

BASIC FISH ANATOMY

Body shape

There is a tremendous diversity of fish in the world. Each species is adapted to life in a specific habitat. By examining the body shape of the fish, the aquarist can learn much about the habitat of the fish.

Overall Body Shape

The body shape is one of the best indicators in determining the fish's environment. Surface dwelling fish have an upturned mouth, a flattened back. Tall bodied, laterally compressed species like Discus and Angelfish, are adapted to life in slow-moving waters. Slender, torpedo shaped fish are better adapted to moving waters. Bottom-dwelling fish have flattened bellies and inferior mouths. Some bottom-dwellers have altered swim bladders so they "hop" along the substrate instead of swimming.

Head

There are three general locations of the mouth in fish which often indicate the species's feeding habits. Surface feeding fish usually have an undershot, upturned (superior) mouth for feeding on insects. Fish that feed in mid water have a terminal mouth, which is usually considered the "normal" fish mouth. Predatory fish usually have a wide mouth, while omnivorous fish have smaller mouths. Bottom feeding fish generally have an underslung or inferior mouth. Often, bottom feeding species are also equipped with barbels ("whiskers"), which are tactile and taste organs used for locating food in dark or muddy waters. Some bottom-dwelling fish, especially the Loricarids, have a suction-cup like mouth for rasping on algae, wood, plants, or mud (for small invertebrates).

Fins

The fins are used for movement, stability, nest-building, spawning, and as tactile organs. Fins can be single or paired. Many aquarium fish seen in the hobby have long, drawn out fins, which have been developed through selective breeding. In nature, these fins are not found.

The caudal or tail fin is used for propulsion. Fish that have forked caudal fins are regular fast-swimmers. Fish that have rounded caudal fins are fish capable of quick action like predators. Large, elongated caudal fins are often used to attract mates.

The single anal fin is located on the underside of the body just forward of the caudal fin. The anal fin serves to stabilize the fish while it is swimming. Long anal fins that are moved in an undulating manner are used for propulsion.

The paired pelvic or ventral fins are located forward of the anal fin. Ventral fins are used to provide further stability in swimming. Sometimes these fins are modified as long, thread-like fins used as a tactile organ. Then ventral fins are used by Corydoras catfish to hold the eggs during spawning.

The paired pectoral fins are located near the gill cover and are used for maneuvering the fish. These fins have been adapted, in the case of some bottom-dwelling species, so fish can prop themselves up or even walk around above or below water. Sometimes the pectoral fins are equipped with spines for defense.

The single dorsal fin is located on the back of the fish and serves to help balance the fish while swimming. The rays of this fin are often sharp, and a spine is often present.

The adipose fin is a tiny fin found between the dorsal and caudal fins on some fish.

Body covering

Most fish are covered with scales, which protect the body. Some fish such as catfish have bony plates which serve the same purpose. Other species have very small scales or no scales at all.

Body coloring

Although selective breeding has produced a number of unnatural colors and patterns, wild fish are still colorful. Color has an important role for fish. Some species rely on stripes or brown color to be camouflaged and escape the notice of predators. Other species use attractive coloration to attract mates, while some species use "eye-spots" to disillusion predators where to attack. Mouth brooding cichlids of Africa often rely on colored "egg-spots" for fertilization.

Color is determined by the pigment of the fish and the light reflection. Fish with solid, dark coloration usually have pigmented skin, while species with silvery iridescence rely on light reflection. Some species are able to alter their coloration, while some fish assume different coloration at night.

Healthy fish are almost always more colorful than unhealthy one. To keep a fish in top color form, maintain favorable water conditions, fed a variety of foods, and house with compatible tank mates. Some color-enhancing foods can help bring out certain colors in fish. During territorial displays, during the spawning season, and at spawning, the color of most species is enhanced.

Gills

The gills are the organ by which gases are exchanged between the fish and the surrounding water. Through the gills, fish are able to absorb carbon oxygen and give off carbon dioxide. Like the lungs, the gills have a large area for gas exchange.

Some species have altered gills and other organs so that they can absorb atmospheric air and extract the oxygen.

Because freshwater fish live in the environment that they do, water is constantly passing in to their body by osmosis. Osmosis is the movement of water from an area of less dissolved salts to an area of more dissolved salts. This is reason that water passes into the fish's body. The outside water is trying to dilute the high concentration of body salts in the fish. Therefore, freshwater fish are constantly excreting water through their gills and never drink to keep the body salts non-diluted.

Mike from Canada adds: "Yes, from each gill arch soft gill filaments radiate posteriorly and are used in breathing and osmoregulation and all that, but the anterior face of the gill arch has, to a varying extent, bony gill rakers. Gill rakers point forward and can be long and thin for filter feeding or short, larger and fewer in number for trapping larger prey items inside the mouth cavity."

Lateral Line

The lateral line organ is a series of fluid-filled ducts located just under the scales. The lateral line system picks vibrations in the water. Thus fish are able to detect predators, find food, and navigate more efficiently. Many fish species can navigate without vision in darkness or muddy water. The Blind Cave Fish relies entirely on its lateral line system.

Swim Bladder

The swim bladder is an air-filled bladder used for keeping the fish in a state of neutral buoyancy where they neither sink nor float. Thus fish are able to sleep in mid water. Numerous species have altered swim bladders to fit their living habits. Some species can swallow air, which is passed to the swim bladder, where the oxygen is extracted. This adaption is especially convenient in oxygen-starved waters.