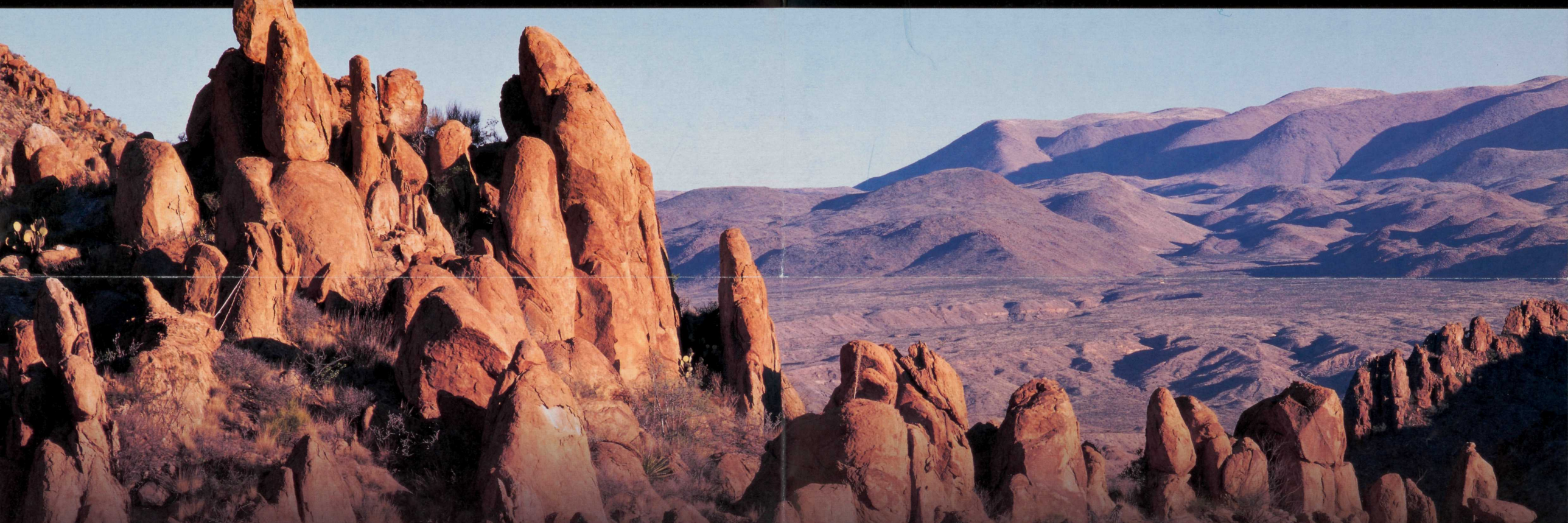
Big Bend

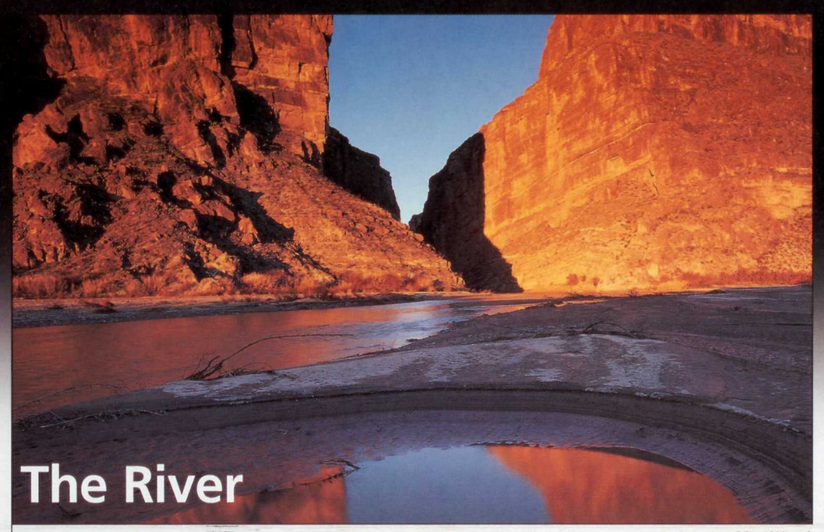
Big Bend National Park
Texas

National Park Service
U.S. Department of the Interior



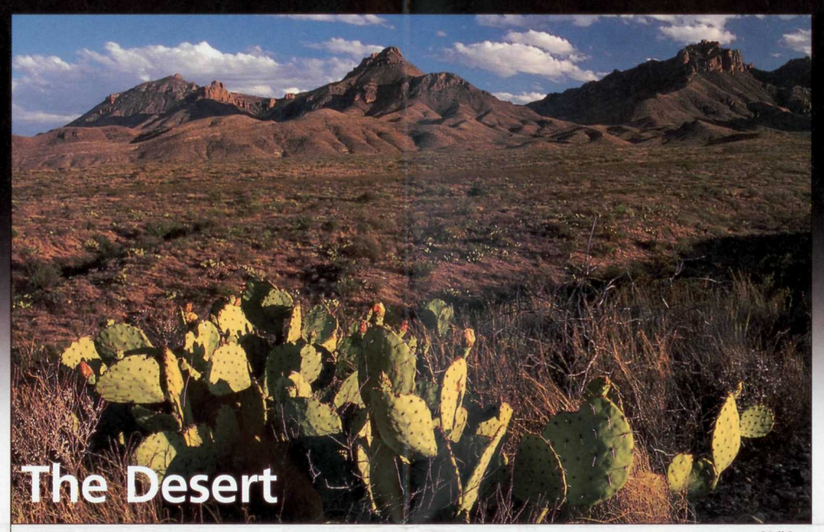
In Big Bend National Park all roads end at the Rio Grande River, the boundary between the United States and Mexico. But far more than two nations meets here. Three states come together at Big Bend: Texas in the United States and Coahuila and Chihuahua in Mexico. Many of the park's famous, expansive vistas mix scenes belonging to both nations. One of the park's best-known features, Santa Elena Canyon, is only half a canyon on the United States side. Its canyon walls on the river's south side tower high above Mexico. Big Bend National Park also marks the northernmost range of many plants and animals, such as the Mexican long-nosed bat. Ranges of typically eastern and typically western species of plants and animals come together or overlap here. Here many species are at the extreme limits of their ranges. Latin American species, many from the tropics, range this far north, while northern-nesting species often travel this far south in winter. Its location on a bird migration route between South, Central, and North America makes the park excellent for birdwatching. The Rio Grande River corridor also provides a migration highway by which many species pass through the desert. Contrasting elevations create additional, varied micro-climates that further enhance the diversity of plant and animal life and the park's wealth of natural boundaries. Birders and other wildlife watchers know that the greatest numbers of species are often found at the ecotone (transition area) between adjacent ecological communities or habitats. In Big Bend National Park the varied ecotones formed by river, desert, and mountains result in an outstanding diversity of wildlife.

View of Rosillos Mountains from Grapevine Hills ©Jeff Gnass



The River

©David Muench



The Desert

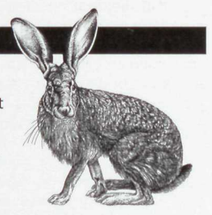
©Jeff Gnass

The Mountains

©David Muench

The name Big Bend refers to the great U-turn the Rio Grande River makes here in Southwest Texas. The river is an arcing linear oasis, a ribbon of green across the dry desert and cutting through its mountains. Like all rivers that survive desert passages, the Rio Grande has its headwaters outside this desert. Today much of the water flowing through the park is supplied by the Rio Conchos River that flows out of Mexico, not by the Rio Grande. Much of the flow of the Rio Grande is diverted for irrigation or lost to evaporation before it reaches the park's western boundary. The Rio Grande defines the park's southern boundary for 118 miles. Garfish and some turtles are living fossils that help describe the area's former life as a lush savannah and swamp 50 million years ago. Their ancestors swam in company with crocodiles and hippopotamus-like creatures.

Jackrabbit



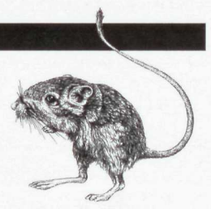
Big ears are the jackrabbit's distant early warning system against its predators. The ears also work as radiators to transfer excess body heat to the environment as needed.

If you wonder about the river's carving power—did it really cut such colossal canyons?—paddle an aluminum canoe down the Rio Grande. The canoe will seem to hiss as thousands of abrasive particles bounce off its hull. The river is like a relentless, gravity-powered beltsander that has been running for millions of years.

Among the startling sights in this desert country may be the tooth marks of beaver on cottonwood or willow trees along the river. But don't look for the beaver lodge—beavers here live in bank burrows. The river is an oasis for species not adapted to the aridity of desert life, and so it adds to the park's biological diversity. The river's floodplain provides areas for birdwatchers. Some birders say the birds in the floodplain are more colorful than elsewhere. Summer tanagers, painted buntings, vermilion flycatchers, and cardinals lend their accent colors to the background greens of foliage. This ribbon-like floodplain verdancy appears as a green belt in the desert. It is a phenomenon seen elsewhere in the park along arroyos, or washes. Birds and other animals make use of this interruption of more arid desert vegetation. On the river's sand and gravel bars and cliffbanks are other creatures you would not expect in the Chihuahuan Desert. Sandpiper and killdeer sprint on the sandbars, and the cliff swallow flies to its adobe nest of river mud.

The floodplain has been a homeland to people for many centuries, but knowledge of the Rio Grande among non-Indians dates back less than 150 years. Spanish people crossed the Rio Grande in the 16th and 17th centuries searching for gold, silver, and fertile land. The Presidio del Paso de San Vicente was established in 1774 at a major river crossing. People did not float the river, as far as we know.

Kangaroo Rat



The kangaroo rat is superbly adapted to dry desert life. It does not need to drink to survive. It can metabolize water from carbohydrates in seeds, and it wastes no excess moisture.

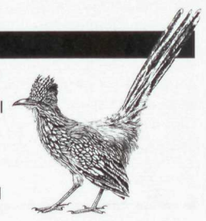
Comanche Indians crossed the river in the 19th century, traveling to and from Mexico with their raiding parties. In 1852 U.S. Army Major William H. Emory conducted a boundary survey. Emory's party examined all three river canyons but elected to float only Mariscal. An 1881 survey party led by a Texas Ranger floated Santa Elena Canyon. (He actually led the float party by horse from the canyon rim.) In 1889 a U.S. Geological Survey expedition was the first group known to run Boquillas Canyon.

Mexican settlers began farming on both banks of the river's floodplain around 1900. Anglo-Americans joined in the farming after 1920, when boundary unrest ended. Cotton and food crops were grown around Castolon and what is now Rio Grande Village even after the park was established.

North America has four deserts: Great Basin, Mojave, Sonoran, and Chihuahuan. The Chihuahuan extends deep into Mexico, and Big Bend National Park lies in its northern third. This desert is bordered on three sides by mountains that block the rains. Its other side abuts vast semiarid plains. The Chihuahuan Desert is young, perhaps not more than 8,000 years old. Green and somewhat lush, it receives most of its rainfall when most needed, in the summer.

Heat and seasonal winds contribute to the aridity. Ground temperatures may reach 180°F at mid-day in summer, or they can be freezing in winter when northern storms sweep through. The good news: it is often a luxurious 80°F here while the Rocky Mountains are locked in deep snow.

Roadrunner



Running at speeds up to 20 mph the roadrunner pursues lizards and small rattlesnakes. It pecks them to death with stunning blows of its beak. The roadrunner gets much of its required moisture from the body fluids of its prey.

Life here has adapted to minimize expending its energy and to maximize getting or even hoarding water—as the kangaroo rat illustrates. We should not be amazed that Big Bend animals are so well adapted to desert life. Such adaptations are what life is all about. There are fairy shrimp, fast-growing toads, and those jackrabbit ears. There are more mundane adaptations too: many animals beat the heat by coming out only at night. Most snakes do this because summer daytime temperatures on the desert floor would kill them in minutes. Another way to beat this heat is to climb above it. Many human travelers pass through the summer desert quickly, headed for the higher and cooler Chisos Mountains. Some insects use the same strategy. They merely fly straight up in the air a short distance, where it is significantly cooler. One walking beetle seems to rise up on stilts periodically, again to achieve critical distance from the desert floor's killing heat.

Although ancient cultures made homes here at least 10,000 years ago, perhaps earlier, little evidence of human occupation appears until the Archaic or Desert Culture of 8,000 years ago. Hundreds of Chihuahuan Desert plants were useful to these people as food and medicine. Their diet included hearts of the sotol and lechuguilla plants; fruit and blossoms of yucca; fruit and young pads of pricklypear; mesquite and acacia beans; and other native plants. They made baskets and sandals from lechuguilla fiber and yucca leaves. They hunted with the atlatl, a throwing stick that propelled stone-tipped darts to kill deer, rabbits, and other game. Like us they needed food, water, and shelter. Desert springs were valuable sources of drinking water. Today, living sites often include the remnants of rock shelters and hearths or fire rings.

Late in the Archaic period trade between the local people and those from the south and west introduced horticultural practices, bringing cultivated corn, beans, and squash to supplement their diets. By 1200 the La Junta people, an agricultural group related to the Puebloan people of the upper Rio Grande, occupied and farmed the river floodplain in areas west of today's national park. In the 1500s Spaniards enslaved the Indians and substantially changed their culture. Pushed south by Comanches, Apaches moved into this area in the 1700s.

Apaches were capable of resisting the Spaniards, who began to release their tenuous hold on this area in the 1700s. In the 19th century, Anglo-American homesteaders encroaching on hunting territories forced Comanches southward. Mexican settlers occupied the Big Bend by the early 1800s, and their isolated communities became the targets of raids by nomadic Comanche warriors. Gold discoveries in California in the mid-1800s and the destruction of bison herds hastened the Comanches' decline. Military forts were built on the route that passed through this area to California goldfields.

If the Rio Grande River interrupts the Big Bend country as a linear oasis, the Chisos Mountains interrupt it as a green island in a desert sea. The presence of the river and the mountains brings together creatures that you might not otherwise expect to find in desert areas.

Several species are quite rare. Isolation—set in motion thousands of years ago as the great ice age drew to a close—accounts for their rarity. As colder, moister climates retreated northward many plants and animals became stranded in the Chisos Mountains by the increasing aridity of the lowlands that surround them.

Golden Eagle

The golden eagle's wingspread may be six to eight feet. Its golden nape is visible only at close range. It nests in large trees or on high rocky ledges and feeds mostly on rabbits and large rodents.

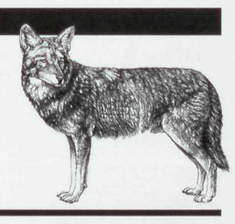
Carmen Mountains white-tailed deer provide a graphic example. Within the United States these deer live only in the Chisos Mountains. Also occupying several nearby mountain ranges in Mexico, they are unknown outside this area that the Rio Grande bisects. White-tailed deer are not adapted to desert conditions. They may have had a much wider range in this region during the much cooler ice age. As the climate warmed, cooler conditions prevailed only in the mountains because of their higher elevations.

Today, the fate of this smaller white-tailed deer can be monitored by watching the desert mule deer gradually encroach on mountain foothills. Adapted to desert life, mule deer appear to be usurping some of the white-tailed deer's range.

Average rainfall at the Basin, a Chisos Mountains location popular with people and other animals, is twice that at Rio Grande Village along the river. Approaching the mountains through Green Gulch, you pass grasslands punctuated by century plants and sotol, but soon you will notice green, leafy shrubs. Then the bushes get taller, with evergreen sumac, mountain mahogany, Texas madrone, and common beebrush. You see both evergreen and deciduous trees. At an elevation of 4,500 feet, the first tall trees begin to appear. Higher up in the drainages you see masses of trees—junipers, small oaks, and pinyon pines. Some tree species grow at the extreme southern limit of their United States ranges in the Chisos Mountains. Arizona pine, Douglas fir, Arizona cypress, quaking aspen, and bigtooth maple are the last remnants of ice age-influenced forests once widespread here.

Some Big Bend plant species are found nowhere else in the world. The Chisos oak grows only in the Chisos Mountains highcountry. A number of plant species grow in the United States only in the Chisos Mountains, but they also are found in Mexico and elsewhere. Drooping juniper that looks as though it needs a good watering is such a plant.

Coyote



The coyote can put on a burst of speed sufficient to run down jackrabbits. Its craftiness, immortalized in many Indian stories, sometimes is witnessed by wildlife watchers.

Illustrations: Gene Dieckhoner

To see all the bird species that occur in the United States, you eventually must come to the Chisos Mountains to see the Colima warbler. It nests here after wintering in Mexico. Also found here is the mountain lion, locally called a panther. This cat has given its name to the lion's share of park places, including Panther Pass and Panther Junction.

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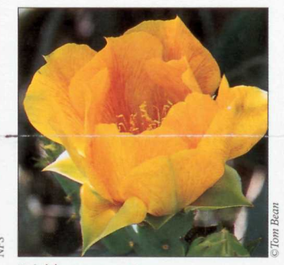
Desert marigold

NPS

Claret cup actus



©Tom Bean

Prickly pear cactus

NPS/Tom VandenBerg

Desert willow

©David Schleser

Ocotillo

©Stephan Krasemann

Rock nettle

NPS/Tom VandenBerg

Pitaya cactus

©ramblincameras.com

Torrey yucca

©Robert V. Lourey

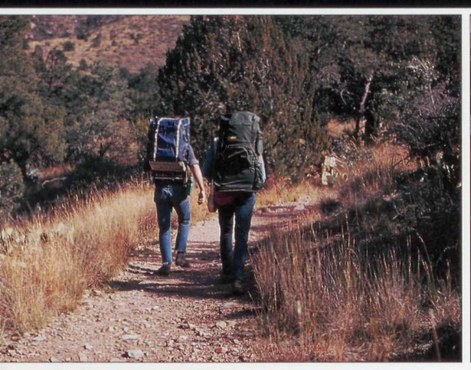
Lechuguilla stalk

Amazing Adaptations

The popular image of desert-dwelling plants is the cactus, uncommonly adept at getting water and then miserly about hanging onto it. But, there are other strategies or adaptations. One is waiting. Many desert annuals, unlike their counterparts in temperate climes, simply wait out the rains in the seed stage of their life. If the rains don't come one year, the seed remains dormant. Some seeds are coated with chemicals that inhibit germination. Unless enough rain falls to remove this inhibitor, the seed ignores the wetting. This assures that the developing plant will have enough water to complete its life cycle and develop new seeds before the next dry spell. This chemically patient seed may wait more than a year to germinate but once it does, the plant will develop, flower, and fruit more rapidly than would a temperate annual. Creosotebushes ply another strategy. These regularly spaced shrubs look as though humans had deliberately planted them—the plants produce a toxin in their leaves that, when shed, discourages other plants from intruding in their growing space. The small creosotebush leaves are coated with a resin so that they lose little moisture to the air. These combined strategies make creosotebush the most prevalent shrub in the park and enable it to prosper in North American deserts. Creosotebushes that grow along a road use pavement runoff and may grow twice as tall as those one row back from the road. Cacti exemplify water conservation. Cacti have spines instead of water-losing leaves. Spines also protect plants from being trampled or eaten. The thick and fleshy stem presents reduced surface area and bears a waxy coating that inhibits evapotranspiration. The shallow root system spreads in a wide pattern to intercept rainwater as soon as it enters the ground. Cacti store water, serving as their own reservoirs for surviving long droughts. The ocotillo, not a cactus, is in a family by itself. With rainfall the ocotillo develops leaves but drops them when dry conditions return. This may happen several times a year. Wax extracted from the candelilla, or wax plant, has been used in the manufacture of candles, waxes, gum, and phonograph records. In the rainy season the stem fills up with a thick sap that coats the stem as a wax and prevents evaporation in the dry season. The wax seals in moisture and protects the candelilla from drought. Desert plants display their most profuse flowering in spring, especially in April. While it is difficult to predict, wildflowers often are most impressive during the hot months. One glimpse of this floral richness may change your image of the desert forever.

Too often the desert has been conceived of as a vast emptiness, but it is a life zone. In its own way it is full of plants and animals suited to their situations. The life of the desert is nowhere more apparent than amidst the astonishing floral displays that may follow rainy periods. Cacti begin to flesh themselves out to their true, water-retentive proportions and to sport colorful blossoms. Plants that may look dead leaf out anew. Wildflowers bloom as though they were carpets of glorious color. Nothing will so thoroughly revise your concept of the desert as to witness one of its spectacular flowerings.

Exploring Big Bend



Backpacking the Chisos
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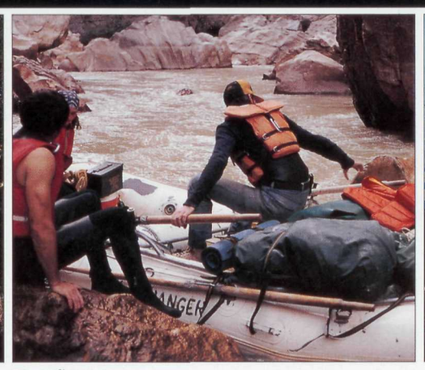

River floaters
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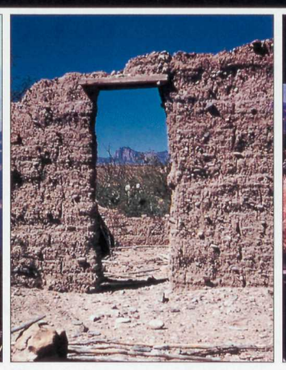
On the South Rim
©Tom Bean



Glenn Spring
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Wilson Ranch
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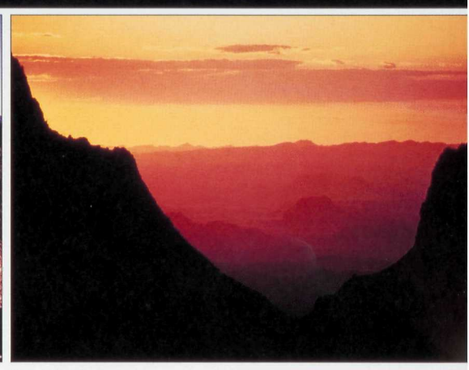

The Window
NPS

Visiting the Park

There is no public transportation to or through the national park. Trains and buses serve Alpine, and airlines serve Midland-Odessa and El Paso. Distances are vast, so plan your arrival and departure conveniently for available facilities. See area map *(right)* for approaches. Water and gasoline are available at few and widely separated points in and near the park. Check your water supply and gas gauge before you leave Alpine or Marathon.

Carry drinking water in your vehicle and when hiking. Hikers require one gallon per person per day. Start your return trip before half your water is gone. Treat spring water before drinking, and do not drink river water.

Publications, road guides, hiking guides, and maps are sold at the visitor centers at Panther Junction, Chisos Basin, Persimmon Gap, and Rio Grande Village. Check at a visitor center for schedules of naturalist programs and activities. The official *Big Bend National Park Handbook*, a guidebook exploring the park's history, natural environment, and wildlife, is sold at visitor centers.

Find overnight lodging at Chisos Mountains Lodge in the Basin. Campgrounds are located in the Basin, Rio Grande Village, and Castolon. There is a trailer park with utility hookups at Rio Grande Village.

There are backcountry roadside campsites along some park dirt roads (free permit required). Many require high clearance or four-wheel-drive vehicles. All lodging and camping facilities may be full in spring and during holiday periods. Check before driving to the park, call 915-477-2251. For reservations and information on lodging, call 915-477-2291 or write Big Bend National Park Concessions, Inc., Big Bend National Park, TX 79834-9991.

Groceries, cold drinks, camping supplies, and film are sold at the Basin, Rio Grande Village, Castolon, and Panther Junction. The Chisos Mountains Lodge has a gift shop. Gas is available only at Panther Junction and Rio Grande Village. Minor auto repairs can be obtained at Panther Junction.

There are no medical services in the park. The nearest hospital is in Alpine, 100 miles north of park headquarters. A rural health clinic is at Terlingua, 27 miles west of park headquarters. **To reach the park's ambulance service or to report an emergency, dial 911.**

For More Information
Big Bend National Park
P.O. Box 129
Big Bend National Park, TX 79834-0129
TDD 915-477-2370; 915-477-2251
www.nps.gov/bibe

Activities

Big Bend has superb walking and hiking, river running, and birdwatching. *Please read the sections on regulations and safety before you begin. If you have questions, ask a ranger.* Report accidents, incidents, or injuries at park headquarters or to a ranger.

Hiking Walks and hikes range from short, self-guiding nature trails to cross-park treks. Off-trail hiking requires proper gear and adequate supplies. Use a topographic map and know your route.

River Use The park administers 245 miles of the Rio Grande River for recreational use. Get a free river float permit (required for all boat use) and current river information at park headquarters or any ranger station. Be well equipped and informed before running the river. A river guide is sold at park headquarters. There are no equipment rentals in the park. Contact the park for a list of river outfitters. River levels vary greatly. The river may be dangerously high or too shallow to float. Check river levels before starting a float trip. The Rio Grande is a Wild and Scenic River for 196 miles along part of the park boundary and extending downstream.

Birdwatching The park is a birder's paradise—more than 450 species of birds have been seen here. The larger migration occurs in spring. Ask a ranger about the best birdwatching spots during your visit.

Regulations and Safety

Driving Observe posted speed limits. The maximum speed limit in the park is 45 mph. If water crossings are flooded by seasonal storms, wait out the high water. A short wait is better than having your vehicle swept downstream. Vehicles must stay on established roads. Backcountry roads are subject to closure from storm damage. Check road conditions before driving unpaved routes.

Night Driving Watch for wildlife at night. Animals blinded by your headlights may stay on the road.

Hiking and Backcountry Camping Get a backcountry permit for any overnight use. Building fires is prohibited. Fire danger in the Chisos Mountains may be extreme. Besides highcountry trails, there are rewarding hikes in the lower desert region; ask a ranger. Be wary of high water and low spots when camping. Do not camp in arroyos or washes. They can become raging rivers while you sleep.

Camping and Fires Camping is allowed in campgrounds and at designated backcountry sites with a permit. Building wood or ground fires is prohibited.

Trail Use Stay on established trails to prevent erosion and slides. Smoking on trails is not allowed. Please carry out all trash.

Swimming and Wading The Rio Grande is dangerous: Strong currents, submerged snags, and sudden drop-offs. It claims the lives of more swimmers and waders than it does river runners.

Poisonous Reptiles and Insects A copperhead and four rattlesnake species live here but are rarely seen in daytime. They are protected by law; do not harm them. At night stay on trails and use a flashlight. Snakes, scorpions, tarantulas, and other wildlife generally won't harm you unless you annoy them. Get prompt attention in case of an injury.

Spines and Thorns Spines and thorns of cacti and other plants are hazardous. Wear sturdy shoes and clothing for off-trail hiking and carry tweezers.

Fishing Fishing licenses are not required within the park. Park rangers can supply fishing information.

Firearms All weapons must be unloaded, broken down, and out of sight.

Pets Pets are allowed on roads, in developed campgrounds, and in primitive roadside campsites. They must be leashed at all times and are prohibited on trails, in the backcountry, and in public buildings.

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