

# Major carp's culture in Shivana Takali Dam (Natural pond) Kannad. Dist. Aurangabad.

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## ABSTRACT

Three major species of carp indigenous to the rivers of the Indian subcontinent – Catla catla (common name: Catla), Labeo rohita (Rohu), and Cirrhinus mrigala (Mrigal) – are widely cultivated in India and parts of Southeast Asia. Common carp contributed around 4.67 million tons on a global scale during 2015–2016, roughly accounting for 7.4% of the total global inland fisheries production. Fisheries in India are a very important economic activity and a flourishing sector with varied resources and potentials. Only after the Indian Independence, has fisheries together with agriculture been recognized as an important sector. Aquaculture industry involves culture of many fish species of either fresh or brackish water origin and among the important freshwater fish species. Aquaculture, probably the fastest growing food-producing sector, now accounts for nearly 50 percent of the world's food fish. (*World Food and Agriculture – Statistical Yearbook 2021*). Fish is an integral part of human diet but while the demand is increasing, aquaculture represents a potential sustainable solution to meeting up with the ever-increasing demands for fish and fish products. (Delgado CL, et al.2020) The freshwater aquaculture comprises of the culture of carp fishes, culture of catfishes (air breathing and non-air breathing), and culture of freshwater prawns. Carp are omnivorous, with a high tendency towards the consumption of animal food, such as water insects, larvae of insects, worms, molluscs, and zooplankton. Zooplankton consumption is dominant in fish ponds where the stocking density is high. Additionally, the carp consumes the stalks, leaves and seeds of aquatic and terrestrial plants, decayed aquatic plants, etc. The pond farming of carp is based on the ability of the species to accept and utilize cereals supplied by the farmers. common carp prefer large bodies of slow or standing water and soft, vegetative sediments. As schooling fish, they prefer to be in groups of five or more.

Here we selected a medium project constructed in kannad taluka at Shivna Takali ; on the River Shivana. Local people and fisher man society yearly, auction basis they culture the some major carps here.

**Keywords:** Aquaculture, Major carps, Shivna Takali Dam.

## . INTRODUCTION

Aquaculture is a rapidly growing fisheries sector in India with an annual growth rate of over 7%. Freshwater aquaculture contributes over 95% of the total annual aquaculture production of 5.77 million t. Technologies of induced carp breeding and polyculture of the three Indian major carps (Catla catla, Labeo rohita and Cirrhinus mrigala). (P. JAYASANKAR – 2018). Aquaculture has been called as the rearing of aquatic organisms under controlled or semi controlled condition. Fish is a rich source of animal protein and its culture is an efficient protein food production system from aquatic environment. Many culture systems are

based on traditional ideas that have been used for years, but some new concepts that make them unique. There are three major culture systems- open, semi-closed and closed culture systems. Natural resources can be used as culture systems and organisms to be cultured are stocked in the water body. Capital expenses are low for the open culture systems. Cages, long lines, floats, rafts, trays and clam beds are examples of open system techniques. Here in Takali Dam open culture system is adopted. On the other hand, global aquaculture production has been increasing over the past six decades, and the Food and Agricultural Organization (FAO, 2016a, 2017) has designated aquaculture as the fastest growing food production sector. Aquaculture has contributed a mere 7% of total fish consumed in 1974, but increased steadily to 26% in 1994, and a decade later was 31%. Currently, aquaculture contributes a total of 44.14%, which translates to 73.8 million tons of the total 167.2 million tons of fish produced globally.

## MATERIAL AND METHOD

The **height** of the dam above lowest foundation is 17.7 m (58 ft.) while the **length** is 4524 m (14843 ft.). The **volume** content is 622 km<sup>3</sup> (149 cu mi) and gross storage **capacity** is 38190 km<sup>3</sup> (9160 cu mi). **Coordinates:** 20.1166709°N 75.0836616 °E. **Opening date** 2005. **Owner(s):** Government of Maharashtra, India. Type of dam: Earthfills. **Official name**-Shivna Takali. Shivana Takli Dam D03058 ([https://en.wikipedia.org/wiki/Shivana\\_Takli\\_Dam](https://en.wikipedia.org/wiki/Shivana_Takli_Dam)), **Shelar and Pathrikar.(2016).**

1. SOIL QUALITY- Pure clay soil for water retention and suitability for drinking to people.
2. CONSTRUCTION-by Govt. Of Maharashtra.
3. SOURCE OF WATER-The major source of water is from Shivana River, it originate from PITALKHORA MOUNTAIN RANGES, One of the river BRAHMANI Also join to it at near kannad. Water supply is free from pollution and with a pH of 7.2-8.3. There are three Indian major carps, namely, Catla (*catla-catla*), Labeo rohita (*rohu*) and Cirrhinus mrigala (*mrigal*), and cyprinus carpio are easily cultured by local fisherman society.

## Fresh Water Culture Methods

Aquaculture has a tradition of about 4 000 years. It began in China, possibly due to the desires of an emperor to have a constant supply of fish. It is speculated that the techniques for keeping fish in ponds originated in China with fishermen who kept their surplus catch alive temporarily in baskets submerged in rivers or small bodies of water created by damming one side of a river bed. Another possibility is that aquaculture developed from ancient practices for trapping fish, with the operations steadily improving from trapping-holding to trapping-holding-growing, and finally into complete husbandry practices (Ling, 1977).

In Asia, where the bulk of world production from aquaculture emanates, fish ponds are mostly freshwater or brackishwater, and rarely marine. In China and most of the Indian sub-continent, pond culture is traditionally dominated by freshwater species, mainly the carps, usually in polyculture and/or integrated with animal husbandry. In Southeast Asia, fish ponds are predominantly brackishwater, with milkfish and penned shrimps grown either in polyculture or in monoculture (Tripathi, S. D. et al-2000).

Cultivable organisms are cultured in different types of culture methods. Many culture methods are based on traditional ideas that have been used for years, but some encompass new and sometimes radical concepts that make them unique. There are three major culture methods

1. Open, 2. Semi-closed and 3. Closed culture methods. Each has its special characteristics, advantages and disadvantages. The choice of methods is largely dependent on the function of the organisms to be grown and the resources and ideas of the farmer.

## Pond Culture: Open Type

The majority of aquaculture throughout the world is conducted in ponds. Earthen ponds or reinforced concrete ponds are used for culturing the fish, shrimp, prawn, etc. in both freshwater and brackish waters. Today, most of the states being capable of producing carp seed through hypo-physation and the culture-based fisheries of small reservoirs in India largely center round the three species of Indian major carps viz., Catla catla, Labeo rohita and Cirrhina mrigala. The Indian major carps have an impressive growth rate and their feeding habits are suitable for utilization of various food niches. In addition, the stocking of many exotic species (common carp, silver carp, grass carp) have also contributed substantially to commercial fisheries. The other groups having countrywide distribution are the catfishes, feather backs, air-breathing fishes and the minnows. Lakes and Reservoirs Naturally formed lakes and man-made reservoirs constitute great potential fishery resources of India. Lakes and reservoirs are estimated to have an area of about 2.05 million ha. In our country. Important lakes in India are Chilka, Pulicat, Ooty, Kodaikanal, Nainital, Logtak lakes, etc. Important large reservoirs in India are Nagarjuna sagar, Nizam sagar, Gandhi sager, Shivaji sagar, Tungabhadra, Krishanarajasagar, Hirakud, Beas, Govindsagar, Ramapratapsagar, Bhavanisagar, Matatila, Rihand, Kangasabati, etc.

### 1. Cyprinus carpio:-

The common name is leather carp. The body is devoid of scales except for a single row of somewhat degenerate scales along the base of the dorsal fin. Sometimes it extends from head to tail. Carps with reduced scale pattern are highly valued in the European market. The body is round and deep, mouth is anteriorly directed, and lips are thin. The fins are short. It is a bottom dweller fish. It is omnivorous and consumes all material available in the bottom of the tank. In India, it becomes adult in six months-time. But in cold water it gets maturity in one year.

In China and Japan they mature in two years and it is reported that this fish attains maturity only in one and half years in India. It grows 800 g in a year. In India, after first and second years it acquires weight 1 to 2 kg respectively. The number of ova/g body weight is 8.3-37.3, the number of ova/g ovary weight is 437-1793. This is the carp that can easily breed in stagnant water.

### Fecundity:

Eggs quantity is 39,500 to 16,60,000. It is reported that it can breed four to five times in a year. Breeding habit is similar to carps.

### 2. Catla Catla:

It belongs to order: Cypriniformes, (Division: (A) Cyprini) and family: Cyprinidae. It is called in Hindi speaking regions as Catla. In Oriya, it is known as Bhakur whereas in Tamil it is called as Thoppa meen, in Telugu it is named as Bacha.

In nature, the fish is found in lakes, ponds, rivers and reservoirs. It breeds only in running waters that is in rivers. It breeds in natural habitat during southwest monsoon and seeds are available from May to August and could be collected from the breeding grounds. Due to the success in induced breeding, this fish now can easily breeds in stagnant waters in fish farms.

It is a highly suitable fish for composite culture along with fishes that are column and bottom feeders. Catla too breeds in flooded fields and can also breed by stimulating riverine condition in special ponds called dry bunds. The fingerlings feed on zooplankton and the adults are also consume meroplanktons and vegetable matters.

The mouth of Catla is wide upwardly directed. As the mouth is upwardly directed, it is surface feeder. Head is large and the body is comparatively very deep. The lower jaws are protruding. The colour of the body is black, fins and tails are dusky grey while belly is silvery white. In some species, fins are also dark black in colour.

It attains maturity by the end of second year. In well-managed farms it attains maturity in 18 months. The fecundity of female fish ranges from 24000 to 42 thousand eggs. The fries can be collected by the natural sources or induced breeding.

As far as breeding habits are concerned it does not breed in stagnant water but by induced breeding methods it can breed well in stagnant water too. Fingerlings and adult can feed on vegetable debris, Daphnia and decomposed bottom material.

### **3. Labeo rohita:**

It is common in North India, Orissa and Bengal and is called Rohu but in Assam it is known as Rohiti. The body is elongated; dorsal profile is more convex, the colour of the body is bluish above and silvery at the flanks.

Eyes are reddish. In juvenile stage, it possesses dark band at the caudal peduncle. It has reddish tinge at the dorsal, pelvic, anal and caudal fins. The distinguishing feature is that the lips are fringed. The maxillary barbels are prominent.

As far as the distribution is concerned, it is available throughout nation in rivers and ponds. It is most delicious and, therefore, there is a great demand of this fish. It breeds in monsoon in rivers. Like other Cypriniformes, it does not breed in stagnant water.

During breeding season the fish before breeding moves along with current of water, then take a turn and moves against the current of water and breeds in shallow water. It can successfully breed by induced methods. At 10 mm stage it has prominent concentration of chromatophores at- the base of caudal fin, nape and at the base of all fins. The barbels are conspicuously black in colour.

It is widely distributed and inhabits in rivers and ponds of India. It grows fairly large in size but in comparison to *Catla catla* the growth is less. The fish becomes sexually mature in one year or so. The fecundity is 1.5-2.00 (lac/g body weight). The fry and fingerlings could be obtained from the breeding grounds. Induced breeding in fish farms can successfully breed it.

Adult as well as fingerlings feed on vegetable debris, *Daphnia* and decomposed water material. Other species of *Labeo* could also be cultured but from the economic point of view *Labeo rohita* and *Labeo calbasu* are profitable.

#### **4. *Cirrhinus Mrigala*:**

The common Indian species are *Cirrhinus mrigala*, *C. cirrhosa*, *C. latia*, *C. reba* and *C. fulungee*.

The body is streamlined; the abdomen is round with deeply forked caudal fin. The snout is depressed, mouth is broad, transverse and obtusely round and the upper lip is entire. Barbels are two in number. The body colour is coopery; the flank is white with tinge of golden colour.

The colour of eye is golden. It attains an average length of about 40 cm. It is found in rivers and lakes of northern India. It is also well acclimatized in South India for aquaculture. It breeds during monsoon months. It is most suited for induced breeding and now available throughout India.

*C. mrigala* breeds during monsoon. The fingerlings are available from natural grounds from July to November. The fish breeds naturally in rivers or induced riverine conditions due to the effect of pituitary hormone or other synthetic hormones. The number of ova/g body weight is 32-280, the number of ova/g ovary

weight is 880-1830 and with fecundity per kg body weight is 1.5-2.00 lakh. Body is elongated and round. The head of these fishes is similar to the head of the snake, hence also commonly classified as snake headed fish. Fins are without spines. Air breathing organs are present. The colour is greenish gray dorsally, the belly is yellowish orange with spots scattered all over the body. There are six blotches along the flank.

The fish is inhabitant of freshwater—commonly found in ponds and stream, Reservoir Rivers. It is tasty having fine flavour and highly preferred. The caudal fin possesses a spot of black colour, which is surrounded by an orange ring. It is carnivorous bottom feeder. Murrels breed in ponds, tanks and swamps. It breeds during April to October.

### Breeding of Common carp:

Carp may spawn throughout the year in tropical areas of India, with peaks in January-March and July-August. Breeding is carried out in hapas, induced breeding (**Khan, H. A. 1969.**) cement tanks or small ponds. Submerged aquatic plants are used as substrata for egg laying. When the fry are 4 to 5 days old, they are stocked into nursery ponds. Common carp are stocked with Chinese carps, and/or Indian major carps, tilapia, mullet, etc., in poly-cultural systems. This constitutes a natural food and supplementary feed-based production method, in which fish that have different feeding habits and occupy different tropic niches are stocked into the same ponds. The quantity of fish should be in accordance with the productivity of natural food organisms. The frequent application of manure or fertilizers and the proper species ratio, make the maintenance of productive populations of natural food organisms, and the maximal utilization of the productivity of pond ecosystem possible. Synergetic effects between fish species support the production in poly-cultural ponds. Common carp can also be stocked into natural waters, reservoirs, and temporarily inundated areas, in order to utilize the natural food production of these waters for enhanced capture fisheries. In this case the fish stocked should be 13-15 cm fingerlings produced in fish farms ('aquaculture-based fisheries') in order to avoid the losses that would occur with smaller fish. Common carp are usually stocked with other cyprinid species, in accordance with the productivity of the water and the intensity of exploitation. ([https://www.fao.org/fishery/en/culturedspecies/cyprinus\\_carpio-2022](https://www.fao.org/fishery/en/culturedspecies/cyprinus_carpio-2022))

### CONCLUSION

Aquaculture not only supplies dietary essentials for human consumption, but provides excellent opportunities for employment and income generation, especially in the more economically backward rural areas. (**P. JAYASANKAR – 2018**). Aquaculture refers to the breeding, rearing, and harvesting of plants and animals in all types of water environments including ponds, rivers, lakes, and the ocean. (**Brown, E. Evan (1983)**). The fishes have been perused by man from the times immortal. It has currently become very popular because the fish have been found to be excellent food and fisheries can be considerably contribute to the solution of our national problems such as self-sufficiency in food and unemployment.



Fisheries primarily started as capture fisheries in Natural waters, Rivers and lakes. Fish culture is a recent addition to fisheries, but it has acquired a great significance on account of the great prospectus it holds. A fishery helps to national economy as well as helping as a food recourses of all over the countries. Aquaculture sector in India has to come up with timely strategies to cope with the future challenges of increased fish demand.

A fishery is fast emerging as an important industry with immense job potentials. Fishing is the second highest industry in Korea. Fish trade centres of international level have come up in Hong-Kong and West Bengal in India.

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## View of Shivana Takali Dam.



1.SITE BORD



2.FRONT VIEW OF DAM



3.LABEO ROHITA



4.MRIGAL AND CATLA



5.CYPRINUS CARPIO



6.LABEO AND CATLA



7.CYPRINUS CARPIO

