

THE CHINESE CARP IN PAKISTAN

Shan Ahmad Naveed*

The Chinese Carp—*Cyprinus carpio* belongs to the family Cyprinidae. Its body is usually fairly deep and thick, colour bright, silvery yellow; tail fin large and well forked, anal fin short, dorsal fin long and concave comprising three or four single rays of which the last is thick and spinous and has seventeen to twenty two small soft rays. The mouth is terminal, the lips thick and capable of being projected forward, four barbels on the upper lip—the two anterior short and thin and the two posterior are long and thick.

Its three important varieties—scaly, mirror, and leather carps—are distinguished by the size and arrangement of scales:

Scaly carp (*Cyprinus carpio communis*): Small, regular, concentric scales. Colour of the body dull brown. Considered to be the parent stock.

Mirror carp (*Cyprinus carpio specularis*): Large, irregularly bright silvery yellow shining scales running along the sides of the body in three or four rows only. The rest of the body is naked. Best suited for culture at high elevations.

Leather carp (*Cyprinus carpio nudus*): Either a few scattered scales at the back or none at all, or possessing a thin soft skin. Colour of body dull brown. Suitable for culture in warm waters.

The scaly and mirror carps grow faster than the leather carp and have a higher probability of survival. The scaly carp grows faster than the mirror carp and is more resistant to disease. But the mirror carp is preferred for eating.

Cyprinus carpio is a native of China and has been introduced in Japan, India, Germany, Poland, Hungary and Yugoslavia. Apart from Asia and Europe, the carp was introduced before the end of the nineteenth century into the United States, South Africa and Madagascar. In the United States and Canada, it has invaded the warm turbid and open waters where it competes with those fishes which are cherished more by the anglers.

Cyprinus carpio prospers in small pools, stagnant ponds and muddy ditches, where most other fishes would die. Unlike the major carps of our country, such as *Catla catla*, *Labeo rohita*, *Cirrhina mrigala* and *Barbus putitora*, this fish has the excellent habit of breeding freely in ponds, lakes and other confined waters. Its growth is optimum in the temperature range of 20.5°C to 28°C. In this temperature and with plenty of food it can attain a

* Deputy Director of Fisheries, North West Frontier Province, Peshawar.

length of about a metre and a weight of 10 to 15 kg. Below 13°C its growth is greatly retarded and it stops eating when the temperature falls below 5°C. In ponds with average summer temperature of 15°C to 18°C it can survive but will not reproduce. When it is cold, the carp takes refuge at the deepest part of the pond and becomes lethargic.

Like many other members of the carp family it feeds in a variety of ways and at all depths between surface and bottom. Generally it is a bottom feeder. It feeds by taking in large mouthfuls of mud from which it sifts the small flora and fauna. The greater part of its food comprises the larvae of Chironomid flies or "blood worms". The carp may feed in this manner for several weeks. At the early stage the fry is a phytoplankton feeder. As the size increases the fry begins to take zooplankton. When it reaches 10 cm to 15 cm size it starts feeding on annelids, molluscs, weeds and insects.

Breeding. The carp spawns from March to May in different countries. Any place having a metre depth of water is good enough for spawning. During spawning, the fish are seen at the surface running lazily along the margins particularly near aquatic plants. Often 3 to 4 small males are seen following a large female. The carp makes a lot of noise while ridding itself of its eggs by agitated movements. It prefers to deposit its eggs on floating aquatic plant weeds. Therefore for getting good collection of eggs these should be freely provided but making sure that they do not contain snails or other enemies of fish eggs. The eggs are mucilaginous and adhere wherever they touch. I consider the roots of willow best for egg adherence. For collecting eggs the plants which become covered with eggs should be removed from time to time, allowing a few minutes for the last deposit to become fertilized. Egg-traps are also used for securing eggs. In our experience, an egg-trap composed of a number of bunches of willow roots or aquatic plants secured together in a radiating circle, like the spokes of a wheel work very efficiently. About ten bunches are sufficient. Such a circle need not be removed until well filled with eggs.

A female lays about 100,000 to 150,000 eggs per kg of body weight. The eggs are transparent and they stick to the submerged vegetation. After swelling they are from 1 to 1.5 mm in diameter. The infertile eggs turn white on the second day and soon become the centre of a ball of fungus.

Depending on favourable circumstances about 50% eggs may hatch but usually hatching is not more than 15%. After spawning and before hatching the brood fish are removed in order to stop them from destroying part of the fry or passing on parasites to them. Parasites can destroy a whole nursery in this way. Also it is essential to remove roots and other vegetation from the spawning ponds otherwise decomposition would set in.

When the temperatures are between 17°C to 20°C, the hatching takes place in 4 to 6 days. The eggs are noticeable after 2 or 3 days. The fry measure 5 to 6 mm. They have very small yolk sacs which are observed rapidly. The mouth opens for respiration after seven days of hatching. The baby fish feed on small animalcules. They grow rapidly and when they are about 5 to 7 cm long they can be transported to other places.

History of introduction in Pakistan. The Chinese carp was first introduced in Pakistan in June 1964 when three pairs were imported from Bangkok and released in Channawun fish farm (Punjab). The carp bred in the nurseries a day after their arrival and the resultant fry were distributed to various places in the Punjab for further propagation. In 1967, 90 fry from Channawan fish farm were stocked in Warsak reservoir and Jamrud Road fish nurseries of N.W.F.P. The fry grew into adult and bred in 1970 in Warsak reservoir. The resultant fry and adults escaped into the Kabul river from the Warsak reservoir through spillways. The carp got acclimatized and established itself in Kabul and Indus rivers and their tributaries as evidenced through commercial catches conducted by fishermen as far down as Chashma lake and River Indus in D.I. Khan. Some brooders were collected from Kabul river and were stocked in Jamrud road fish farm for propagation during 1972. The following spring, they bred for the first time in captivity giving about 60,000 fry. The spawning data obtained from 1973 to 1977 are given below:

Year	Average water temperature °C	Date on which spawning started	Date on which hatching started	No. of eggs obtained	Remarks
1973	18.3	22-3-1973	27-3-1973	60,000	
1974	21.1	11-3-1974	15-3-1974	100,000	
1975	20.0	20-3-1975	26-3-1975	200,000	Hailstorm experienced during hatching.
1976	18.3	21-3-1976	25-3-1976	250,000	
1977	21.1	13-3-1977	16-3-1977	200,000	

In April 1978, 1030 fry/fingerlings of the carp from N.W.F.P. were stocked in tanks in Hyderabad where they are expected to thrive.

Prospects for cultivation of *Cyprinus carpio* in Pakistan. Soil, topography, temperature, water and geographic location are important factors to consider while determining the suitability of an area for culture of *Cyprinus carpio*. Areas with long periods of warm temperature are best suited for scaly and leathur carp culture. These two species are suitable for economic cultivation in Punjab, and southern parts of N.W.F.P. Mirror carp is best suited for cultivation in the hills.

REFERENCES

1. DAS, S.M., and B.A. SUBLA. 1963. The Ichthyofauna of Kashmir Part-I Ichthyologica, 2: 87-106.
2. HUET, M. Text Book of Fish Culture Breeding and Cultivation of Fish, Fishing News (Books) Ltd: London.
3. NAVEED. A.-SHAN. 1971. Report on the Group Training Course in Cold Fresh Water Fish Culture and Propagation Research.
4. ——— 1969. Report on the Fresh Water Cultural Fish Industry of Japan by E. Evan Brown, Department of Agricultural Economics College Station, Athens, Georgia, March, 1969.
5. ——— (1959) Report on Decade of Progress in Fisheries, Directorate of Fisheries, West Pakistan.
6. ——— 1977. Report on Fish culture in fresh water. Korean Delegation of Fisheries. Democratic Peoples Republic of Korea-visiting Pakistan from 15-10-76 to 15-4-77.