

HOLIDAY GEOLOGY

Big Bend, Texas

Big Bend National Park and the almost adjacent Big Bend Ranch State Park are in the remote southwest of Texas. The two parks extend over 445 sq. km., forming the northeast extremity of the Chihuahuan Desert that covers much of northern Mexico. The southern boundary of the parks is formed by the Rio Grande, which is also the international border. For much of its length in the parks, the river follows the line of a fault with a 1500 m downthrow on the Texas side. This results in a 450 m cliff in the Santa Elena limestone that forms the back drop to many views.

Cretaceous limestone plus younger sediments and volcanics form the surface of much of the Park. The limestone has been intruded by Tertiary rhyolites. Block faulting and erosion of the limestone has resulted in rhyolite domes protruding through to produce the peaks of the Chisos Mountains. These dark red rocks contrast with the white limestone to produce a colourful landscape. Extrusive rhyolites and Tertiary basalts cap other mesas, and dykes form walls across the desert. There are many small canyons that show good sections through the lavas, tuffs, conglomerates and limestones.

At the National Park fossil exhibit, replicas of excavated Eocene mammal bones are displayed. The originals, plus various dinosaur remains that have been excavated, are in Austin. At the west entrance to the National Park, at Study Butte, there are the remains of cinnabar mining and mercury refining.

Around the north entrance to the National Park are older Palaeozoic rocks. These, and the Cretaceous rocks in this area, have been subject to multiple

thrusting during the assembly of Pangaea and again on the opening of the Atlantic during one of the phases of Rocky Mountain uplift. The most visually striking of these steeply dipping rocks are the beds of gleaming white novaculite (a hard, siliceous rock formed by low-grade metamorphism of bedded chert). Subsequent continental relaxation, as part of the early Tertiary basin-and-range episode, produced the block faulting and allowed the igneous activity, the results of which can be seen today.

Both parks are visited by numerous birds and contain plants that are otherwise only found in Mexico and further south, so are of great interest to northern birders and botanists. The park emblem is the Road Runner. These birds are abundant and it is easy to see why their comical demeanour inspired the cartoon character. They can reach a maximum speed of about 30 mph (when chased by a car); above this speed, they take off and glide into the scrub.

The temperature in April is around 30°C with a pleasantly dry air and little likelihood of rain, though it is often windy. April is also the time that the desert blooms if there have been winter rains. The numerous species of cactus are decked with surprisingly large, yellow, red or magenta blooms while the ground between them can be covered with blue lupins and various species of yellow daisy. Bushes that have appeared to be dead for the rest of the year, burst into green leaf and colourful flower. There is an excellent botanical garden and interpretative centre near Lajitas in Big Bend Ranch State Park.

In spite of their remoteness, a survey by the National Parks Service shows that most visitors only spend one day in the parks. For anyone interested in geology and nature, a week would be time well spent.

Alan Filmer



In the Chisos range of Big Bend National Park, Ward Mountain is part of an Oligocene rhyolite dome that emerged through Eocene-Oligocene limestones and tuffs. The foreground of this view from Maxwell Drive is broken by the long ridges of the Chinese Walls that are erosion-resistant Neogene basaltic dykes.