



The Paisano

Big Bend National Park
Rio Grande Wild & Scenic River
Visitor Guide

Volume 33, number 1 2013



C. BALLOU

Windmill at Sam Nail Ranch

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Welcome to Big Bend National Park!

Welcome to Big Bend National Park and the Rio Grande Wild and Scenic River! Over 800,000 acres await your exploration and enjoyment.

From an elevation of less than 1,800 feet along the Rio Grande to nearly 8,000 feet in the Chisos Mountains, Big Bend includes massive canyons, vast desert expanses, forested mountains, and an ever-changing river. Here you can explore one of the last remaining wild corners of the United States.

In fact, early explorers found the Big Bend Region to be so remote, so wild, that they called this area El Despoblado—the

uninhabited land. At first glance, the desert appears to be desolate and barren. One might feel alone in the wilderness of Big Bend, but even here you are surrounded by life.

From the forests of the Chisos down to the floor of the desert, over 1,200 types of plants thrive in the park and support ecosystems full of pollinators, herbivores, and other wildlife.

Take a drive along one of Big Bend's roads, or hike a scenic trail, and discover just how much diversity and life there is in the desert!



R. WONITE

Superintendent's Message

My husband and I fell in love with Big Bend in the late 1980's after a Chisos Mountains backpacking trip. Now, after several decades in a diverse and rewarding National Park Service career, I am honored to have the opportunity to become a member of the team here at Big Bend.

With your help, I look forward to assuring the protection of this national park, while providing visitors with opportunities to explore and understand this special place.

One upcoming project that I'm excited about, the Fossil Bone Discovery Trail, will significantly enhance understanding of our diverse fossil resources. I'm also thrilled to be working with our partners in Mexico to open a Port of Entry, which will provide greater cooperation with our neighbors while assisting in the preservation of our shared ecosystem.

Cindy Ott-Jones

Superintendent Cindy Ott-Jones



C. BALLOU

Sunrise over the Sierra del Carmen Range





National Park Service

U.S. Department of the Interior

Big Bend National Park

Rio Grande Wild & Scenic River

The National Park Service was established on August 25, 1916. . . “to conserve the scenery and the natural and historic objects and the wildlife. . . and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.”

Authorized by congress in 1935, and established in June 1944, Big Bend National Park preserves the most representative example of the Chihuahuan Desert ecosystem in the United States.

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Big Bend National Park, TX 79834

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432-477-2251

Park Websites
www.nps.gov/bibe/
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The National Park Service cares for the special places saved by the American people so that all may experience our heritage.

EXPERIENCE YOUR AMERICA™





NPS PHOTO

Fossil Discovery Trail

Park Ranger Gail Abend

Jurassic Park is coming to Big Bend National Park. Well, more accurately, Cretaceous Park. Ground-breaking for the new Fossil Discovery Trail is expected in the near future. The 0.25 mile trail will replace the current Fossil Bone exhibit eight miles north of Panther Junction. The trail will feature the four major ecosystems—marine, coastal, inland floodplain, and volcanic highlands—that were present in the park from about 120 million years ago (mya) to the present. Covering a wide range of interests for expert and layman alike, the exhibits will also feature important geologic events such as the great extinction at the end of the Age of Dinosaurs.

The highlight of the trail will be the fossils themselves. All types of fossils will be exhibited including dinosaurs, mammals, invertebrates, and plants. Several fossil casts are being considered as well as full-sized and touchable replicas of the giant femur of Alamosaurus and the skull of the super-crocodile, Deinosuchus that lived 73-80 mya. While its overall appearance is similar to modern crocodiles and alligators,

Deinosuchus measured up to 39 feet and weighed over 9 tons. It was probably capable of killing and eating large dinosaurs as well as feeding on other aquatic and terrestrial prey. The croc skull will be cast in bronze.

A towering celebrity of Big Bend was discovered in 1999 when the vertebrae and pelvic bones of an adult Alamosaurus were unearthed in the park. Alamosaurus belongs to a group of dinosaurs called sauropods—large herbivores with extremely long necks and tails—that disappeared from North America 105 mya and reappeared when conditions were suitable about 70 mya. The Big Bend sauropod measured 100 feet in length and weighed over 50 tons.

Several mammal casts will also be featured, including the lower jaw of a Columbian Mammoth and the skull of a rhino-like Brontothere, an extinct mammal that belonged to the same Order as horses, rhinoceroses, and tapirs. The Columbian Mammoth ranged from Alaska across the mid-west, and south into Mexico and Central America. Standing 14 feet at the shoulder and weighing up to 10 tons, the Columbian Mammoth could consume 700 tons of vegetation a day. Its cousin, the Woolly

Mammoth, was smaller and migrated as far as present-day Kansas.

The trail may include an interactive children’s discovery component, as well as real and touchable fossils. There is no set completion date and the rate of construction will vary depending on logistics and funding. For information regarding donations to the Fossil Discovery Trail, contact the Friends of Big Bend at www.bigbendfriends.org/fossil.



NPS PHOTO

Marine clam fossil

Support Your Park!

Become a member and create a lasting relationship with Big Bend National Park.

Do more with your dues!
Purchase a dual annual membership in both Big Bend Natural History Association (BBNHA) and Friends of Big Bend National Park (FBBNP) for only \$100.

Member Benefits
Membership benefits include a 15% discount in BBNHA bookstores; a 10% discount on most seminars; a subscription to the *Big Bend Paisano*; a current Big Bend calendar; discounts at many other association bookstores in other national park sites; and the opportunity to support scientific, educational, and research programs in Big Bend.

Annual Dues

- Individual \$50
- Associate \$100
- Corporate \$200
- Joint Membership \$100

Life Membership

- Individual/Family \$500
- Corporate \$1000
- Benefactor \$2500

Join online at:
www.bigbendbookstore.org


For more information:
432-477-2236

Park Partners

Big Bend Natural History Association

The Big Bend Natural History Association (BBNHA) was established in 1956 as a private, non-profit organization. The Association’s goal is to educate the public and increase understanding and appreciation of the Big Bend area and what it represents in terms of our historical and natural heritage. BBNHA champions the mission of the National Park Service in interpreting the scenic, scientific, and historic values of Big Bend, and encourages research related to those values.

The Association conducts seminars, and publishes, prints, or otherwise provides books, maps, and interpretive materials on the Big Bend region. Proceeds fund exhibits, films, interpretive programs, seminars, museum activities, and research.




www.bigbendbookstore.org

Friends of Big Bend

Founded in 1996, the Friends of Big Bend National Park is a private, non-profit organization with a mission to support, promote, and raise funds for Big Bend National Park in partnership with the National Park Service and other supporters who value the unique qualities of this national resource on the Rio Grande.

The Friends of Big Bend National Park has funded a range of critical projects, including wildlife research programs, the purchase of air and water quality monitoring equipment, and the construction and renovation of the park infrastructure.

Get In On the \$30-Per-Plate Fund-Raiser
Big Bend custom license plates are available for your car, truck, or motorcycle from the state of Texas and most of the proceeds go to preservation and protection of Big Bend National Park.




PO Box 200
Big Bend National Park, Texas 79834
432-477-2242
www.bigbendfriends.org

Volunteers in the Park

Approximately 260 volunteers contribute 50,000 hours of work every year in Big Bend National Park! Whether manning visitor centers and campgrounds or patrolling backcountry trails, volunteers protect valuable resources and help visitors learn about, and more safely enjoy, Big Bend National Park.

While you might not notice volunteer contributions at first, look around and you'll be surprised how many volunteers you see. It is primarily volunteers who provide visitor information at campgrounds, and at four of the five visitor centers in the park. They keep the campsites, backcountry roads, and trails in pristine condition, assist with maintenance projects, and are considered the eyes and ears of the park. Please thank them for their services if you have the opportunity. For more information, contact the volunteer coordinator at 432-477-1196.



www.nps.gov/volunteer

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Big Bend and the Border



C. BALLOU

The Fluid Border

In addition to defining the curve that forms the Big Bend, the Rio Grande also serves as the international boundary between the United States and Mexico. Throughout much of its history, the border along the Rio Grande has been fluid, allowing people of both countries to come and go as needed. However, the border is an artificial boundary imposed on the natural environment, and as such is subject to political and social pressures that continue to evolve. Increased border restrictions have led to a number of important changes that affect the international boundary in Big Bend.

Border Crossing

The Boquillas Crossing Port of Entry is the gateway for those visitors who wish to take advantage of the opportunity to visit Mexico. Proper documentation is required to both enter Mexico and re-enter the United States. Information about documentation and Boquillas is also available from the staff at the Boquillas Crossing Port of Entry or go to the U.S. Customs website for complete information on what is required:
http://getyouhome.gov/html/eng_map.html

Border Merchants

Mexican Nationals may approach you from across the river to sell souvenir items such as walking sticks, bracelets, and crafts. If you agree to look at or purchase their items and the Mexicans cross the river, they may be arrested for being in the U.S. illegally. They will be held until deported back to Mexico through Presidio (100 miles away). Mexican merchants will be arrested for illegal commercial operations which may result in a fine and/or additional incarceration while awaiting adjudication prior to deportation.

Items purchased illegally will be considered contraband and seized by officers when encountered. Rocks, minerals, and archeological items cannot be purchased, imported, or possessed in a national park.

In addition, illegal trade impacts the resources of the park in a number of negative ways, including the creation of social trails that crush plants along the river and cause erosion of riverbanks, and an increase in garbage and contaminants along the Rio Grande watershed. Supporting this illegal activity contributes to the continued damage of the natural resources along the Rio Grande, and jeopardizes the possibility of retaining the crossing in the future.

Please check with the staff at the Boquillas Crossing Port of Entry concerning items which may be purchased in Boquillas, but may not be legal to import. Rocks, minerals, and archeological items are still illegal to purchase, import and possess in Big Bend National Park.



Handcrafted wire scorpion

Border Safety

- Know where you are at all times, follow good safety procedures, and use common sense. Remember, cell phone service is limited in many areas of the park.
- Keep valuables, including spare change, out of sight and lock your vehicle.
- Avoid travel on well-used but unofficial “trails”.
- Do not pick up hitchhikers.
- People in distress may ask for food, water, or other assistance. Please report the location of the individuals to park staff or Border Patrol as soon as possible. Lack of water is a life-threatening emergency in the desert.
- Report any suspicious behavior to park staff or the Border Patrol. Please do not contact suspicious persons.
- Ask at the visitor center or contact a ranger or a Border Patrol agent about areas where you may have concerns about traveling.

Protecting Yourself and the Park

Big Bend may be wild and unfamiliar country, yet it need not be dangerous. Whether hiking the high country, floating the Rio Grande, observing wildlife, or driving the scenic roads, let safety be your constant companion. By giving forethought to your actions you can have a safe, exciting, and rewarding experience in Big Bend National Park. Spend a moment reviewing these common safety considerations and resource protection guidelines.

Collecting

It is the mission of the National Park Service to preserve all natural and cultural resources unimpaired for future generations. Taking crystals or arrowheads, or collecting plants or animals robs everyone of this heritage—once something is stolen, it cannot be replaced.

Please, do not destroy, deface, injure, dig, collect or otherwise disturb park resources including plants or animals (dead or alive), fossils, rocks, or artifacts. It is a violation to possess park resources. Please, take only pictures, and leave only footprints.

Driving

Most serious injuries and deaths in the park result from car accidents. Drive within the speed limit (maximum of 45mph in most areas), and watch for wildlife grazing along the roadsides, especially at night. Park roads have limited shoulders and some are steep and winding and require extra caution.

Remember, too, you share the road with bicyclists and pedestrians. Pull off the road to take pictures—do not stop or pause in roadways. Please, slow down...and enjoy!

Heat

The dry desert heat quickly uses up the body's water reserves. Carry and drink water—at least 1 gallon per person per day. As you exercise, you lose salt and water (over a quart and a half per hour during arduous exercise). You need both to survive in this extreme environment. Reduce alcohol and caffeine intake—the diuretic effects can result in accelerated loss of body water.

Protect your body—sensitive skin burns easily. Find shade, wear sunscreen, sunglasses, and a brimmed hat. Wear long-sleeves, trousers, and proper shoes.

Hiking

Trails vary from easy and well maintained to strenuous primitive routes. Plan hikes within your ability. Avoid ridges during thunderstorms, and canyons or creek beds when flash flooding is possible. Carry a flashlight and first aid kit, and let someone know where you are going and when you expect to return. If you get hurt or lost, stay in one place to conserve water and energy.

Please keep your children close; don't let them run ahead on trails.

Water Conservation

Big Bend is a desert, with water being a precious resource. Water in the Chisos Basin is limited to Oak Spring, which is recharged by scant rainfall. Other areas rely on a precious few aquifers.


Please voluntarily limit your water consumption within desert areas. Drinking water is necessary, but lengthy showers are an extreme luxury—instead, soak in the Hot Springs if you'd like to relax in some hot water. Wash only what clothing items you need. Consider topping off RV water tanks at your next destination.

Wildlife

Observe Big Bend’s wildlife from a distance. Do not follow or approach them. Wildlife is protected in the park; it is illegal to harass or harm wildlife. Never feed wild animals. Feeding wild animals damages their health, alters natural behaviors, and exposes them to predators and other dangers. Protect wildlife and your food by storing rations and trash securely.

Venomous snakes, scorpions, spiders, and centipedes are active during warm months. Pay attention: check shoes and bedding before use, and use a flashlight at night.

Pets in the Park



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Having a pet with you may limit some of your activities and explorations in the park. Abiding by these pet regulations will ensure a safer, more enjoyable visit for yourselves, other park visitors, your pet, and the park's wildlife.

- Pets are not allowed on trails, off roads, or on the river. Your pet can only go where your car can go.
- Pets need to be on a leash no longer than six feet in length (or in a cage) at all times.
- You may not leave your pet unattended in vehicles if it creates a danger to the animal, or if the animal becomes a public nuisance.
- If you plan to hike, someone must stay behind with the pet, or you will need to make arrangements with a kennel service. There is no kennel service in the park.
- Pet etiquette and park regulations require that you always clean up after your pet and dispose of waste in trash receptacles.



Greening Up the Park

Student Conservation Association Intern Henry Ring

We recycle in a big way here. Plastics #1 and #2, tin cans, aluminum, paper, cardboard, paperboard, car batteries, car tires, motor oil, scrap steel, and even brush are all collected and recycled in the park. Last year, we recycled 136 tons of material, or about 24% of our total waste. The National Park Service is dedicated to protecting and preserving our national resources for current and future generations, and recycling factors into that in a big way.

America contains only about 4% of the world's population, but we produce the most trash of any nation, close to 30% of the world's trash. We throw away enough steel and iron to continuously supply the US auto industry with all the metal they'd need. We junk enough aluminum to rebuild our entire commercial airfleet every three months. And we throw away enough plastic every year to shrink-wrap Texas.

This is why we believe it's important to recycle—to cut back on the resources we're using and our rate of consumption. Recycling aluminum, plastic, paper, glass, and even steel is vastly more efficient than refining those materials from their raw components. Not only does it cut down on energy use to recycle, but it also means less pollution from waste products being pumped into our air and water. In a desert park renowned for views of up to 150 miles on a clear day, protecting the quality of our water and air is a big priority for us.

But it isn't all about the national level. Our dirty little secret is that Big Bend has a landfill. And we love our landfill, because it allows us to dispose of waste within the park, rather than hauling it nearly 100 miles to the next closest landfill. This saves time and money, and keeps us from burning extra fuel to transport that garbage, meaning less CO₂ emissions. But, at our current rate of garbage production, our landfill will reach capacity by 2022, after which we may have to haul all of our waste out of the park. Recycling, while not a perfect solution, is our best bet at helping out with the landfill dilemma.

By recycling, we cut down on the waste going into the landfill, meaning we can extend the life of the site beyond 2022, and delay the day we may have to contribute all that extra CO₂ by hauling our trash out of the park. While we currently haul the majority of our recycling out of the park, the money we get from recycling centers does help to defray the cost of our recycling program.

As a community, we also do a variety of recycling activities. We're lucky enough to have a glass pulverizer, a large piece of equipment that allows us to reuse glass bottles and containers as roadfill and for landscaping programs in the park. Brush is use as ground cover and erosion control. And even the school children of the park are getting excited about recycling—they've collected aluminum cans to pay for a field trip.

Big Bend is dedicated to recycling, and we're hoping to expand our program and to increase its effectiveness. The biggest thing we can ask is that you, the visitor, please recycle during your visit. Recycling containers are located at all developed

campgrounds and by all visitor centers. Every can, bottle, or gallon jug recycled is a little less space used up in our landfill and a little bit less carbon that goes into our clear night skies.



Recycle emblem handcrafted from recycled steel



Painting the Desert Green

Park Ranger Matthew Yarbrough

Big Bend is a desert park, but it has small islands of greenery that stand out against the heat and the rocks. Large deciduous trees shade Dugout Wells and Sam Nail Ranch, and grass carpets the Rio Grande Village and Cottonwood campgrounds. But where did all these lush plants come from? The answer is simple: people have been painting Big Bend green with irrigation and vegetation long before this desert became a park.

Before the campgrounds, Rio Grande Village and the Castolon Historic District were home to extensive ranching and farming communities. In fact, most of the Big Bend was devoted to ranching, farming, mining, and other pursuits. The real problem was getting enough water for all these activities in the middle of the desert. However, through ingenuity, and maybe even a little luck, people survived and even thrived here.

The first, large-scale, ranch in the Big Bend area dates back to the 1800's, when the G4 Ranch was established. The harsh conditions of the Chihuahuan Desert made maintaining the ranch's 55,000-plus acres quite a feat. After about a decade, the ranch broke up, but that didn't stop people from coming to the area to try their hand at life in the desert. By the 1910's families had arrived in Big Bend and took up residence near the precious few water sources: the Rice family set up around the Grapevine Hills, the Buttrills capitalized on what is now the Buttrill Spring, and the Burnhams occupied the Paint Gap Hills. Each of their residences used different methods to get to the little water that could be had. Some used collection tanks to hold runoff and rainwater, some tapped springs, and others struggled with tougher, less reliable sources like the seasonal water found in the creeks and drainages.

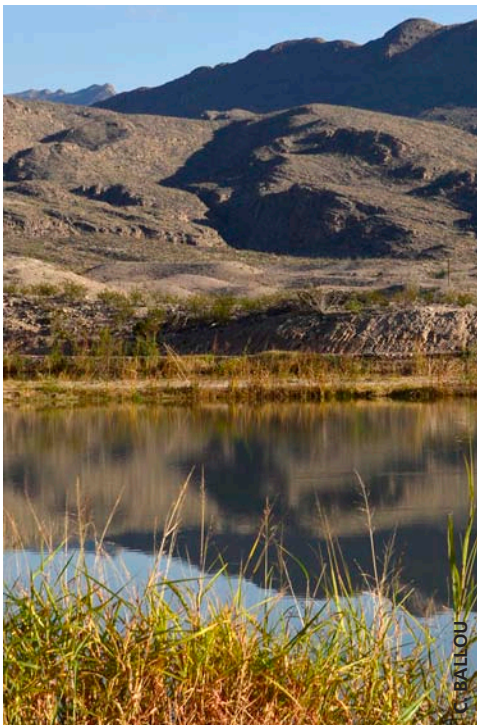
These water sources and collection tanks can still be seen in the park today. Sam Nail Ranch and Dugout Wells feature windmills that continue to pump water up to the desert surface that surrounds them. At the Rice Tank Camp Site on Glenn Springs road you

can find just what the name implies, a stock tank. Viviano Castillo built the tank for John Rice to collect water from rain and runoff in the area. Along the Blue Creek Trail there are a few water cisterns, one at the Homer Wilson Ranch House, and another a few miles up the trail, each fed by ancient piping systems.

Down at the Rio Grande Village, there are even more historic water systems on display. Drainage ditches, culverts, causeways, and water gates linger by the road sides, the campgrounds, and even the picnic areas. All of these were put in place long ago by farmers repurposing the water from the river to maintain their crops and water their livestock.

Along the Old Maverick road, Luna's Jacal ("huh-cal") stands as the last remnant of a tough individual who had no time for the intricate water systems of his neighbors. Luna, who reportedly lived to be 108, relied on the waters that flowed down Alamo Creek, sometimes having to dig into the creek bed so the water under the soil might rise to the surface.

Miners, ranchers, farmers, and all the other people of Big Bend have been finding water out here for quite a long time, but to paint the desert green, ingenuity and hard work are almost more important than the water itself.



Settling pond near Daniels' Ranch



Ubiquitous Mesquite

Park Ranger Bob Hamilton

Mesquite trees are found everywhere in Big Bend National Park and likely exist in far greater numbers today than before humans first occupied the area. Two species, honey mesquite (*Prosopis glandulosa*) and screwbean mesquite (*Prosopis pubescens*), dominate the low desert and river corridor that borders the park. Depending on the season, their compound leaves, long yellow flower clusters, and seed pods are quite distinctive. Honey mesquite has long, straight pods that can reach seven inches in length when mature, while screwbean has a short, tightly coiled seed pod. Both species are equipped with needle-sharp, paired thorns.

W. T. Waggoner, a pioneer Texas rancher and oilman, stated mesquite is “the devil with roots.” It scabs my cows, spooks my horses, and gives little shade.” While such vilification of the mesquite is commonly expressed by ranchers, their livestock has played an important role in the widespread distribution of mesquite within the park.

Mesquite seed pods do not open on their own; the bean-like seeds germinate much better when chomped, swallowed, soaked in digestive enzymes, and then excreted on the ground in a perfect mixture of moisture and fertilizer.

Mesquite seed itself is well adapted to germination almost anywhere in the park. If the seed is deposited near water, the tree flourishes, growing relatively quickly to a height of 20–30 feet. But if the seed lands far from a water source, the tree trades height for a strong taproot that can reach a depth of 190 feet in its quest for water. The mesquite root system also forms dormant buds, generally two to twelve inches beneath the ground, which sprout when the above-ground tree is damaged by fire or drought. Mesquite is not only nearly indestructible, but very difficult to remove once established.

The Pima Indians of central and southern Arizona refer to the mesquite as the “tree of life.” The Pima, and many other tribes of the Southwest, often located encampments and villages close to mesquite stands for its many benefits. In addition to providing

fuel for fires, mesquite is a very reliable seed pod producer, often yielding the best fruits during drought conditions. It is thought that early inhabitants in the Big Bend area used the numerous rock mortars and commonly encountered manos and metates to grind mesquite pods and seeds into sweet flour used in breads, cakes, or a kind of mush. Mesquite beans contain nearly 30 per cent sucrose, which imparts sweetness to flour and foods to which the flour is added.

In addition to being an important food source, mesquite trees possess medicinal qualities as well. Mesquite gum, stimulated by scarring or injuring a trunk or limb, has proven valuable in treatment of injuries to the skin. Thick mucilage, made from the gum, works to sooth and heal a sore throat. Taken internally, mesquite gum or tea works as a restorative for dysentery, diarrhea, and digestive disorders. Boiling pods or leaves in water and using the liquid as eyewash treats bacterial conjunctivitis.

As valuable as mesquite is to humans, it is equally important to the desert ecosystem. More than 200 plant and animal species

depend on it for survival and reproduction. Misunderstood, unappreciated, and disparaged by many, it is perhaps time to reevaluate our views of this important desert inhabitant.



Honey mesquite in bloom



The Consistency of Change

Park Ranger Jennifer Goucher

Our planet seldom experiences an episode, whether climatic or otherwise, on a universal scale. What’s happening on one side of the Earth is rarely going to be the same on the other side. One of these rare event relics though, is known as the K/Pg (Cretaceous/ Paleogene) boundary. This geological signature, generally found in a thin clay layer, was not only global in scale, but also distinctly marked the disappearance of nearly 85% of the species found in Earth’s fossil record some 65 million years ago. Most notably, the dinosaurs.

To imagine Big Bend during this timeframe is to visualize an entirely different climate and backdrop. In contrast to the desert landscape we see today, Big Bend was partially covered by a shallow and fluctuating warm inland sea. This environment was primed for prehistoric species of now extinct marine reptiles, primitive mammals, trees,

sea life, and even dinosaurs to flourish. The sea inevitably retreated, replaced by estuaries and swamps. Consequently, this anoxic (areas depleted of dissolved oxygen) environment was perfect for the formation of fossils. Some of the fossils found in Big Bend National Park that formed during this time include fossilized trees, gigantic crocodiles, primitive mammals, and dinosaurs such as Alamosaurus, various hadrosaurs, and the largest known flying creature of all time, *Quetzalcoatlus*.

All other areas of the planet, however varied their local environments were, experienced this extinction event in the same way. Environments changed and fossils formed. Theories for the Cretaceous/ Paleogene extinction abound. However, the culprit for this global event may lie in the stars. An element known as Iridium is found in high concentrations in the K/ Pg layer worldwide. Iridium is common in meteorites in concentrations much greater than in the Earth’s crust. It is so rare in fact, that one meteorite contains an average of five hundred times the Iridium found in the Earth’s crust. The significance of this finding

lies in the Alvarez hypothesis which proposes that the mass extinction of 65 million years ago is attributed, in part, to an asteroid slamming into the earth with a force over a billion times that of an atomic bomb!

The K/Pg boundary is not exposed everywhere on Earth. Erosion alters landscapes every day and over thousands, or in this case, millions of years. Layers are deposited, removed, and the process continues. Not many places in the world have a complete fossil record where the K/Pg extinction boundary is exposed. However, scientists have found that Big Bend’s fossil record is not only complete, but spans both eras continuously. This makes Big Bend National park one of the best places in the world to study such a complete prehistoric fossil record.

Connections can be found if you compare Earth events, such as the discovery of the worldwide Cretaceous/Paleogene boundary. Earth’s features are remarkably fluid in terms of change. For example, a regional event such as a volcanic eruption will not change the landscape on a global scale as an asteroid

impact would. However, the complete history of the planet shows itself if you look closely enough. Even on the opposite side of the globe, Earth’s history can be read in the strata beneath your feet.



Fossil tooth from the Cretateous Period

What to See and Do

Chisos Basin

A drive to the Chisos Basin is an excellent way to experience the transition between arid desert and cooler mountain habitats. As this scenic, winding road rises over two thousand feet above the desert floor, it offers vistas of the mountain peaks and the erosion-formed basin area.

Within the Chisos Basin area is a visitor center, campground, lodge, restaurant, camper store, and miles of hiking trails.

With limited time, walk the Window View Trail for easy access to mountain vistas, and a classic sunset view. If time permits, consider hiking (or backpacking) into the High Chisos to witness the towering forests of Boot Canyon or the unparalleled vistas of the South Rim.

Note: this road is not suitable for RVs longer than 24' or trailers longer than 20'.

Rio Grande Village

The drive to Rio Grande Village traverses ancient limestone and has marvelous vistas of the magnificent Sierra del Carmens. Along the way is the oasis at Dugout Wells and a spur road leads to the popular Hot Springs.

Continue the drive to Boquillas Canyon, where a short hike offers excellent views of the Rio Grande as it enters the canyon.

Rio Grande Village has a visitor center, campground, RV hook-ups, camp store, and picnic area.

Take a stroll (or a short drive) from the store to Daniels' Ranch; this is a great area for birding. Picnic tables are near the historic ruins.

The Rio Grande Village Nature Trail crosses a wildlife viewing boardwalk, then gradually climbs the hillside, offering panoramic views of the river, Sierra del Carmens, and Chisos Mountains. This is an excellent sunset vista.

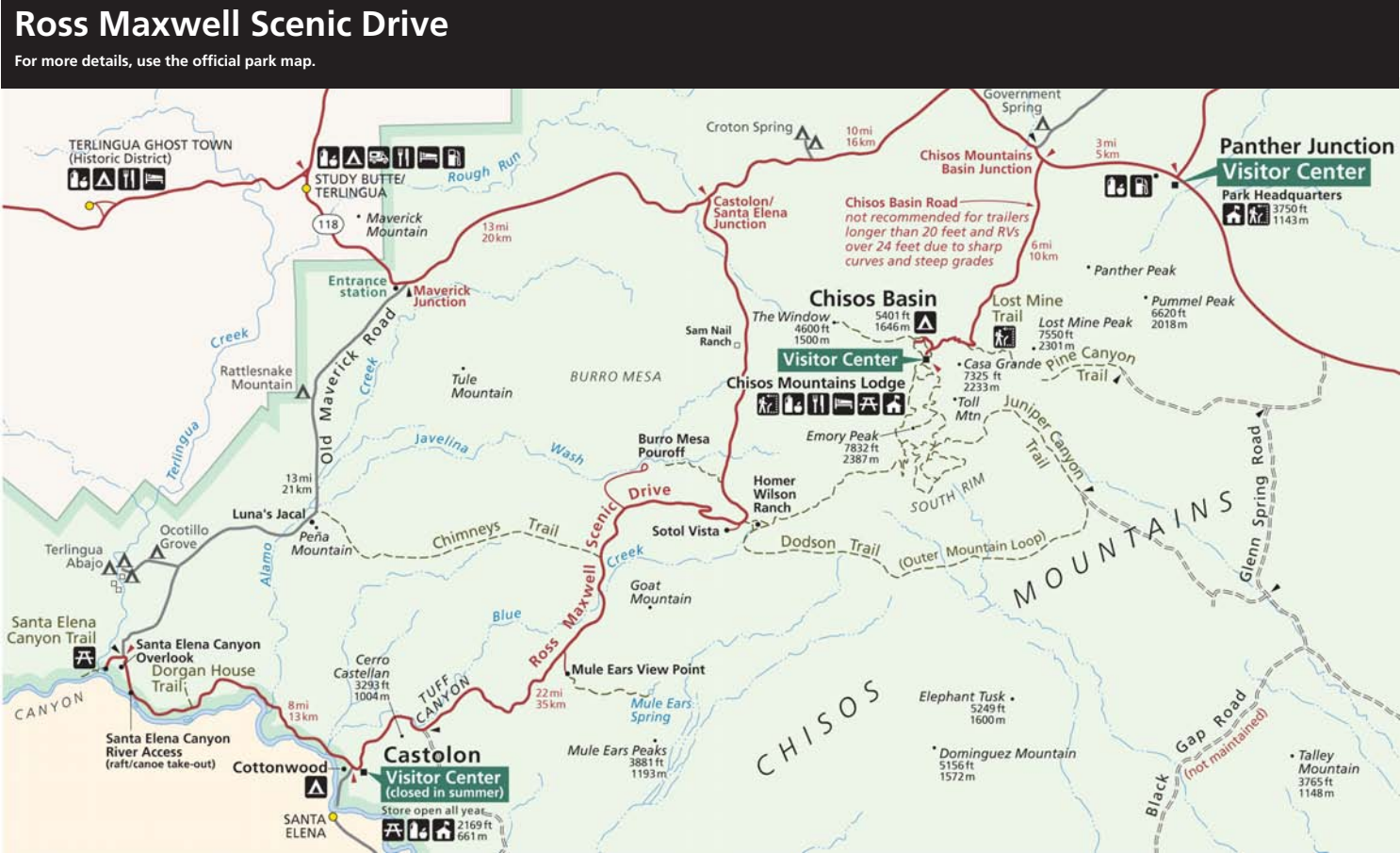
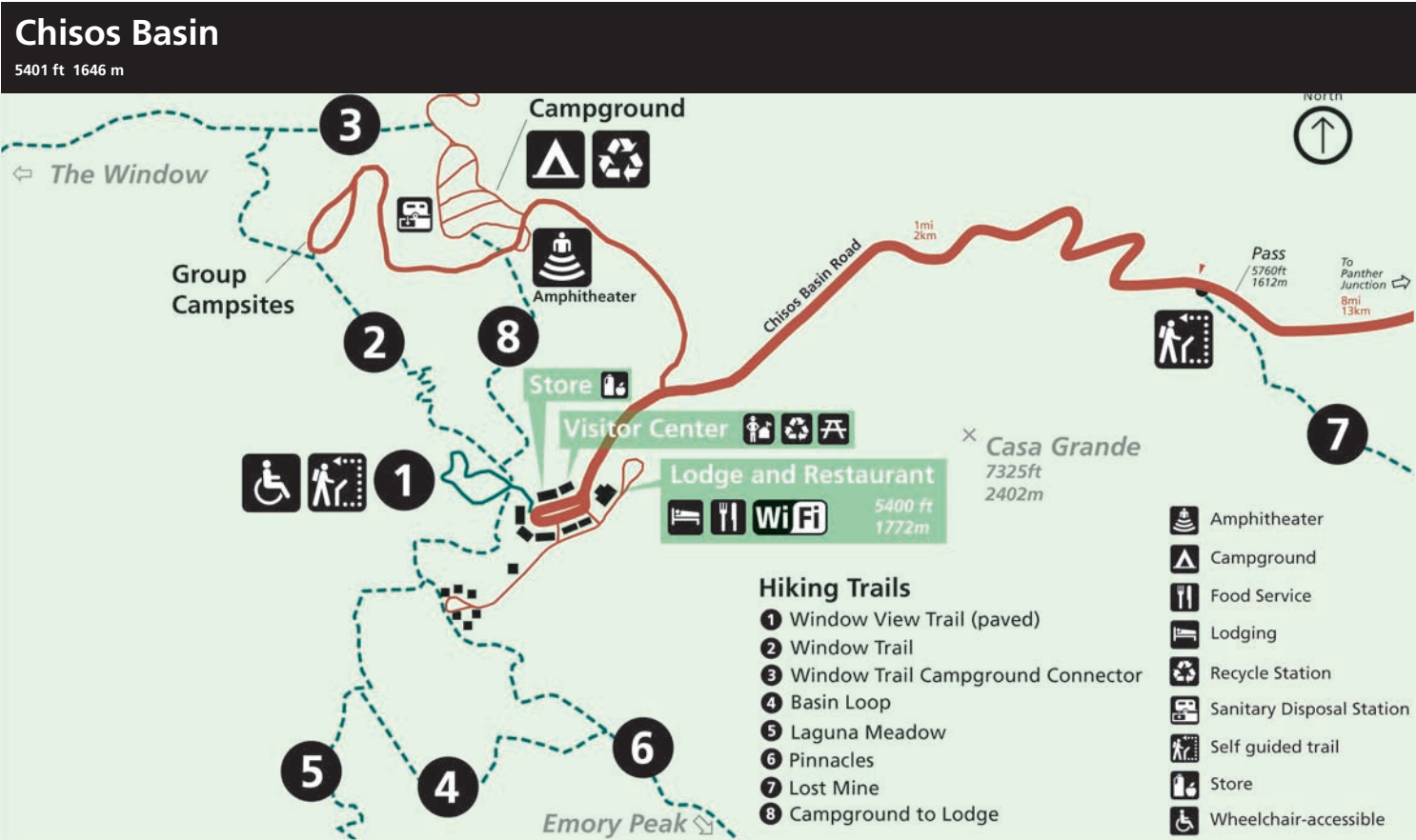
Ross Maxwell Scenic Drive

A trip along the Ross Maxwell Scenic Drive highlights the geologic splendor Big Bend is famous for, and offers many scenic overlooks and exhibits along the way. Sotol Vista, Mule Ears Overlook, and Tuff Canyon are all worthwhile stops.

History is highlighted at Sam Nail Ranch, Homer Wilson (Blue Creek) Ranch, and the Castolon Historic Compound. Castolon has a visitor center, camp store, and nearby is the Cottonwood Campground.

Continue the drive to the magnificent Santa Elena Canyon, where limestone cliffs rise 1,500’ above the Rio Grande. A short trail leads into the canyon.

Return by the same route, or take the gravel Old Maverick Road to the western entrance of the park. This road is usually passable for most vehicles, but may be impassable after heavy rains. Check at a visitor center for current conditions.



Popular Day Hikes

The Chisos Mountains <i>Smoking is prohibited on all trails in the Chisos Mountains.</i>					
Trail	Trailhead Location	Round Trip (mi/km)	Avg Time	Elevation (ft/m)	Description
Basin Loop	Chisos Basin Trailhead (near the Basin Store)	1.8/2.6	1 hour	350/107	Moderate Connects the Laguna Meadow and Pinnacles Trails. Nice views of the Basin area.
Emory Peak	Chisos Basin Trailhead (near the Basin Store)	10.5/17	7 hours	2400/789	Strenuous Trail leads to the highest peak in the park, with excellent views. The end of the trail involves some moderate rock climbing.
Lost Mine 	Basin Road, mile 5 (at the pass)	4.8/7.7	3 hours	1100/335	Moderate Excellent mountain and desert views. For a shorter hike, 1 mile up is a great view to the southeast.
South Rim	Chisos Basin Trailhead (near the Basin Store)	12/19.4 15/24	8 hours 10 hours	2000/656 2000/656	Strenuous Trail leads to the 2000’ cliff with incredible views of the desert below. Hike either the southwest rim, or add the northeast and southeast rim trails when open.
Window 	Chisos Basin Trailhead or Basin Campground	5.6/9.0 4.4/7.0	4 hours 3 hours	980/299 500/152	Moderate Descends to the top of the Window pour-off. Great scenery and wildlife viewing. For a shorter hike, start from the Basin Campground (near campsite 51)
Window View 	Chisos Basin Trailhead (near the Basin Store)	0.3/0.5	1/4 hour	0/0	Easy Level, paved, accessible. Great mountain views. Best place in the Basin to catch a sunset through the Window.



C. BALLOU

Window View Trail sunset

Eastside — Panther Junction and Rio Grande Village					
Trail	Trailhead Location	Round Trip (mi/km)	Avg Time	Elevation (ft/m)	Description
Grapevine Hills Balanced Rock	6.4 miles down the Grapevine Hills Road	2.2/3.5	1 hour	240/73	**Easy** Follows a sandy wash through a boulder field. A short but steep climb near the end takes you to a large balanced rock. No shade.
Chihuahuan Desert Nature Trail	Dugout Wells	0.5/0.8	1/2 hour	10/3	**Easy** Loop trail with interpretive signs on desert ecology. Look for javelina tracks and resident birds.
Hot Springs	End of Hot Springs Road (unpaved narrow road)	0.75/1.2	1/2 hour	0/0	**Easy** Walk past historic buildings to the riverside hot spring. Enjoy a soak in 105°F water. *Spring is subject to flooding during rising river levels.*
Boquillas Canyon	End of Boquillas Canyon Road	1.4/2.3	1 hour	40/12	**Easy** Begins with a short climb, then descends via a sandy path to the river. Ends near a huge sand dune “slide.”
Daniel’s Ranch to Hot Springs Trail	Daniels’ Ranch parking area, west of Rio Grande Village	6/10	3 hours	100/31	**Moderate** Trail from Daniels’ Ranch to the Hot Springs. Cliff drop-offs prevent access to the river along most of the route. No shade.
Rio Grande Village Nature Trail	Rio Grande Village, across from campsite 18	0.75/1.2	1 hour	130/40	**Easy** First 300’ leads to a wildlife viewing platform on a pond. Trail then climbs the hillside with views of the river and mountains. Great for birding and sunsets.



J. JURADO

Hot Springs

Westside — Ross Maxwell Scenic Drive					
Trail	Trailhead Location	Round Trip (mi/km)	Avg Time	Elevation (ft/m)	Description
Sam Nail Ranch	Ross Maxwell Scenic Drive, mile 3	0.5/0.8	1/2 hour	10/3	**Easy** Well-maintained trail leads through the old ranch site. The combination of water and shade makes this an excellent birding location.
Lower Burro Mesa Pour-off	Burro Mesa Spur Road	1.0/1.6	1/2 hour	60/18	**Easy** Trail enters a dry wash and ends at the bottom of the dramatic Burro Mesa pour-off. A great walk for viewing geological features.
Chimneys	Ross Maxwell Scenic Drive, mile 13	4.8/7.7	2 hours	400/122	**Moderate** Flat and scenic desert trail to rock formations of an eroded dike. Look for Native American rock art and shelters. No shade.
Mule Ears Spring	Ross Maxwell Scenic Drive, mile 15	3.8/6.1	3 hours	20/6	**Moderate** Beautiful desert hike to a small spring. Spectacular geology with mountain and desert views.
Tuff Canyon	Ross Maxwell Scenic Drive, mile 17	0.75/1.2	1/2 hour	100/31	**Moderate** Two trails from the parking lot both provide outstanding balcony overlooks; one of the trails descends to the floor of the canyon.
Santa Elena Canyon	Ross Maxwell Scenic Drive, 8 miles west of Castolon	1.6/2.6	1 hour	80/26	**Easy** Sandy path crosses Terlingua Creek. Trail switchbacks up to overlook the river before gradually dropping to the river in the canyon.



J. JURADO

View from Chimneys arch



Duck!

Park Ranger Cookie Ballou

Water runs down an irrigation canal. As it progresses, it encircles mature cottonwoods, giving these water-loving trees some relief from the arid desert clime. In a matter of hours, broad, grassy stretches transform into fruitful, yet ephemeral feeding grounds. People have irrigated fields around Rio Grande Village for nearly a hundred years, and it still flourishes as a shady, riverside paradise that ducks find irresistible!

Wood ducks, ring-necked ducks, and northern shovelers float idly in flooded sections, while other ducks bob down the canal. It is not uncommon to find a number of species associating like this. This mingling can cause confusion in identification though, (especially with non-distinct females) but plumage, physical attributes, habitat choice, and behavioral activities help sort out who’s who.

The wood ducks are the easiest to ID. Males, in breeding plumage, are dressed in iridescent, multihued finery. Their fiery-red eyes flash under sleek, crested helmets. They can be mistaken for no other! Even duller eclipse

males have defined facial patterns, and females sport a short crest and unique, pale teardrop patch around the eye.

In the 1800s, their stunning feathers were coveted for everything from women’s hats to trout lures, and wood ducks were heavily sought after. By the early 20th century, jewel-like wood ducks were nearly annihilated. But thanks to the U.S. Fish and Wildlife Service census of ducks and hunters, a 1918 law placed them under strict protection and put an abrupt halt to their rapid termination.

Also present in the flotilla are ring-necked ducks. Perhaps a better name for them might be “ring-billed ducks.” Their cinnamon-tinged neckband is hardly visible, but the conspicuous white ring around the bill and thin white line around its base, certainly are. Males have a sizeable white crescent at the waterline, and a black back and chest. Ring-necked ducks flaunt broad, gray wing stripes in flight, the only black and white ducks to do so.

Though they are diving ducks they prefer secluded ponds and shallows to open water. This partiality for wetlands puts them at high risk for lead poisoning. An estimated 6,000

tons of lead buckshot was fired every year by hunters in wetlands before being phased out for nontoxic steel shot. Its deadly effects, even decades later, are still evident.

Northern shovelers are also among the ranks. There are no breeding males present, but the females still stand out in the crowd. Although they don’t have impressive plumage, they do have an outsized, long, thick, spatulate bill that is hard to miss, and appears clownish on their small heads.

Shovelers favor especially shallow, muddy areas. Head down, they push the bill through the muck, straining minuscule food particles and debris through its comb-like edges. Shovelers aren’t considered particularly tasty due to a fondness for morsels gleaned in muck and mire, and this has likely kept them out of the cross-hairs of many duck hunters, and kept their numbers up. Lucky ducks. . .

Getting to know one duck might make identifying another a bit easier. With knowledge and understanding of the individuals, the species, and their habitats, we can learn from past mistakes, take definitive actions for their protection, and always enjoy the sport of duck watching!

Birding Hot Spots

Panther Junction to Rio Grande Village

- Dugout Wells—shady cottonwood trees and a windmill at this desert oasis.
- Rio Grande Village Nature Trail—a boardwalk over the pond is an excellent area for water fowl.
- Daniels' Ranch Picnic Area—the cottonwood trees provide excellent shade to both resident and migrant species.

Ross Maxwell Scenic Drive

- Sam Nail Ranch—windmills and large trees attract birds to this historic ruin.
- Blue Creek Trail—a half mile from the Homer Wilson Ranch are the Red Rocks, an area known for hummingbirds.
- Cottonwood Campground—large trees here provide a haven for birds.

Chisos Mountains

- Basin area—many mountain birds can be found around the campground and basin developed areas.
- Boot Canyon—the nesting area of the Colima Warbler and other species.
- South Rim—this 2000' cliff is known for falcons and swifts.

Night Skies



The Wanderers

Park Ranger Gail Abend

Constellations can be a devil to find under the brilliant night skies of Big Bend National Park. There are so many stars, both brilliant and faint, that making out star patterns can be tricky. What is less difficult, and actually helpful in finding constellations, are the planets. The planets (and the Moon), our nearest celestial neighbors, are unmistakable even amongst the myriad of stars, though you still need to know where and when to look.

Planets were a source of fascination by the ancients as they moved among the backdrop of fixed stars. The word planet is derived from the Greek for wanderer. We now know that nothing is fixed in space and stars are still in motion relative to each other and to a central point. Planets seem tame in comparison, as they steadily circle the Sun.

Planets that are easily visible in Big Bend are Mercury, Venus, Mars, Jupiter, and Saturn. Mercury and Venus, the two inner planets, are seen together. Because of their proxim-

ity to the Sun, they are either the morning “stars” seen in the east just before sunrise or the evening “stars” in the west at sunset.

Venus’s surface is obscured by bright, reflective clouds composed of sulfuric acids, and a thick atmosphere of carbon dioxide. Venus, about the size of Earth, was the stuff of science fiction until we sent probes and learned the planet experiences a runaway greenhouse effect with surface temperatures that can melt lead.

Mars has been observed from space and Earth for several decades. The landing of the rover Curiosity on the red planet is already one for the history books. Will we find evidence of life? How about water? We already know Mars once had large rivers, and perhaps mega-floods that scoured and shaped its landscape. Its atmosphere was thicker, and the surface must have experienced regular rainfall. Today, its atmosphere is too thin to sustain life as we know it. What happened to Mars?

Farther yet from the Sun is the gas giant Jupiter, whose bright, creamy glow is un-

mistakable and is only overshadowed by the 24-carat brilliance of Venus. Through a small telescope Jupiter reveals multicolored bands, an enormous cyclone known as the red spot, and four of its many moons, called the Galilean moons, discovered by Galileo.

The last naked-eye planet is Saturn, best known for its sparkling rings of icy bodies. Saturn is also a gas giant with no discernible surface. The spacecraft Cassini's observations of Saturn's largest moon, Titan, have given scientists a glimpse of what Earth might have been like before life evolved. They now believe Titan possesses many parallels to Earth, including lakes, rivers, channels, dunes, rain, snow, clouds, mountains, and possibly volcanoes.

These planets are located within constellations on the ecliptic or apparent path of the Sun. Find a planet and you can find the constellation. For example, Jupiter can be seen in the constellation Taurus the Bull through June 2013 when it will move into Gemini, the Twins. Enjoy locating these planets and constellations in the dark skies of Big Bend National Park.

2013 Celestial Events

- April 21–22—Lyrids Meteor Shower, usually producing about 20 meteors per hour at their peak.
- April 28—Saturn at Opposition will be at its closest approach to Earth and its face will be fully illuminated by the Sun.
- May 28—Conjunction of Venus and Jupiter. The two bright planets will be within 1 degree of each other in the evening sky. Mercury will also be visible nearby. Look to the west near sunset.
- August 13–14—Perseids Meteor Shower is one of the best to observe, producing up to 60 meteors per hour at their peak.
- November 17–18—Leonids Meteor Shower, producing an average of 40 meteors per hour at peak. Full moon will prevent a great show this year.
- December 13–14—Geminids Meteor Shower producing up to 60 multicolored meteors per hour at peak. The gibbous moon could be a problem this year, hiding many of the fainter meteors.

Keeping Wildlife Wild



M. GONZALES

Black Bears

The return of black bears to Big Bend is a success story for both bears and the park. Native to the Chisos Mountains, they disappeared from this area by the 1940s. Nearly fifty years later, they began returning from Mexico. Today, wildlife biologists estimate a black bear population of around 15–20 black bears.

A black bear's normal diet consists largely of nuts, fruits, sotol and yucca hearts, but

also includes small mammals, reptiles, and carrion. Bears normally avoid humans, but can become aggressive if they learn to take food from human sources.

The Chisos Basin Campground, High Chisos backpacking sites, and some primitive roadside campsites have bear proof storage lockers for caching edibles. Hard-sided vehicles are also suitable for storing edible items. Dumpsters throughout the park are bear proof as well. A free brochure about black bears is available at all visitor centers.



R. WONITE

Mountain Lions

Solitary and secretive, the mountain lion is Big Bend's top predator, and is vital in maintaining the park's biological diversity. Mountain lions live throughout the park from mountain to desert, and biologists estimate a stable population of about two dozen lions.

Everywhere in Big Bend, you are in the territory of at least one lion. Within their territories, lions help balance herbivores and vegetation. Research shows these large

predators help keep both deer and javelina within the limits of their food resources.

Each year visitors report around 130 lion sightings in Big Bend National Park. Over half are seen along roadways, but encounters also occur along trails. Your best plan of action is to be aware of your surroundings and avoid hiking alone or at dusk and dawn. Also, watch your children closely; never let them run ahead of you. A free brochure about mountain lions is available on the park website.



R. WONITE

Javelinas

For many visitors, seeing a javelina (pronounced hav-uh-LEE-nuh) is a new experience. Also known as collared peccaries, these animals are only found in the U.S. in Texas, New Mexico, and Arizona.

They are covered with black, bristly hairs and weigh between 40–60 lbs. They usually travel in groups called bands that consist of 10–25 individuals. Peccaries have a highly developed sense of smell, but poor vision. Physically, they resemble pigs, but are not

closely related. A javelina's diet includes prickly pear cactus, grasses, mesquite beans, piñon nuts, fruits, berries, and seeds.

Every year reports document campsites raided by javelinas. Although not normally aggressive, they can be when food is involved. Protect yourselves and the javelina by storing all food inside a vehicle or in the food storage lockers provided in the campgrounds. Do not leave coolers or food boxes unattended at any time. Flatten tents when you are away from your campsite.



J. JURADO

Coyotes

Nothing in Big Bend speaks of wilderness more than the song of a coyote. Their various vocalizations from yips to howls let you know you are in the presence of an iconic figure. Their narrow-set, yellow eyes and long snout may seem intimidating, but in general, coyotes do not bother human beings.

Coyotes range over the entire United States. These highly adapted members of the

canine family are omnivores, dining on small mammals, reptiles, and insects. Coyotes will also eat berries and other vegetation when meat is unavailable. Carrion is an important food source in winter.

Coyotes are typically solitary, but will hunt in small groups when individuals converge in areas where food is plentiful. They will work cooperatively, either chasing an animal in relays to tire it, or waiting in ambush. However, unlike wolves, they do not form lasting packs.



M. YATEROUGH

Rattlesnakes

Four species of rattlesnake live in Big Bend National Park—the Western Diamondback, Black-tailed, Mojave, and Rock rattlesnakes.

This often-feared reptile is beneficial to the environment, eating mice, rats, and other small animals—many of which are pests or spread disease.

Perhaps surprising, rattlesnakes are not a top predator, sometimes becoming the meal

of roadrunners, skunks, coyotes, and even other snakes, such as the western coachwhip.

The buzz of a rattlesnake is an unmistakable sound that will stop you in your tracks. And this is a good thing, as rattlesnakes use this sound as a warning when they perceive a threat; continue toward them, and you risk provoking a self-defensive bite. A few bites have occurred in Big Bend. If bitten, contact a ranger promptly, as permanent damage can occur within 12 hours of a bite.



J. JURADO

Wild Animal Encounters

For many people, the chance to see a bear or mountain lion in the natural environment is an amazing opportunity. However, one must always remember that we are entering their home, their territory. As such, we need to respect wildlife, and know what to do if we encounter a wild predator:

- Do not run (you may resemble prey).

- Watch children closely and never let them run ahead or lag behind.

- Try to look large. Wave your arms.

- Throw rocks or sticks if threatened.

- If attacked, fight back.

- Report bear or mountain lion sightings or encounters to a park ranger as soon as possible.

To help preserve healthy environments for both visitors and predators, please remember:

- Never leave food or trash unattended, as bears and other wildlife readily habituate.

- Never feed wildlife, as no park animal is tame, and feeding leads to aggressive future behavior.

- Keep a healthy distance between you and park animals (at least 50 yards).

Please Help

At the Lodge

- Leave nothing outside your room, on the balcony, or on the porch.

In Developed Campgrounds

- Store food, beverages, toiletries, pet food, and dishes in the bear-proof storage locker provided at your site.
- Keep your campsite clean. Take trash and food scraps to a dumpster.
- Dump liquids in rest room utility sinks, not on the ground.
- Ice chests and coolers are not bear-proof; store them in your vehicle.

In the Backcountry

- Never leave packs or food unattended. Carry everything with you or store in a bear-proof locker.
- Avoid carrying odorous food and toiletries.
- Cook away from your sleeping area. Pour out cooking water well away from camp.
- Carry out all trash, including orange peels, cigarette butts, and left-over food and cooking grease.

Cyclists

- Use food storage lockers when provided.



Chisos Basin

The Chisos Basin Campground is surrounded by tall, rocky cliffs and conveniently located near some of the park's most spectacular and popular trails.

Elevation: 5,401 ft.

Open: Year-round

Details: 60 campsites (no hook-ups). \$14 per night (\$7 per night with applicable passes). Flush toilets, running water, grills, picnic tables, and dump station. Trailers over 20' and RV's over 24' are not recommended due to narrow, winding road to the Basin, and small campsites at this campground.

Reservable Campsites: 26 sites are reservable from November 15–April 15. Contact recreation.gov, or call 1-877-444-6777.

Group Camping: 7 group campsites are available by advance reservation. To reserve a group campsite, contact recreation.gov or call 1-877-444-6777.

Cottonwood

Cottonwood Campground is a quiet, shady desert oasis located between the Castolon Historic District and the scenic Santa Elena Canyon.

Elevation: 2,169 ft.

Open: Year-round

Details: 24 campsites (no hook-ups). \$14 per night (\$7 per night with applicable passes). Pit toilets, running water, grills, picnic tables, No dump station, no generators allowed. A small picnic area is available across from campsite #23.

Group Camping: Cottonwood Campground has one group camp site available by advance reservation only. Maximum occupancy is 25 persons, minimum occupancy is 9 persons. Group campground is walk-in tent camping only. Vehicle parking is restricted to an adjacent parking area. To reserve the group campsite, contact recreation.gov or call 1-877-444-6777.

Rio Grande Village

Set in a large grove of cottonwoods, the campground is adjacent to the Rio Grande. The RGV camp store and showers are within walking distance.

Elevation: 1,850 ft.

Open: Year-round

Details: 100 campsites (no hook-ups). 14 per night (\$7 per night with applicable passes). Flush toilets, running water, picnic tables, grills, and some overhead shelters. Dump station nearby.

Reservable Campsites: 43 sites are reservable November 15–April 15. Contact recreation.gov or call 1-877-444-6777.

Group Camping: 4 group sites are available only by advance reservation. Group campground is walk-in tent camping only. Vehicle parking is restricted to an adjacent parking area. To reserve the group campsite, contact recreation.gov or call 1-877-444-6777.

Rio Grande Village RV

Open, paved lot with grassy, tree-lined edges. Adjacent to the camp store. This campground, operated by Forever Resorts, Inc., has the only full hook-ups in the park.

Elevation: 1,850 ft.

Open: Year-round

Details: 25 campsites. Concession-operated RV park with full hook-ups—water, electrical, and 3-inch sewer connection. \$33, double occupancy, with a \$3 additional per person charge. Periodically, a few sites may not be available for a 40' or longer RVs due to the size of the parking lot and orientation of the spaces. are available.

Reservable Campsites: 20 sites are available by reservation, 5 are held for first come, first-served campers. Register at the Rio Grande Village store/service station, or call 1-877-386-4383, or 432-477-2293.

Developed Campgrounds at a Glance						
	Elevation (ft/meters)	Sites	Nightly Fee	Facilities	Registration	Comments
Chisos Basin	5,401/1,646	60	\$14.00*	Flush toilets, dump station	Self-pay station	Surrounded by rocky cliffs; many hiking trails nearby.
Cottonwood	2,169/661	31	\$14.00*	Pit toilets, no generator use allowed	Self-pay station	In a cottonwood grove along the river. Grassy sites.
Rio Grande Village	1,850/564	100	\$14.00*	Flush toilets, dump station	Self-pay station	Largest campground; shady sites. Laundry and showers nearby.
Rio Grande Village RV	1,850/564	25	\$33.00 and up	Full hook-ups	RGV Camp Store	Concession-operated; register at the RGV store.
			* \$7.00 with an eligible Federal Recreation Pass			

Dirt Road Adventures

Dagger Flat Auto Trail

This seven-mile road (14 miles round-trip) winds eastward to a small valley where there is a forest of giant dagger yuccas.

A self-guiding brochure is available, and provides a useful key to the plants and geology along this road.

Typically open to all vehicles, this road is an easy drive, or excellent for bicycling. However, sandy areas or muddy conditions may seasonally exist. Check with a ranger.

Allow two hours to complete the drive. The speed limit on this narrow, winding road is 25 miles per hour.



View along Dagger Flat Auto Trail

Old Ore Road

This backcountry road follows the historic route used in the early 1900s to transport ore from Mexican mines to the railroad station at Marathon.

This road has excellent vistas of the Chisos Mountains and Tornillo Creek. It passes through the foothills of the Deadhorse Mountains, including the cliffs of Alto Relex.

Ernst Tinaja, five miles from the southern end of the road, is a popular hiking destination.

Allow at least 3 hours to drive this 26 mile-long road. A high-clearance vehicle and good tires are necessary.



Limestone layers at Ernst Tinaja

River Road

The River Road traverses the southern portion of Big Bend, providing a great opportunity to see the remote backcountry of this park.

Midway are the ruins of Mariscal Mine. This former mercury mine is a marvel to explore, as numerous structures are still standing.

Allow a full day (5–7 hours) to explore this 51 mile-long road. Backcountry campsites along the drive (permit required for camping) allow for extended exploration.

This road is for high-clearance vehicles only, and may become impassable following rain.



Historic buildings at Mariscal Mine

Backcountry Roads	
Road Name	Description
Dagger Flat	Suggested high clearance past Old Ore Road Junction
Glenn Springs	Narrow road; no RVs, trailers, or wide vehicles
North Rosillos	Deep ruts and sand
Juniper Canyon	High-clearance vehicles only; rough, rocky, and slow
Old Maverick	Wash boarded sections; impassable after rains
Old Ore	High-clearance vehicles only, 4WD recommended
Pine Canyon	High-clearance vehicles only; rough, rocky, & slow
River Road East	High-clearance vehicles only
River Road West	High-clearance vehicles only, 4WD recommended
Black Gap	4WD required; infrequently maintained

Backcountry



Backcountry Roadside Campsites

For those who wish to camp in the backcountry without having to backpack, Big Bend offers a number of primitive campsites along roads, both in the desert and along the Rio Grande.

All roadside sites are along unpaved roads. While some centrally-located sites are accessible to most vehicles, a high clearance and/or 4-wheel drive vehicle is necessary to reach those along the primitive dirt roads.

Sites offer excellent views, privacy, an

opportunity for solitude, and a cleared gravel location to park your vehicle and set up a tent.

There are no amenities at any backcountry campsite; please plan to bring everything you need, including water, shade, chairs, and a trowel to bury human waste.

Please remember, campfires (all wood fires or ground fires) are strictly prohibited. Use cook stoves with caution.

Generators are not allowed in backcountry areas, and pets must be kept on a leash within the boundaries of the camp site.

Backcountry Planning

Permits Required

A permit is required for all backcountry camping, river use, and horse use, and must be obtained in person at any park visitor center during normal operating hours. A permit can be obtained up to 24 hours in advance of the trip. The permit fee is \$10 for overnight-use, free for day-use.

Permits may be written for up to 14 consecutive nights in the backcountry. Park staff can assist you with trip planning based on your needs and current trail conditions.

Backcountry Water

The dry desert air quickly uses up the body's water reserves. Each hiker should carry and drink a minimum of one gallon of water for each day they are in the backcountry. Spigots for drinking water are available at all visitor centers. Big Bend is a desert environment; springs and tinajas (depressions in rock where water collects) are rare and often unreliable. Water should be filtered. Every gallon removed from backcountry water sources is one less for the wildlife which depend on them. Please carry enough water to supply your own needs—don't risk your life by depending on desert springs. Caching water is recommended for extended hiking trips in the desert.

Leave No Trace

Following the seven basic leave no trace principles helps protect our fragile desert environment:

- Plan ahead and prepare—a well-planned hike is more likely to be a safe hike, and without the need to rely on precious desert water.
- Travel and camp on durable surfaces—avoid walking on small plants or biological crusts.
- Dispose of waste properly—bury solid human waste at least six inches deep and 0.25 mile from springs. Pack out all waste paper and trash.
- Leave what you find—natural and culture resources are protected within National Parks. Collecting or disturbing features is prohibited.
- Minimize fire impacts—fires are only allowed on overnight river trips. A fire pan is required. Keep all heat sources away from combustible vegetation.
- Respect wildlife—all animals are wild, even if they appear to be tame. Never feed wildlife or leave scented items unattended.
- Be considerate of other visitors—keep noise levels to a minimum, as sounds can carry for long distances across the desert.



Backpacking

Big Bend National Park has over 200 miles of trails in the Chisos Mountains and desert terrain, with options for backpacking within these beautiful habitats.

Chisos Mountains

There are 42 campsites along Chisos Mountains trails, ranging from one to eight miles from the trailhead. These sites are designated to help reduce impact and damage to this delicate environment.

Sites include a cleared area for a tent as well as a bearproof storage box, which must be used to store all scented items. A permit

for a specific site must be obtained prior to camping.

Zone Camping

Open zone camping permits are available for backpackers who wish to camp outside of the Chisos Mountains. The park is divided into a number of zones ranging from areas along popular trails to extremely isolated areas.

Camps must be set up at least 1/2 miles from roads, out of sight of roads, and at least 100 yards away from trails, historic structures, archaeological sites, dry creek beds, springs, or cliff edge.



River Running

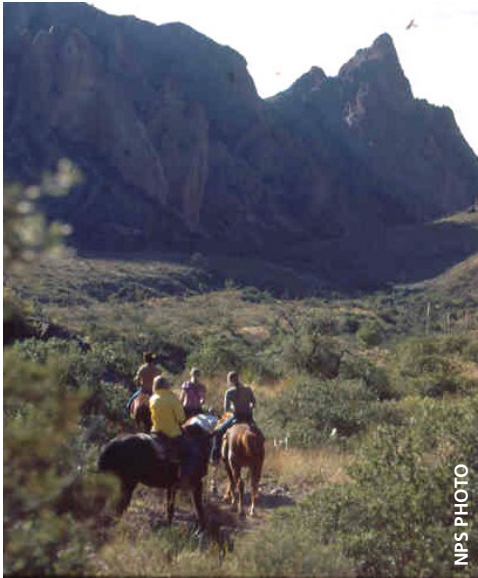
The Rio Grande follows the southern boundary of Big Bend National Park for 118 miles. In this distance it has carved three major canyons—Santa Elena, Mariscal, and Boquillas.

Seeing the park's canyons from the middle of the Rio Grande is both fascinating and gratifying. There are many possibilities, from half-day floats to extended seven-day excursions.

Canoes, kayaks, and rafts are allowed in river canyons. You may bring your own equipment, or you can hire a guide service.

Three local companies (see page 12 for phone numbers) provide guide service, equipment rental, and up-to-date river information and conditions.

The deepest channel of the Rio Grande is the international border between the United States and Mexico. Passports are not currently required for river trips, but stepping onto the Mexican bank of the river, then returning to the U.S., constitutes an illegal border crossing. U.S. Border Patrol allows for exceptions to be made under emergency situations only, i.e.; scouting, portaging, or lining.



Horseback Riding

Visitors are welcome to bring and use horses in the park. A stock-use permit is required (free for day-use), and copies of vaccination documents must be with you.

While horses are not allowed on paved roads or road shoulders, all gravel roads are open to horses. Cross-country travel is permitted in the park, except in the Chisos Mountains, where horse use is limited to the Laguna Meadow, Southwest Rim, and Blue Creek trails. Horses are not permitted in picnic areas or on interpretive trails.

Grazing within the park is not permitted;

you must bring your own feed. Stock may be watered in the Rio Grande and at springs not used for domestic water supply. However, be prepared to haul water for you and your stock, as desert springs are unreliable. All horse manure and feed remnants must be removed from the park.

Horses are allowed at several of the park's primitive roadside campsites. Hannold Draw campsite, located 4.8 miles north of Panther Junction, has a corral large enough for 8 horses. If you plan to camp with horses in the park, you may reserve this campsite up to 10 weeks in advance. For reservations, call 432-477-1158.

Services Inside the Park	
Emergency Call 911	
National Park Service	
General Information	432-477-2251
Big Bend Natural History Association	
Booksales & Seminars	432-477-2236
Visitor Centers	
Panther Junction (Hdqtrs)	432-477-1158
Chisos Basin	432-477-2264
Castolon	432-477-2666
Persimmon Gap	432-477-2393
Rio Grande Village	432-477-2271
U.S. Post Office	
Panther Junction	432-477-2238
Lodging/Restaurant	
Chisos Mountains Lodge	432-477-2291
Reservations	877-386-4383
Gasoline Service	
Panther Junction (diesel)	432-477-2294
Rio Grande Village	432-477-2293
Camper Stores	
Rio Grande Village	432-477-2293
Chisos Basin	432-477-2291
Castolon	432-477-2222
Services Outside the Park	
<i>This listing of local services is a courtesy to our visitors and implies no endorsement by the National Park Service or Big Bend National Park.</i>	
Lodging	
<i>Lajitas</i>	
Lajitas Resort	877-525-4827
<i>Marathon</i>	
Gage Hotel	432-386-4205
Marathon Motel	432-386-4241
Eve's Garden	432-386-4165
<i>Study Butte/Terlingua area</i>	
Big Bend Resorts	800-848-2363
Easter Egg Valley Motel	432-371-2254
El Dorado Motel	432-371-2111
Longhorn Ranch Hotel	432-371-2541
Ten Bits Ranch	866-371-3110
Terlingua House	325-473-4400
Camping	
Big Bend Resorts	800-848-2363
Big Bend Ranch State Park	432-424-3327
Big Bend Travel Park	432-371-2250
B.J.'s RV Park	432-371-2259
Heath Canyon Ranch	432-376-2235
Longhorn Ranch	432-371-2541
Stillwell's Trailer Camp	432-376-2244
Study Butte RV Park	432-371-2468
Convenience Stores/Gasoline	
Big Bend Resorts	800-848-2363
Cottonwood General Store	432-371-3315
Stillwell Store & Station	432-376-2244
Terlingua Store	432-371-2487
Medical Services	
Terlingua Fire and EMS	911
Big Bend Medical Center	432-837-3447
Banks	
Quicksilver Bank/ATM	432-371-2211
Local Outfitters	
Big Bend River Tours	800-545-4240
Desert Sports	888-989-6900
Far Flung Outdoor Center	800-839-7238
Horseback Riding	
Big Bend Stables	800-887-4331
Lajitas Livery	432-424-3238
Terlingua/Study Butte (30 miles west) and Marathon (70 miles north) offer basic services, including gasoline, restaurants, lodging, and campgrounds. Alpine, 100 miles northwest of the park, offers the greatest number of services.	

Information and Services

Accessibility

All visitor centers are accessible, as are the Chisos Mountain Lodge restaurant and some motel rooms and campsites. The Window View Trail is paved and fairly level.

ATMs

The Chisos Mountain Lodge and Rio Grande Village Store both have ATMs. The nearest banking facility is located in Study Butte, 26 miles west of park headquarters.

Camp Stores

Forever Resorts, LCC, operates stores at Castolon, Chisos Basin, Rio Grande Village, and in the Panther Junction service station. Each offer groceries, camping supplies, and souvenirs.

Camping Limits

Visitors can stay in the park up to 14 consecutive nights, whether in a front or backcountry site, with a limit of 28 total nights in the park in a calendar year. Campers can occupy a specific site up to 14 total nights in a year. Between February 1 and April 15, visitors are limited to 14 total nights in the park.

Entrance Fees

- Single private non-commercial vehicle \$20—valid for 7 days
- Single person entry on foot, bicycle, motorcycle, commercial vehicle, etc. \$10 per person—valid for 7 days
- Big Bend Annual Pass \$40—valid for one year from month of purchase
- Interagency Annual Pass \$80—valid for one year from month of purchase

All other valid passes will be accepted until expired including: Senior Pass, Access Pass, Golden Age Passport, and Golden Access Passport. For commercial rates, please consult our website: www.nps.gov/bibe. Additional permits may be required.

Weather and Climate

The old adage "if you don't like the weather, just wait a minute," often holds true for Big Bend National Park. While Big Bend generally has blue skies and warm days, the weather can change quickly and dramatically.

Throughout the Year

Relative humidity is generally low. Spring and fall are usually warm and pleasant. Summers are hot, although temperatures vary significantly between the desert floor and the Chisos Mountains. May and June are the hottest months. The rainy season extends from mid-June to October with locally heavy thunderstorms and some flash flooding. However, the water recedes rapidly and the rainy season can be a delightful time to visit the desert. Winters are generally mild, although periods of cold weather (including light snow) are possible; winter visitors must prepare for a variety of conditions.

Fires

Ground fires and wood fires are strictly prohibited throughout the park. Only gas stoves and charcoal contained in a grill may be used. Use caution with any heat source.

Food Storage

Javelinas or bears can easily open coolers and tents. Do not store food or scented items in tents, and never leave coolers, cook stoves, dishes, trash, or food/water unattended.

Gas Stations

Gasoline is available at the Panther Junction and Rio Grande Village stations. Diesel is only available at Panther Junction. Rio Grande Village station also offers propane.

Junior Ranger

Through activities, games, and puzzles, kids can have fun learning about the park and earn a badge or patch, bookmark, and certificate. A \$2 booklet is sold at visitor centers.



Kennels

Alpine Veterinary Clinic
432-837-3888

Alpine Small Animal Clinic
432-837-5416

Lodging

The Chisos Mountain Lodge, located in the Chisos Basin, includes 72 rooms, a gift shop, and dining room. For more information call 432-477-2291 or 877-386-4383.

Phones

Limited cell phone coverage is available in the park. Public pay phones are located at visitor centers, campgrounds, and stores.

Post Office

A full-service post office is located at the Panther Junction Headquarters, open M–F, 8am–1pm and 3pm–4:30pm. A mail drop is also available at the Chisos Basin Store.

Ranger Programs

Join a ranger for a guided hike or evening presentation. These free programs are offered most days of the year. Schedules are posted at visitor centers and campgrounds.

Recycling

Recycling cans are provided in campgrounds and near stores and visitor centers. Every bit of material recycled means one less piece buried in the park landfill. Please recycle!

Showers and Laundry

Public showers and laundry facilities are available at the Rio Grande Village Store, and have 24-hour access. Out-of-park facilities are available in Study Butte.

Swimming

Big Bend is a desert park. Wading in the Rio Grande is not recommended. Soaking in the 105° Hot Springs is an option. Do not enter or contaminate backcountry springs.

Other swimming opportunities include Balmorea State Park, the world's largest spring-fed pool (a three-hour drive north).

Visitor Centers

Panther Junction, Chisos Basin, and Persimmon Gap Visitor Centers are open year-round. Rio Grande Village and Castolon Visitor Centers are open November–April.

Wifi/Internet

Free wireless internet is available at the Chisos Mountains Lodge and Rio Grande Village Store/RV hook-ups. There are no public computer terminals.



Frosted sotols in the Chisos Mountains

Panther Junction Averages (mountains temps 5-10° lower, low desert temps 5-10° warmer)												
	January	February	March	April	May	June	July	August	September	October	November	December
Max Temp (°F)	60.9	66.2	77.4	80.7	88.0	94.2	92.9	91.1	86.4	78.8	68.5	62.2
Min Temp (°F)	35.0	37.8	45.3	52.3	59.3	65.5	68.3	66.4	61.9	52.7	42.3	36.4
Precip (inches)	.46	.34	.31	.70	1.50	1.93	2.09	2.35	2.12	2.27	.70	.57