

FISH MORPHOLOGY

Fish shape and anatomy helps us discover information about how a fish moves, where and how the fish lives, and how it has adapted to its environment. By studying the morphology of living things, humans have learned how to better design machines such as submarines, torpedoes, airplanes and automobiles. Body shape, mouth location and size, tail shape and color all give indication of how fish live and function. For example, we know by the shape and color of a flounder that it lives on the sea bed floor and swims like a flying bird. Because its top is brown, it blends in with the ocean floor. Since both eyes are on the same side of its head, it indicates that the flounder lives on or near the bottom.

#Body shape is a good indicator of how a fish moves and where it lives.

Fish that are flat or depressiform like a skate or flounder flap their fins up and down to swim through the water in the same way a bird flaps its wings. They normally live on the bottom of the sea floor. Meanwhile, fish that are long and skinny or filiform, like an eel, slither through the water like a snake.

Fish that are streamlined and have an oval or fusiform cross-section like a tuna or striped bass are fast swimmers and usually live in open water. A compressiform shape like that of angelfish looks thin when viewed from the front. This body shape is well designed for making quick turns and quick bursts of speed over short distances. Compressiform fish commonly live where there are many places to take refuge such as ponds, lakes, or coral reefs, or they school together in shallow open waters. The shape of a fish's tail indicates how the fish moves and lives as well. A rounded tail or a truncated tail like that of a killifish or minnow is good for maneuverability and short bursts of speed. This kind of tail is commonly found on fish in coastal embayments. A forked tail like that of a striped bass is good for maneuverability and speed over longer distances. Lunate or crescent shaped tails like those found on a swordfish are not good for maneuvering but allow for great speed over long distances and are usually found on fish that live in the open ocean. The size and location of the mouth tells us a lot about where a fish finds its food, what food it eats, and where it may live. Fish with a large mouth generally eat large pieces of food; an exception is the whale shark that filters small pieces of food through its large mouth. Fish with a small mouth generally eat small items of food such as plankton. If the mouth is oriented upwards, it is a surface feeder, or it feeds on prey above it, like a stargazer or stonefish.

If the mouth is located in the middle front of the head, like a tuna, we can assume that the fish feeds on prey directly in front of it. If the mouth is oriented downwards, it is a bottom feeder,

like a catfish. Some fish have elongated tube-like mouths to reach into crevices, like a butterfly fish, or to “slurp” up food like a seahorse. Color Patterns help determine where a fish may be found and how it escapes predators. Fish that are camouflaged can blend in to match surroundings to hide from predators; a good example of a camouflaged fish is a flounder, which can also change colors to blend in. Another color pattern is called disruptive coloration. This is when a fish has spots, stripes, or patches of color to break up and diffuse the fish’s actual outline. Many coral reef fish have disruptive coloration. Counter-shading is when a fish such as an anchovy or tuna has a dark back and lighter belly. This enables these fish to hide in the open ocean to hide from predators that might be looking down or up at them as the sunlight penetrates the water column. Many fish use warning coloration or bright colors to warn other fish of the presence of venomous spines or some other defensive mechanism. Fish may also use an advertising pattern or color to attract a mate, defend its territories, or promote the idea that it can clean other fish. There may also be different forms of mimicry in fish such as false eye spots to confuse predators into attacking the wrong end of the fish. The Stonefish or Sargassum fish mimic other objects of no interest to enemies. Finally there are fish that mimic another species of fish.

BODY SHAPE

Crosssection	Fish	Shape	Locomotion
	 Tuna	Fusiform	Fast-swimming in open water.
	 Tautog	Compressiform	Quick speed for short distances.
	 Skate	Depressiform	Swims like a flying bird.
	 Pipefish	Filiform	Slithers through the water like a snake.