



# Uplifting and Erosion



Visitors to Hurricane Creek Park descend into a deep canyon just off US 31. The descent takes only a few moments along a path that took the forces of nature thousands of years to create. The landscape here was formed when the water, in what is now called Hurricane Creek, cut against the rising stone and carved this beautiful canyon.

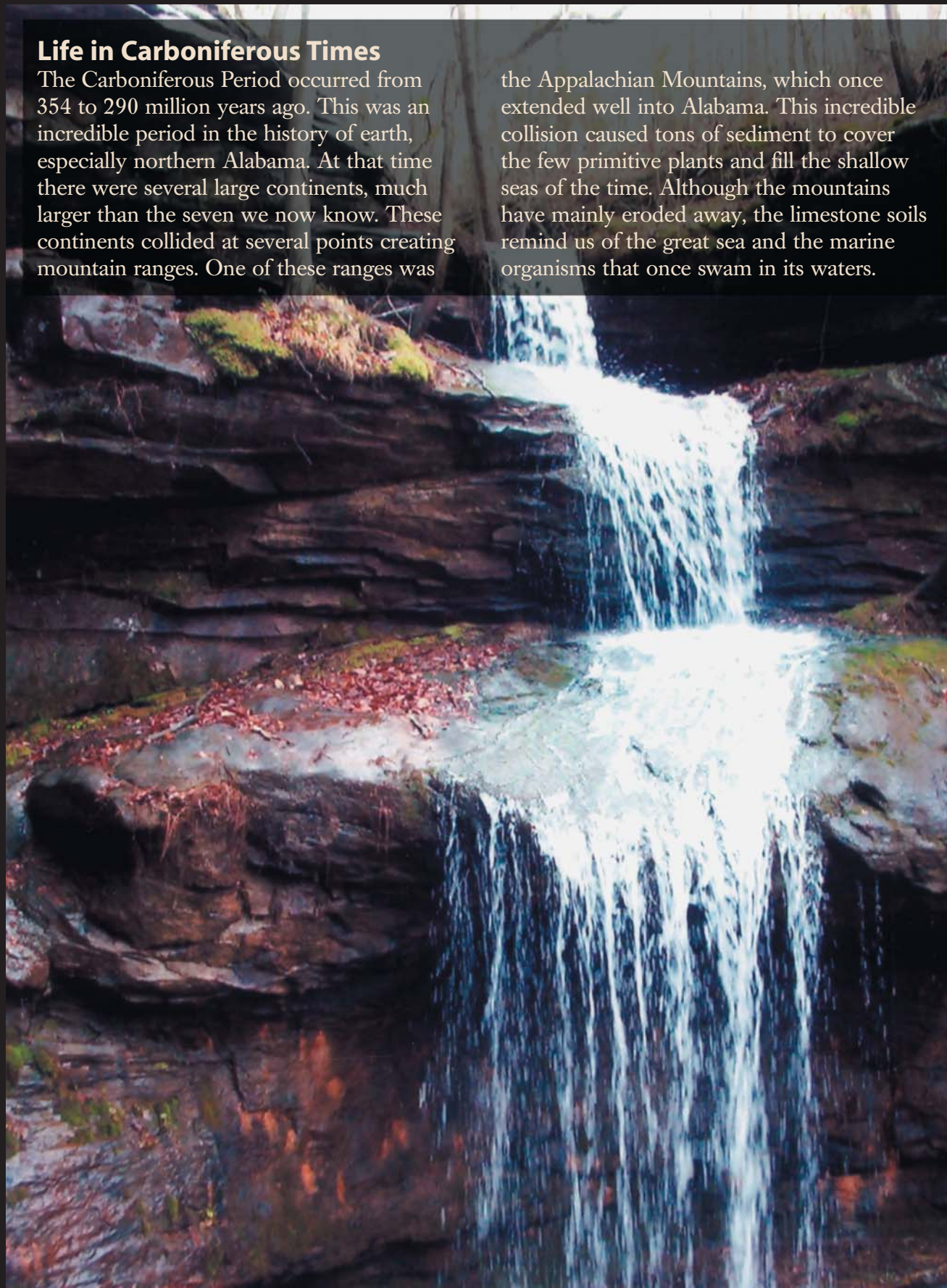
This is a phenomenon we see repeated throughout the region. A series of plateaus are dissected by rivers that form spectacular gorges and create an abundance of photogenic waterfalls. Two main geologic processes were needed to form this unique landscape. First, the plateaus were created by *uplifting*. This was caused by extreme pressure below the earth's crust forcing the ground to rise high above its current level.

Second, *erosion* gradually ate away the soft stone that had been pushed upward. Over time, huge amounts of sediment were worn down and washed out to sea. This process created the soft rounded features of the plateaus as well as the canyons such as the one found here.

## Life in Carboniferous Times

The Carboniferous Period occurred from 354 to 290 million years ago. This was an incredible period in the history of earth, especially northern Alabama. At that time there were several large continents, much larger than the seven we now know. These continents collided at several points creating mountain ranges. One of these ranges was

the Appalachian Mountains, which once extended well into Alabama. This incredible collision caused tons of sediment to cover the few primitive plants and fill the shallow seas of the time. Although the mountains have mainly eroded away, the limestone soils remind us of the great sea and the marine organisms that once swam in its waters.



Waterfall at Hurricane Creek Park/John McCrary



Fossil of Crinoid/Jeff Garner

## What Once Lived Here?

The Carboniferous Period was a time of extensive shallow seas. These seas were similar in many ways to our seas of today. There was an abundance of fish and sharks. There were also extensive areas of coral. One of the most abundant groups of the time were the Crinoids. These are related to the sea urchins and sand dollars of today. Most Crinoids died out when the shallow seas in which they lived filled with sediment. Careful inspection in any large area of limestone will likely produce fossilized remains of Crinoid skeletal fragments.

## Geological Timetable for Alabama

Eon	Era	Period	Epoch	Time	Significance	
Phanerozoic	Cenozoic	Quaternary	Holocene	10,000 years	Recorded human history	
			Pleistocene	1.7 mya	Ice ages, modern landscape	
		Tertiary	Pliocene Miocene Oligocene Eocene Paleocene	67 mya	Rapid evolution of birds and mammals	
	Mesozoic	Cretaceous	Age of Reptiles	140 mya	Extinction of most Mesozoic flora and fauna	
			Jurassic	210 mya	Largest dinosaurs and birds	
			Triassic	250 mya	First dinosaurs, conifers	
	Paleozoic	Permian		290 mya	Extinction of Paleozoic life	
		Carboniferous	Pennsylvanian	Coal Ages	325 mya	Rise of Appalachians
			Mississippian		360 mya	Great thickness of limestone
		Devonian		410 mya	Age of fishes	
Silurian			440 mya	First land plants and animals		
Ordovician		500 mya	Age of invertebrates			
Cambrian		590 mya	First major animal groups			

Precambrian

mya - million years ago