Dear Students,

Hope you all are safe and taking necessary precautions.
Attached are the practical assignments that you need to write down on A4 size sheets and get them checked by me once this whole COVID19 thing gets settled. We will be seeing these spotters in the classrooms as well; however, I suggest you use your time at home judiciously and finish writing these assignments by the time you arrive for regular classes. As usual, your writing part should be on the right hand side of your sheets and the diagrams should be on the left. Beware, the diagrams should be taxonomically correct and you will get redraws and negative points if the work does not reflect sincerity.

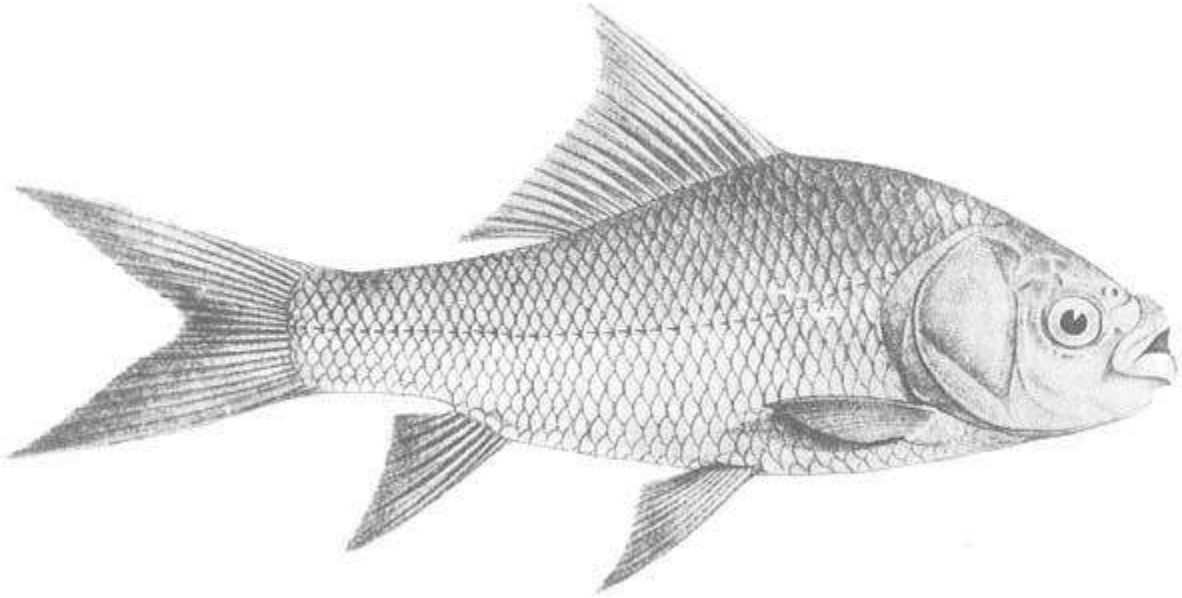
Take care

Cheers!

Ankur Jamwal

CATLA CATLA (LABEO CATLA)

Common name: Catla



Class: Actinopterygii; Order: Cypriniformes; Family: Cyprinidae; Genus: *Labeo*; Species: *L. catla* (Hamilton, 1822)

Field Identification characters:
Body is deep with a large head and has a wide, upturned mouth. Barbels are absent, lips not fringed, scales are large. Colour grayish on back and flanks, silvery-white below, fins dusky.

Habitat:
Freshwater, Gangetic carp (origin: north India up to the river Godavari), Indian major carp. Due to its fast-growing nature, it is now introduced in almost all rivers, reservoirs and tanks all over India. *Catla*, along with other major carps, forms a major portion of reservoir fishery in India. *Catla* is a eurythermal species which can tolerate temperature ranging from 25 – 32 °C. It can tolerate salinities up to 6 ppt.

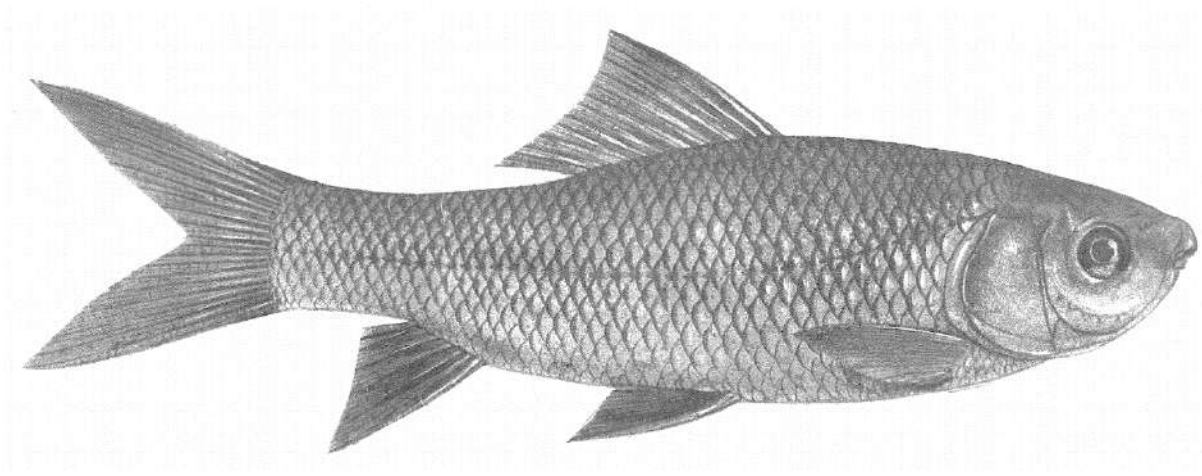
Feeding:
Surface feeder, zooplankton. Accept supplementary feed.

Growth:
Grows up to 1 Kg within one year under optimum conditions. Maximum recorded size is 63 Kg.

Breeding:
Matures at the end of the 2nd year when the fish usually weighs 2 Kg. *Catla* can breed naturally in rivers of North India during southwest monsoon. *Catla* cannot breed on its own in confined waters and therefore, has to be induced bred by hypophysation. Sexual dimorphism is present: male – rough pectoral fins and oozing milt; female – smooth pectoral fin and bulged belly. Source of seed is hatcheries and wild collection in India. Many states have adopted a ranching program to supplement the stocks of *Catla* in reservoirs.

LABEO ROHITA

Common name: Rohu



Class: Actinopterygii; Order: Cypriniformes; Family:Cyprinidae; Genus:*Labeo*

Species:*L. rohita* (Hamilton, 1822)

Field Identification characters:
Body elongated. Mouth inferior, wide, transverse and protractile. Lips fringed, thick, covering the jaws. Snout broadly rounded or obtusely pointed, projecting beyond the mouth. Single pair of concealed barbels present. Colour bluish or brownish on back, reddish on flank. Reddish marks on scales pronounced during breeding season.

Habitat:
Day (1877 and 1889) described the distribution of fish as "Freshwater of Sind and from the Punjab through India, Assam and Burma". However, due to fast growth and high consumer demand, Rohu is introduced in almost all rivers, reservoirs and tanks of India. Rohu forms a major fishery of Indian reservoirs. The species has also been introduced in many other countries, including Sri Lanka, the former USSR, Japan, China, the Philippines, Malaysia, Nepal and some countries of Africa.

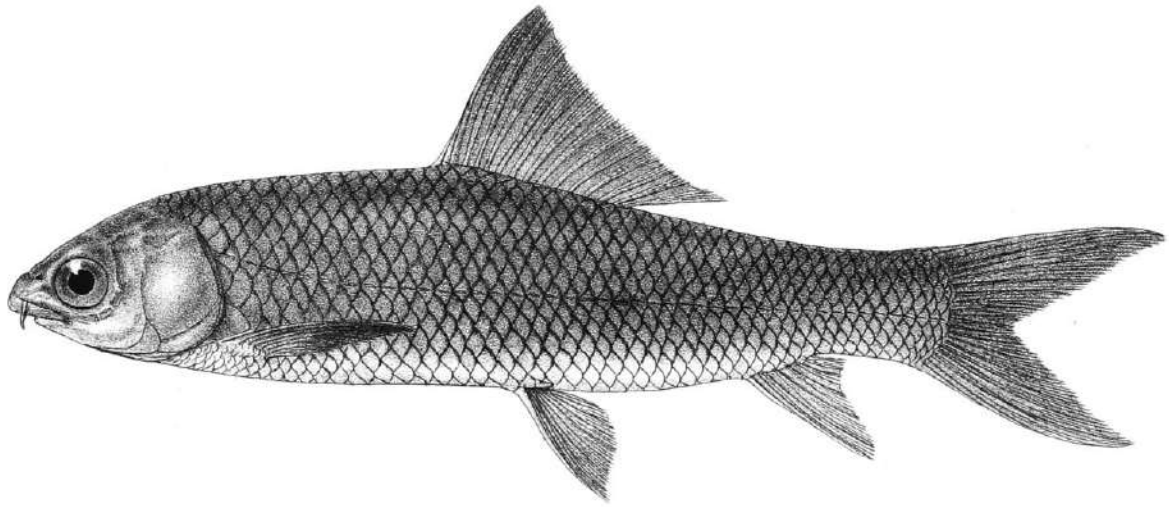
Feeding:
Column feeder, periphyton, decayed vegetation. Accepts supplementary feed.

Growth:
Grows up to 0.9 Kg within one year under optimum conditions.

Breeding:
Matures at the end of the 2nd year when the fish usually weighs 2 Kg. Rohu can breed naturally in rivers of North India during southwest monsoon. Rohu cannot breed on its own in confined waters and therefore, has to be induced bred by hypophysation. Sexual dimorphism is present: male – rough pectoral fins and oozing milt; female – smooth pectoral fin and bulged belly. Source of seed is hatcheries and wild collection in India. Many states have adopted a ranching program to supplement the stocks of Rohu in reservoirs.

CIRRHINUS MRIGALA

Common name: Mrigal



Class: Actinopterygii; Order: Cypriniformes; Family:Cyprinidae; Genus:*Cirrhinus*

Species:*C.mrigala* (Hamilton, 1822)

Field Identification Characters:

Streamlined body, mouth inferior. Mouth appears straight when closed. Lips not fringed, single pair of barbels present. Colour silvery dark grey along back, golden yellowish on flank, belly silvery white.

Habitat:

Freshwater, Gangetic carp (origin: north India up to the river Godavari), Indian major carp. Due to its fast-growing nature, it is now introduced in almost all rivers and tanks all over India. Mrigal is not a preferred fish in deeper and larger reservoirs because of its bottom dwelling nature. Mrigal along with other major carps, forms a major portion of reservoir fishery in India. Mrigal is a eurythermal species which can tolerate temperature as low as 14 °C. It can tolerate salinities up to 6 ppt.

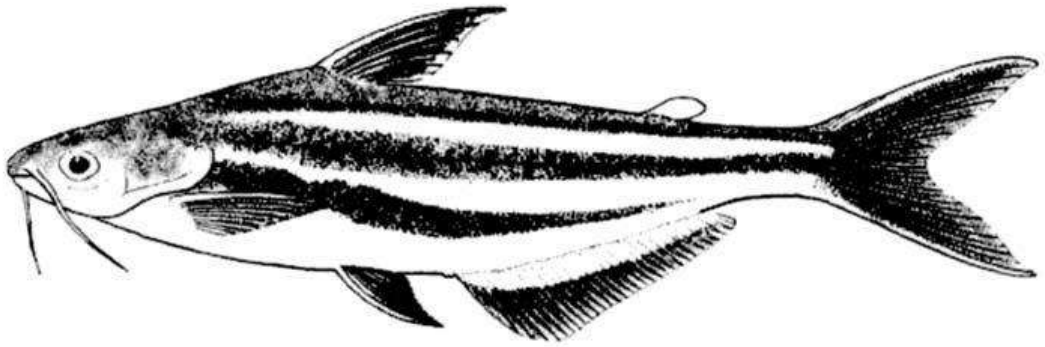
Growth: Can grow to 0.7 to 1 Kg in one year under optimum conditions. Maximum reported size is 20 Kg.

Breeding:

Matures at the end of the 2nd year when the fish usually weighs 2 Kg. Mrigal can breed naturally in rivers of North India during southwest monsoon. Mrigal cannot breed on its own in confined waters and therefore, has to be induced bred by hypophysation. Sexual dimorphism is present: male – rough pectoral fins and oozing milt; female – smooth pectoral fin and bulged belly. Source of seed is hatcheries and wild collection in India. Many states have adopted a ranching program to supplement the stocks of Mrigal in reservoirs.

Pangasius hypophthalamus (Sauvage, 1878)

Pangas catfish



Class: Teleostei; Order: Siluriformes Family: Pangasiidae Genus: *Pangasius*
Species: *Pangasius hypophthalmus* (Sauvage, 1878)

Field identification characters

Fins dark grey or black; 6 branched dorsal-fin rays; gill rakers normally developed; young with a black stripe along lateral line and a second long black stripe below lateral line, large adults uniformly grey. Dark stripe on the middle of anal fin; dark stripe in each caudal lobe; small gill rakers regularly interspersed with larger ones

Habitat:

Native to Mekong river delta in Vietnam. Inhabiting large rivers, *P. hypophthalamus* is a highly migratory and makes long-distance migrations that can reach up to several hundred kilometres (potamodromous) between upstream refuge and spawning habitats and downstream feeding and nursery habitats. *P. hypophthalmus* is omnivorous. In wild, pangasius feeds on algae, zooplankton, and aquatic insects. Pangasius can be weaned to accept formulated feed. This species is benthopelagic, typically living within the ranges of pH 6.5-7.5 and 22-26 °C. Similar to other riverine fish of Asia, the life cycle of *P. hypophthalmus* is also linked to the monsoon cycle - pangasius spawns in May-June at the start of the monsoon season. In rapids and sandbanks.

Aquaculture introductions have taken place to several Asian countries including Bangladesh, China, India, Indonesia, Malaysia and Myanmar.

Cage culture of Pangasius:

Since pangasius is an exotic fish, guidelines stipulated by government agencies such as NFDB should be followed. The seed should be sourced only from authentic and reliable agencies. A proper record of seed source should be maintained. The seed should be quarantined, acclimatized and bathed in 3 ppm $KMnO_4$ for prophylaxis. For grow out in cages, 50-60 mm sized fingerlings can be stocked at 60 – 100 numbers/ m^3. The culture period is 7-8 months. Cage farming is purely on floating feeds. The feed should contain 25 – 30 % protein. The feeding ration is 5%, 3% and 2% of body weight fed at first 2 months, 3rd to 5th month, and 6th month onwards, respectively.