

## **FISHING CRAFT AND GEAR:**

The use of crafts and gears in fishing technology plays very important role and help enhancing the production commercial bases. The success of fishing largely depends on to how and which types of nets are used to capture the fish.

**There are two main types of devices used to capture fishes in both marine and inland fisheries:**

**(1) Nets or gear** — these are instruments used for catching fish.

**(2) Crafts or Boats** — It provides platform for fishing operations, carrying the crew and fishing gears.

There are various types of gears and crafts used in different parts depending upon the nature of water bodies, the age of fish and their species. Some nets are used without craft, however, others are used with the help of crafts. Generally, locally made gears and crafts may be non-mechanized(manually operated) or mechanized.

### **Crafts and Boats:**

There are many types of fishing crafts being successfully made and used for marine and inland fisheries.

## A. Marine Fishing Crafts and Gears:

### (a) Marine Fishing Crafts:

Different crafts are used due to different conditions of sea on the east and west coasts.

#### I. Crafts used on the East Coasts:

##### (1) Catamaran:

The word catamaran is originated from a Tamil word Kattumaram which means 'lashing timber'. It is used mainly on the east coasts of Orissa from Kanyakumari. It is also used on northeast coast of Kerala. It is the most primitive, traditional, economical and efficient craft.

It is made by tying many wood logs in such a way that it takes the shape of a canoe, which consists of two main logs and two side logs cut into boat shape and held together with rope. The logs are held in position by loose rubber called Teppa. Generally the Catamaran is 5-10 metre long, 0.5 metre wide and 0.3 metre deep.

Types of Catamaran:

##### i. Orissa and Ganjam Type:

It is made by five logs pegged with wood. The logs are cut in boat shape and are not tied with rope.

## ii. Coromandal Type:

It is used in Tamil Nadu to capture flying fish of Nagapattanam. It is made by 3-5 logs. A modified type of Coromandal type is called Kolamaram, which is made by 7 logs.

## iii. Andhra Type:

It is the modified form of Orissa type, larger in size—about 5-7 metres long, hence made by nine heavy side wood logs that are fitted with a median logs.

## iv. The Boat-Catamaran:

It is made of three wood logs tied in boat shape. It is used in Mandapam and Mukkun coastal regions.



## (2) Masula Boat:

It is a weakly constructed boat of about 8-12 metres long . It is used in clear weather near the shore. The masula boat is keel less and frameless made by mango planks, which are stitched with palm leaf fibres. There are several variations of the musula boat. In Orissa it is called ‘Bar

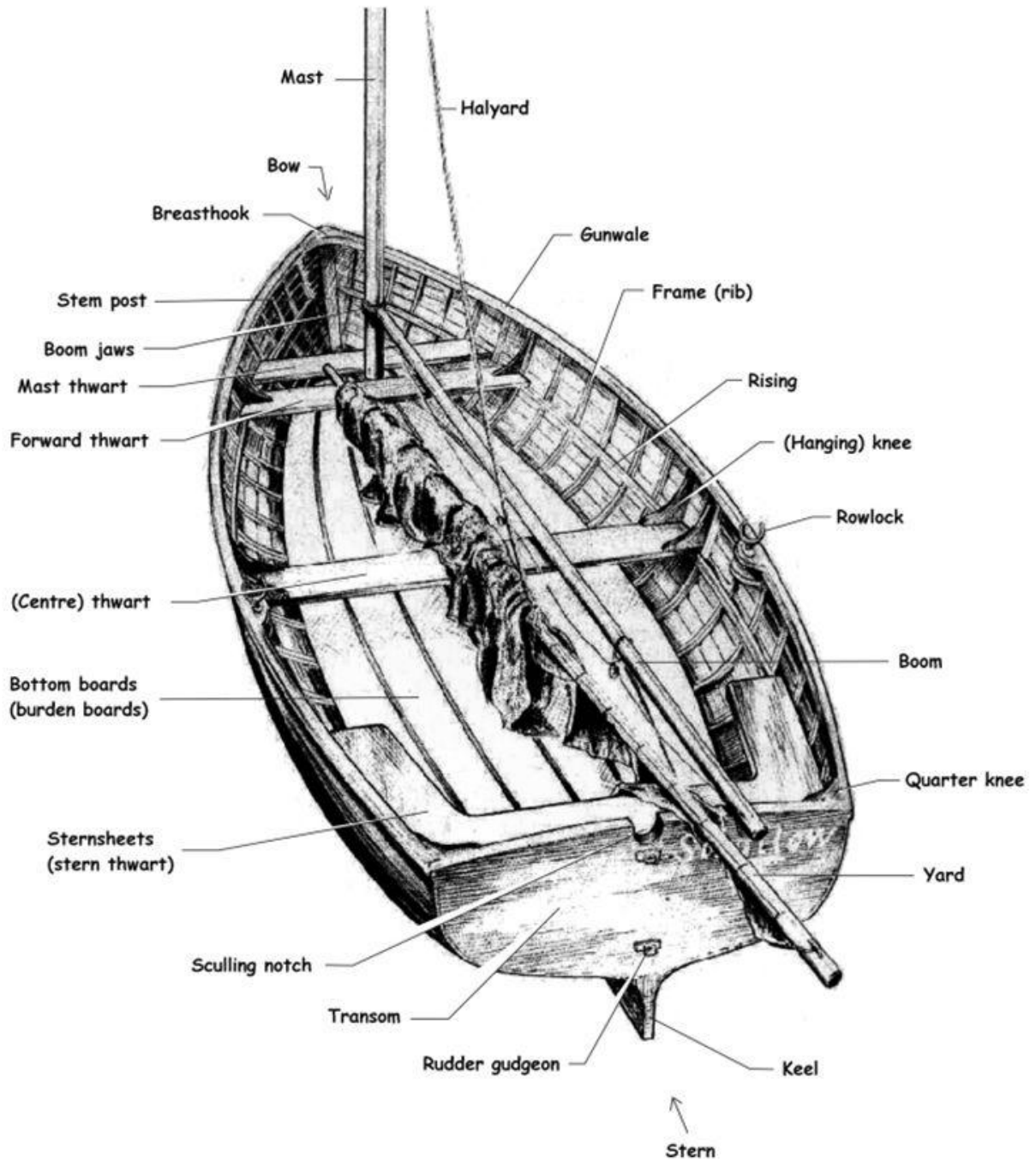
boat' and in Andhra called Padava or Padgam.



### (3) Nauka and Dinghi:

These boats are with carvings and are operated in West Bengal and Orissa. These are well-designed large boats

measuring about 11-13 m x 2-3 m x 2 m in size.



#### (4) Tuticorin Boats or Fishing Luggers:

These are operated in inshore waters and are used as cargo boats. They are carved boats of 11 m x 2m x 1m in size.



Fig: Mechanised Fishing boat.

## II. Crafts used on West Coasts:

### (1) Dugout Canoes:

These are constructed from large wood logs. These logs are hollowed by scooping inner part. Their bottom is thicker than sides. They are operated on Kerala and Konkan coasts. The small boats of 5-10 m long are called 'Thonies', which are used for gill nets or drift fishing and for seining.

The large boat of 10-22 m long is called Vanchi or Odam and is used for operating variety of nets on Malabar Coast. Dug-out canoes are also operated on the west coast from Colachal to Kathiawar.



## (2) Plank-Built Canoes:

It is a kind of dug-out canoes. It is extended with planks(floating/buoyant) on sides. They are popularly used on coast of Kerala, Karnataka and North Bombay.



## (3) Outrigger Canoes:

These are large size canoes of about **15 m long**. It has **narrow keel** and single outrigger and extended out with planks. They are commonly called as Rampani, because they are used for the casting of the Rampani net for catching mackerels .

They are operated on the Kanara and Konkan coasts. Small size outriggers are used between Bhatkal and Majali.



#### (4) Built-Up boats:

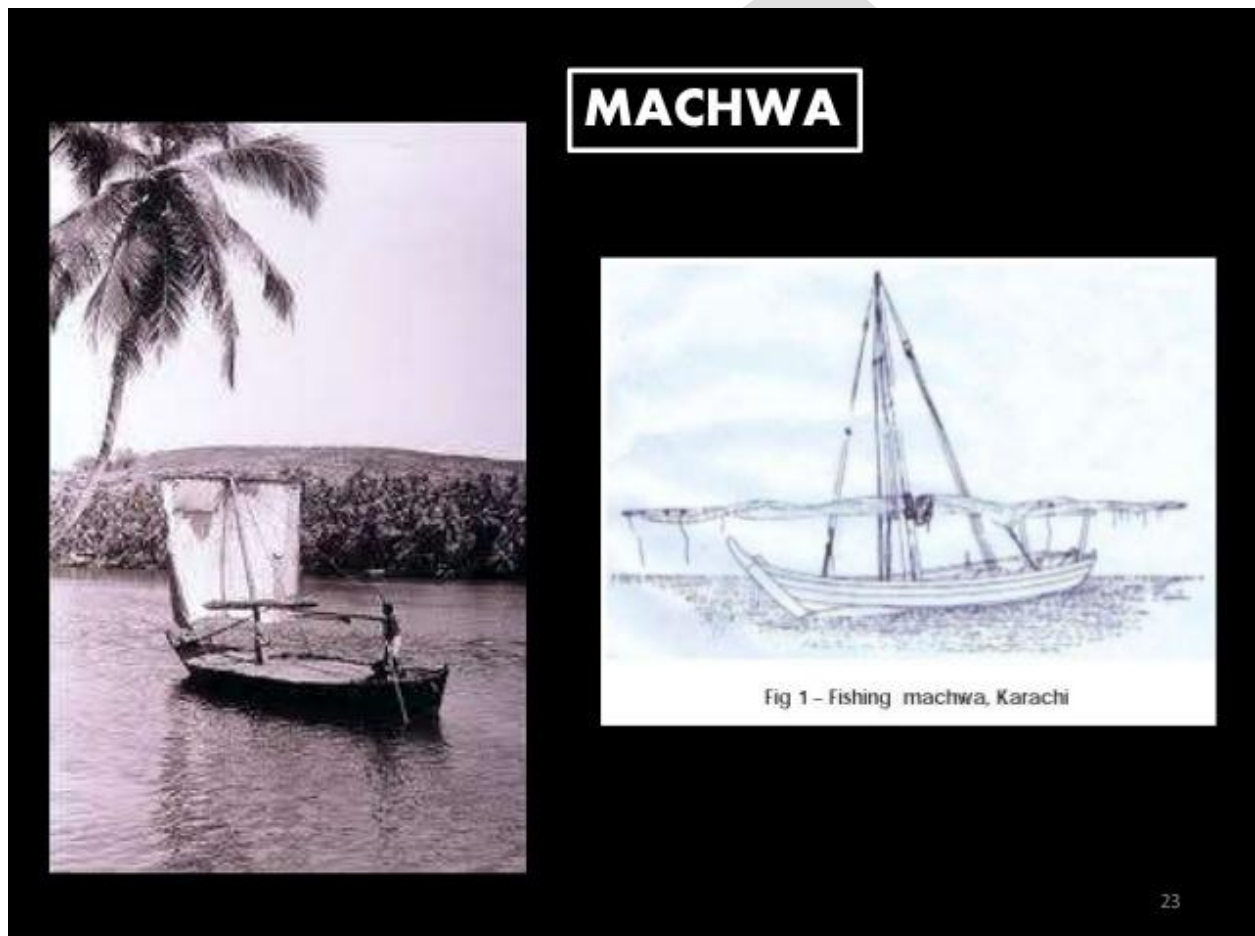
It is highly specialized indigenous fishing craft. They are commonly used along the Bombay coast and north Ratnagiri.

There are small variation according to different places such as:

(a) Ratnagiri type boat, which has pointed bow, straight and narrow keel and low gunwale.

(b) Machwa:

It is provided with broad hull, straight keel and pointed bow. It is popular in Bassein hence called Bassien type.



(c) Satpati or Galbati Type:

It has straight keel, high gunwale, medium pointed bow and broad beam. Satpati can be mechanized with a motor engine without any modification in design.

(d) Broach Type:

It has flat bottom and is widely used in inshore and estuarine water.

(5) Coracle:

It is used in rivers, reservoirs and canals for fishing. One or two fishermen can operate this craft. It is made like a round basin and its frame is made with split bamboos. The outer surface is covered with leather.



(6) Shoe Dhonie:

It is shaped like a shoe. It is used both marine and inland fishery. It is constructed by teak wood with planks grooved with ribs and frames fitted with nails. It is used for fishing with gill nets.

## SHOE DHONI

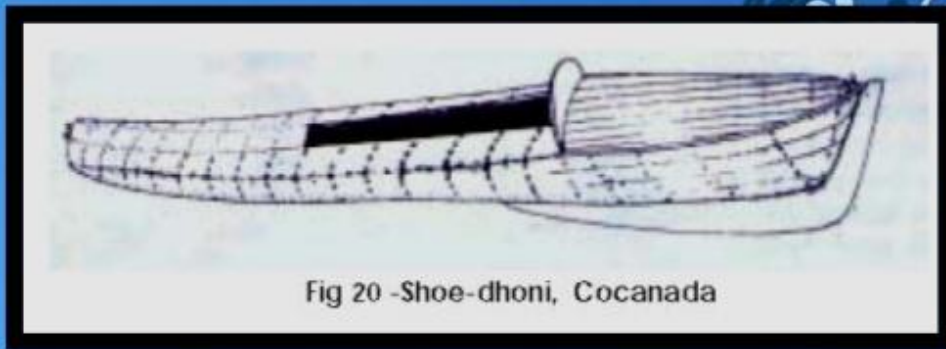


Fig 20 -Shoe-dhoni, Cocanada

- Shoe shaped with wide flat forward
- sharp stem, strongly flared bow sections
- narrows greatly in the aft , transom stern
- fore part is decked, has spray board
- steers by oar from aft deck
- Special type of dug-out in Kolleru lake (A.P)

### (7) Kakinada Nava:

It is commonly used for inshore fishing. It is made by teak wood. It is keel less but ribs are fitted in frame with nails. It is about 9-10 m in length.

### (b) Marine Fishing Gears:

Various types of gears are used for fishing in sea. They may be of different size, shape and designs. These gears may be made by fishermen. They are also manufactured in cottage industries. The most commonly and widely used fishing gear are [different types of nets](#).

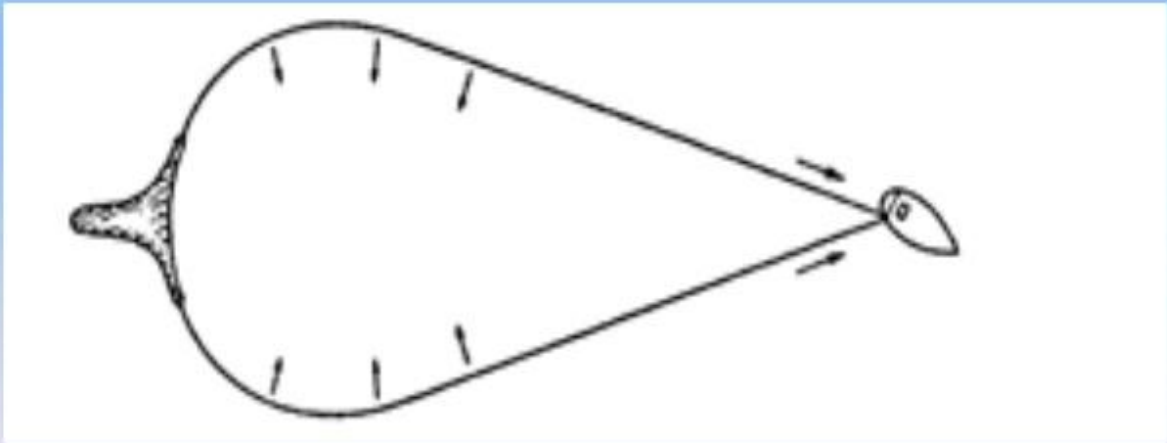
They are used for catching large fishes offshore. The main type of nets being used are boat seine, shore seine, bag nets, fixed or stationary nets, drag nets, drift nets and cast nets.

### (i) Seines:

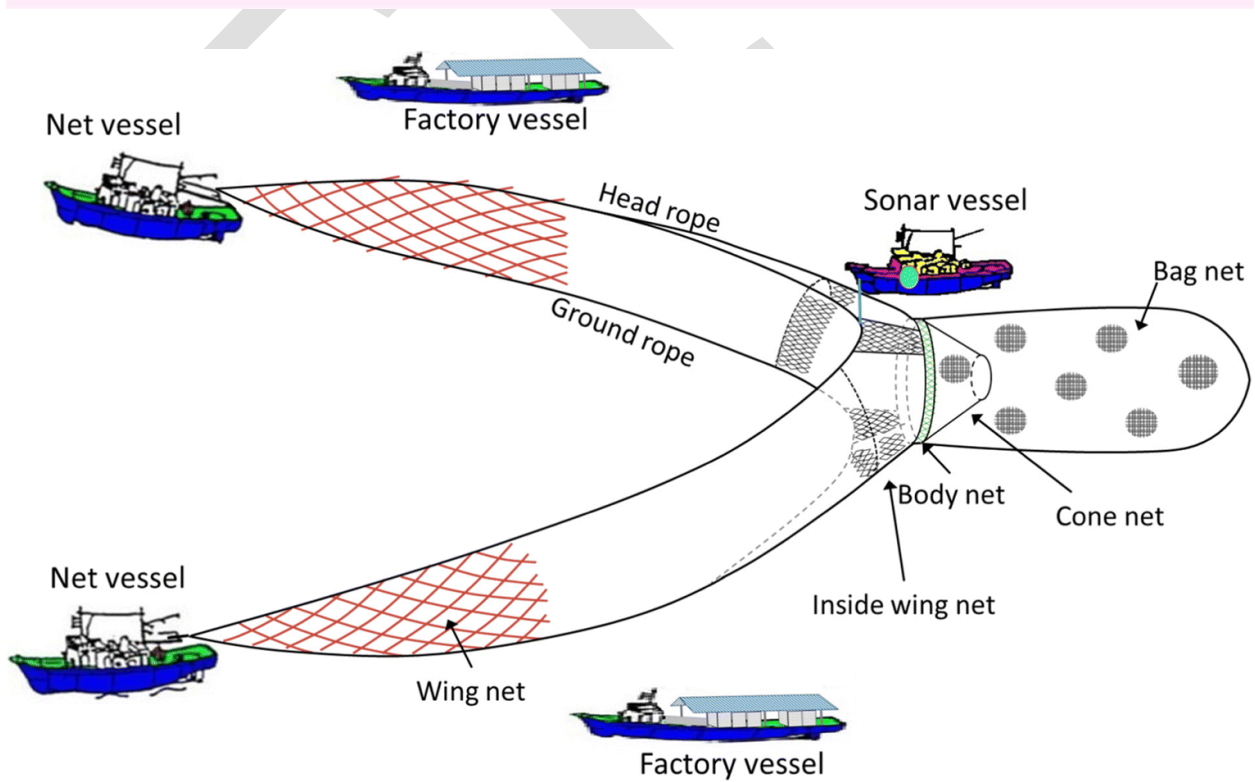
These are specially designed and [large fishing nets](#). They are generally used [in running water](#). When they are spread in sea; they collect large numbers of fishes. Seines are rectangular in shape mounted on wire. They are spread vertically in the water. Seines are of two types, boat and shore seines.

#### (a) Boat Seine:

These nets are conical in shape provided with wings. The mesh of the nets is smaller in center and increase in size towards outer ends of flanks. This seine is operated in sea by catamarans or boats. The seine traps the fishes. Towing is done with the help of coir.



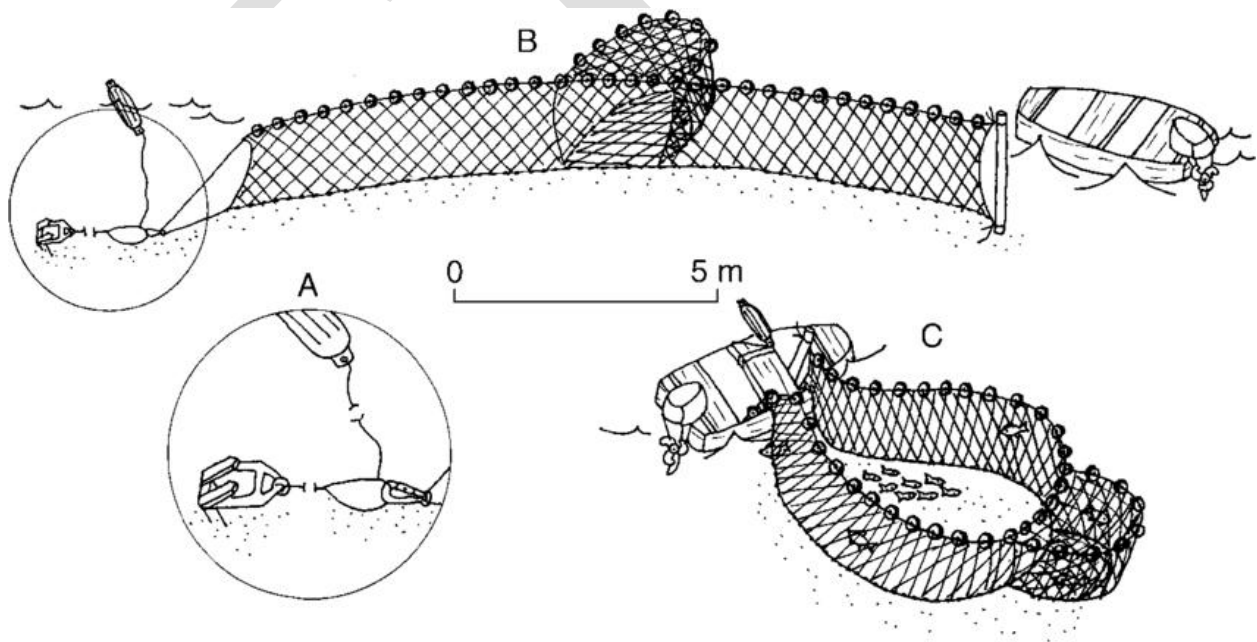
Boat seine net



## (b) Shore Seine:

It is operated from seashore. It is popularly called as Ber Jal in Orissa, Pedda or Alivi vala in Andhra coast, Periya vala or Mada valai in coromandel coast and Kara valai in the Gulf of Mannar. It is a conical bag-like with two wings.

One end of net is kept fixed to shore and other end is spread into sea with the help of a boat, in the form of semicircular fashion. When the net is filled up with fishes, the two ends are slowly dragged by group of fisherman.



## ii) Danish Seine:

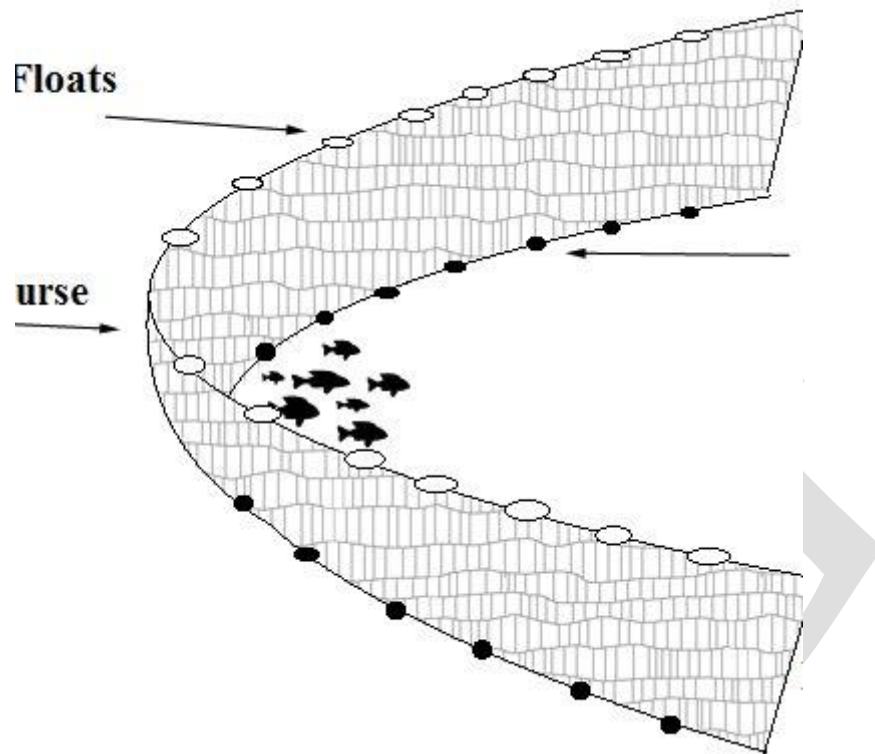
It is also called drag seine. It is used in deep waters and do not reach to surface. It has small wings.

## (iii) Beach Seine:

It is also called haul seine. It has two wings made by strong twines. Both wings are joined to a central bag. The ends of wings are tapering and connected to the wraps either directly or by means of spreader (brail) of strong pole. The mesh size is smaller in the bag than in the wing. Beach seine has side, i.e., float line and lead line. The float line contains appropriate floats whereas lead lines carry sinkers.

The net is used in such a way that its one wing remains on the beach. The other wing is spread on right angle in such a way that, when it is dragged slowly it encircles that part

of water section. Both float and lead line do not allow fish

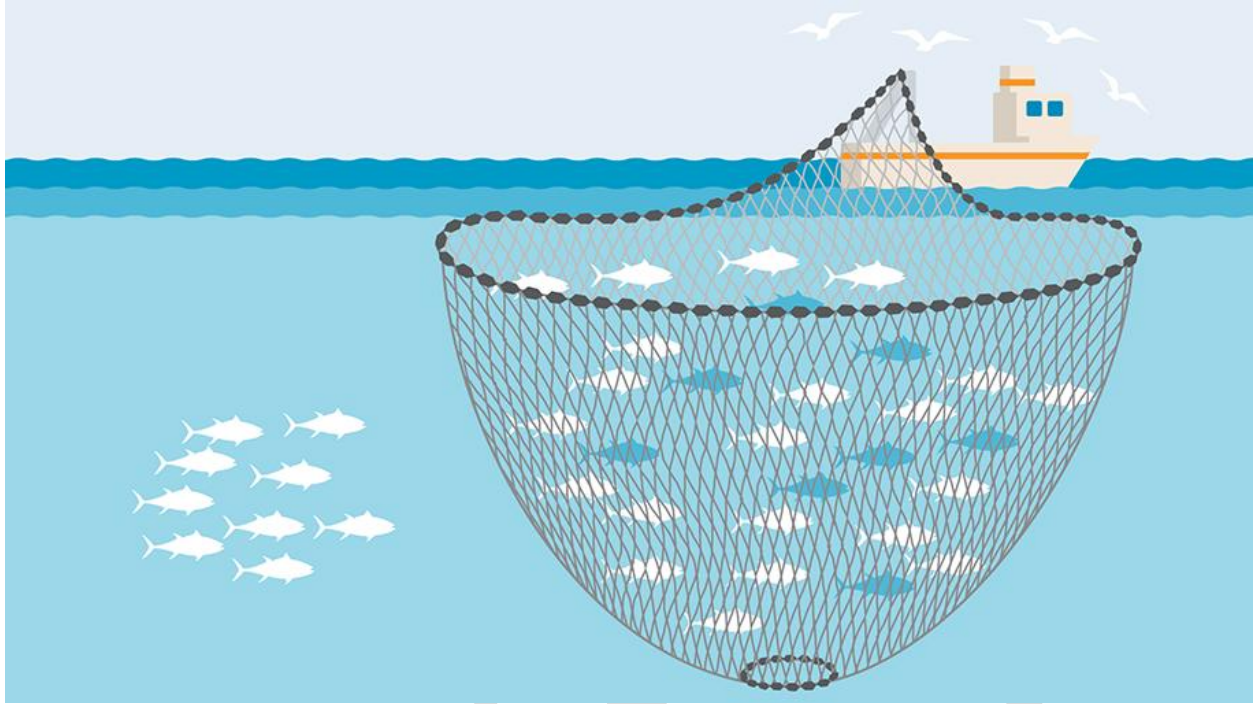


to escape.

#### (iv) Purse Seine:

It is used to catch pelagic and migratory fishes. It is purse-like. It has two main lines—float line, which remains on the surface and a lead line, which sinks into the water, but does not touch the bottom. The fishes are trapped and do not escape because net is pursed(pouch) during the operation.

At the time of use, one end of the net is tucked with a boat and another end is laid down with the help of a cruise making a circle and bringing this end back to the boat. The net then takes the shape of purse.



#### (v) Trap Nets:

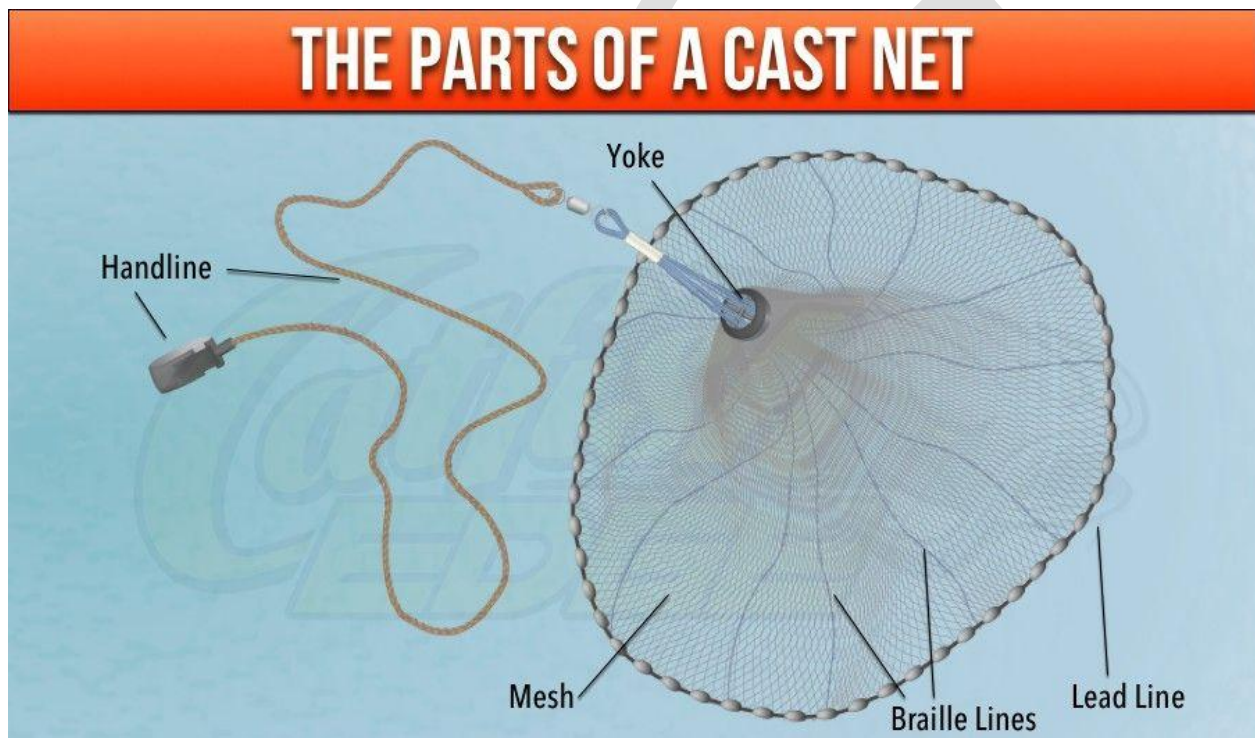
They are generally used for fishing in **shallow waters**. Trap nets are strong and made in various shapes and sizes. These nets may be **stationary or fixed**. Its lower part is cylindrical while upper part is conical. Interior region of the net contains one or two cone-shaped necks to prevent escape of fish. Large trap nets are called a pound net, which has a chamber with a wide gate.

#### (vi) Drop Net:

It is square in shape and mounted with to supple loops at the corners that tied in a cross at the top and is attached to a pole. Drop net is operated with a boat. It is dropped and pulled to catch fishes.

### (vii) Cast Net:

It is a circular and cone shaped net. It is spread from the edges of water. Its circumference is attached to lead line while its centre is attached with a rope. The net assumes shape of **umbrella** when it is spread on the water. When the net sinks to the bottom it is pulled and fishes are collected.

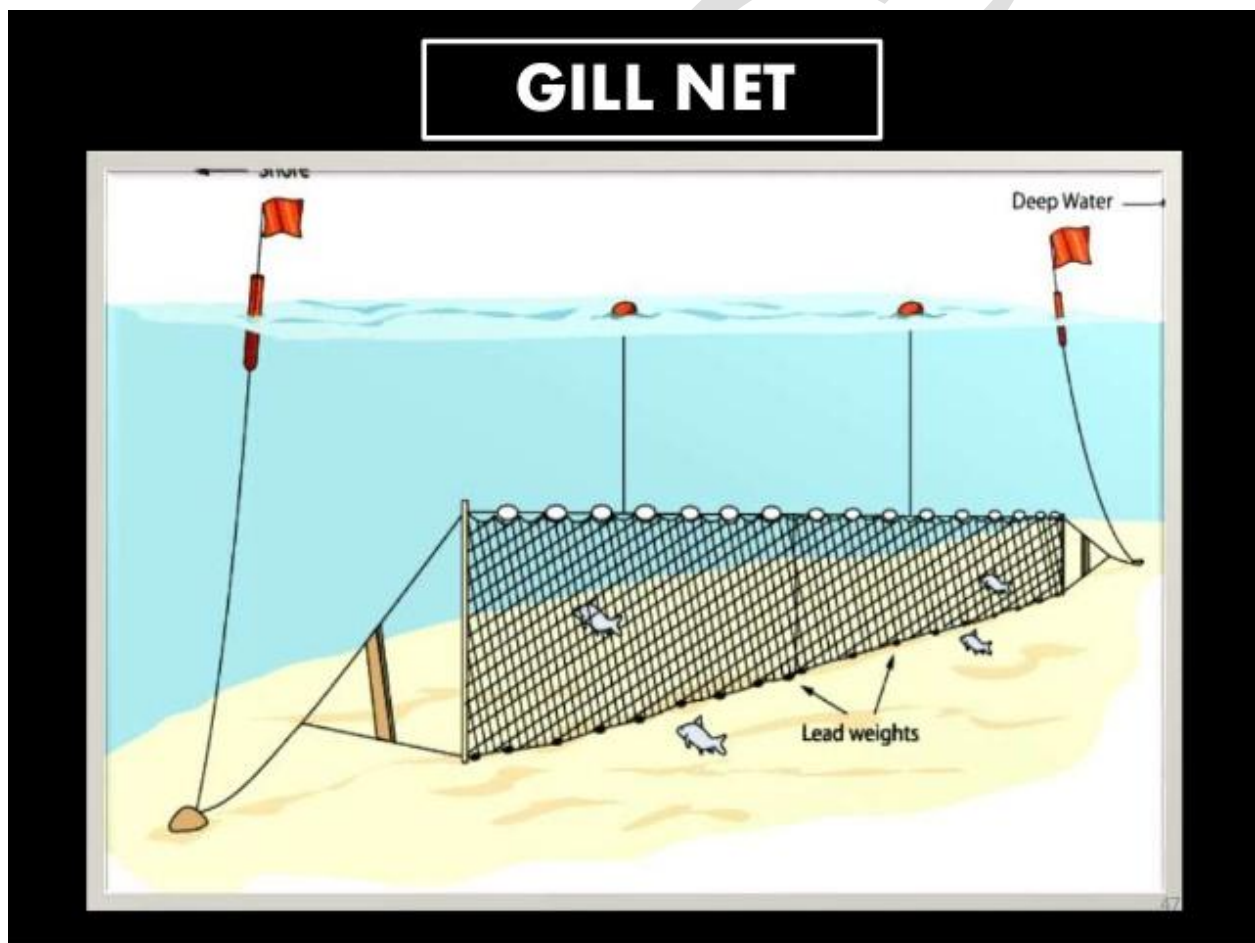


### (viii) Drift Nets and Gill Nets:

These types of nets are made by nylon materials. **Gill nets** are kept overnight in the water and then dragged. The fishes get entangled in the meshes. There are two types of nets—simple and trammel nets.

### (ix) Simple Gill Net:

These are loosely woven nets. When spread in water, fishes get entangled in mesh. If the fishes try to escape the twine of the net get mingled in the gills of fishes. The fish is said to be gilled (captured by gills) and hence the name given 'Gill Net'.



(x) **Trammel Gill Net:** It has a float line at the top and a dead line at the bottom; two walls are attached to these lines. It is generally operated to catch small fishes.

### (xi) Fixed or Stationary Net:

These nets are used to catch fish at inshore water during low tides. These nets are kept fixed with the help of floats, sinkers and stakes. It is rectangular or conical in shape. They are available in various sizes.

In West Bengal and Orissa conical fixed nets are used, which are called Ghurni Jal, or behundi, Kathia-kool Jal, Panch-Kathiaber Jal and Panch. However, rectangle nets used are called as Mai Jal in West Bengal, Barnada Jal in Orissa and Kakavalai, Jadi or Mtagh Jal in Tanjore.



### (xii) Bag nets:

It is conical in shape without wings. Some commonly used **bag nets** are iroga in Andhra, thuriwala in Tamil Nadu and koliwala in Kerela. These nets are used with the help of two catamarans or boats. In the coasts of Mumbai and Gujarat a special type of bag net called ‘dol’ is used. It is conical with wide mouth. The mouth is fixed on a bamboo.

### Bagnets and dragnets composition

**Bagnets and dragnets are both strengthened along their perimeter.**

**Description of strengthening:**

- uses thicker string than for the net
- mesh size is always larger than mesh size of the net
- usual mesh size is 3 cm (first row) and 4 cm (second row)
- string is threaded through mesh rows
- upper line has floats
- lower line has sewn weights

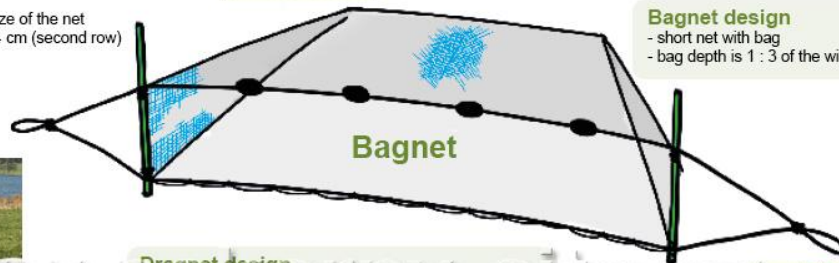


- net endings are attached to wooden poles
- net is fastened to the pole with string
- net ending is a heavy sling made
- from three ropes – heavy brace



**Floats**

- floats are attached to the upper line of the net
- they have various load bearing capacities related to their size
- float spacing depends on the net type and size



**Bagnet design**

- short net with bag
- bag depth is 1 : 3 of the width

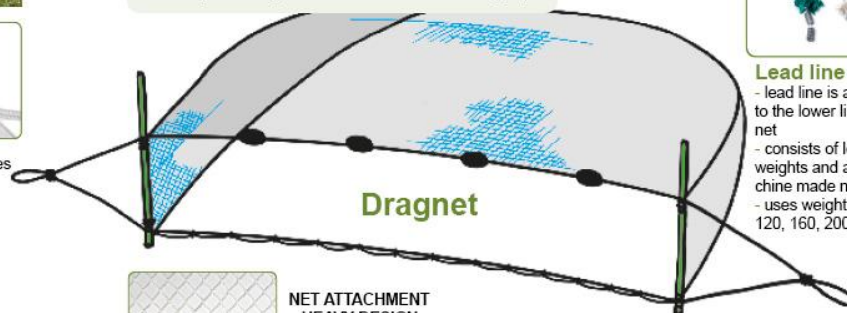
**Dragnet design**

- bag depth may be equal to net width, i.e. 1:1
- bag is square or rectangle-shaped with beveled sides
- beveling of the bag starts at 1/3 or 1/2 or 2/3 of bag depth



**Lead line**

- lead line is attached to the lower line of the net
- consists of lead weights and a machine-made net
- uses weights: 30, 80, 120, 160, 200 g



**NET ATTACHMENT**

- HEAVY DESIGN
- net is strengthened around its perimeter
- net has one or two rows of larger mesh made from thicker string

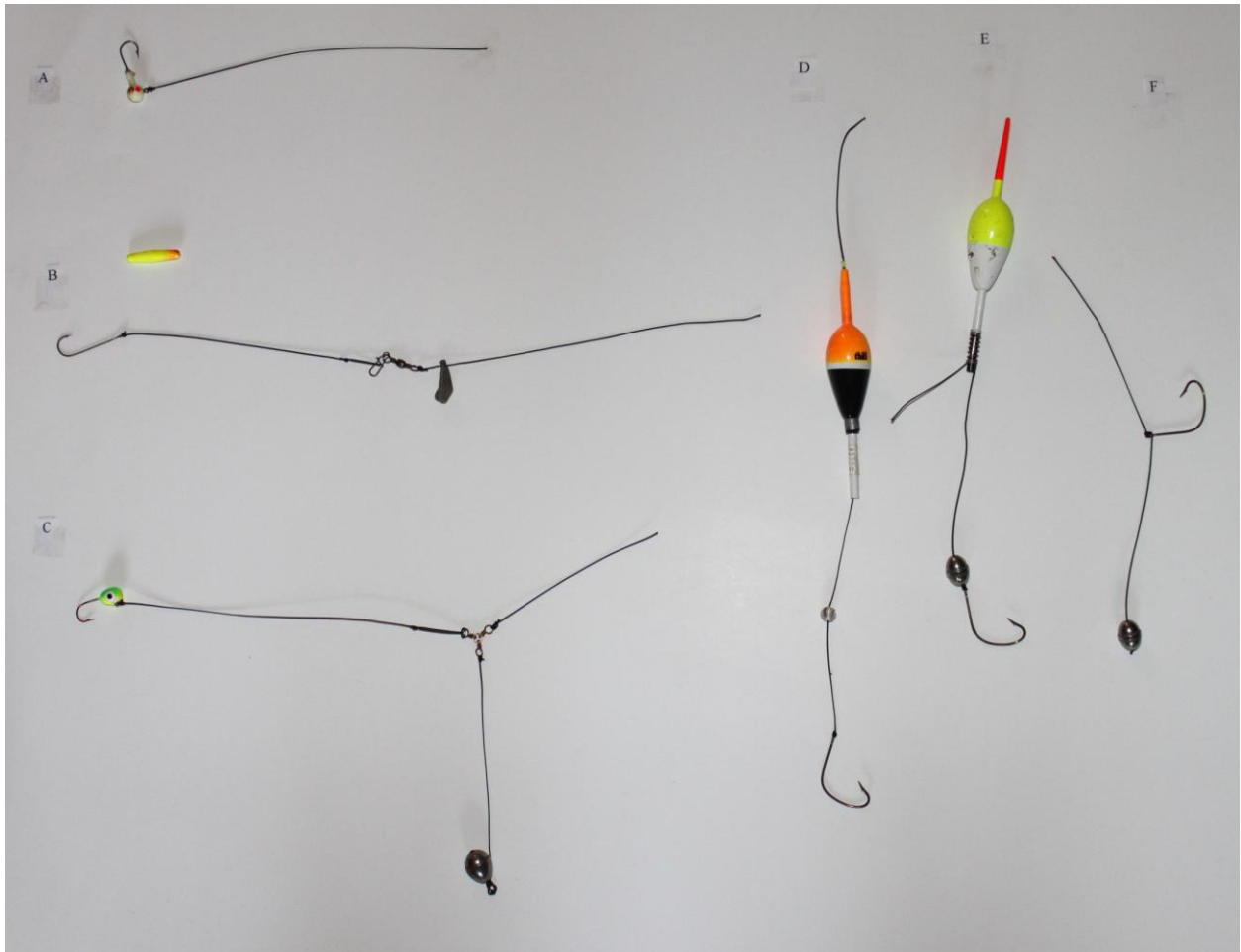
### (xiii) Scoop Net or Dip Net:

It is round in shape and is used to capture delicate fishes. It is like a finger bowl and can be moved swiftly in a scooping manner, collecting the fish.



### (xiv) Hooks and Lines:

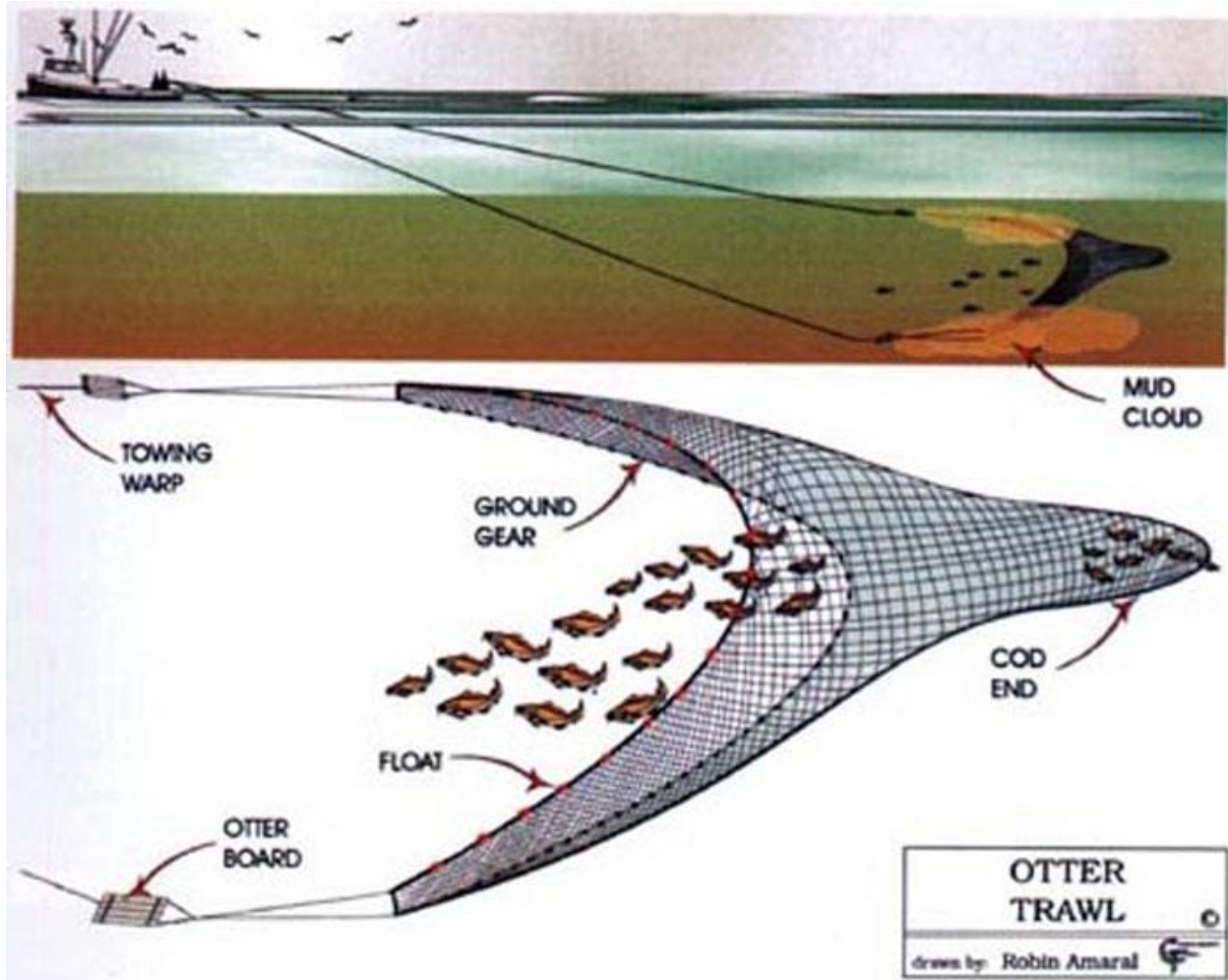
It consists of two types of hand lines and long lines. Various types of hooks are used, such as chain hooks, baited hooks, revolving and non-revolving hooks for capture of larger fishes.



### (xv) Trawls:

These are large dragging type nets. There may be two types of trawls with beam called beam trawls and otter

trawls.



## B. Inland Fishing Crafts and Gears:

### (a).Inland Fishing Crafts(Boats):

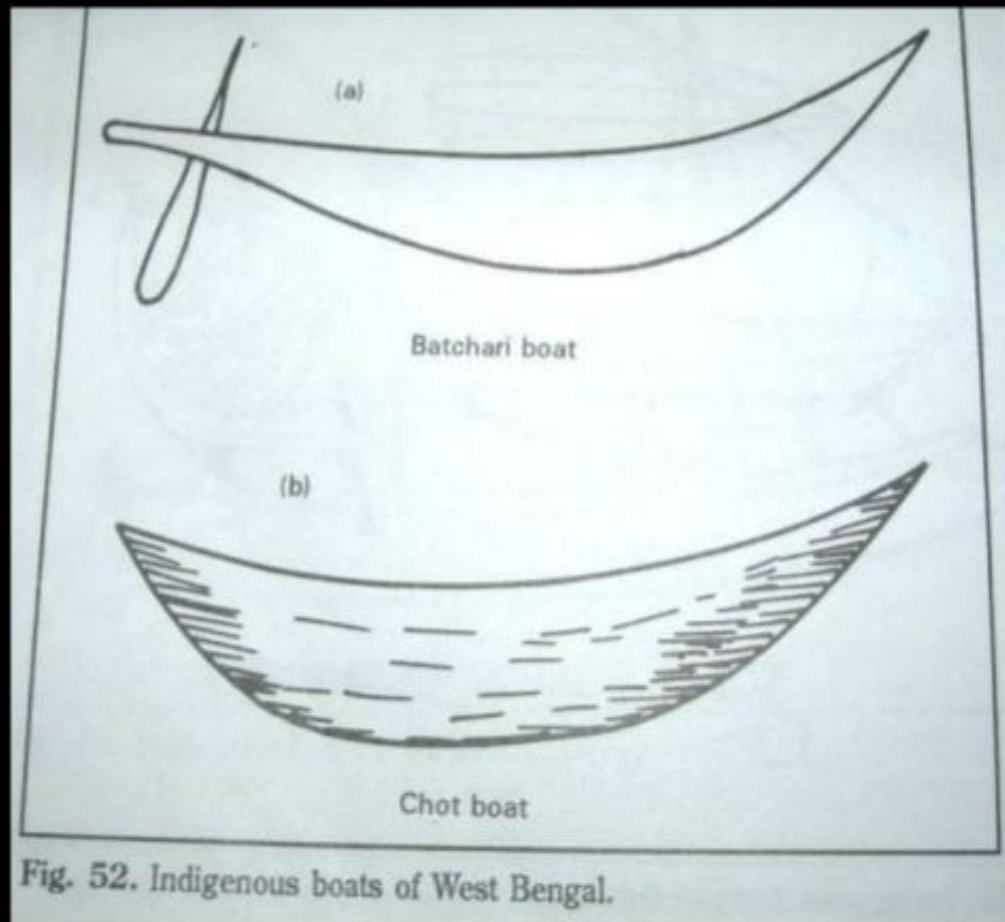
Rafts and Dongas are age-old inland fishing crafts used in steady waters.

## 1.Rafts:

Rafts are traditional crafts made by different types of materials. In Bihar earthen pots are tied together to provide support to a high bamboo platform. In West Bengal and Tamil Nadu stems of banana trees are held together to construct a floating platform.

In olden days buffalo skins are tied together to make a crude raft. In West Bengal a simple types of dugout canoe called Dongas are used. It is constructed by hollowing the stem of palm tree. It is commonly used for fishing in shallow waters. Vellum is stronger dugout canoe used in brackish waters of Kerala. In Tanjore and Tiruchirapalli chatty rafts made by earthenware are commonly used.





## 2.Boats:

Following types of boats are used for fishing in rivers:

### i. Plank-Built Boat:

These boats are sturdy and are used for fishing in rivers with strong tides and currents. In different regions different types of plank boats are operated. One of

common types is 'Dinghis' used in west Bengal. Dinghi is narrow and it has a tapering bow and stern. It has no Keel.

Dinghi is generally used to operate purse nets and dip nets. Another type is Chandi nauka, which is used to operate drift nets. It is 18 m long and 3 m wide.

In Kolkata and the other parts of West Bengal a medium sized boat called Mechho bachari is used to transport live fishes. However, in Chilka lake (brackish water lagoon) another type of plank boat called Nava is used.

#### **ii. Kulnawa:**

It is a specialized boat used in the river Ganges for fishing of minnows. Kulnawa means open wale boat. This boat is used in calm water during night from February to April. It is brought from Tarai parts of Nepal.

Kulnawa is made up of 3 parts, viz., a frilled pole, screen platform and boat with one of the walls open. It is made by Sal wood or Kathal wood. It is 7 m long and is dinghy type of boat without any keel. The boat is painted by coaltar to keep it dark in colour.

The screen platform is made by 5 m x 0.5 m bamboo splinters, which are woven interlacing plastic cords. Screen is painted with enamel paint. The free margin of

screen is always immersed in water. The frilled pole is 4-6 m long bamboo pole kept drooping as frill. 6% dry grass bunches are tied to these poles.

### **(b)Inland Fishing Gears(Nets):**

India has a wide variety of diversified water bodies, hence the nets used are also diversified.

#### **1.Nets used in hill streams:**

Cast nets are used in small pockets of hilly regions. Different types of traps and cast nets are fixed in narrow gaps of streams. It catches fish during breeding seasons.

#### **2.Nets used in Ponds and Lakes:**

These are most commonly used for commercial fishing. Seines are large nets operated from boats. In big lakes and the Ganges the most commonly used seine is Jagat Ber Mahajal. Simple drag nets are also employed in ponds for commercial fishing.

#### **3.Rangoon Nets and Uduvalai:**

They are used in those lakes where use of seines and dragnets are not easy. Rangoon net is made by fine cotton rectangular pieces of net. These pieces are tied in such a

way so as to form a big wall. It is then spread in water with the help of floats.

The fish gets entangled in the net. Rangoon net is generally used for fishing in less deep water. However, in deep water bodies the use of uduvalai is preferred. It has small sinkers with footrope.



### **(c)Gears used in rivers:**

The following gears/ nets of different dimensions are used for fishing in rivers.

#### **1.Seine and Drag Nets:**

They are most commonly used nets for fishing in rivers. Seines can be operated from one or more boats.

#### **2.Kurjar Nets:**

It is used in shallow water for fishing of carps and herring (Hilsa ilisha). This net is very easy to operate. Kurjar net is umbrella like and kept in inverted position and dipped in water for some times. Then it is pulled out with

capture.



### **3.Kona Jal or Bhasa Gulli:**

It is a special type of large cotton seine net used for fishing of Hilsa.

#### **Kona Jal:**

It is a special type of seine net of about 90 m x 9 m in size. It has conical pockets of small mesh size. These pockets are fixed at a distance of 8-10 m all along the net. It is made by cotton, fish once caught, cannot escape because of a valve-like flap present in the pocket. It is also called Bhasa Gulli.

#### 4.Moi or Moia Jal:

It is a simple net commonly used in shallow waters for fishing.

#### 5.Jagat Ber or Maha Jal:

It is a simple net used all around in rivers.

#### 6.Chunti Jal:

It is a type of drag net used in rivers of Bihar. Two fishermen operate it.

#### 7.Kharra Jal:

Hela jal, bhesal jal and firki jal are also commonly used for fishing of carps and Catla in the river Narmada.

#### 8.Khorsula Jal or Koila Jal:

It is a special type of dip net. Bhil tribal fishermen use this net in Narmada river for fishing of migratory Hilsa.

#### 9.Jhanda Net:

It is like an open bag operated in shallow waters. It is rectangular in shape with small mesh. This net is stretched on a bamboo frame.

#### 10.Suti Jal:

It is a long-tube like stationary bag net. It has a long wing.

### 11. Bada Jal:

It is a modified type of Suti jal, which has a wide opening, being kept open with the help of a rod.

### 13. Purse Net:

Special types of purse nets used for fishing in rivers are kharki jal and shanglo jal or sharki jal. In shanglo jal the mouth of purse can be opened or closed with a vertical cord. However, in kharki jal a vertical bamboo rod is fixed to the lower part of mouth of the purse to open or close it. These nets are operated from a dug-out canoe.

### 14. Fishing Basket:



### 15. Spears for fishing:

A polespear (hand spear or gidgee) is an underwater tool used in spearfishing, consisting of a pole, a spear tip, and a rubber loop.



### Selection of Gear:

Selection of appropriate gear for catching fish is of utmost importance in order to increase catch.

Correct gear may be chosen taking into consideration of the following points:

1. For catching the big and strong fish, the gear should also be strong and sturdy with proper mesh size.
2. To catch fish at various level of the water body, different nets should be used, viz. surface gill nets, column gill nets and bottom gill nets.

3. Fishes which swim in shoals, may be caught by using encircling nets like drag nets, purse nets, etc. Similarly using hooks and lines can catch the individual fish.

### **Maintenance of Gears:**

Proper care and handling of fishing gears after their use is as important as their use. Proper maintenance increases the durability of the gears.

### **Following care is necessary:**

1. The gear should be washed thoroughly with the clean water and weeds and mud, etc. should be removed carefully.
2. Then dip the net in dilute  $\text{KMnO}_4$  or  $\text{CuSO}_4$  or common salt solution to get rid of harmful bacteria.
3. Wash again with clean water and then spread in shade for drying.
4. To increase durability and strength of the fibre of gear, it may be kept immersed for 10-15 min in hot tar diluted with kerosene.