

# The Devonian Period

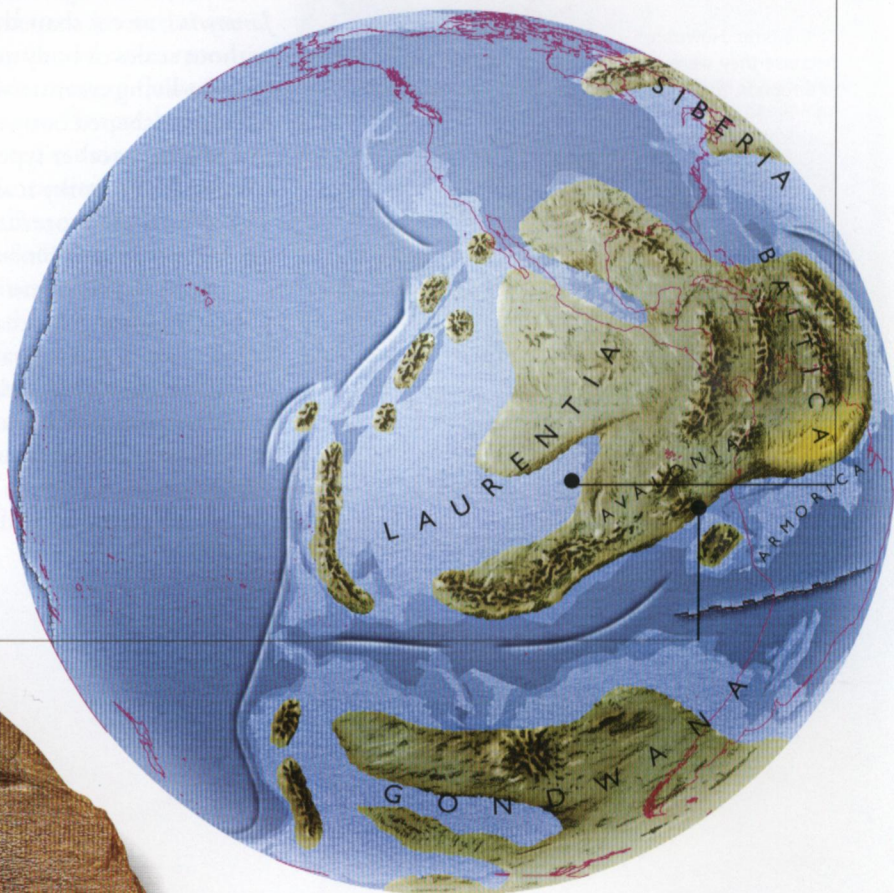
OFTEN CALLED THE “AGE OF FISHES”, DEVONIAN TIMES FEATURED AN ABUNDANCE OF DIVERSE LIFE FORMS IN RIVERS, INLAND SEAS AND FRESHWATER LAKES.

The Devonian period lasted for 63 million years, from 417 million to 354 million years ago. During this time, the closure of the Iapetus Ocean was finally completed, as North America and Greenland (Laurentia) collided with the southern British Isles (Avalonia) and Scandinavia (Baltica) to form a single continental mass. A central mountain belt stretched from Scandinavia, through Britain, to Newfoundland and Canada. Meanwhile, the supercontinent of Gondwana moved steadily northward from its polar position.

Global climates remained warm during this period. The formation of new landmasses resulted in ever bigger and drier continental interiors, where vast deserts developed. The continents were traversed by huge rivers flowing into inland seas and lakes that were home to the first extensive freshwater life. By mid-Devonian times, sea levels had risen as the icecaps melted, allowing extensive reefs to develop in Laurentia and Australia.

## “WINGED” BRACHIOPODS

The spiriferids were one of the groups of Paleozoic brachiopods. These wing-shaped shells from upstate New York housed a spiral structure used for filtering microscopic food from seawater.



## ANCESTORS OF THE FIRST TETRAPODS

The paired fins of this *Eusthenopteron foordi* fish have a single bone and are joined to the body in a similar way to the upper arm or leg bone of a tetrapod (four-legged animal). This fossil was found in Quebec, Canada.

## THE “AGE OF FISHES”

The Devonian inland waterways were dominated by predators. The jawless agnathans were the first to invade freshwaters, but they were soon pursued by their jawed predators. By the end of the Devonian period, these predators had wiped out most agnathans. Only the lampreys and the hagfish survived. The jawed group, by contrast, evolved into a new array of groups – placoderms, ray-finned fishes, lobe-fins, true sharks and lungfishes, some of which were active predators that grew up to 18 feet (6 metres) in size.



**SANDSTONE FIGURES**  
Sandstone typically creates a bare and semi-arid landscape. Originally, storms and flash-floods generated huge rivers that transported and deposited stones into deep sedimentary basins. Erosion of the resulting rock on this Scottish cliff face has created a statue-like sculpture known locally as the Old Man of Hoy.



**OLD RED SANDSTONE**

Periodically, the hot Devonian climate evaporated the waters of inland seas, rivers and lakes, leaving behind mineral salt deposits that reddened when oxidized by the air. These red and brown strata, known as Old Red Sandstone, are prevalent in Britain and the American Catskills. Old Red Sandstone made excellent building material and was extensively quarried in the 18th and 19th centuries. As quarrymen opened the layers of the strata, they revealed the well-preserved remains of the creatures that had lived in the original rivers and lakes.

**MARINE EXPANSION**  
The remarkable expansion in Devonian vertebrate diversity has become clearer as well-preserved evidence of the period, such as the marine seabed deposits of Gogo in Western Australia, has emerged. These thick deposits contain one of the most diverse collection of animals of the age, with over 25 varieties of armoured placoderms, ray-finned fishes, lobe-fins and lungfishes.

The placoderms were primitive jawed forms, growing up to 2 feet (60 centimetres) in length, with a head and trunk enclosed in a box-like structure of bony plates. Some had long, bony, wing-like arms protruding from either side. They evolved in the Silurian age and dominated both the freshwater and marine environments, diversifying into over 200 genera. They looked similar to primitive sharks, but unlike the sharks they died out at the end of the Devonian period.

The lungfishes are a particularly interesting group of primitive air-breathing fish that evolved and flourished in Devonian times. They originally lived in the sea and did not invade freshwaters until the Carboniferous age. Their paired fins and ability to breathe air were thought to link lungfish with landgoing vertebrates, but it is now known that they are not ancestral.

Other creatures in Devonian waters, however, evolved in the direction of terrestrial vertebrates. As plant species continued to develop on land, fish groups such as panderichthyids become almost indistinguishable from the future tetrapods that would eventually leave the water for the land.



**FISH FOSSIL**  
*Osteolepis panderi* was a mid-Devonian-age fish with muscular paired fins like the lungfish. Mostly small fish that grew to about 8 inches (20 centimetres) long, they were first discovered in the 19th century by quarrymen in the Old Red Sandstone of Scotland.