

What is Fish Culture?

Fishing and fish culture are popular parts of the cultural tradition for many people in eastern India.

'Fishing' is where people catch fish from a *common property* resource. This may be with or without licenses.



In many areas, people are finding less fish to catch.

Fish culture is becoming popular for food, employment and income generation.

"Fish culture" is where people own and look after a stock of fish. This might involve regular stocking, fertilization and feeding, protection from predators and disease, and taking care of the environment.



Species commonly selected for culture

In India, it is common to select for culture fish species that live in the major rivers of the north of the country - the Brahmaputra, Ganga and Indus and their tributaries.

They are called carps. They have scales on the body but none on the head. The three most commonly grown are called:

| Oriya | English | Scientific |
|---------|---------|--------------------------|
| Bhakur | catla | <i>Catla catla</i> |
| Rui | rohu | <i>Labeo rohita</i> |
| Mirkali | mrigal | <i>Cirrhinus mrigala</i> |

Together they are called the Indian Major Carps on account of their large size and fast growth rate.

Catla has a big head and deep body, a wide upturned mouth, a thick lower lip with a fold (but no upper lip), large scales, grayish black on the back and off-white on the belly. It grows to a large size and has reached 30-40 kg in quite a few tanks and reservoirs in Uttar Pradesh and Rajasthan.



Rohu has a medium-sized head and small mouth. Its scales have a reddish tinge on their margins. It is greenish on the back and grayish below. Their maximum size is about 20 kg.



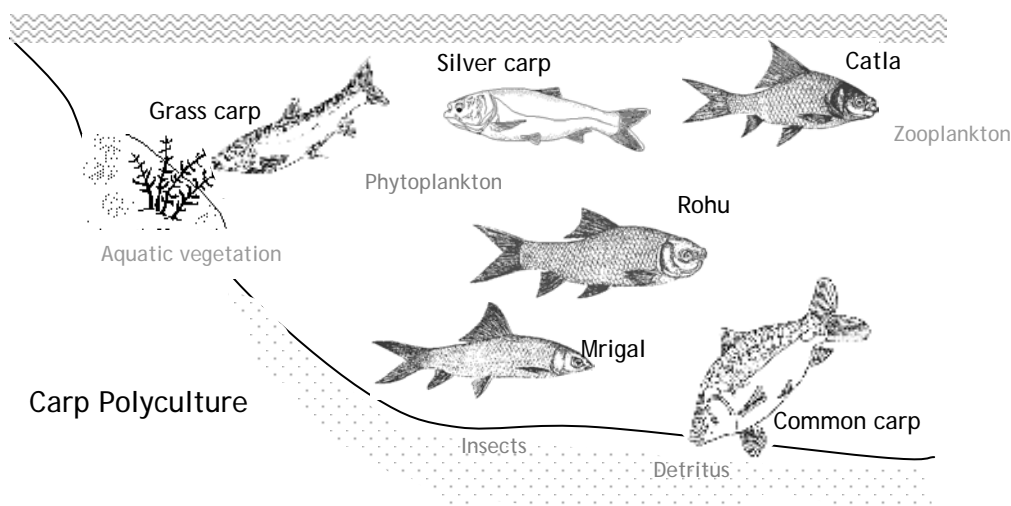
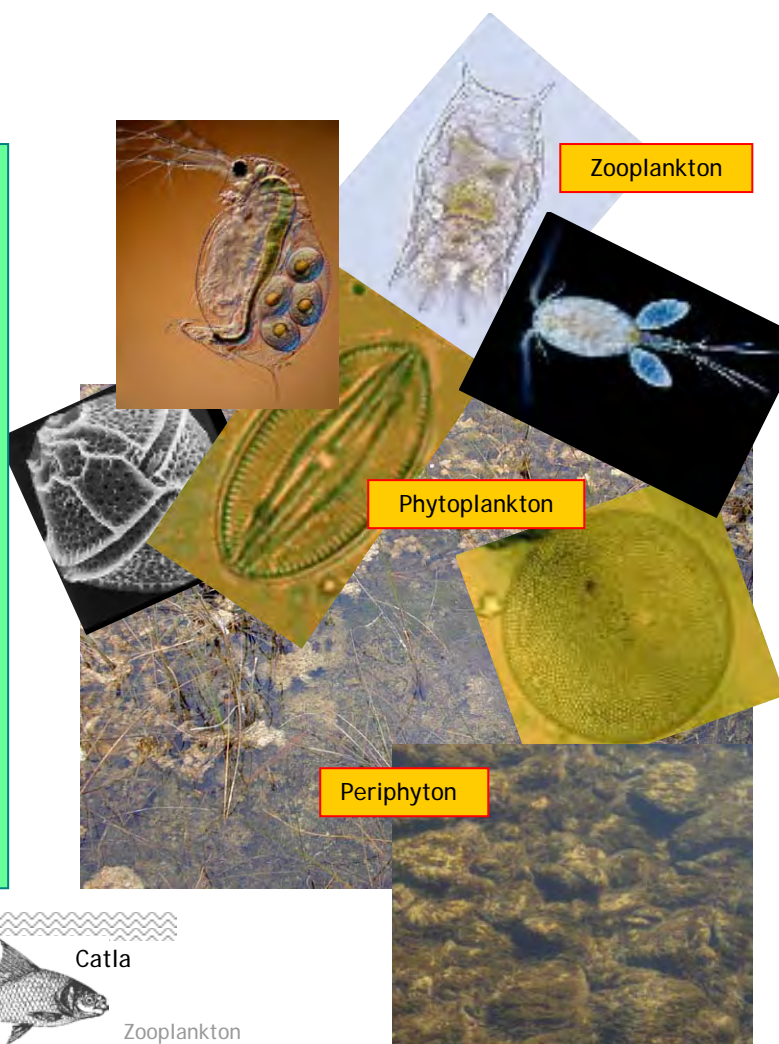
Mrigal has a slender body, a small head with golden eyes, a round mouth with thin lips and a tubercle in the middle of the lower jaw. The scales are golden on the back and sides, whitish on the belly and the fins are golden with a blackish tinge. Their maximum size is about 12 kg.

Food and feeding habits

Catla feeds mainly on tiny animals (zooplankton) but occasionally insect larvae, algae and bits of aquatic weeds are also taken. The shape of its mouth is such that it can feed in the surface layers and hence the fish normally swims in the upper layer of water. It is the fastest growing of the Indian Major Carps. Within one year it can weigh 700-800 g in a fertilized pond without adding extra feed, and about 1.0-1.5 kg with additional feeding.

Rohu is a mid-water feeder, eating plankton, vegetable matter and debris. It is well-adapted to graze tiny plants that grow on the surface of submerged objects. After one year in ponds, it weighs 400-500 g without feed, but may even grow up to 1 kg with added feed.

Mrigal is a typical bottom-feeder that picks up large quantities of decaying things along with small animals and plants found in the bottom layers. After one year it weighs 400-500 g in ponds rich in organic matter. When fed, it can reach 1 kg.



This polyculture is a mixture of Chinese Carps and India Major Carps with surface, mid-water and bottom feeders, eating small plants (phytoplankton) and animals (zooplankton), large plants, insects and detritus (on the pond bottom).

Indian Major Carps are fast growing and reach a large size.

... and because they live in different layers of the pond and eat different things, they can easily be grown together in the same body of water without competing with each other for space or food.



Water and soil

You will need to think about where the water will come from and if it is good for growing fish. Will it remain all year or will it dry up?

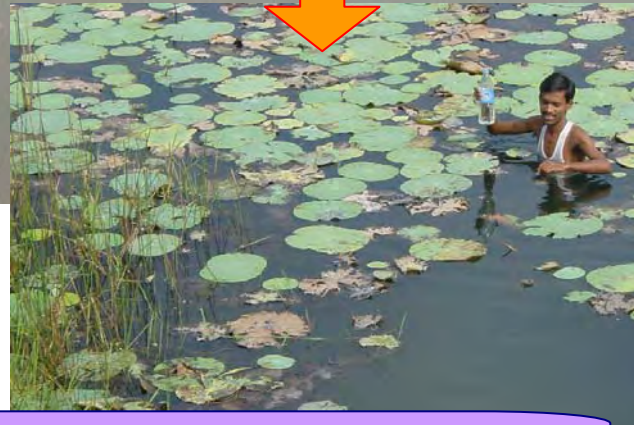
Seasonal ponds - are often more available than perennial ponds. They dry up completely making it easy to harvest fish and to control predators and problems. But they should be able to produce a crop of fish before the water dries up.

Perennial ponds - are often used by many people. Fish culture may conflict with water use for irrigation, washing or even drinking. They often are a home to large predators which will eat seed and fry and they may be difficult and expensive to fish, due to their size or depth.

You will need to think of the things about the soil and water which affect the fish. Very cloudy waters should be avoided. Fertile soils or water that gets nutrients from fields or settlements can often support fish growth. Overhanging trees that shade out the sun and drop leaves are often not good.

The water in this pond may be clean and well-oxygenated, but with so many plants there may be predators. Moreover, it would be difficult to net fish from this pond.

You will need to learn more about water quality and know about things called dissolved oxygen, pH, Hardness, Salinity (which you can read more about later in this series of guidelines).



What happens throughout the aquaculture year?

Aquaculture has to fit with the rains. It is good to begin planning early - building or clearing what you need from January. In a hatchery spawning takes place when the rains come in July-August. Nursery ponds are prepared to receive fish seed. Eventually fish of around 150 mm - called fingerling are ready to stock seasonal or perennial ponds to grow to a size where they can be sold.

| Actions | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|------------------------------------|-----|--------------|-----|-------------------------|-----|-----|---------------------------------|---------------------------------|-----|--------------|-----|-----|
| Promoting fingerling supply | | | | | | | | | | | | |
| Planning | | | | Develop nursing network | | | | | | | | |
| Hatchery | | | | Condition broodstock | | | Spawning | | | | | |
| Nursing | | | | | | | Seed to SHGs with nursing ponds | | | | | |
| Fingerling transport | | | | | | | | Fingerlings to SHGs for raising | | | | |
| Raising fish | | | | | | | | | | | | |
| Fish raising | | Raising fish | | | | | | | | Raising fish | | |

So - what is fish culture?

Fish culture is where you own the fish and care for them.

Fish eat small plants, small animals and things which grow on leaves and rock surfaces.

Many people culture carps like Bhakur, Rui and Mirikali.

A mixture of species is good - to use all the space and food in the pond.

Fish spawn when the rains come - the aquaculture year fits around the rains.

You need to fertilize a pond to increase the number of small plants and animals and can feed other materials like rice bran and oil cakes to fish.

Avoid swampy, marshy and peaty soils.

Avoid saline, acid, alkaline, cloudy and hard waters.

Useful Contacts

Other Better-Practice Guidelines

There are many more Better-Practice Guidelines in this series.

You can get more copies of this and other Better-Practice Guidelines from your local One-stop Aqua Shop, STREAM India Communications Hub, from the STREAM Regional Office or from the STREAM Website.

www.streaminitiative.org

We would like your feedback about these Better-Practice Guidelines. You can let us know by phoning, emailing or writing to the Communications Hub Manager at your STREAM Country Office.

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