

# Fishing Crafts and Gears used in the Dowleswaram reservoir of Godavari river, Andhra Pradesh, India

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## ABSTRACT

*Fishing implements used at Dowleswaram reservoir has been investigated during 2015 April to 2017 March. Credentials of crafts and gears in freshwater sector of India is scanty. This paper is an attempt to record the fisheries related aboriginal technological knowledge in terms of fishing crafts and gears used at Dowleswaram reservoir of Godavari river. As many as 6 different types of crafts and 6 different types of gear were encountered during the study period. The crafts were coracle, plank boat, rubber tube platform, thermocol raft, engine boat and fibre glass boat. The gears were gill net, cast net, seine, drag net, scoop net and hook and line*

**Keywords:** Fishing implements, Dowleswaram reservoir, Crafts, Gears

## Introduction

Fishing gear is any form of equipment, implement, tool or mechanical device used to catch, collect or harvest fish (Banglapedia, 2006). Various types of materials are used to make these fishing gears which include net, twine, plastic structural fasteners, clips and swivels, ropes, steel wire ropes, combination wire ropes, purse rings, polyester, polyethylene, nylon, cotton, polypropylene, mixed fibers, floats and sinkers, bamboo, wood etc. (Hameed and Boophendranath, 2000). The topography of the water body and behaviour of fishes play a dominant role on the types of fishing gear used in fishing process (George, 1982). Types of Crafts and gears and their operation in reservoirs from India 5-8 and Andhra Pradesh 9-10.

## Material and Methods

A detailed survey on the craft and gears operated in the Dowleswaram reservoir has been under taken during the years 2015-17. The data pertaining to the technical specifications of the crafts, design details of the gear and the mode of operation were recorded by physical examination of the units at landing centres. Data about gear size, operation mode, building materials, fish species caught, etc. were collected by interviews and personal communication from the reservoir area. Interviews were conducted through face to face interview method by using semi-structured open ended questions. Cross-check interviews were conducted with key informants such as Fisheries Development Officer (FDO), District Fisheries Officers and relevant GO and NGO officers and staffs. The data collected were compiled and discussed to have a clear idea about the gears operated in the Dowleswaram reservoir of river Godavari. The gear specifications such as type of material, mesh size, twine size, constructional details, hanging ratio, floats and sinkers were collected as per the standards (Nedelec C, FAO Catalog1975). Details were collected from the landing centres. Data on catch details has been collected daily by supplying data sheets to the fishermen.

## Results and Discussion

The survey revealed that a variety of fishing crafts and gears were operated throughout the study period in the Dowleswaram reservoir of Godavari river. The different fishing crafts and gears of Dowleswaram reservoir is listed in Table (I and II ) & Plate (I and II).

## Fishing Crafts

The crafts that are used for fishing at the sampling sites are coracle, plank boat, rubber tube platform, thermocol raft, engine boat and fibre glass boat.

**Coracle:** Coracle is a craft used in the reservoir. It is a wide mouthed circular or oval flat bottomed basket of 2 to 2.5 m diameter made of split bamboo frame. The bottom is flat and covered with sheets of plastic, in order to make them waterproof. Coracles are an effective fishing vessel, steered and propelled using a single paddle. Gill nets and traps are operated from this vessel and usually one or two persons will be operating this craft.

**Plank boat:** The most important fishing craft equipment is Plank boat. A Plank boat is a wooden, non-mechanized, manually operated boat. The wooden boat is locally manufactured. The length of boat is about 7-11meters and width is about 1-2 meters. The boats were painted inside by synthetic paints while outside they are coated with dammar for protection against water. The average age of plank boat is nearly 10 years. Fishing gears such as cast net and scoop net may operated through the boat.

**Rubber tube platform:**

Fishermen rely on other kinds of improvised materials. They show considerable ingenuity in fabricating makeshift out of discarded old motor vehicle rubber tubes. A wooden platform 1 to 1.5 sq.m. area is placed over the rubber tube and tied tightly with rope. It is mostly used for setting and hauling of gill nets.

**Thermocol raft:**

Slices of thermocols are tied with rope to make a bundle of length 0.5 – 0.7m with a diameter of 0.3-0.4 m. Two such bundles are tied with rope on which fishers used to seat and go for fishing. Similarly, the thermocol raft is used during drag net operation.

**Engine boat:**

The sizes of the mechanised boats vary from 9 m to 11 m, the most popular size being 10 m. The horsepower of the engines generally varies between 50 HP and 80 HP. The hulls are made mostly of wood and often sheathed with aluminium to protect the wooden hulls from borer attack. Chemical wood preservatives with toxic ingredients are also used to protect the wood from decay.

**Fibre glass boat**

It was the common fishing crafts used in Dowleswaram reservoir of the Godavari river. These boats were made by tin material, the sheet is carved in boat shape and edges are mounted by locally available wooden planks. Below the sheet, a wooden keel is fixed and internally wooden ribs are arranged. The size of boat was 11-14 ft length and 3-6 ft wide and 2-3.5ft depth. It was operated with help of oar. Different type of gill nets, cast nets, traps and lines are operated from this type of boat.

**Table.I.** Different types of crafts used in the Dowleswaram reservoir of Godavari river.

S. no	Craft	Made with	Length & width(feet)	Making cost Rs	Durability
1	Coracle	Split bamboo frame	2 to 2.5meter	4500-6000	4-5 Years
2	Rubber tube platform	Rubber and Wood	1 to 1.5 sq.m.	3500-4000	4-6 years
3	Plank boat	Wood of <i>Tectona grandis</i> or <i>Terminalia arjuna</i>	1-2feet width , 7-11feet length	30000-40000	Nearly 10 years
4	Thermocol raft:	Thermocol sheets	0.5 – 0.7m with a diameter of 0.3-0.4 m	850-1000	2-3 Years
5	Engine boat	Wood covered with plastic and attached with engine	3-4 feet width , 12-14feet length	50000-70000	12-15 Years
6	Fibre glass boat	Tin material, fiber glass sheet	11-14 ft length and 3-6 ft wide and 2-3.5ft depth.	80000-10000	7-8 Years



Coracle



Rubber tube platform



Plank boat



Thermocol raft



Engine boat



Fibre glass boat

Plate-I

### Fishing gears

Gears used for fishing at Dowleswaram Reservoir are gill net, cast net, seine, drag net, scoop net and hook and line

#### Gill net:

Gill net is most common fishing gear used by the fishermen. Maximum fish harvesting in the reservoir is performed by gillnet. For fish harvesting, Gillnet of different mesh size were used by the fishermen's community. The mesh size of net shows variations and depend upon the species and size of different target groups. Gillnet are woven by the local fishermen's themselves, as well as also readymade gillnets available in the local market are purchase by the fishermen.

#### Cast net:

Cast net is another important fishing gear used in the Dowleswaram reservoir. The cast net is used throughout the reservoir. The advantage of cast net is that it can be used single handed. The fishermen can operate it mainly from the boat or from the bank of reservoir. While using the cast net after a number of attempts the fishermen became successful to catch the fishes from the reservoir. Generally small fishes such as minor carps and other small species were caught through cast net.

#### Seine

Named such because along the bottom are a number of rings. A line passes through all the rings, and when pulled, draws the rings close to one another, preventing the fish from swimming down to escape the net. This operation is similar to a traditional style purse. Around ten persons operate the larger seine and three persons operate a small seine net. In the earlier years, carps, catfishes, and miscellaneous species formed the dominant catch, while in recent years, miscellaneous fishes and prawns account for the major portion of the catch. It was a popular gear, large specimens of catla weighing 8 to 10 kg were seen.

**Hook and line :** This might be the one of the oldest and famous fishing method all over the world. A metal hook is tied with one end of nylon tread and the other end of nylon tread is tied with a bamboo stick.

Earthworm, grasshopper, fingerlings are placed into the hook as bait. The nylon rope with hook is placed into reservoir water for 2-6 hours. Generally, the fishermen placed the nylon rope along with metal hook in water for whole night and collect the fish in another morning. This is not a commercial fishing method and mostly the fish caught is consumed by the fishermen itself. Mostly, the Murrels, catfishes and other shallow water species are caught by this gear.

**Drag Net:**

It is comparatively less in use as it requires significant man power, plain terrain and relatively low water level. Below Dowleswaram reservoir, the river has a depth of 1 - 2 m, where frequent dragnet operations are observed. The top of the net is attached with a thick nylon rope. The net is taken to the deep portion of the river and dragged towards the shore. Fishes blocked on the way by the net tend to go downwards and are eventually trapped. 6 - 8 persons are needed to operate the net, which required 1.5 - 2 hours for a single operation.

**Scoop net :**

The Scoop net is very useful fishing equipment in shallow areas of reservoir. This is a circular net having a long handle. This is mainly used from the boat or from bank of reservoir especially near outgoing canal of reservoir to catch mainly carps and catfishes.

**Table. II.** Different types of gears used in Dowleswaram reservoir of Godavari river.

S.no	Gear	Mesh size	Different types based on size	Making cost In Rs	Durability in years
1	Gill net	1 to 12 finger	12	4000 - 14000	4 - 5
2	Cast net	1-10 cm	10	2500 - 6000	3 - 4
3	Seine	1 to 10 finger	10	6000 - 17000	5-6 years
4	Hook and line	Hook size 1-4cm	-	50-100	1-2
5	Drag Net	1cm	1	3000 - 7000	3-4 years
6	Scoop net	0.5cm	1	900-2500	3 - 4



Gill net



Cast net



Seine



Hook and line



Drag net



Scoop net

## Plate-II

**Conclusion**

The traditional fishing gears are eco friendly and low energy gears made from locally available materials. Polyamide multifilament and monofilaments gill nets and bamboo traps are predominantly used in reservoir. Proper selection of mesh size, hanging ratio of the net will help in judicial exploitation and management of fishery resources. Improved and durable material for traps and gears and new designs will enhance the durability and selectivity. Although Dowleswaram reservoir is rich with fishery resources but the use of fishing gears that catch fish irrespective of their size or species will destroy the habitat of the wild species thus causing multiple damages to all the fish living in the reservoir. For that, the use of selective fishing gears which have the capability to catch fish of distinguishing size and species will help to protect the target species and hence reduces the loss of fish biodiversity. Though the use of several types of fishing gear is limited and regulated under the national fishery laws, but they are still being used. As the operation of all types of gear cannot be banned immediately to allow the stocked fingerlings to grow out, it is important to identify the gear that can be operated without exploiting undersized fingerlings stocked under the government plan and the gear that should be regulated. The main fundamental objective of responsible fishing is to maximize economic returns to the fishermen without affecting the long-term sustainability of the fishery resources and with minimum impact on the ecosystem. Government released 35 lakh seed into reservoir in 2015 and 2017 separately, as far as concerned of Dowleswaram fishermen view, they expressed orally if the seed quantity increased upto 1 crore it will improve their economic condition, at the same time, an awareness or training program should be conducted under the supervision of Department of Fisheries, Andhra Pradesh to the fishermen to create awareness of the long-term effects of different fishing gears and to impart knowledge of fishing laws.

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