

## Evolution of Fish

**Ostracoderms:** The first fishes, and indeed the first vertebrates, were the ostracoderms, jawless fishes found mainly in fresh water. They were covered with a bony armor or scales and were often less than 30 cm (1 ft) long. The ostracoderms are placed in the class Agnatha along with the living jawless fishes, the lampreys and hagfishes, which are believed to be descended from the ostracoderms.

**Cambrian to Devonian**

**Acanthodians:** The first fishes with jaws, the acanthodians, or spiny sharks, were generally small shark-like fishes varying from toothless filter-feeders to toothed predators. It is commonly believed that the acanthodians and the modern bony fishes are related and that either the acanthodians gave rise to the modern bony fishes or that both groups share a common ancestor.

**Silurian to Permian**

**Placoderms:** Placoderms were typically small, flattened bottom-dwellers. The upper jaw was firmly fused to the skull, but there was a hinge joint between the skull and the bony plating of the trunk region.

**Devonian**

**Chondrichthyes:** The cartilaginous-skeleton sharks and rays, class Chondrichthyes, are generally believed to be descended from the bony-skeleton placoderms. The cartilaginous skeletons are considered to be a later development.

**Devonian to Recent**

**Osteichthyes:** The early forms of the modern bony fishes, class Osteichthyes were freshwater fishes until the Triassic. The Osteichthyes may have arisen from the acanthodians. A subclass of the Osteichthyes, the ray-finned fishes (subclass Actinopterygii), became and have remained the dominant group of fishes throughout the world.

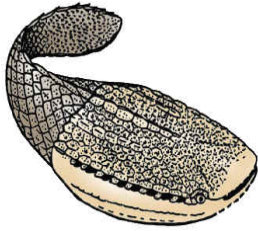
**Devonian to Recent**

**Sarcopterygians:** The ancestors of the land vertebrates are found among another group of bony fishes called the Choanichthyes or Sarcopterygii. Choanate fishes are characterized by internal nostrils, fleshy fins called lobe fins, and cosmoid scales. The choanate fishes possibly arose from the acanthodians. The choanate fishes include a group known as the Crossopterygii, which has one living representative, the coelacanth *Latimeria*. During the Devonian Period some crossopterygian fishes of the order (or suborder) *Rhipidistia* crawled out of the water to become the first amphibians.

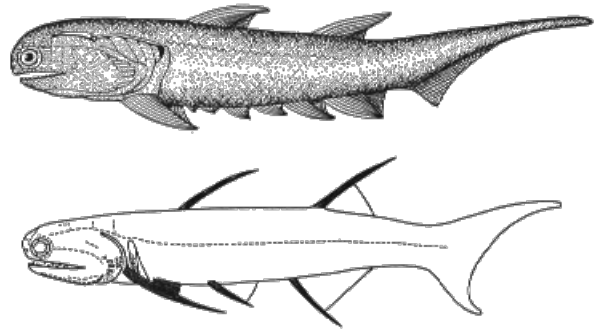
**Devonian to Recent**

Text from <http://www.lookd.com/fish/evolution.html>

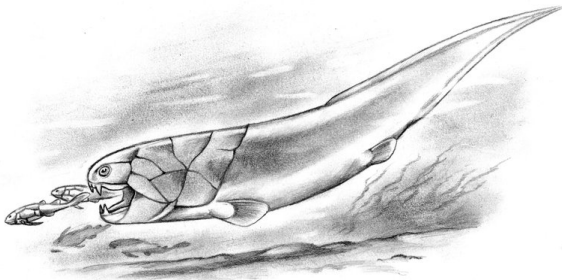
Ostracoderms



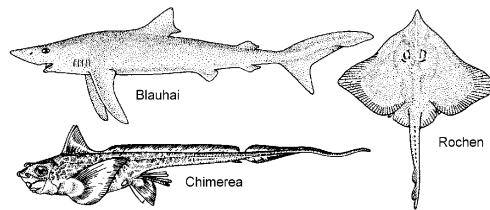
Acanthodians



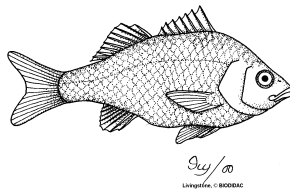
Placoderms



Chondrichthyes



Osteichthyes



Sarcopterygians

