

# Three Kinds of Fishes

By Cindy Grigg

<sup>1</sup> A fish is a type of animal that has a backbone, lives in the water, and has fins. Most fish have scales covering their bodies. Most fish breathe with gills. Fish belong to a very large group! Nearly half of all vertebrates (animals with backbones) are fish. Fishes have been swimming in Earth's waters for more than five hundred million years. That's longer than any other kind of vertebrate has been on Earth. Fish were the first vertebrate animals to evolve.



<sup>2</sup> Scientists group fish into three main types. They are divided into these groups because of the structure of their mouths and the types of skeletons they have. There are jawless fishes, cartilaginous (cart uhl AJ uh nuhs) fishes, and bony fishes. All three types are "cold-blooded," or ectotherms. This means that they can't control their body temperature internally. Their body temperature is similar to the temperature of their outside environment.

<sup>3</sup> The jawless fishes were the earliest vertebrates. Today there are only about sixty species still living. These fish have no scales. Their skeletons are made of cartilage, a firm, flexible material like the end of your nose. They also do not have pairs of fins like most fish. But the most remarkable thing about these fish is that they do not have jaws! Instead, the mouths of these fishes have structures for scraping, stabbing, and sucking.

<sup>4</sup> Hagfishes and lampreys are the only living kinds of jawless fishes. Hagfishes look like big slimy worms! They crawl into the bodies of dead or dying fish and use their sandpapery tongue to scrape the tissues.

<sup>5</sup> Lampreys have a mouth like a suction cup with many tiny, but sharp, teeth. Many of them are parasites that feed on other fish. A parasite is an organism that lives off another organism without helping the host organism in any way. Lampreys attach their mouths to a healthy fish and then suck the tissues and blood out of the healthy fish. There are many lampreys in the Great Lakes.

<sup>6</sup> The second type of fish is the cartilaginous fishes. These include sharks, rays, and skates. Their skeletons are made of cartilage, just like the skeletons of the jawless fishes. However, they do have jaws and pairs of fins. Their bodies are covered with pointed, toothlike scales. This gives their bodies a texture rougher than sandpaper. All cartilaginous fishes are carnivores. Rays, like sting rays and manta rays, live on the ocean floor. Sting rays hunt mollusks, crustaceans, and small fishes. Manta rays are filter-feeders. As they swim with their mouths open, water containing plankton, very

small animals, comes into their mouths. They filter out the food from the water.

<sup>7</sup> Most sharks are active predators, eating mostly fish. The great white shark also preys upon ocean mammals like seals. The largest shark, the whale shark, may grow to be forty feet long. It feeds like a filter-feeder, swimming along with its mouth open to catch small fish and plankton.

<sup>8</sup> The third type is the bony fishes. These are the most familiar fish. Bony fish make up about ninety-five percent of all fish species. Trout, goldfish, tuna, clownfish, and catfish are all kinds of bony fishes. They live in both salt and fresh water. Their bodies are covered with scales. Their gills are inside a pocket on the sides of their head. Each gill pocket is covered with a flap that opens to release water.

<sup>9</sup> Bony fish have scales that overlap like the shingles on a roof. Scales are made from a substance like your fingernails. Mucus covers and protects the scales. This slimy coating is important because it protects the fish from parasites, infections, and diseases. It helps wounds heal and even helps the fish move easily through the water. The paired fins help the fish stay balanced and upright in the water. Fins are used for swimming. Fins are thin membranes stretched across a framework of bones. Like a wide boat paddle, a fin provides a large surface to push against the water.

<sup>10</sup> Most all fish breathe with gills. As a fish swims, it automatically opens its mouth. It continuously gulps water, even when it sleeps. The water, which contains oxygen, moves through openings in the fish's throat that lead to the gills. Gills, which look like tiny feathers, are red because of the many blood vessels in them. As water flows over the gills, oxygen moves from the water into the fish's blood. Carbon dioxide, a waste product, moves out of the blood into the water. After flowing over the gills, water leaves the fish through slits beneath the gill flaps.

<sup>11</sup> From the gills, the blood travels through the fish's body. Blood is pumped from the heart to the gills, from the gills to the rest of the body, and back again to the heart. Each cell of the fish's body receives oxygen from the blood and releases its carbon dioxide into the blood. Interestingly, a fish's heart has only two chambers.

<sup>12</sup> Fish come in all shapes, colors, and sizes. Scientists estimate that there are more than 20,000 different species of fish! Fish have lived on Earth before the dinosaurs. Fish have adapted to almost every watery environment and type of food.

Name \_\_\_\_\_

Science Pd: \_\_\_\_\_

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<p>1. A fish is a type of animal that:</p> <ul style="list-style-type: none"><li><input type="radio"/> A Has a backbone</li><li><input type="radio"/> B Has fins</li><li><input type="radio"/> C Lives in water</li><li><input type="radio"/> D All of the above</li></ul>	<p>2. Fish are grouped into _____ main types.</p> <p>_____</p> <p>_____</p>
<p>3. Name the main types of fishes.</p> <p>_____</p> <p>_____</p>	<p>4. What word means that fish cannot control their body temperature?</p> <p>_____</p> <p>_____</p>
<p>5. Which type of fish were the earliest vertebrates?</p> <ul style="list-style-type: none"><li><input type="radio"/> A Bony</li><li><input type="radio"/> B Cartilaginous</li><li><input type="radio"/> C Jawless</li></ul>	<p>6. Sharks, skates, and rays all have skeletons made of:</p> <ul style="list-style-type: none"><li><input type="radio"/> A Muscle</li><li><input type="radio"/> B Cartilage</li><li><input type="radio"/> C Bone</li></ul>
<p>7. Most fish belong to which type?</p> <ul style="list-style-type: none"><li><input type="radio"/> A Jawless</li><li><input type="radio"/> B Bony</li><li><input type="radio"/> C Cartilaginous</li></ul>	<p>8. All cartilaginous fish are:</p> <ul style="list-style-type: none"><li><input type="radio"/> A Herbivores</li><li><input type="radio"/> B Predators</li><li><input type="radio"/> C Carnivores</li></ul>