



Fish Diversity in Lentic Ecosystems of Bengaluru

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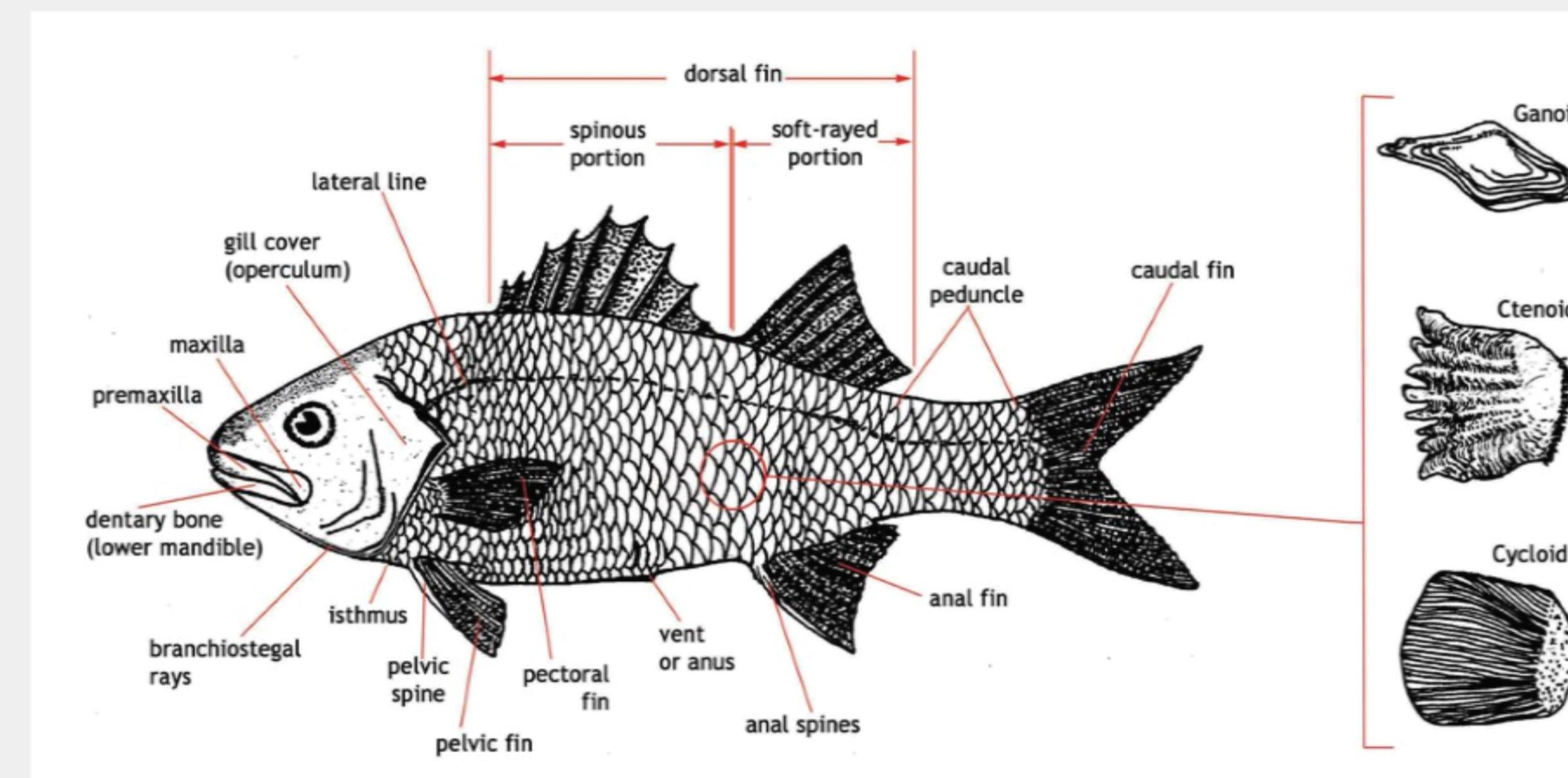
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FISH PROTEIN IS GOOD FOR HEALTH, SAVE LAKES FOR FISH DO NOT POLLUTE WATER BODIES, SAVE FISH & EAT HEALTHY FISH
A fish every day, keeps you away from arthritis, respiratory diseases, etc.



EAT FISH AND BE HEALTHY



Fish species	Energy (Kcals)	Moisture (g)	Protein (g)	Fat (g)	Mineral (g)	Fiber (g)	Carbohydrates (g)	Calcium (mg)	Phosphorus (mg)	Iron (mg)
Cat fish	86	77	21	-	-	-	-	10	230	-
Catla	111	74	19	2	1	-	3	530	235	1
Mrigal	98	75	19	1	1	-	3	350	280	1
Rohu	97	77	17	1	1	-	4	650	175	1

Source: Gopalan, C., Sastri, R. B. V., and Balasubramanian, S. C., 2004, Nutritive Value of Indian Foods. National Institute of Nutrition, ICMR, Hyderabad.

Catla catla
Common name: English – Catla; Kannada – Catla, Dodda Gende.



Scientific Classification	
Kingdom:	Animalia
Phylum:	Chordata
Class:	Actinopterygii
Order:	Cypriniformes
Family:	Cyprinidae
Genus:	<i>Catla</i>
Species:	<i>C. Catla</i>

- Distinguishing Characters:**
- Body short, deep and moderately compressed.
 - Dorsal profile much more convex than that of the abdomen.
 - Large upturned mouth with a prominent protruding lower jaw.
 - Mouth wide, lower jaw prominent.
 - The lateral line has 40 - 43 scales.
 - Pectoral fins long, extends to pelvic fins.
 - Anal fin short whereas caudal fin is forked.
 - Scales conspicuously large. Barbels absent.
 - Greyish above, becoming silvery on the sides and beneath.
 - Fins dark coloured, in some specimens black.

Clarias batrachus
Common name: English – Magur; Kannada – Ane-meenu, Murgodu.



Scientific Classification	
Kingdom:	Animalia
Phylum:	Chordata
Class:	Actinopterygii
Order:	Siluriformes
Family:	Clariidae
Genus:	<i>Clarias</i>
Species:	<i>C. batrachus</i>

- Distinguishing Characters:**
- Body elongate but compressed posteriorly.
 - Wide mouth with upper jaw a little projecting.
 - Head moderately depressed. Mouth terminal.
 - Four pairs of barbels: the maxillary pair extend beyond base of pectoral fin while the nasal barbels extend to gill-openings.
 - Dorsal fin inserted slightly anterior to tip of pectoral fins. Pectoral spine strong, finely serrated on both edges. A pair of accessory respiratory organ (air sacs) present which extends backwards from the gill chamber on either sides of vertebral column. Caudal fin rounded.
 - Fish is dingy green or brownish superiorly, becoming lighter beneath, the vertical fins usually with reddish margins.

Ctenopharyngodon idella
Common name: English – Grass carp; Kannada – Hullu Gende.



Scientific Classification	
Kingdom:	Animalia
Phylum:	Chordata
Class:	Actinopterygii
Order:	Cypriniformes
Family:	Cyprinidae
Subfamily:	Leuciscinae
Genus:	<i>Ctenopharyngodon</i>
Species:	<i>C. idella</i>

- Distinguishing Characters:**
- Body is stout and elongated but compressed in posterior part.
 - Dorsal and ventral profiles equally arched. Head is depressed and flattened with a short rounded snout.
 - Mouth sub-terminal with upper jaw slightly protractile.
 - Eyes are large and lateral in position.
 - Dorsal fin inserted slightly near to snout tip than to base of caudal fin.
 - Pectoral fins are small. Caudal fin is forked. Scales are of moderate size.
 - Fish is dark – grey above, silvery on flanks and belly, base of each scale is dark – brown. Fins are dark coloured. Barbels are absent.

Labeo rohita
Common name: English – Rohu; Kannada – Rohu; Telugu – Boccha gandu



Scientific Classification	
Kingdom:	Animalia
Phylum:	Chordata
Class:	Actinopterygii
Order:	Cypriniformes
Family:	Cyprinidae
Genus:	<i>Labeo</i>
Species:	<i>L. rohita</i>

- Distinguishing Characters:**
- Body is bilaterally symmetrical and moderately elongate.
 - Dorsal profile more convex than that of the abdomen.
 - The greatest width of the head equals its length excluding the snout.
 - Snout obtuse and depressed projecting beyond the jaws, devoid of lateral lobe.
 - Eyes large and mouth small and inferior. Lips are thick and fringed with a distinct inner fold above and below.
 - Barbels: a short and thin maxillary pair.
 - Reddish eyes, colour is bluish along the back, becoming silvery on flanks and belly, sometimes there is a red mark on each scale during breeding season. In some species, the fins are black.



Printed from THE TIMES OF INDIA

Bengaluru lakes have seen most fish kill incidents in a decade: IISc study

Bengaluru: Aquatic life in the city's lakes is in deep water. Of the fish mortality cases in India which have grabbed headlines and found mention in research papers, the maximum are from Bengaluru followed by Mysuru, a recent study has revealed.

Most fish have perished for the same reason. Sustained flow of untreated sewage and chemicals into water bodies has caused dissolved oxygen (DO) levels to dip, the study on Recurring Fish Mortality Episodes in Bengaluru Lakes by Indian Institute of Science (IISc) has found. The alarming findings should come as a wake-up call for the authorities, who need to do more than just clear the dead fish from the water bodies.

"Ulsoor Lake falls under category E of Inland Surface Water, which means the water can be used only for irrigation, industrial cooling or controlled waste disposal," said professor TV Ramachandra of the Centre for Ecological Sciences, IISc. He added, "The sustained inflow of untreated sewage into the Ulsoor Lake has flooded the aquatic ecosystem with nutrients." Algae (also harmful to aquatic life) thrive under high nutrient availability.

First incident dates back 11 years

Ulsoor Lake witnessed its first fish kill 11 years ago in January. Increased oxygen demand and chemicals flushed into the lake were to blame. The second episode happened in January 2005 when pollutants made their way into the lake after the Ulsoor swimming pool was cleaned. The third such incident was recorded on March 7 this year where oxygen levels dropped to abysmally low levels (zero at some points) due to entry of untreated sewage.

The analysis of water samples and fish samples by IISc researchers reveals the fish mortality in Ulsoor and Devarabeesanahalli lakes was due to asphyxiation, with a sudden and considerable fall in DO levels in some locations.

Besides Bengaluru, two lakes in Mysuru, (Kukkarahalli and Karanj) witnessed incidents of fish mortality in 2001 and 2014 respectively lake due to discharge of effluents. Even Taj Boudi in Bijapur witnessed the phenomenon in 2010. Andhra Pradesh fares the second worst with over five occurrences of fish death in over a decade. AP is followed by Madhya Pradesh and Kerala

IISc RECOMMENDS

- *Aerators (water fountains) or introduction of ducks. Aeration will increase DO levels and minimize hydrogen sulphide, methane and various volatile organic compounds responsible for bad taste and odour
- *Regular monitoring of lakes will help understand physico-chemical characteristics
- *Dredging (mostly wet dredging) will remove sediments (rich in nutrients)
- *Public awareness and participation necessary to safeguard lakes

Cirrhinus mrigala
Common name: English – Mrigal; Kannada – Mrigal, Bangari.



Scientific Classification	
Kingdom:	Animalia
Phylum:	Chordata
Class:	Actinopterygii
Order:	Cypriniformes
Family:	Cyprinidae
Genus:	<i>Cirrhinus</i>
Species:	<i>C. cirrhosus/ C. mrigala</i>

- Distinguishing Characters:**
- Body is elongated and streamlined or laterally compressed. It has a downward-facing mouth, with the upper lip being more prominent than the lower one.
 - Blunt snout with pores. A single short pair of rostral only is present.
 - Dorsal fin as high as body. Pectoral fins shorter than head. Caudal fin deeply forked.
 - Fish is dark grey with a coppery tinge, flanks silvery with a yellowish tinge and belly is silvery – white; golden eyes.
 - Pectoral and pelvic fins orange-tipped; dorsal and caudal fins dusky.
 - Dorsal fin with 12- 13 branched rays; scales on body are rounded. The lateral line has 40 - 45 scales.

Clarias gariepinus
Common name: English – African catfish; Kannada – Ane-meenu.



Scientific Classification	
Kingdom:	Animalia
Phylum:	Chordata
Class:	Actinopterygii
Order:	Siluriformes
Family:	Clariidae
Genus:	<i>Clarias</i>
Species:	<i>C. gariepinus</i>

- Distinguishing Characters:**
- Body elongated, head moderately depressed.
 - Snout broadly rounded, eyes supero-lateral and small.
 - Mouth terminal.
 - In case of barbels pairs, the maxillary extend beyond base of pectoral fin while the nasal barbels extends to gill opening.
 - Dorsal fin inserted slightly anterior to tip of pectoral fins.
 - Pectoral spine strong and finely serrated on both edges.
 - Fish is dingy green, brownish and blackish superiorly, becoming lighter beneath, the vertical fins usually with reddish margins.

Cyprinus carpio communis
Common name: English – Common carp; Kannada – Samanya Gende, Pare.



Scientific Classification	
Kingdom:	Animalia
Phylum:	Chordata
Class:	Actinopterygii
Order:	Cypriniformes
Family:	Cyprinidae
Genus:	<i>Cyprinus</i>
Species:	<i>C. carpio</i>

- Distinguishing Characters:**
- Body stout and slightly compressed.
 - Head is moderate in size, triangular; snout is obtusely rounded.
 - Mouth small and oblique, protrusible; lips are thick and fleshy.
 - Barbels – two pairs, maxillary pair twice as long as rostral pair.
 - Dorsal fin inserted midway between snout – tip and base of caudal fin; dorsal fin stout, serrated behind.
 - Anal fin is deeply trapezoidal. Pectoral fins are large and rounded. Scales are large; lateral line straight. There are 30-40 scales along the lateral line.
 - They are usually olivaceous, with silvery or golden sides. Fins yellowish, reddish or golden, anal fin becomes bright red during breeding season. Abdomen rounded.

Oreochromis mossambicus
Common name: English – Tilapia; Kannada – Jilebi, Baduvara meenu



Scientific Classification	
Kingdom:	Animalia
Phylum:	Chordata
Class:	Actinopterygii
Order:	Perciformes
Family:	Cichlidae
Genus:	<i>Oreochromis</i>
Species:	<i>O. mossambicus</i>

- Distinguishing Characters:**
- Body is elongate, fairly deep and compressed, upper profile of body more convex than ventral.
 - Mouth is large; Longest soft dorsal ray extending to above proximal part of caudal fin in females and immature males. Caudal fin is truncate, often with rounded corners. Scales are cycloid.
 - Females and non-breeding males watery – grey to yellowish, with 3 or 4 dark blotches often apparent along flanks; body of males in breeding season deep black; lower part of head chalky or pale – grayish – white; upper lip bluish.
 - Dorsal fin is black with a red margin; pectoral fin translucent red; caudal fin with a broad red margin.

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