou. Which is provided with a comb like structure made of pointed bamboo strips to stop the trapped fish to come out. It has non-returnable longitudinal valves fixed in the mouth pointing the valve stick inwardly. Three-fourth of the box is set in a row facing different directions. The trap is used in the lakes and ponds by setting among the weeds in rows. The materials for this trap net include bamboo strips of small and finger size fastened by a synthetic yarn. The average taijep measures 3.6 ft in length and 1.8 ft in breadth having the entrance of 5 inches and depth of 8 inches. It is priced at Rs 400/- at market and lasts for about 5 years. These are vertically tied to floating weeds in Lakes or streams. They are also used in shallow water near channels, paddy fields, kept either singly or in series. The main species caught by the gear include *Notopterus notopterus*, *Channa sp.*, *carps* etc. The gear is used throughout the year.

bamboo sticks known as “shou”, which prevents the fish from escaping. Various sizes of Tekhao-lu are available. The largest trap is 10ft in length with mouth opening of 4ft in diameter. The



bamboo strips are fixed like a funnel to rings with strips tied together by nylon yarns. It lasts for about 7 years and cost about Rs 800/- at the market. It is used from June to December every year.

During the time of operation, with the help of one rope, one bamboo or wooden pole is fixed at the bottom of the riverbed at the depth, where the gear is to be lowered. The cone end of the trap is tightened at this place. Two ropes are tied to the gear near the mouth. Then the trap is lowered and kept at the required depth. And two ropes are tied to the shore pole to secure the gear in position. The gear mouth is set along the direction of the river flow. The fishes, swimming against the current get trapped inside. Tekhao-lu is the largest trap used in Manipur. The most common problem of this trap is storage when it is not in use because of its size. The operation of this trap is seen on the Wangou river, the Iril river and the Imphal river.



Fig 13 Tekhao-lu

(III) *Kao*: It is a peculiar indigenous trap used to catch fish by making a fish aggregating device made of locally available materials where twigs and branches of trees are included. It is triangular shape with 5 ft length and 2.5 ft length, about 3 ft breadth at the mouth region. The gear consists of bamboo splits intersecting with spaces enough to pass water. One end of the bamboo netting is folded lengthwise in the middle to join into a single vertical line. The other end is left freely open. Mouth is provided with bamboo frame. The gear is used in shallow waters, small rivers, streams and lakes. The trap is tied to two bamboo poles with a rope as to avoid from being carried away by the current and is placed inside water facing the current / inflow of water current away from the bank or dyke. Twigs and straw are kept inside the trap to serve as sheltering/ hiding place of fishes. The upper portion of the trap is kept fully open. Fish attractants like ant nest and food like rice bran are kept as a bait inside the trap. It is set in the morning and lifted after 1 day to find the catch. Sometimes the trap may be kept for longer days and harvested after 4 or 5 days. The Meitei community inhabiting in Thoubal District of Manipur use this fishing method to catch fish from streams, rivers. June to January is the main season for using this trap. One trap is priced at Rs 300/- at the market. The fishes caught by this method are Bottom dwelling fishes like *Mystus sp*, *Clarius batrachus*, *Channa sp*, *H. fossilis* and river shrimps.



Fig 14 Kao found at Imphal River



Fig 15 Kao found at the Imphal River

IV) *Soralu*: This trap is the biggest trap among all types of traps used. It is found in different shapes and sizes in different areas of Manipur. It consists of two parts, (a) Bigger one of conical shaped tapering with circular end in which two detachable ropes are tied at opposite directions, and (b) A smaller of tubular shape with tapering towards the end. It is made up of bamboo strips and has a wide mouth and a narrow cod-end. The bigger one is meant for congregation and the smaller one functions as fish collecting cod end. The two parts are attached together with the help of detachable rope which is tied at the mouth of the smaller one. The maximum width of the mouth is about 1.3 m and the total length is about 3-4 m including the cod- end which direction ranges from 0.3 to 0.45 m. It is set in the running waters against the water current and in the small streams, rivulets, irrigation canal etc. in an already prepared barrier in such a way that its mouth faces the current. The devices is set in the evening and is kept for whole night. The traps are opened in the early morning for the catch by detaching the smaller part of the trap. The process can further be continued for harvest. The traps are also used in Paddy fields during the rainy season that is from June to August. Small air breathing fishes, weed fishes are caught with the help of this gear.



Fig 16 Sora -lu at Moirang



Fig 17 Sora-lu



Fig 18 Kabo-Lu at Thaga Karang

#### V) *Kabo-lu* (Tubular trap)

It is a tubular trap with both ends tapering like a spindle. This trap has valves at both ends and an opening is made in the middle of the trap, which is larger in size and is tapering towards both ends. It is made of bamboo splits which are interconnected by split cane strips or small plastic strips. One end of the trap is open with circular opening of diameter equal to the 1/5<sup>th</sup> of the maximum diameter, and the openings are made in such a way that fishes once enter inside are not able to come out again. Non-returnable valve is attached in the middle in a slanting position. The ends are fastened by cane / polythene straps. The traps vary in sizes from 50 cm to 150 cm in length. This is set in the thick

aquatic weeds or in the water channel/outlet from the ponds or shallow waters as well as in paddy fields and hill streams throughout Manipur. The trap is set in slanting position facing the valve mouth for the entry of the fishes. The opened end is closed with grasses or weeds. During rainy season this trap is used.

#### VI) Plunge basket (Longup)

It is ball-shaped basket reaching a height of about 50-55 cm having both ends hollow and made of seasonal bamboo strips in the shape of bell. The trap has a top opening with a ring made of cane strips and fishes are taken out from this top opening. This trap is handled by one man. The trap is plunged into water by holding at the top and wider bottom foot fixes into the mud, where the fishes are available. While the left hand supports the basket, the right hand gropes inside the basket to catch fishes. Plunge basket is used during dry season, when water reduces to minimum or water is drained away. It is effectively used in the smooth bottom and shallow water.



Fig 19 Longup



Fig 20 Operation of fishing with plunge cover basket

#### C) Line fishing: Hooks and line

The principle of line fishing is to attract fish to swallow the bait which conceals the hook. Bait is an important factor in line fishing. The line fishing is done with a long line and a hook tied to a rod. Two ends of line are secured to fixed locations and kept for few hours. Fishes entangled in the hooks and pulled out of water. Hooks have different numbering pattern, the higher the number the lower is the size. The number ranges from 4 to 22. A hook is typically a metallic piece having parts called eye shank, bend and spear. The main species caught by this gear are *Channa species*, *Clarias batrachus*, *Mystus gulio* (Ngasep) etc.

##### (i) Khoitek thaba

Simple and very popular method in Manipur is catching fish by using pole and line fishing and is locally known as KHOITEK THABA. A nylon thread of 50 cm with a hook firmly tied is fastened at tip of a pole measuring 60 cm long. It is set under water in the evening and hauled in the next morning. Khoitek thaba is operated throughout the year. Catches are mainly consisted of *Clarias* (Magur), *Channa spp.* and mud eel.



Fig 21 Khoitek



Fig 22 The operation of Khoitek Thaba

##### (ii) Khoisang thakpa (longline)

It is arranged by setting long line made of nylon or cotton twine of about 50 to 100 meters long on the water surface with both ends tied firmly to the fixed poles and baited hooks of about 30 to 50 numbers or more with a gap/ interval of 2-3 m on the main line are fixed with baits immersed under water.

Khoisang thakpa is easy to fix and to use. One end of the mainline is tied to a fixed pole and it is passed on the surface of water, weeds and finally its end is fixed to another fixed pole. The long line is set in the morning for 8 to 10 hours and catch is collected. The commonly used live bait include earthworms, insects, *Puntius sp.*, *Esomus danricus*, *Amblypharyngodon mola*, prawn and small fishes of *Channa sp.* It is mainly used during summer season (June-August).



Fig 23 Khoisang Thakpa (Longline)

##### (iii) Angling (Khoi choppa)

A nylon or cotton thread /twine of about 2-3 m length with a baited hook at one end is tied to at the tip of a bamboo pole. A float is attached to thread or twine to indicate entangle of a fish [3]. When the fish is hooked in the bait, it tries to move and the float also move. While using in the running water like rivers, streams, a lead weight is attached to the line at about 10-15 cm above the hook to maintain proper hanging under water and to prevent the line from drifted away. The angling is set from the bank by holding the pole by hand and hauling when float is pulled or dipped under water. Baits are Earthworms, flour paste, hentak paste, boiled rice etc. are used as bait in the hook. Angling is done by children to old persons. The persons hold one end of the small pole and cast the other end to water. A hooked bait attached to one end of nylon or cotton twine is firmly tied to the other end, which is dipped in water. When the float moves, the fishermen forcefully pulls up the other end of the pole from water.



Fig 24 Fishing with the help of pole line

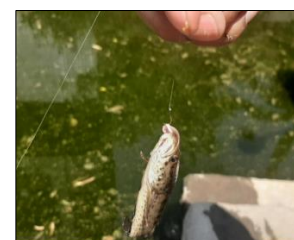


Fig 25 Fish caught by pole line

#### D) Wounding gear

*Long-tanba/ thinba fishing*: This is the fishing gear that wounds or kills fish rather than capturing or trapping them. Such as harpoons, spears, arrows etc.

*Traditional spear (Long fishing)*: It is made of 5-9 prongs of steels or bamboo (about 1-1.5 m in length) with iron pointed tips fitted on a bamboo pole measuring 3-4 m in length. It is used by the experienced fishermen with sharp vision. It is operated from the shores or from the boat. The fish is located



first in water by observing the bubbles of movement of fishes and then spear is thrown to hit the fish from the boat or from the

dyke. The common catches are *Channa spp.*, Rohu, Mrigal, Catla, Grass and silver carp, *Wallago attu* etc.

Table 1 List of fishing gears used by the Meity community of Manipur

S. No	Fishing methods	Group	English Name	Local Name	Size of fishes	Fish Species
1	Nets	Gill net	Gill net	Lang	Big and small fishes	<i>Esomus danricus</i> <i>Amblypharyngodon mola</i> <i>Puntius sp</i> <i>Notopterus notopterus</i> <i>Labeo dero</i> <i>Labeo angra</i> <i>Channa striatus</i> <i>Wallago attu</i> <i>Bagarius bagarius</i> <i>Anguilla bengalensis</i> <i>Cyprinus carpio</i> <i>Lepidocephalichthys guntea</i>
		Cast net	Cast net	Shangbren or Nupa-il	Big and small fishes	Mixed species of fishes <i>Puntius sophore</i> <i>Chitala chitala</i> <i>Channa striatus</i>
		Dip or lift net	Dip or lift net	Nupi-il or il-jao	Big to small fishes	Indian major carps <i>Puntius sp</i> <i>Chanda ranga</i> <i>Chanda nama</i> <i>Esomus danricus</i> Air breathing fishes <i>Wallago attu</i> <i>Amblypharyngodon mola</i> <i>Notopterus sp.</i>
		Drag net	Drag net	Moonamba	Big to small fishes	<i>Anabas testudinues</i> <i>Heteropneutes fossilis</i> <i>Channa sp</i>
		Surrounding net	Surrounding net or Encircling net	Moirang Lang	Big to small fishes	Indian major carps <i>Wallago attu</i> Catfishes and Air breathing fishes etc.
		Scoop net	Scoop net	Longthrai	Small fishes	Mixed species <i>Trichogaster fasciatus</i> <i>Parambassis ranga</i>
		Traps	Traps	Taijep	Big to small fishes	<i>Notopterus notopterus</i> <i>Channa sp</i> Carps etc.
		Traps	Traps	Tekhao-lu	Big to small fishes	<i>Cyprinus carpio</i> <i>Wallago attu</i> <i>Anguilla bengalensis</i> <i>Labeo angra</i> <i>Hypophthalmichthys molitrix</i> etc.
		Traps	Traps	Kao	Mainly Small fishes	<i>Mystus sp</i> <i>Clarias batrachus</i> <i>Channa sp</i> <i>H. Fossilis</i>
		Traps	Traps	Soralu	Big to small fishes	River shrimps. Small air breathing fishes, weed fishes <i>Cyprinus carpio</i> <i>Channa sp</i> <i>Labeo gonius</i> <i>Ctenopharyngodon idella</i> <i>Clarias batrachus</i>
2	Traps	Traps	Traps	Taijep	Big to small fishes	<i>Trichogaster fasciatus</i> <i>Esomus danricus</i> Other small fishes.
		Plunge basket	Traps	Longup	Big to small fishes	<i>Channa sp</i> <i>Clarias batrachus</i> Carps <i>Notopterus notopterus</i> <i>Trichogaster fasciatus</i>
		Traps	Traps	Kabo-Lu	Small fishes	<i>Clarias (Magur)</i> <i>Channa spp</i> Mud eel.
		Traps	Traps	Soralu	Big to small fishes	<i>Channa spp</i> <i>H. Fossilis</i> <i>N. notopterus</i> <i>Wallago attu</i> etc.
		Traps	Traps	Kabo-Lu	Small fishes	
3	Hooks and line	Hooks and line	Line fishing	Khoitek thaba	Small fishes	
	Hooks and line	Hooks and line	Line fishing	Khoisang Thakpa	Small fishes	



	Hooks and line	Hooks and line	Line fishing	Angling	Small fishes	<i>Trichogaster fasciatus</i> etc.
4	Wounding gear	Wounding gear	Wounding gear	Long tanba or Thinba fishing	Big and small fishes	<i>Channa sp.</i> <i>Labeo rohita</i> <i>Cirrhinus mrigala</i> <i>Catla catla</i> Silver carp <i>Wallago attu</i> etc.



Fig 26 Long

Selection of fishing methods and gear are influenced by various factors such as physiography of the water body, nature of fish stock, characteristic of the material from which gear are fabricated and standard of living [4]. Variation in application of fishing gear is observed according to season, water depth and type of fish. The survey was carried out in the areas predominantly inhabited by the fishing communities so as to facilitate to study about number, various types of fishing gears and fishing techniques which are used by them in the rivers, lake, canals, ponds in Manipur. During study period 16 different types of fishing gears were recorded under nets, traps, line fishing and wounding gear. Nets such as Gill net, Cast net, Dip or lift net, Drag net, Scoop net, Surrounding net are used. Under trap gears such as Taijeps, Tekhao-Lu, Kao, Soralu, Kabo-Lu, Longup or Plunge cover basket are found and under Line fishing or Hooks and line, gears such as Khoitek thaba, Khoisang Thakpa or Longline, Angling or Khoi Choppa or Pole line are also found. In addition to these gears, wounding gears are also used. The above fishing gears do not pose any threat and harm to the environment. The use of certain chemicals, battery electric fishing, poisoning of water habitat for catching fishes has been illegal in Manipur. Women folks like the men are also involved in catching fish by the use of above traditional fishing gears.

## CONCLUSION

The survey was carried out in the areas predominantly inhabited by the fishing communities so as to facilitate to study about number, various types of fishing gears and fishing techniques which are used by them in the rivers, lake, canals, ponds in Manipur. In total of about 16 different types of fishing gears were recorded such as Gill net, Cast net, Dip or lift net, Drag net, Scoop net, Surrounding net, Traps, Line fishing, Wounding gear. Under Trap gears such as Taijeps, Tekhao-Lu, Kao, Soralu, Kabo-Lu, Longup or Plunge cover basket are found and under Line fishing or Hooks and line, gears such as Khoitek thaba, Khoisang Thakpa or Longline, Angling or Khoi Choppa or Pole line are also found. About 45,000 fishermen are engaging in fishing activities as their primary occupation in Manipur. These fishermen use primitive traditional fishing gears and these include wounding spears, pole and line, hooks, traps, nets etc. The private and government agencies can produce 32,000 tonnes of fish requirement of the population in Manipur per year as against the annual requirement of 60 thousand tonnes. So, fishes from the outside state like Assam, Andhra Pradesh are important to meet the fish requirement per year. The traditional fishing gears needs to be upgraded and improvised with technological device. Also, the fish resources are required to be made abundant by adopting various methods of breeding, hatcheries etc. These will help in bettering the socio-economic condition of the fishermen. For the development of modern fishing crafts or gear it is important to have the knowledge of fish behaviors in relation to fishing gear. For this the choice of material is very important because it helps to increase the efficiency of a gear such as suitable material like the synthetic yarn can be used instead of natural fibers. The developed gear can be used in many ways such as the gill net, surrounding net and drag net etc. It is observed that both men and women use predominantly traditional fishing gears in the Meitei Community. Even though men dominated for the preparation and maintenance of fishing crafts and gears, women do play very prominent roles for the capture fishery. The fishermen inhabiting in the valley of Manipur state employ different traditional fishing gears/devices to catch fishes from the Lakes, rivers, ponds, marshy swamp places to earn income for the family. These old techniques and skills are passed on to the next generation. These devices are upgraded by the substitution of durable material.

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