

All About Fish

Ichthyology—The Study of Fish

Most scientists agree that fish developed from soft-bodied, filter-feeding animals similar to the lancelets of today. Today, there are over 20,000 species of fish. Did you know that some fish can live out of water, others fly, and some even walk on their fins? Fish are an important animal to man; many people around the world depend on fish for their main source of protein.

Built for Water Life

Because of their internal and external features, fish are built for underwater life. Fish have **fins**, fanlike structures, attached to their endoskeleton (inside skeleton). The caudal fin propels the fish forward; the dorsal and anal fins keep the fish from rolling over. The paired pectoral and pelvic fins hold the fish steady and are also used as brakes when the fish needs to stop. Most fish have one of four kinds of scales. **Scales** are hard, thin plates that cover the skin and protect the body. Fish grow their entire lives, and their scales grow with them. You can calculate the age of a fish by counting the growth rings that form as the scales expand.

Most fish float because of a special feature called a **swim bladder**. The swim bladder is a thin-walled sac that can inflate or deflate when gases pass in or out of it. When the swim bladder fills with gas, it becomes buoyant and rises. As the swim bladder deflates, the fish sinks. Constant swimming and lift from the flow of water over their lateral fins also helps prevent fish from sinking. Fish have all five senses that we have. Most fish have limited vision while some fish have keen senses of smell. Fish have receptors on their heads that help them navigate using the earth's magnetic field. Fish even detect physical pain by nerve organs scattered over their skin. Most fish have an extraordinary sixth sense—the **lateral line system**, which detects movement and currents in the water. This sensory organ alerts fish to the movement of other organisms.

Gills are located on both sides of the fish's head and are protected by a covering called the **operculum**. Water passes over the gills from front to back and provides a constant source of oxygen. This efficient method of **respiration** (breathing) allows fish to have a single-loop circulatory system with only a **two-chambered heart**.

Most fish reproduce simply by **external reproduction**, which takes place outside the female body. Most females release large numbers of shell-less eggs into the water. Males then swim over the eggs and release sperm. This behavior is called **spawning**. Spawning is a behavior in fish that results from certain environmental factors such as temperature, length of day, and supply of food. Each species has its favorite time and location to gather and spawn. Most fish lay loads of eggs because most will not survive to become adults.

