

Example of bony fish research paper

[Environment](#), [Water](#)



The bony fish has several adaptive features that make it suited to its environment.

The most common shape of the bony fish is the roughly cylindrical form, which tapers at both the head and the tail. This shape allows for increased efficiency during swimming.

Most species of bony fish have a form of pigmentation or the other. This pigmentation is an excellent way of camouflage the fish in its environment.

The fins are another structure that aid, in no small way, in propelling the fish through water thereby bringing about movement from one place to another.

Some of the fins are paired (the pelvic and pectoral fins), while the others are median (Dorsal, caudal and anal fins). The paired pectoral fins are used in turning movement of the fish. The paired pelvic fins enhance the fish's stability in water.

The dorsal fin is used to initiate sudden change in direction. The caudal fin is solely for propulsive movements. The anal fin also adds stability to the fish in water.

Scales are found in some bony fish. They provide a protective covering for the exterior of the fish, forming a sort of exoskeleton structure. Some bony fish also have spines which aid in protection.

A look at the skeletal system shows that it consists of bones and cartilages. The skeleton of the fish is made up of the vertebral Column, the cranium, the jaws, ribs and the intramuscular bones. This provides protection to the fish. The bone is also the site of red blood cell production.

The muscular system provides the fish with the propulsive force with which it moves from one place to another, in water which is the medium of

transportation in water. The Muscles are made up of the tail and trunk muscles, the jaw muscles and the fin muscles.

The nervous system is not as specialized as that of higher vertebrates. The brain is divided into the forebrain, the midbrain and the hindbrain. The forebrain handles the fish's ability to smell. The midbrain is used for vision, movement responses and learning. The hind brain, however, is concerned with coordination of movement, tone and balance of the muscles.

The cardiovascular system is made up of a two-chambered heart: the Atrium and the Ventricle. The Sinus Venosus receives deoxygenated blood from the body while the Bulbous arteriosus is the outflow tract for blood where it moves to the gills to be oxygenated.

Blood flows to the gills where it is oxygenated. Thereafter, the blood flows through a series of vessels throughout the body distribute the blood.

A look at the digestive system shows that the esophagus of the fish is a short structure that is readily expandable. This attribute allows the fish to swallow objects that are large. The walls of esophagus are also lined by muscles. This facilitates better propulsion of food through the esophagus. The stomach is a U-shaped organ which houses some gastric glands. The gastric glands secrete digestive enzymes that break down the food particles down in preparation for digestion. The fish has a pancreas which secretes digestive enzymes for the digestion of food. The intestine of the fish is the structure in which digestion of food occurs. The length of the intestines depends on the feeding habit of the fish. For herbivorous fish, the intestines are long and coiled. However, for carnivorous fish, the intestines are short. The digestive system ends at the anus where waste products of digestion are discharged

from the body.

(Klaus, 2013)

Respiration is a function that bony fishes have adapted to. Gaseous exchange poses a special challenge to organisms that reside in water. Bony fishes have evolved a structure known as the Gill. The gill facilitates gaseous exchange by bringing into proximity deoxygenated blood and water. Water is pumped through the gills and this repeated process allows the fish to extract the oxygen which has been dissolved in water and exchange it for carbon dioxide. The operculum is an opening at the end of the gills that allows water to exit the gills. A variable degree of gaseous exchange can also occur through the skin.

The bony fish also has a structure called the swim bladder. The swim bladder is a structure that allows the fish to maintain buoyancy in water. However, it has been modified in some species of bony fish to serve as a sound amplifier.

Osmoregulation is also a function that the fish must perform with high precision because of the medium in which it resides. Some bony fish reside in fresh water while others reside in salt water. It is therefore important that the fish strikes a balance between retaining fluid and salt.

For marine fishes, the tissue of the fish is less salty than the surrounding. Therefore, there is the danger of the fish becoming dehydrated. However, the marine fish overcomes this problem of dehydration by drinking large amounts of water and producing very little concentrated urine. The marine fish also secretes salt from its gills.

For the fresh water fish, the reverse is the case. The body tissue of the fresh

water fish is saltier than the surrounding environment. Because of this, the freshwater fish risks swelling up because of retention of fluid. However, this problem is overcome by the fish drinking only little water and at the same time, passing out a lot of dilute urine. In this way, the fish does not lose salt. Also, the fresh water fish does not secrete salt from its gills; rather, salt is reabsorbed into the body.

References

Klaus (2013). Characteristics of Bony Fish by Klaus. Retrieved 31st May, 2013 from

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