

Ichthus=fish

Scientific Classification:

Super class: Pisces

Class I: Chondrichthyes

Class II: Osteichthyes



Order: Cypriniformes

Suborder: Cyprinoidei

Family: Cyprinidae

Cyprinidae

This family it represents the most types of Iraqi fishes which include the following

1-*Barbus sharpeyi*

2-*B. lutus*

3-*B. grypus*

4-*B. oesocinus*

5-*B.xanthopeterus*

6-*Cyprinus carpio* (for commercial cultivation)



Iraqi river's fishes

Carp

(*Cyprinus carpio*)

Its origin from china, this type of fishes is selected for cultivation for many reasons which include the following

- 1- Huge and fast production in the cultivated farms (3-4 kg feed-1kg meat)
- 2- It can rapidly adapted to most of the environmental conditions
- 3- Good quality of meat
- 4- High resistance to the fish's dis.
- 5- It can live with the lowest levels of O₂
- 6- High fertility

There are three types of *Cyprinus carpio*

- 1- Common Carp
- 2- Mirror Carp
- 3- Skin Carp

Type 1 and 2 entered to Iraq in 1955 people called it the republic or the Indonesian

Carp reproduction is naturally in the artificial farms twice at a year Feb.-Apr. and Jun-Sept. In Iraq the ideal time to cultivate the fishes is at 20th Feb. -10th March the cultivation persists to the Oct. when the degree reach to 10 C.

The carp characterized by

Body elongated and somewhat compressed, Small head, Protruded eyes, Lips thick, Two pairs of barbels at angle of mouth, shorter ones on the upper lip (Superior position of the mouth). Dorsal fin base long with 17-22 branched rays and a strong, toothed spine in front; Long dorsal fin outline concave anteriorly. Anal fin with 6-7 soft rays; posterior edge of

3rd dorsal and anal fin spines with sharp spinules. Lateral line with 32 to 38 scales.

Pharyngeal teeth 5:5, teeth with flattened crowns. Colour variable, wild carp are brownish-green on the back and upper sides, shading to golden yellow ventrally, Small glistening silver scales

. The fins are dusky, ventrally with a reddish tinge. Golden carp are bred for ornamental purposes. Carp are mainly bottom dwellers but search for food in the middle and upper layers of the water body Best growth is obtained when water temperature ranges between 23 °C and 30 °C. The fish can survive cold winter periods. Salinity up to about 5‰ is tolerated. The optimal pH range is 6.5-9.0. The species can survive low oxygen concentration (0.3-0.5 mg/litre) as well as supersaturation. Carp are omnivorous, with a high tendency towards the consumption of animal food, such as water insects, larvae of insects, worms, molluscs, and zooplankton.

The daily growth of carp can be 2 to 4 percent of body weight. Carps can reach 0.6 to 1.0 kg body weight within one season in the poly-cultural fish ponds of subtropical/tropical areas. Growth is much slower in the temperate zone: here the fish reach the 1 to 2 kg body weight after 2 to 4 rearing seasons.

Big head carp

Aristichthys nobilis

It can grow 3-5 kg at a year it can reach to the 47kg in 10 years does not reproduce naturally in the artificial farms, its head equal to 1/3 of the body, have large rounded bell with small scales its feeding on the zooplankton and phytoplankton.

Grass Cap

White Amour

Ctenopharyngodon idella

It's lived on the grass and herbs and other vegetation in the water live in warmer water, it's grow rapidly can reach 32kg in three years not reproduce naturally in the artificial farms, have good quality of meat in its early life they feed on the zooplankton then gradually become herbivorous, have large scales and short fins the reproduction time is at the beginning of April to Jun.

Silver Carp

Hypophthalmichthys molitrix

its feeding on the phytoplankton. the weight can reach to 16kg at the 10th year of the age not reproduce naturally in the artificial farms, the maturation age is 3-4 years can jump 2 meters directly to noise sound.

Characterizations of good healthy fishes

1- Perfect body (no ulcers, wounds, deformities, small head, brilliant appearance, ect)

- 2- Bright appearance
- 3- Good fat index(fat fish color is yellow or golden opposite emaciated fish color is gray or silver)
- 4- High body weight.

Factors affecting fish production

- 1- Bad handling with larvae and fingerlings
- 2- Bad management of the artificial farms (ponds ,aquariums)
- 3- Raising different ages
- 4- Vet. quarantine violation
- 5- The intensity of cultivation
- 6- The utilization of drugs and disinfectants

Principles of Cultivation (Prevention and Control)

- 1- Good supply of high quality of water (with out organic or chemical pollutants)
- 2- Good level of O₂ and nutrients in the providing water
- 3- Periodically repairing of the fish's farms
- 4- Dryness of the ponds with spreading the lime 2.5ton/hectar and mix with 15-30cm water for 15 days then removed and replaced with clear water after marketing.
- 5- The foreign fishes must be prevented from introducing the ponds? because it considered as feed ,O₂,consumers and dis. Transmitters.
- 6- Fingerlings transportation is under control conditions
- 7- Choosing a proper season for cultivation
- 8- External parasites must be eliminated with proper method
- 9- The cultivation intensity ranging 4000-5000/hectar common carp plus 10-15% other carp species (grass, silver carp).
- 10- Water entrance guard by wire net barrier with tiny openings also to the opposite side (exit).this openings had important role to keep water at high quality ,normal level of [O₂] 5-7mg/liters,good temperature ,PH with acceptable range 6.5-8.5,minimun level of pollutants ,prevents the increasing of the Ammonia at high levels in the ponds because it affects the gills tissues or act as predisposing factor to bacterial infection of the gills ,partially ammonia oxidation can produce nitrate roots which cause rapid, high mortality of cultivated fishes .
- 11-High quality of food (protein 28-30%).
- 12-periodically examination and inspection of samples of cultivated fishes.
- 13-Avoiding contaminated food with mycotoxins.
- 14-Get rid of wild birds?
- 15-Controlling the transmission of the dis. From parents to progeny like *Lernea* , *Dactylogyrus*

Disease transmission

- 1- Direct contact with infected fish
- 2- Contaminated water
- 3- Contaminated the soil of the bottom of the pond
- 4- Contaminated food
- 5- Contaminated tools, workers, etc.

Classification of the fish's farms

There are different systems of cultivation which include:

1-nonintensive fish farms

Which depend on the natural nutrition found in the water like the zooplankton, phytoplankton and vegetations in the water.

2-semi-intensive fish's farms

Beside to the natural food it can be added the fertilizers to enhance the growth of natural nutrition

3-Intensive farms

This sys. depend on the fertilization and artificial feeding

Second system which divided into tow types of farms

1-Incomplete sys.

Consist of

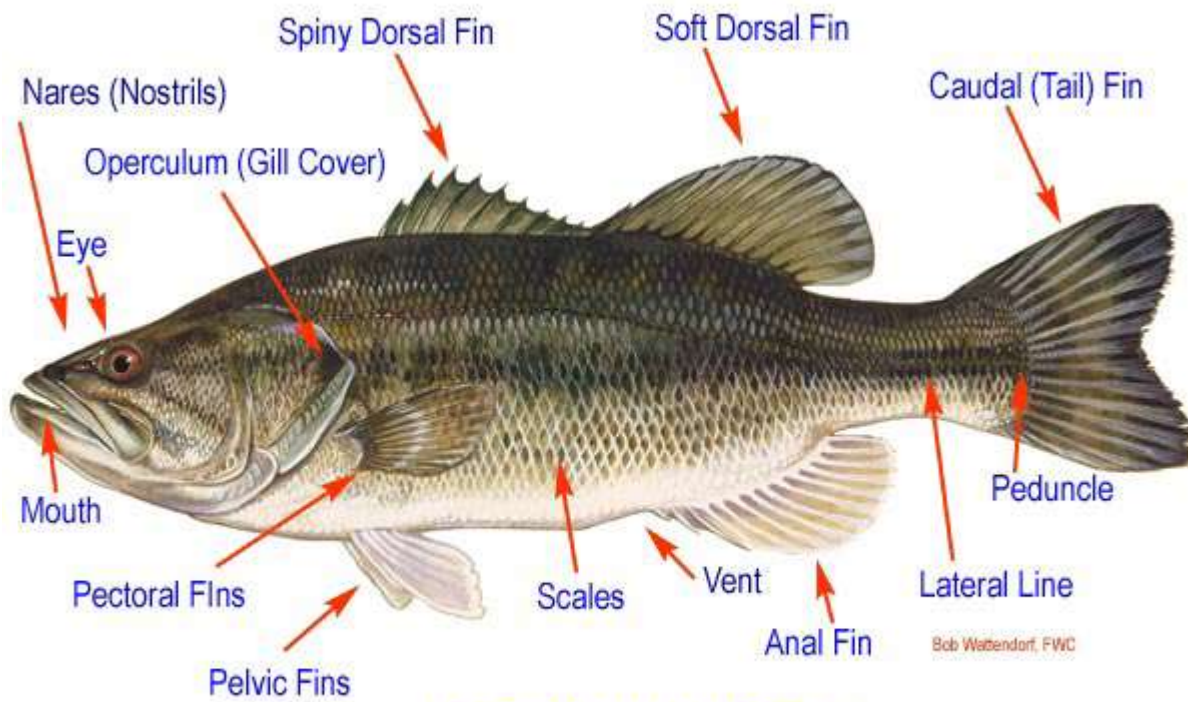
- a- One stage sys.(single pond for cultivation and production)
- b- Dual stage sys.(tow ponds ,reproduction pond and cultivation pond)

2-Complete sys.

Consist of

- a-Parents ponds
- b-Reproductive ponds
- c-Incubation ponds
- d-Fingerlings ponds
- e-Cultivation ponds

The cultivated pond may be monoculture, polyculture or multicultural system for the first type is raising only the Common Carp, second type is mixing the Common Carp with silver, grass and bighead Carp ,third type is raising the fish with duck, gees .



EXTERNAL ANATOMY