



# The Paisano

The official newspaper of  
Big Bend National Park and the  
Rio Grande Wild & Scenic River

Volume 28, number 1  
Winter/Spring 2008



The western park boundary from the Mesa de Anguila

## Getting Started

### 8 What to See & Do

Find out how to make the most of your time in the park. Recommendations and suggested trip itineraries for one day, three day, or week long visits can be found here.

### 9 Day Hikes

Find descriptions of many of the most popular easy and moderate hiking trails here. Detailed descriptions of each trail include length, average time required, difficulty, and location.

### 16 Park Map

Don't know where you are? The park map can help. Detail maps of the Chisos Basin and Rio Grande Village are also found here. A list of useful phone numbers for services both in and outside the park is also included.

## Expect Change

WELCOME TO BIG BEND NATIONAL PARK AND THE RIO GRANDE WILD and Scenic River! Big Bend is one of the largest and least visited of America's national parks. Over 800,000 acres await your exploration and enjoyment. From an elevation of less than 2,000 feet along the Rio Grande to nearly 8,000 feet in the Chisos Mountains, Big Bend includes massive canyons, vast desert expanses, and the entire Chisos Mountain range. Here, you can explore one of the last remaining wild corners of the United States, and experience unmatched sights, sounds, and solitude. This issue of the *Big Bend Paisano* explores the concept of change, as it applies to a complex place such as the Big Bend.

We often think of parks as outdoor museums, but caretaking a living ecosystem is very different than protecting unchanging objects. Both natural features and human facilities may be different each time you visit. Park management may or may not affect your visit. You won't notice the air quality monitoring equipment that works 24 hours a day, but you will see other activities. Some of them may unavoidably affect you, such as smoke from a prescribed fire or flash-flooding that leads to closures of trails and roads. Your visit gives you a snapshot of the year-round process of park management. Nature decides the timing of many of these activities, but they all share one goal: preservation of these parks for people now and in the future.

### Superintendent's Welcome

Welcome to Big Bend National Park and the Rio Grande Wild & Scenic River, two of THE most special places administered by the National Park Service. We trust that you will have a wonderful time as you explore and experience these great parks.

Change comes in many forms—in the coming months the most visible example of change will be the expansion of the Panther Junction Visitor Center (see page four for more information on the project). In the early 1960s, when the visitor center was built, nearly one hundred thousand visitors came to the park each year; today, almost four times as many visitors come to

the park, and about one hundred thousand enter the Panther Junction Visitor Center. This change will create a disruption now, but this enlarged and improved facility will have the ability to better serve the modern visitor to Big Bend. New exhibits will convey an overview of the complex resources and opportunities that the park offers. It is our sincere hope that on your next visit you will be able to enjoy the renovated visitor center.

National parks like Big Bend belong to us all, and as such we have a shared stewardship role. Please be mindful of that as you spend time in YOUR national park. Leave only footprints and take only memories.



*William E. Wellman*  
Superintendent William E. Wellman

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### What is a Paisano?

*Paisano* is a Spanish word meaning countryman or peasant that is used throughout the American southwest as a nickname for the greater roadrunner.



### Big Bend on the Internet

Plan your next trip, or learn more about the fantastic resources of the Big Bend by visiting the *official* National Park websites. These are your best source of information for weather conditions, river levels, research, park news, trip planning, and more.

**Big Bend National Park:**  
<http://www.nps.gov/bibe/>  
**Rio Grande Wild & Scenic River:**  
<http://www.nps.gov/rigr/>

### Got Water?

Carry and drink plenty of water—at least 1 gallon per person per day.

### Emergencies

Call 911 or 432-477-2251  
24-hours a day or contact a Park Ranger.

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National Park Service  
U.S. Department of the Interior  
Big Bend National Park  
Rio Grande Wild & Scenic River  
PO Box 129  
Big Bend National Park, TX 79834





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U.S. Department of the Interior

Big Bend National Park  
Rio Grande Wild & Scenic River

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#### National Park Service

Editor: Eric Leonard, Park Ranger  
Chief Naturalist, David Elkowitz  
Superintendent, William E. Wellman

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. As conservation educators, the park's Division of Interpretation and Visitor Services provides guided walks, talks, evening slide programs, workshops, and other educational activities as well as written materials such as this newspaper.

#### Big Bend Natural History Association

Executive Director, Mike Boren



The Big Bend Natural History Association, established in 1956 as a private, non-profit organization, champions

the mission of the National Park Service in facilitating popular interpretation of 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.

#### Photograph Credits

When possible *The Paisano* proudly uses photographs of the park taken by visitors and submitted to the website visitor photo gallery. These photographs bear the photographer's name; all uncredited images are NPS photographs.

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#### Websites

www.nps.gov/bibe/  
www.nps.gov/rigr/

The National Park Service cares for the special places saved by the American people so that all may experience our heritage.

EXPERIENCE YOUR AMERICA™

# Big Bend and the Border



Viewing the sunset against the Sierra del Carmen mountains is a signature Big Bend experience, underlined by the irony that the mountains aren't a part of the National Park; in fact, they aren't even located in the United States. 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 often 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.

Increased border restrictions have led to a number of important changes that affect the international boundary in Big Bend. A visit to Big Bend is a wonderful experience to learn about the park's history and to experience a wide variety of natural history and recreation options. The park's border with Mexico is part of our shared landscape and a chance to experience and learn about our neighbors. A few simple steps can help keep the park safe for everyone who is here.

#### Crossings Remain Closed

As a result of a 2002 US Customs and Border Protection decision, there are NO authorized crossings in Big Bend National Park. *Crossing at Boquillas, Santa Elena, or other locations along the Rio Grande is prohibited.* The closest legal ports of entry are Del Rio and Presidio, Texas.

The U.S. Attorney's Office has indicated that it will prosecute any criminal violations regarding any illegal crossings. If you re-enter the United States at any point within Big Bend National Park, you may be liable for a fine of not more than \$5,000 or imprisonment for up to one year, or both.

#### When Visiting A Border Park

Big Bend National Park shares the border with Mexico for 118 miles. This is a remote region. *Visitors should be aware that drug smuggling routes pass through the park.*

If you see any activity which looks illegal, suspicious, or out of place, please do not intervene. Note your location. Call 911 or report it to a ranger as quickly as possible.

Each year hundreds of people travel north through the park seeking to enter the United States. It is possible you could encounter an individual or small group trying to walk through the park with little or no water. Please *do not stop*, but instead, note your location and immediately call 911 or contact a ranger as soon as possible. Lack of water is a life-threatening emergency in the desert.



#### Border Merchants

Mexican Nationals may approach you from across the river to purchase souvenir items (walking sticks, bracelets, crafts, etc.). 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 will be considered contraband and seized by officers when encountered.*

Rocks, minerals, archeological items, etc. cannot be purchased, imported, or possessed in the national park.

In addition, illegal trade impacts the resources of the park in a number of negative ways, including the creation of social trails, the cutting of cane along the river, erosion of riverbanks and an increased amount of garbage and contaminants along the Rio Grande watershed. Supporting this illegal activity contributes to continued damage of the natural resources along the Rio Grande, and jeopardizes the possibility of reopening the crossings in the future.

Sotol walking sticks and other handcrafted items made in Boquillas, Mexico can now be purchased legally at a number of sales outlets inside and outside of the park.



Overlooking the Rio Grande, 1950s.

## Fees: Your Dollars at Work

#### Why Do Parks Charge A Fee?

Much of the funding for Big Bend and other national parks comes from American taxpayers. However, protecting this land and ensuring that you have a safe, enjoyable and educational experience costs more than this tax base provides. Therefore, the U.S. Congress determined that people who use federal lands should pay fees to help offset the difference.

#### Where Does Your Money Go?

Twenty percent of the money collected from entrance and campground fees is redistributed to units of the National Park System that do not charge fees to assist in their upkeep and to upgrade those areas. Eighty percent of the money collected here stays in Big Bend National Park.

#### How Is Your Money Used?

Your entrance and campground fees help Big Bend National Park complete important projects that directly benefit you and other park visitors.

#### Recent Projects at Big Bend Made Possible By Your Fees:

- Reconstruction of the Rio Grande Village nature trail boardwalk
- Installation of a toilet at Hot Springs
- Develop a visitor center at Castolon
- Improvements to river access boat ramps

#### Current Projects:

- Major expansion of the Panther Junction visitor center
- Castolon historic district exhibits

### Entrance Fees at Big Bend National Park

**Private noncommercial automobile**  
\$20 (7 days)

**Single entry (foot, bike, motorcycle, etc.)**  
\$10 (7 days, both parks)

**Big Bend Annual Pass**  
\$40 (valid one year from month of purchase)

**Interagency Annual Pass**  
\$80 (This pass will be valid for one year from month of purchase for entrance fees to federal fee areas)

All currently valid passes will be accepted until expired, including the National Parks Pass, Golden Eagle Pass, Golden Age Passport, and Golden Access Passport.

# Park Partners



The concept of partnership is deeply embedded in the management philosophy of Big Bend National Park. As a result, the park has developed a number of effective partnerships to further the mission of the National Park Service at Big Bend.

## 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 their 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 of 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.



PO Box 196  
Big Bend National Park, Texas 79834  
432 477-2236

[www.bigbendbookstore.org](http://www.bigbendbookstore.org)

### Shopping Options

For those who prefer to shop in person, or during your visit, BBNHA operates sales outlets at Amistad National Recreation Area in Del Rio, Texas, and in Big Bend National Park Visitor Centers at the Chisos Basin, Panther Junction, Persimmon Gap, Castolon, and Rio Grande Village.

When preparing for a future visit, or remembering a previous trip, BBNHA offers both phone and internet sales. Phone orders can be placed during business hours seven days a week by calling 432 477-2236. Please browse through our online store at <http://www.bigbendbookstore.org/> You can enjoy safe, secure shopping in the comfort of your home. We offer many categories, authors, subjects, and titles.

All profits from your purchases are used to provide assistance to the National Park Service in Big Bend National Park and Amistad National Recreation Area.

The Association's ongoing projects include:

- Operate book sales outlets in Big Bend National Park and Amistad National Recreation Area
- Publish trail guides, brochures and assist with the publication of *The Big Bend Paisano*
- Sponsor an on-going Seminar program
- Provide annual grants for research projects and administer grants and gifts received for the park
- Support the park's volunteer, Junior Ranger, and educational outreach programs

### Seminars

Spend some quality time with an expert on Big Bend birds, tracks, black bears, dinosaurs, geology, and much more with our Natural History Seminars Program.

Additional information including seminar details and schedules is available on the BBNHA website, [www.bigbendbookstore.org](http://www.bigbendbookstore.org) or call 877 839-5337. There are still slots available for the upcoming sessions. Sign up today!

## Friends of Big Bend

Founded in 1996, the Friends of Big Bend National Park is a private not-for-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 equipment to monitor air and water quality, and the construction and renovation of Park infrastructure.

The Friends of Big Bend National Park host a yearly membership event and in-park tour, which is an excellent opportunity to get to know the board of directors governing the organization and perhaps even to get more involved with the group. Also, several fund-raising events occur in the major Texas cities throughout the year and are another opportunity to get involved and help with the mission of the Friends Group. The group's website is a great place to look for upcoming events and current happenings.



PO Box 200  
Big Bend National Park, Texas 79834  
432 477-2242

[www.bigbendfriends.org](http://www.bigbendfriends.org)

### Get In On the \$30-Per-Plate Fund Raiser

Big Bend custom license plates are now available for your car, truck or motorcycle from the state of Texas and most of the cost will be used to help preserve and protect Big Bend National Park, one of the world's last great wildernesses. It may be the most fulfilling contribution you'll ever make.



## Volunteers in the Park

Volunteers are a valuable and valued part of our operation and our community. Last year over 150 volunteers contributed 41,419 hours of service to Big Bend National Park. Some service groups come for a few days, other volunteers stay for months. Some are students; others are retirees looking for adventure during their "golden years."

Most of these volunteers work in visitor centers and as campground hosts; however, volunteers also help in science and resource management, maintenance, and administration. Regardless of age or background, these folks share a desire to make a positive contribution to the preservation and management of Big Bend National Park.



### Honor Roll

Join us in thanking the following individuals and organizations who have recently donated 100 or more hours in volunteer service to Big Bend:

American Youth Works  
Judy Atwood  
Madeline Averett  
Reta and Dick Averill  
Barbara and Bill Baldwin  
Barbara Bracken  
Judy Brinkehoff  
Susan Buchel  
Tillman Cavert  
Aletha, Roy and Kenny Ellis  
Diane and Gary Frable  
Richard Grayson  
Steve Harper  
Ruthine and Bob Hennessy  
Ginny and Jim Herrick  
Whitney Hibbard  
Jim Howell  
Deborah Hurst  
Sally and Bob Jones  
Joan and Raymond Kane  
Mark Kirtley  
Jenny Krouse  
Jodi Lau  
Dan Leavitt  
Wade May  
Peter McElroy  
Ed Navarro  
Brittany Palmer  
Kim and Al Peabody  
Becky Reiger  
Maryann and Ted Rowan  
Samantha Schroeder  
Patsy and Shad Shadoin  
Phil Souza  
Linda and Kenn Sutton  
Jennette Timmer  
Charlotte and Bob Whitesides  
Steve Wick  
Bob Wirt  
Jessica Wooldridge

### Join us and 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 BBNHA and the Friends of Big Bend National Park 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 (W/ FBBNP)

#### Life Membership

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

- Renewal
- New Member

Name \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_  
Make checks payable to BBNHA or charge to:  
\_\_\_ Visa \_\_\_ Mastercard \_\_\_ Discover  
Card Number \_\_\_\_\_ Exp. Date \_\_\_\_\_  
Signature \_\_\_\_\_

Detach and mail to: Big Bend Natural History Association,  
PO Box 196, Big Bend National Park, Texas 79834  
Telephone: 432 477-2236

You can also join online at [www.bigbendbookstore.org](http://www.bigbendbookstore.org)

# Park News

## Panther Junction Visitor Center Expansion

Please pardon the dust! After several years of delays, a remodeling and expansion of the Panther Junction Visitor Center began in October 2007. There will be some inconvenience to the public at several stages of demolition and construction associated with this project, but the results should carry on without interruption for several decades.

The Panther Junction Visitor Center was constructed in the 1960s and is no longer adequate, because visitation to the park has increased and the current bookstore is unable to accommodate the increased amount of literature that has been published on the Big Bend region. During peak winter months, holidays, and the weeks of spring break the visitor center is crowded to the point that visitor service is hampered by crowds, traffic flow, inadequate desk space, and grossly inadequate bookstore floor space.

The Panther Junction Visitor Center expansion is a two phase project that was made possible through a partnership effort that includes in phase one funds from the park's entrance fee program, funding from the Big Bend Natural History Association and the Friends of Big Bend National Park. Phase two provides for the design, fabrication and installation of new exhibits through funding raised by the Friends of Big Bend National Park. At present, construction on the expansion is expected to be completed in March and new exhibits installed in April 2008.

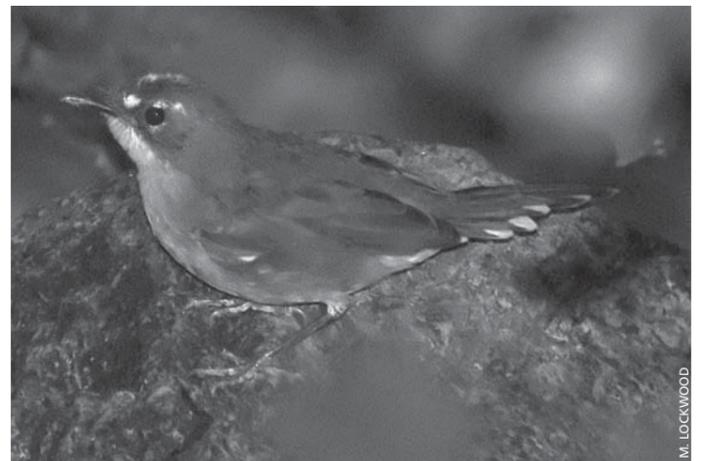
## National Park Centennial Project

Big Bend National Park's project to construct a picnic facility and trailhead for access to a proposed multi-use trail is one of over 200 proposals approved for 2008 as part of the National Park Centennial Initiative. The potential multi-use trail in the vicinity of Lone Mountain will still need to proceed through the environmental assessment process to allow for public comment and consideration of a range of alternatives before construction could begin. The project will allow the park to construct a pull-through parking area, shaded picnic facilities and trailhead access to a potential multi-use hiking and biking trail around Lone Mountain in partnership with the International Mountain Bike Association; the multi-use trail still requires public input and comment through the environmental assessment process. More information regarding the National Park Centennial Initiative can be found at <http://www.nps.gov/2016>

## Rare Bird Sighted

Among the many things that characterize Big Bend—spectacular vistas, towering river canyons, incredible wildflower displays, remote and rugged terrain—for some visitors, the possibility of finding rare birds is the defining experience. Since the first ornithological investigations in the early 1900s, over 450 species of birds have been found in the park. Most are expected species, either as year-round residents or regularly occurring migrants. Occasionally though, the odd bird shows up, most often a species whose normal range lies in Mexico. Violet-crowned hummingbird, piratic flycatcher, flame-colored tanager, black-vented oriole are among the many that have been documented within the park. Recently another rarity joined the list.

On August 13, 2007, a fan-tailed warbler was an astounding find deep in Pine Canyon. Occurring in Mexico along both the Atlantic and Pacific slopes, the fan-tailed warbler was previously known in the U.S. only from a handful of sightings in remote wooded canyons of southeast Arizona. For just over a month, hundreds of birders drove the rough seven-mile long road and hiked four miles roundtrip to catch a glimpse of this very rare bird. Most were rewarded, but only a quick few managed a photograph of this first Texas record.



Top: Artist's concept drawing of a visitor standing next to the new information desk after the expansion project is completed.

Middle: Lone Mountain, as seen from the Panther Junction Visitor Center.

Bottom: Fan-tailed warbler in Pine Canyon, August 2007.

# An Endangered View

Ranger Jennette Timmer

Mountains are solid as a rock. They have been around for millions of years, and yet they are becoming part of an endangered view in Big Bend National Park. Sure they're still there, but are you able to see them? The very skies above Big Bend are changing. . . .

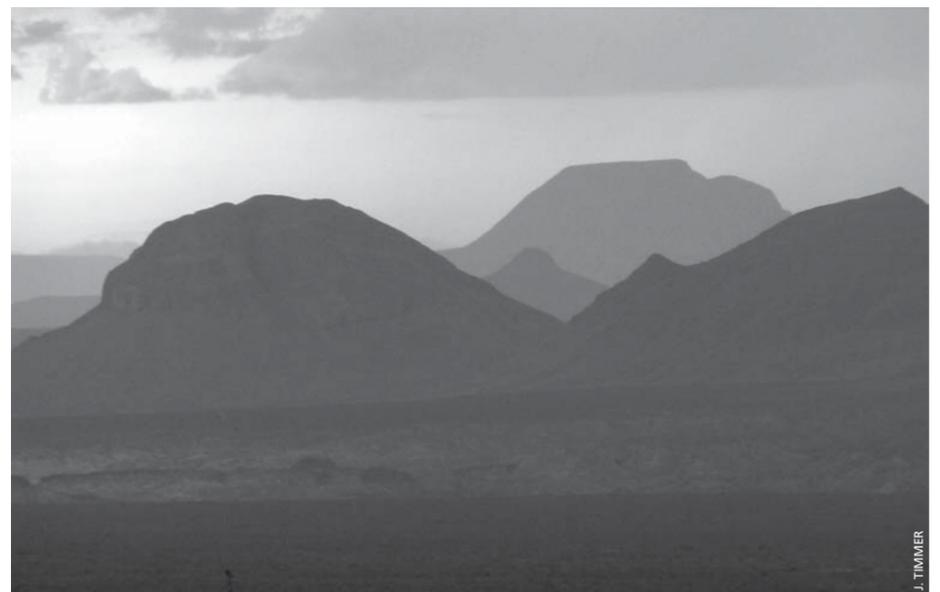
Many visitors come to Big Bend seeking expansive vistas, limited only by the horizon. But the horizon seems much closer as pollution hides entire mountain ranges behind a blanket of haze. This is becoming an all too common sight. Big Bend's impressive views, with the ability to see detail on objects 100 miles away was one of the reasons this land became a National Park. Now, most visitors are met with moderately hazy days, with over twenty days out of the year featuring fewer than thirty miles of visibility.

Unfortunately not just the views are changing, but the ecosystems within the park are being affected as well. A long-term study in Pine Canyon<sup>1</sup> has linked increased pollution to increased nitrates in the air and in the soil, making it significantly more acidic. This altering of the soil will change the composition of the plant communities

growing in the affected areas, eliminating some species while making the area more prone to weeds. When the next generation of visitors comes to the park, they might be robbed of the opportunity to see the diversity of native cacti and wildflowers blooming around the base of the Chisos.

Where is this pollution coming from? Big Bend is a remote park, but not immune to the transport of pollutants carried on large-scale air patterns. Air resource specialists have been monitoring air quality in Big Bend since 1978, identifying the pollutants and tracking wind patterns to identify the sources. They have found that much of the pollution comes from Central and East Texas refineries and coal-fired plants. Additional pollution comes from Mexico and as far away as the Ohio valley.<sup>2</sup>

The Clean Air Act of 1970 (amended in 1977 and 1990) includes provisions to help protect the National Parks' air quality. Standards are set in place to "prevent the significant deterioration" of air quality in areas of natural, scenic and historic value such as Big Bend. But legislation can only go so far, leaving individuals room to make



Santiago Peak, far to the north, can be clearly seen from the park during higher air quality conditions.

a difference. Coal burning power plants are a major source of pollution. Using energy-efficient appliances and lighting reduces electricity consumption. Additionally, many electric companies offer customer energy conservation programs and electricity from alternate sources. Cars are another major source of pollution. Keeping cars in good working condition, driving at medium speeds, using energy-conserving grade motor oil and "clean" fuels can help reduce exhaust emissions. Decisions made at home can have far-reaching effects: You can help ensure the future of Big Bend's sky.

## Notes

<sup>1</sup> The pH data (unpublished) is part of an ongoing study of the Pine Canyon watershed. This is a joint effort of Dr. John Zak (Texas Tech University), Dr. Kevin Urbanczyk (Sul Ross University), and Dr. Joe Sirotak of Big Bend National Park.

<sup>2</sup> The BRAVO (Big Bend Regional Aerosol and Visibility Observational) study was conducted in 1999 and analyzed until 2004.

# Managing Change

Ranger Bob Hamilton



Change is a process with which many people are uncomfortable, especially if they happen to be fairly comfortable with the status quo. If considered within the grandest of scales, however, there is arguably no period of time in the some 13-14 billion year history of the universe during which change has not been taking place.

Our home planet appears to be 4.5 billion years of age. If one examines current evidence scattered about our planet, one could say that there has also never been a period of time during which the earth has remained static, that is, absent of change over time. There was a period of time, for example, when the earth lacked oxygen, and another when continents were fused together. There was a period of time during which tropical plants dominated the landscape of Alaska, a time when the Grand Canyon was a flat plain, and multiple times when enormous sheets of ice covered huge areas of the planet's surface. The very brief period of human existence on Earth, combined with the even shorter lifespan of the average human prohibits any one of us from noticing all but the most sudden of changes. There is no valid reason for any human to believe or expect that current conditions on planet Earth will continue to exist in the distant future as they do today. Change has been, and is likely to remain, the rule rather than the exception.

In that context then, consider the challenge before national park managers attempting to achieve the National Park Service mission. The first component of the NPS mission statement says: "The National Park Service *preserves unimpaired* the natural and cultural resources and values of the national park system for the enjoyment, education, and inspiration of this and future generations."

If one considers both the natural and human forces of change at work within our national parks, monuments, and historic sites, the idea of actually achieving the NPS mission seems remote at best.

Perhaps the current state of affairs within Big Bend can illustrate the enormous challenges that face park managers. As at all national park areas, visitors to Big Bend National Park frequently pinpoint these important challenges through their questions.

Visitors often ask "Why is the border between Mexico and the United States closed within the national park boundary?" Many visitors traveled to Mexico from the park during past trips and consider the closure to be detrimental, not only to their personal experience, but also to the economy of the small Mexican villages across the river. On a more philosophical level, does the border closure represent a significant impairment to park cultural resources, specifically the cultural exchange that has existed here for hundreds of years? Does the closure impair the ability of the NPS to achieve its own mission statement?

Many visitors, especially those who have grown up in and near Big Bend before it became a national park in 1944, ask "Why have the vast majority of ranch buildings, fences, and other evidence of historical occupation of this area been destroyed?" Is the ranching culture not an important part of the more recent history of this area? Ironically, if current management philosophy and law had been in place in the 1940s, the answer would have been yes.

Many visitors who wish to take advantage of birding opportunities within the park ask "Why have windmills at Sam Nail Ranch

and Dugout Wells not been repaired?" The nature of this question requires both the NPS manager and the visitor to define what exactly constitutes "unimpaired." In thinking about the issue, managers must establish the historical point in time from which impairment will be evaluated. Do we strive for an unimpaired Chihuahuan desert ecosystem within the boundaries of Big Bend National Park? If the answer is "yes" then windmills represent an unnatural pathway to bring valuable water to the surface of the desert, and as such, ought to be removed.

Where human impacts are concerned, natural changes are often trumped by human interference. The impact of overgrazing before the establishment of Big Bend may pale when compared to impacts of the introduction of non-native plants such as love grass, buffle grass, giant river cane, and tamarisk. Even the proliferation of native Trans-Pecos shrubs after the grass was removed begs the question "can a pristine...if such can be determined... Chihuahuan desert ever be re-established in Big Bend?"

How does the park management deal with invasive animal species? Barbary sheep, feral hogs, cattle, burros, nutria, bullfrogs, and elk are seen in Big Bend each year. Each of these exotics changes the flow of nutrients through native food chains. In some cases, native wildlife populations are adversely affected by the presence of non-native species. Should funding be allocated to eliminate species that clearly do not belong here, especially if there is doubt that they can be eliminated at all?

Challenges to the mission of the NPS sometimes arise from special interest groups. Do we establish mountain biking trails in our natural parks? Do we re-build

the walls of the old hot spring bathhouse to exclude a rising river that keeps visitors from "enjoying" the hot spring, which is a naturally occurring feature within the park? Or do we treat the remaining walls as "unnatural" and remove them altogether?

As the Endangered Species Act of 1973 mandates, do we try to restore the Big Bend ecosystem by re-introducing species that have been extirpated by past occupants of the landscape? Is Big Bend an impaired system if key species are missing?

Opinions on these and other management issues abound in Big Bend National Park, as well as most parks in the National Park system. The task of managing national parks is daunting, far more complex than most visitors realize or even think about. But it is the park owners, the visitors who are US citizens, who must consider all the issues that surround the great treasures that are our National Parks.

The great writer Wallace Stegner once wrote "National Parks are the best idea we ever had. Absolutely American, absolutely democratic, they reflect us at our best..." Confronting change, both natural and human-caused, within our national parks should also be democratic in nature. That happens only if all who care about our national parks remain engaged through thought and action to confront the changes with which the system is faced. It is they who must understand the important issues that confront the parks, it is they who must watch how park managers respond to those issues and, ultimately, it is they who must vote for the officials who will determine park management philosophy.

## Panther Junction

Constructed in the early 1960s, at a time when annual park visitation was less than 100,000 the Panther Junction Visitor Center was a model facility of its time. Designed as a place which stood apart from the natural environment for visitors to receive orientation and information, the visitor center at Panther Junction has undergone a series of face-lifts in its forty-five year history. The following photographs capture the changing appearance of this central location within the park.

Upper Left: Panther Junction, 1959

Lower Left: Detail of road sign, 1959

Upper Middle: Visitor Center exterior, 1965

Lower Middle: Visitor Center exterior, 2007

Upper Right: Information desk and exhibits, 1962

Lower Right: Information desk and exhibits, 2007



# A Desert Sanctuary

*Observe always that everything is the result of a change, and get used to thinking that there is nothing Nature loves so well as to change existing forms and to make new ones like them.*

~Marcus Aurelius

**Big Bend National Park is much more than just a recreational destination. It is a sanctuary of natural and cultural resources—a living museum for all the world. Conserving this heritage is a task the National Park Service cannot accomplish alone. All of us serve a critical role in maintaining Big Bend's sanctuary for the future.**



Keep wildlife wild. Human foods are not healthy for wildlife. Feeding wild animals is illegal and can cause injury or death to the animal. Keep food in a hard-sided vehicle or food storage locker where provided.



Please respect the peace and quiet of Big Bend's unique environment and protect the subtle sounds of nature by traveling quietly.



You are an important resource, too. Use common sense and good judgement to protect your own safety and take advantage of our educational programs to enhance your knowledge of Big Bend.



Collecting any natural or historical feature or object is strictly prohibited. Leave the park intact for others to enjoy. If you witness any collecting, report it to a park ranger as soon as possible.

# K-T K-O: Cretaceous-Tertiary Knock Out

Ranger Bob Jacyna



Badlands near the Maverick Junction mark the K-T boundary.

S. Collyer

On the surface of things, the pace of change appears very slow at Big Bend National Park. Arid regions, like this one, display very little change from year to year. Compare a photograph taken today at a specific site in the desert landscape and then compare it to a 100-year-old photo taken at the same location. There is little difference. Creosote bushes are about the same size and have nearly the same spacing. Amp the time frame however, and change becomes much more apparent.

Big Bend country was an entirely different place 65 million years ago. If you had visited here then, you might have witnessed the giant Alamosaurus, a 50 ton, 100 foot-long plant-eating dinosaur. If you had seen a giant shadow cross the ground and then looked up, you may have observed Quetzalcoatlus Northropi, a pterosaur with a 36 foot wingspan. And if this was then a National Park, you would have rushed to the nearest visitor center to fill in a wildlife sighting card.

We know that both of these gigantic creatures lived here because their fossil bones were discovered and excavated in the park. The fossils were contained in the Javelina formation, a sedimentary rock layer deposited when this region was an inland fresh water system of lakes, rivers, marshes, and swamps. Other fossils from this time frame, but not necessarily in the Big Bend Javelina formation, include those of birds, mammals, flowering plants, ferns, insects,

fishes, corals, mollusks, and plankton, all organisms that you might have seen on your prehistoric visit. Now, if you traveled again to Big Bend country after waiting several thousand years, the changes would be amazing.

One thousand years hence, the first thing you would notice is the absence of the large dinosaurs and pterosaurs, indeed dinosaurs or pterosaurs of any size. They would be absolutely and irrevocably gone. The plankton, fishes, and crustaceans, too, would be gone. You would see birds, mammals, flowering plants, ferns, insects, and corals, but fewer varieties of each. If you assembled a team of scientists to perform a comparison survey, they would report that 70 percent of all plant and animal species are missing and presumed extinct. Walking around in disbelief you would find the color and texture of the earth beneath your feet had also changed. If you also happened to have a metal detector and tuned it to find iridium, a rare metal found in the inner regions of the earth and meteorites, it would peg the needle. What happened? One possible answer actually suggests origins off earth, while an opposing school of thought looks closer to home. . . .

Scientists theorize that a large meteorite, 6 miles across, collided with our planet 65 million years ago. The speed of this object from outer space was enormous, as was the explosion upon impact, around 100 million megatons. It instantly vaporized

limestone and sulfate deposits at the target point, releasing enormous amounts of carbon dioxide and sulfur dioxide into the atmosphere, creating an immediate greenhouse effect. The impact also produced obliterating shock waves, stupendous earthquakes, and enormous tsunamis. Fire, smoke, soot, and darkness enveloped the whole planet. The apparent impact crater has now been found deeply buried in the sediments off the coast of the Yucatan peninsula of Mexico. The egg-shaped crater, called Chicxulub, is 110 miles across, testimony to the enormity of this cataclysmic event.

Scientists also tell us that, around the same time, there were gigantic volcanic eruptions which could produce results similar to those of a meteorite impact. These lava flows, now known as the Deccan Traps of western India, cover over 1,000,000 square miles. About 90 percent of the vast Deccan Traps erupted 65 million years ago, pouring out its vast volume of lava in hundreds of thousands to several million years.

What ties the Big Bend to these ancient cataclysms? Iridium. Because meteorites have a much higher percentage of the metal iridium relative to the earth, concentrations of this rare metal in terrestrial deposits are possible indicators of past meteor impacts. On the other hand, iridium also exists at the earth's core, and a massive volcanic event could bring this rare metal to the surface. Around the globe, an iridium-bearing clay

layer corresponding in age with both the Chicxulub crater and the Deccan Traps has been confirmed in 100 locations, including Big Bend National Park.

This layer, called the K-T Boundary, is the precise division between the Age of the Dinosaurs at the end of the Cretaceous Period and the Age of Mammals at the beginning of the Tertiary Period. We are fortunate that thirty percent of all species did survive and that some mammals, including our progenitors, were included among them.

Whether the great dinosaur extinction and the K-T boundary layer was caused by an extraterrestrial impact, gigantic volcanism, both, or neither is still debated among the experts. What is not debated is the presence of the K-T iridium boundary. Can you walk up and put your finger on it? Not really. Traveling the road between the west park boundary sign and the Maverick entrance station offers an opportunity to see the deposits. Park on the road shoulder at mile marker 22 and look across the road to the northeast. How will you know the exact K-T boundary layer? It will be difficult to pinpoint but the bands of purple in the clay hills to the northeast will give you an approximate idea of the location. One thing is certain: below the layer you *might* find dinosaur fossils, but above it, you will definitely not. And what about future K-T like boundaries, deposited tens of millions of years from now? Will there be human fossils below the boundary layer and no human fossils above?

## A River of Change

Over the past century, the Rio Grande has experienced radical, and sometimes rapid change. Natural extremes of flood periods and a dry channel have been replaced by a smaller, evenly distributed and more predictable water flows. At present, the annual average volume is about one-sixth of historical flow.

A broad river channel with gently sloping banks has been replaced by steep banks defining a narrower and deeper channel. Channel change has led directly to changes in plant and animal species supported by the Rio Grande. What changes will the future bring?

**Left:** Confluence of Terlingua Creek and the Rio Grande at Hot Springs, 1955.

**Right:** Confluence of Terlingua Creek and the Rio Grande at Hot Springs, 2005.



# What to See and Do



You've driven many miles to get here, and have finally arrived at your destination: Big Bend National Park. But now what? Now that you're here, how do you spend your time? Where should you go? What should you explore? The park is big, and often visitors have a limited amount of time.

## One Day

The visitor centers at Persimmon Gap, Panther Junction and the Chisos Basin are excellent places to begin your visit. Park staff there can answer your questions, and exhibits provide additional orientation. If time allows, drive to the Chisos Basin to take in spectacular views of the Chisos Mountains. Walk the 0.3-mile self-guiding Window View Trail to get a feel for the mountain scenery and one of the best sunset views in the park.

A trip along the Ross Maxwell Scenic Drive will give you a taste of the Chihuahuan Desert and will lead you to the Rio Grande. This drive highlights the geologic splendor and complexity that the Big Bend is famous for. There are many scenic overlooks and exhibits along the way. Sotol Vista, Mule Ears Overlook and Tuff Canyon are all worthwhile stops. The short walks to the Sam Nail Ranch, Homer Wilson (Blue Creek) Ranch and a visit to the Castolon Historic District will give you a glimpse into Big Bend's past.

A highlight is the short walk into Santa Elena Canyon—one of Big Bend's most scenic spots. Travel to the end of the Ross Maxwell Scenic Drive to access the trailhead; rising water levels on the Rio Grande can lead to flooding as well as the closure of the road and trail. Stay off the shoulders of the roadway when encountering high water areas.

## Three Days

With three days to spend in the park, you can explore the major roads more thoroughly and still have time for hiking. In the Basin area, consider hiking the Window Trail (5 miles round trip) or the Lost Mine Trail (4.8 miles round trip); consult the *Hiker's Guide to Trails of Big Bend National Park*, for sale in park visitor centers, for trail descriptions.

In addition to the Basin and Ross Maxwell Scenic Drive (see suggestions for "one day") you can drive to Rio Grande Village, perhaps stopping at Dugout Wells along the way to walk the short Chihuahuan Desert Nature Trail. The Rio Grande Village Visitor Center offers a brief introductory slide program. Walk the Rio Grande Village Nature Trail which begins near site #18 in the campground. The bluff overlooking the Rio Grande at the end of the nature trail is a particularly beautiful spot at sunrise and sunset. The historic Hot Springs nearby can be reached via an improved dirt road or a three-mile (one way) hike from the Daniel's Ranch picnic area.

The Boquillas Canyon road will take you to several overlooks of the Rio Grande and the small village of Boquillas, Mexico. At the end of the road is the Boquillas Canyon Trail, which takes you into the entrance of this spectacular canyon.

## One Week

With a week or more to spend in Big Bend, endless possibilities are open to you. You'll have plenty of time to explore the roads mentioned in the previous sections, and will also have time to drive some of the "unimproved" dirt roads. For these, you'll need a high clearance or four-wheel drive vehicle. *Always check at visitor centers for current road conditions, and carry appropriate gear.*

The River Road, Glenn Springs Road and Old Ore Road are some of the more popular primitive roads. A visit to Ernst Tinaja near the south end of the Old Ore Road is a Big Bend highlight. The Pine Canyon Trail, located at the end of the primitive Pine Canyon Road, is an excellent hike to experience firsthand the transition from desert to mountains.

If you don't have high clearance or four-wheel drive, improved dirt roads such as the Old Maverick Road, Dagger Flat and Grapevine Hills will get you "off the beaten path." Hike the Chimneys Trail, or Grapevine Hills Trail for a closer look at the desert environment.

If you'd like to explore the Chisos Mountains, trails to Boot Canyon, Emory Peak and the South Rim offer good views of the park and take you into another world which seems far removed from the desert. There are plenty of opportunities for overnight backpacking along these trails. A backcountry use permit is required and can be obtained at park visitor centers.



Driving the River Road



Overlooking the desert



Floating the Lower Canyons of the Rio Grande

## Floating the Rio Grande

If you have the time and a spirit of adventure, you may want to consider a river trip. 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. Park Rangers can recommend a trip that meets your abilities and interests. Outfitters and equipment rental companies are listed on page 16. See "Backcountry Planning" on page 14 for additional information.

## Backcountry roads

If you have a high-clearance or four wheel drive vehicle, Big Bend's backcountry roads call for further exploration. There are over 200 miles of dirt roads in the park. Improved dirt roads like the Dagger Flat and Grapevine Hills roads are usually in good condition and accessible to normal passenger vehicles, except following rainstorms. Unimproved dirt roads, such as the Old Maverick Road, Old Ore Road, or the River Road, generally require high-clearance vehicles and/or four wheel drive. *Always* check current road conditions at a visitor center before traveling any of the park's primitive roads. Standard backcountry road conditions are listed on page 14.

## Enjoying Your Visit

No matter how limited your time in Big Bend, remember that you will enjoy the park more if you stop your car and explore on foot. That doesn't mean that you have to hike miles on steep grades; there are many short, easy walks and roadside exhibits where you can stretch your legs and enjoy the sights, smells and sounds of the Chihuahuan Desert.

Hiker's guides and road guides are available at visitor centers throughout the park, and they offer more detailed information about Big Bend's trails and roads. Attending ranger-led walks and evening programs are also good ways to learn more about Big Bend; check at the visitor centers and park bulletin boards for current activities.

Remember, you will NOT be able to see everything on this trip. You will probably enjoy the park more if you choose a few spots and explore them thoroughly to get a taste of what Big Bend has to offer. Then, come back again sometime to see the rest!



# Take a Day Hike on Big Bend Trails

From the 7,832 foot (2,387 meters) summit of Emory Peak, to the banks of the meandering Rio Grande, visitors will find over 200 miles of hiking trails in Big Bend National Park. Trails range from strenuous primitive routes through rugged desert backcountry to short handicapped-accessible pathways. Whatever your style of hiking, you can find it in abundance in Big Bend.

On this page are descriptions of some of the most popular easy and moderate hiking trails, divided by the geographic areas of the park. Most of these trails are perfect for shorter day hikes of up to several hours.

Trail	Trailhead Location	Round Trip (mi/km) (avg. time)	Elevation (ft/m)	Description
<b>Eastside — Panther Junction and Rio Grande Village</b>				
<b>Grapevine Hills</b>	Grapevine Hills Road mile 7 Usually passable to all vehicles.	2.2/3.5 1 hour	240/73	<b>Easy</b> Follows a sandy wash through boulder field. A short climb at the end takes you to a large balanced rock.
<b>Hot Springs</b>	End of Hot Springs Road. Unpaved and narrow road.	0.75/1.2 1/2 hour	0/0	<b>Easy</b> Walk past historic buildings to the riverside hot spring. Take a bathing suit and soak in 105°F water. <i>Spring is subject to flooding due to rising river levels.</i>
<b>Rio Grande Village Nature Trail</b>	Rio Grande Village Campground Opposite campsite 18	0.75/1.2 1/2 hour	130/40	<b>Easy</b> Cross a boardwalk to a great view of the river and distant mountains. Good birding and sunrise/sunset views.
<b>Boquillas Canyon</b>	End of Boquillas Canyon Road	1.4/2.3 1 hour	40/12	<b>Easy</b> Begins with a short climb, then descends via a sandy path to the river. Ends near a huge sand "slide."

## The Chisos Mountains

<b>Basin Loop</b>	Chisos Basin Trailhead (near the Basin Store)	1.6/2.6 1 hour	350/107	<b>Moderate</b> Connects the Laguna Meadow and Pinnacles Trails. Nice views of the Basin area.
<b>Window View</b>	Chisos Basin Trailhead (near the Basin Store)	0.3/0.5 1/4 hour	0/0	<b>Easy</b> Level, paved, handicapped accessible. Great mountain views. The best place in the Basin to catch sunset through the Window.
<b>Lost Mine</b>	Basin Road mile 5	4.8/7.7 3 hours	1100/335	<b>Moderate but steep</b> This trail provides excellent mountain and desert views. Go halfway for a shorter hike.
<b>The Window</b>	Chisos Basin Trailhead or Basin Campground	5.6/9.0 4 hours 4.4/7.0 3 hours	980/299 500/152	<b>Moderate with steep return</b> Descends to the top of the Window pouroff. Great scenery and wildlife viewing. For a shorter hike, start at the Basin campground.

*Smoking is prohibited on all trails in the Chisos Mountains.*

## Westside — Ross Maxwell Scenic Drive

<b>Blue Creek Ranch</b>	Ross Maxwell Drive mile 8	0.5/0.8 1/2 hour	90/27	<b>Easy</b> Descends from overlook via old road to 1930s ranch buildings; connects the Blue Creek Canyon & Dodson trails.
<b>The Chimneys</b>	Ross Maxwell Drive mile 13	4.8/7.7 2 hours	400/122	<b>Moderate due to length.</b> Flat and scenic desert trail to rock formations. Look for rock art. No shade.
<b>Mule Ears Spring</b>	Ross Maxwell Drive mile 15	3.8/6.1 3 hours	20/6	<b>Moderate</b> A beautiful desert hike to a small spring. Spectacular geology and mountain/desert views.
<b>Santa Elena Canyon</b>	8 miles west of Castolon	1.6/2.6 3/4 hour	80/24	<b>Easy</b> Crosses creekbed, climbs stairs, then follows the river upstream into the mouth of the canyon. <i>Flash flooding on Terlingua Creek can close this trail.</i>

 = Self-guiding trail

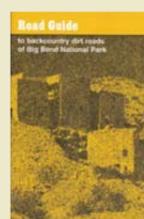
 = Handicapped accessible trail

## Looking for more hikes and information?

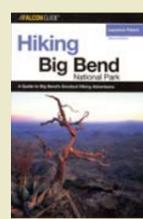
For information on longer, more challenging routes, or to plan an extended backpacking trip, stop by any park visitor center. A large selection of maps and trail guides are available and park rangers can assist you with trip preparations and backcountry permits. Visitor center bookstores carry a large selection of maps and guides. Below are a number of items that can assist in planning your Big Bend adventure.



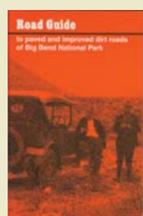
**Hiker's Guide to Big Bend National Park**  
Updated in 2005. Covers all major trails in the park, from short self-guiding nature trails to strenuous backpacking routes. \$1.95



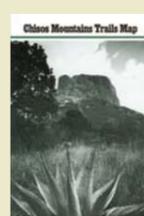
**Guide to backcountry roads**  
Updated in 2004. Detailed mileage logs of Old Ore Road, Glenn Spring Road and River Road. Good descriptions of historic sites and scenery. \$1.95



**Hiking Big Bend**  
In collaboration with National Park rangers, Laurence Parent has compiled a comprehensive guide to 44 of the most popular hikes. Photos show terrain and views. Describes difficulty, elevation changes, and maps needed. Also includes three hikes in Big Bend Ranch State Park. \$14.95



**Guide to paved and improved dirt roads**  
Describes points of interest visible from all paved and improved dirt roads in the park. \$1.95



**Chisos Mountains Trails Map**  
A topographic map that includes all trails in the Chisos Mountains. Includes trail lengths and descriptions. 99¢



On the rim of Hot Springs Canyon.

## Featured Hike

### The Hot Springs Canyon Trail

Distance: 6 miles (9.7 km) round-trip

3 miles (4.8 km) with shuttle

Elevation: 467' (142 meters) gain

The Hot Springs Canyon Trail is a scenic hike connecting the Hot Springs with the Daniel's Ranch area of Rio Grande Village, and is like taking a trek through time; from the recent resort ruins and discarded dish shards to traces of Big Bend's ancient past as revealed in the rocks themselves (*remember: no collecting*). The trail crosses three types of fossil-filled limestone (Boquillas, Buda and Santa Elena), where shells and ammonites can be observed.

The trip can be started from Daniel's Ranch (accessible to all vehicles), or from the Hot Springs parking lot (as described here). This trail is lovely in the fall, winter, and especially the spring when cacti and other wildflowers are blooming, but offers little shade for relief from the heat of mid-summer. Avoid the Hot Springs area after heavy rains or high river levels as the trail will be muddy.

A two-mile long dirt road (*accessible to all except RVs and wide trucks*) leaves the paved road to Rio Grande Village near milepost 17 and leads to the Hot Springs parking lot. The signed trailhead is found at the south edge of the parking area, where you may purchase a guidebook about the history of J.O. Langford and his resort. The trail leads .25 miles past the old trade post and former motor court, through a shaded alcove where Native American pictographs decorate the rock walls, and finally to the hot springs themselves. Another .25 mi farther is a signed junction; to the left an alternate high trail heads back to the start point by way of Langford's home overlooking the confluence of Tornillo Creek and the Rio Grande; to the right the sign points the way to Rio Grande Village. Continue on this path for the remaining 2.6 miles to Daniel's Ranch.

The trail hugs the edge of the Rio Grande, often providing picturesque views of the river and canyon walls below. At various vantage points one has spectacular vistas of the Sierra del Carmen range downstream in Mexico, Sierra de San Vicente to the west, and the Chisos Mountains dominating the northern skyline. The trail eventually meanders from the river to cross the shallower end of a side canyon before climbing to a final overlook. From there it descends to Daniel's Ranch, a picnic area shaded by cottonwoods. If you have a shuttle, your trip is done. If not, return on the same path and consider soaking your feet in the springs as the reward for completing the round-trip.

# The Night Skies

Ranger Mary Kay Manning

## A Sky of Constant Change

Without looking, can you name four constellations that are visible in the sky tonight?

Not all that long ago, just about anyone, anywhere in the world, could have answered this question without even looking up. Recognizing the stars and constellations, knowing when specific ones rose or set, told people when it was time to plant crops, when to expect floods, or when to prepare for winter or other seasonal weather changes. For instance, the Iroquois watched for the Great Bear to begin disappearing below the northwest horizon as a sign that winter would soon begin. The bear in the sky was going into its den, just as the bears on the ground were doing the same, in preparation for the cold weather.

Our ancestors knew that the features in the night sky changed throughout the year, and also that these features would appear

the same at the same time each year. Their knowledge of this cycle of change was key to their survival. Although they couldn't have told you the specific time, they observed that the stars rise and set a few minutes earlier each night. The patterns you see in the sky tonight just after sunset will be in a slightly different place in just a few weeks. Over a period of just one month, the same stars rise and set a full two hours earlier. This observation allowed people to associate certain bright stars or star patterns with seasonal changes or key events. Of course, it also means that learning the constellations visible in December won't do you much good in April. Next December, however, the night sky will look the same as it does this December.

Now, can you point toward the north without using a map, compass, or other tool? Our ancestors (well, those in the northern hemisphere) could easily do this, too. They observed that while almost all of the stars

moved throughout the night and throughout the year, one star stayed in the same place. This is Polaris, the Pole Star. From our perspective here on Earth, this star appears to be lined up with our north pole. This knowledge guided people in their seasonal migrations, and led many slaves in the southern U.S. north to freedom. Measuring Polaris' distance above the horizon also enabled sailors to get their bearings as they crossed the oceans; as you travel further north, Polaris is higher above the horizon.

Unfortunately, Polaris is fairly dim and doesn't stand out among all the other stars. To find it, look for either the Big Dipper or Cassiopeia. Both of these patterns are bright and easy to find, and both can be used to point toward the North Star. The Big Dipper disappears below the horizon during the winter months at our latitude, but Cassiopeia will be visible all winter long.

One final question: Is your view of the night sky the same as it was when you were a kid? For most of us over a certain age, the answer is "No." Nights full of starry skies and fireflies have become blotted out by light pollution and air pollution. Remote areas like Big Bend National Park still exhibit the clear night sky views that were so much more common years ago. While airborne debris does blow into this area, the park is almost free of light pollution. Research has documented that Big Bend National Park has some of the absolute darkest night skies of any national park in the continental U.S. in terms of absence of artificial light. If our ancestors could see the night sky over Big Bend now, they might find that this aspect of the modern world hasn't changed much at all.

To learn more about the night sky, take a look at the selection of astronomy books and star charts available in park bookstores, or attend a ranger-led astronomy program.

## Birds and Birdwatching

Ranger Mark Flippo

Welcome to Big Bend National Park and all that it offers to those fascinated with birds! With a list of 410 confirmed and an additional 41 hypothetical species, and many easy to access hotspots in which to search, Big Bend National Park indeed offers birders of all levels of skill opportunities to find challenge and reward. Patience, a good field guide, and knowledge of where to look are the keys to locating the birds of Big Bend.

First and foremost are the riparian areas, including the corridor of the Rio Grande (Rio Grande Village and Cottonwood campgrounds), and the many desert springs (Dugout Wells and Sam Nail Ranch). Other productive areas include the pinyon-juniper-oak belt (Green Gulch and lower Lost Mine trail), the moist wooded canyons of the high Chisos (Boot Canyon), the grassland/shrub community along the lower slopes of the Chisos (Blue Creek Canyon), and the remaining lower desert areas. A visit to all these key habitats will provide the best opportunities to see birds and to build that "Big Bend List."

The timing of your visit will obviously dictate what birds you may be able to find in the park. A checklist of birds is available for purchase at any visitor center and is a great aid in determining which species are likely to be present at any given time of the year as well as the habitats where they are found.

The winter season (late November – mid-February) can be very productive for birds

with almost a third of the 410 documented species occurring here during these months. Many of these are waterfowl and sparrows; the former along the Rio Grande, the latter haunting grassy areas in the lower and mid-elevation desert. The challenge of identifying winter plumage ducks and sparrows is huge, but not to worry. There are other birds out there to lend diversity to your list.

Easily found permanent residents of the park, many of them unique to the desert southwest, include greater roadrunner, cactus wren, and black-throated sparrow. These are joined by species that spend only the winter in Big Bend, migrating here from breeding grounds farther north, including Anna's hummingbird, ruby-crowned kinglet, sage thrasher, orange-crowned warbler, green-tailed towhee, and sage sparrow. To tempt the avid birder, there is always the possibility of discovering a rare, out of range species. During the 2006 winter season two accidentally occurring species, tundra swans at Cottonwood Campground and a juvenile red-shouldered hawk near the Daniels Ranch picnic area of Rio Grande Village Nature, were observed and documented by park staff and visitors.

By late February the composition of species begins to change. Wintering birds start to leave, replaced by other species coming in from points south, signaling the onset of the spring migration. The number of migrants increases steadily through the ensuing months until peaking in the last two



Aplomado falcon in the Big Bend area, 2007.

weeks of April and the first week of May. In this rush of birds are many neotropical migrants returning from wintering ranges in Latin America. Most pass through, but some remain the summer to nest and raise their young. Among the expected passage migrants comes the occasional rare and accidental species. The biggest surprise of early spring 2006 was a banded aplomado falcon observed just south of Panther Junction. Once native to the yucca-studded grasslands of West Texas, the aplomado falcon disappeared by the mid 1950s. Recent restoration efforts have established several breeding pairs in the Marfa grasslands and Marathon Basin north of the park. From band information the falcon was identified as a female released in 2004, 11 miles east of Marathon, Texas.

Discoveries like these add a special allure to the endeavor of birding, and maintaining a list of identified species is a legitimate and

fun activity. Keep in mind though, that many of the species that are the source of your enjoyment are members of populations in decline. Habitat destruction and degradation on both the wintering and breeding grounds are bringing many of these birds to the brink. You can help in several ways.

Come join us in the annual Christmas Bird Counts held December 28 and 29 (ask at a visitor center for details). Tread softly in fragile habitat areas, taking care not to damage water sources. Don't disturb birds with excessive noise or intrusive attempts at photography. Be aware that the use of artificial lures (feeders and electronic playback devices) is prohibited in the park. Please share your observations with us, particularly of rare and accidental species. Your detailed reports become part of the record and can be an aid to researchers. Enjoy the birds of Big Bend, and do all that you can to ensure their return.

# Keeping Wildlife Wild



Javelina that become habituated to human food become more aggressive. At developed campgrounds, take down your tents when away from the site.

J. HINES

There really are no problem animals—only problem people. Carelessness can kill. Don't be responsible for the death of a wild animal. Your actions affect both Big Bend's wildlife and future park visitors. With your help, wildlife and humans CAN live safely together in Big Bend National Park.

## Mountain Lions

If Big Bend National Park has a symbol, it might well be the mountain lion. Solitary and secretive, this mighty creature is Big Bend's top predator, and is vital in maintaining the park's biological diversity. Everywhere you go in Big Bend, you are in the territory of at least one lion. From mountain to desert, biologists estimate that the park has a stable population of approximately two dozen lions. Within the delicate habitats of the Chihuahuan Desert, mountain lions help balance herbivores and vegetation. Research shows that these large predators help keep deer and javelina within the limits of their food resources. Without lions, the complex network of life in Big Bend would certainly be changed.

Since the 1950s, there have been more than 2,700 recorded sightings of mountain lions by the visiting public within Big Bend National Park. While over 70 percent of these sightings were along park roadways, encounters along trails have also occurred. Since 1987, two lion and human encounters have resulted in attacks on people. In all cases, those attacked recovered from their injuries and the aggressive lions were killed. The more we know about lions, the better able we will be to make life easier for them and for us.



**Do Not Feed the Animals.**  
Not even once. It's bad for them, they can hurt you, and it's against the law. Don't touch, don't feed.

## Please Help

### In Developed Campgrounds

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

### Cyclists

- Use food storage lockers when provided.

### At the Lodge

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

### In the Backcountry

- Never leave packs or food unattended.
- Avoid carrying odorous food and toiletries.
- Leave excess food and beverages in your trunk or food storage box.
- Carry out **all** trash, including orange peels, cigarette butts, and left-over food.
- Ice chests and coolers are not bear-proof; store them in your vehicle.

## Javelinas

For many visitors to Big Bend National Park, seeing a javelina (hav-uh-LEE-nuh) is a new experience. These curious creatures, also known as collared peccaries, are only found in the United States in Texas, New Mexico, and Arizona. They are covered with black, bristly hairs and generally weigh between 40 and 60 pounds. They usually travel in groups called bands that consist of 10-25 individuals. Peccaries have a highly developed sense of smell, but very poor vision.

Physically, javelinas resemble pigs, but in reality, they are not closely related to pigs at all and have been genetically distinct from them for millions of years.

A javelina's diet includes prickly pear cactus, grasses, mesquite beans, piñon pine nuts, fruits, berries, and seeds. Unfortunately however, many javelinas now include human food as part of their diet. Every year we are seeing more and more campsites in the park raided by javelina. Although normally not aggressive, they can be when food is involved. Protect yourselves and the javelina by properly storing all your food inside a vehicle or in the food storage lockers provided in the campgrounds. Do not leave coolers or food boxes unattended on picnic tables or in a tent. Flatten tents when you are away from your campsite. It is important that javelinas and all park animals eat their natural food sources to stay healthy and safe. With your help, these unique animals can continue to thrive and thrill park visitors for years to come.



B. DUNCAN

## Black Bears

The return of black bears to Big Bend National Park is a success story for both the bears and the park. Native to the Chisos Mountains, bears disappeared from this area during the pre-park settlement era. After an absence of several decades, bears began returning to the park from Mexico in the late 1980s. Today, wildlife biologists estimate that between 15-20 black bears may live in the park.

Black bears are omnivorous; their normal diet is comprised of large amounts of nuts, fruits, sotol and yucca hearts, and smaller quantities of small mammals, reptiles, and carrion.

Bears normally avoid humans, but bears that learn to get food from human sources often become aggressive in their attempts to get more "people" food. Rangers may have to kill bears that lose their fear of people and endanger humans in their attempts to get our food.

Big Bend has made it easy to keep edible items away from bears. Campers at the Chisos Basin Campground, at High Chisos backpacking sites, and at some primitive roadside campsites will find bearproof storage lockers for storing all edibles. Hard-sided vehicles are also suitable for storing edible items. All dumpsters throughout the park are bearproof, as well.



B. BAUMANN

## If you encounter a bear or mountain lion:

- 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 at it.
- If attacked, fight back.
- Report any bear or mountain lion sightings or encounters to a park ranger as soon as possible.

# Information and Services



## Ranger Programs

Join a park ranger for a guided hike, evening slide show, talk, or workshop on Big Bend's natural and cultural history. These free programs are offered daily. Consult the Interpretive Activities Schedule posted on visitor center and campground bulletin boards for more information.

## Camper Stores

Forever Resorts Inc., operates camper stores year-round at three locations in the park: Castolon, the Chisos Basin, and Rio Grande Village. Groceries, camping supplies and souvenirs are available in all locations. The gas station at Panther Junction also has a limited selection of groceries.

## Banking

There are NO banking facilities in Big Bend National Park. The nearest banking/ATM services are located in Study Butte, 26 miles west of park headquarters. Most stores accept major credit cards; however, some local services accept only cash. It is advisable to have small bills (\$1, \$5, \$10, \$20) since larger bills are often difficult to change.

## Lodging

The Chisos Mountains Lodge, operated by Forever Resorts Inc., is located in the Chisos Basin at 5,400 feet elevation. The lodge offers 72 rooms, plus a gift shop and dining room. For reservations or more information, please call (432) 477-2291 or visit their website at [www.chisosmountainslodge.com](http://www.chisosmountainslodge.com)

## Gas Stations

Gasoline is available at two locations in the park operated by Forever Resorts Inc. The Panther Junction station offers 24-hour gas pumps with diesel, and can undertake minor repairs. The gas station at Rio Grande Village also provides propane.

## Post Office

A full-service Post Office is located at the Panther Junction headquarters, across the porch from the visitor center entrance. A mail drop is also available in front of the Chisos Basin store.

## Showers and Laundry

Public showers and laundry facilities are located at the Rio Grande Village store.

## Fires

*Ground fires and wood fires are prohibited throughout the park.* Use only gas stoves or charcoal within a BBQ grill. Pack out all evidence of use, including ash. In the backcountry, charcoal fires are only allowed at roadside campsites and are prohibited in the High Chisos or zone camping areas.

## Public Phones

Public phones are located at visitor centers, campgrounds, camper stores, and the Chisos Mountains Lodge.

## Cell Phones

Limited cell phone coverage is available in the Big Bend area. *Do not* depend on your phone to work in the Chisos Basin or remote portions of the park.

## Recycling

Please use the recycling cans provided in campgrounds, around stores, and near visitor centers. On average, the park recycles around 100,000 pounds of aluminum, cardboard, glass, plastic, metal and other materials each year. Every pound of material that can be recycled means one less pound buried in the park landfill. Please recycle!

## Accessibility

All visitor centers are accessible. Wheelchair-accessible campsites and restrooms are located in the Chisos Basin and Rio Grande Village Campgrounds. The Chisos Mountains Lodge restaurant is accessible, as are some motel rooms. A Telecommunications Device for the Deaf is available at park headquarters. Employees with sign language abilities may be available. Some ranger-led programs are also accessible. The Window View Trail is paved and fairly level. A brochure on accessibility is available at all visitor centers.



Blooming agaves and Casa Grande Peak.

# Camping



## Tent Camping

The National Park Service operates campgrounds at Rio Grande Village, the Chisos Basin, and Castolon. The cost is \$14.00 per night for a site. Campsite fees can be paid in US currency, personal checks, or credit card. Camping is also available at primitive backcountry campsites in the Chisos Mountains and along backcountry roads. High-clearance or 4-wheel drive vehicles are necessary to reach most road sites. Backcountry permits are required and can be obtained in person at park visitor centers up to 24 hours in advance (see page 14).

Camping areas are often full during the Thanksgiving and Christmas holidays, as well as during spring break in March or April.

## Trailers & RVs

All park campgrounds can accommodate trailers and RVs, but vehicle lengths have a great deal to do with safely reaching the campground and finding a suitable space.

The only hookups available in Big Bend National Park are at Rio Grande Village in the 25-site, Rio Grande Village RV Park operated by Forever Resorts Inc. Although there is no size restriction, your vehicle must be equipped with water and electrical hookups as well as a three-inch sewer connection. Register at the store. No advance reservations.

Near the RV park is the 100-site Rio Grande Village Campground operated by the National Park Service. Although there are no hookups, water, flush toilets, and a dump station are available. Set in a large grove of cottonwoods, the campground is adjacent to the Rio Grande. Many of the sites are pull-throughs. Generator use is limited: from 8:00 am to 8:00 pm daily. A no-generator use area is also designated.

The 60-site Chisos Basin Campground is rugged and hilly. The sites are small and most are not suited to recreational vehicles or trailers. The road to the Basin is steep and curvy, especially at Panther Pass—the road's highest point. The road into the campground is a 15 percent grade. Trailers longer than 20 feet and RVs longer than 24 feet are not recommended.

Cottonwood Campground, near Castolon, offers pit toilets and potable water, but no hookups or dump station. *Cottonwood is a NO-generator campground.*

Big Bend's unpaved roads are generally unsuitable for RVs and trailers. Overnight camping in any primitive site requires a backcountry permit, which can be obtained in person at park visitor centers up to 24 hours in advance (see next page for more information).

## Group Camping

Groups of 10 or more are eligible to reserve a spot in one of the park's Group campsites at the Rio Grande Village, Chisos Basin, and Cottonwood Campgrounds. Group sites are reservable year round and reservations may be made 360 days in advance through [recreation.gov](http://recreation.gov).

## Camping Limits

Visitors cannot camp at developed campground sites for more than 14 consecutive nights, or for more than 28 nights (including both frontcountry and backcountry camping) in a calendar year, or at any one site for more than 14 nights in a calendar year. Occupying developed campsites for more than 14 nights during the period from February 1 through April 15 is prohibited.

## Campsite Reservations

Forty-three (43) sites at Rio Grande Village campground and twenty-six (26) sites at the Chisos Basin campground are reservable from November 15 to April 15 each year. Visitors may make reservations for the period of November 15 through April 15 up to 180 days in advance. All remaining campsites in these two campgrounds and the entire Cottonwood campground remain on the first-come first-serve basis.

Campsite reservations may be made by calling 1-877-444-6777 or on-line at [recreation.gov](http://recreation.gov).



A busy day at the Rio Grande Village Campground.

## Developed Campgrounds at a Glance

	Elevation (ft/meters)	Sites	Nightly Fee	Facilities	Registration	Comments
<b>Chisos Basin</b>	5,401 / 1,646	60	\$14.00*	Flush toilets, dump station	Self-pay station	Surrounded by rocky cliffs; many hiking trails nearby
<b>Cottonwood</b>	2,169 / 661	31	\$14.00*	Pit toilets, <i>no generator use allowed</i>	Self-pay station	In a cottonwood grove along the river. Grassy sites.
<b>Rio Grande Village</b>	1,850 / 564	100	\$14.00*	Flush toilets, dump station	Self-pay station	Largest campground; shady sites. Laundry and showers nearby.
<b>Rio Grande Village RV</b>	1,850 / 564	25	\$21.00 and up	Full hookups	RGV Camper Store	Concession-operated; register at the RGV store.

\* \$7.00 with an eligible Federal Recreation Pass



## Pets in the Park

### What Not to Do

"I led a bird walk at Rio Grande Village this morning. A woman asked if she and her dog could join our hike. When I told her that she was welcome but the dog was not, she tied the poodle to a picnic table and joined the group. After the hike, as we approached the woman's campsite, instead of finding 'Fifi' yapping away at us, we discovered only its remains. A javelina was just completing a poodle-dinner."

- Ro Wauer  
Chief Naturalist, 1970

### Pets in a Wilderness Park

Having a pet with you will limit your activities and explorations in the park. In addition, desert temperatures and predators are a serious threat to your pet's well being. Please keep in mind the following points when bringing a pet to the park:

- A National Park is a refuge for the animals and plants living within it. Even if your pet doesn't chase animals, dogs present the image and scent of a historical predator. The result is stress on native wildlife.
- Keep your pet on a leash no longer than six feet in length (or in a cage) at all times. Pets are not allowed on park trails, or anywhere off established roadways. Pets may not be left unattended in the park.
- Pet etiquette and park regulations require that you always clean up after your pet and dispose of waste in trash receptacles.
- Predators such as owls, coyotes, javelina, and mountain lions CAN and DO kill pets here. Even large dogs cannot defend themselves against such predators.

Remember, desert heat is *deadly*. Do NOT leave your pet alone in a vehicle. Pets are not allowed on trails, off roads, or on the river.



**Pets must be on a leash at all times.**



**Pets are not allowed on trails or in backcountry areas.**



## Kennels

The following kennel and veterinary services operate in the greater Big Bend area:

### Terlingua Creek Kennels (Oct-April)

Terlingua, TX  
(432) 371-2348

### Red Wolf Inn of the Big Bend

Alpine, Texas  
(432) 837-7475

### Alpine Veterinary Clinic

Alpine, Texas  
(432) 837-3888

### Alpine Small Animal Clinic

Alpine, Texas  
(432) 837-5416

# Big Bend is for Kids



## Explore!

Big Bend's habitats range from the Chihuahuan Desert to the Rio Grande to the Chisos Mountains, and all are rich with plants, animals, and stories of human history, giving children plenty of opportunity to explore.

Kids visiting the park enjoy the exhibits and relief map of the park at the Panther Junction Visitor Center, the Fossil Bone Exhibit area, the Hot Springs, the sand dune in Boquillas Canyon, the mountain lion exhibit at the Chisos Basin Visitor Center, and the hands-on exhibits at the Castolon Visitor Center.

Get kids involved in ranger-led programs. These include guided hikes, slide programs, bird walks, and explorations of various park features. Check the schedule at any visitor center to make sure you take advantage of all the available programs. Stop by any visitor center for further suggestions.

## Hike a Trail!

Many park trails are suitable for families. Consult the listing of Easy and Moderate Hikes on page 9. For children in strollers, consider the Window View Trail, a paved ¼-mile loop trail that begins at the Chisos Basin trailhead. Remember to watch children closely and never let them run ahead or lag behind.

## Be Safe

Be sure to talk to your children about safe behavior before you begin hiking or exploring the park. Require children to walk with adults, rather than by themselves. Keep all your children with you and stand as a group. Desert vegetation can be sharp; have a first aid kit and tweezers handy. Please see pages 11 and 15 for additional safety information.



## Become a Junior Ranger!

Learn desert secrets, identify the parts of a cactus, and discover what javelina eat! The Big Bend Junior Ranger program is designed for kids of all ages. Through activities, games, and puzzles, kids can have fun as they learn about the park. They can also earn a badge or patch, a bookmark, and a certificate.

The Junior Ranger Activity Book costs \$2.00 and is available at all park visitor centers.

## Is there any place to swim in the park?

At the risk of repeating the obvious, Big Bend is a desert park; water is a precious commodity here and often difficult to find. *Swimming in the Rio Grande is not recommended.* See page 15 for important water safety information. The end of the Boquillas Canyon Trail and the Santa Elena Canyon trailhead area may be suitable for wading at certain times of the year (always check river conditions first). You can soak in the 105°F Hot Springs (near Rio Grande Village). When the Rio Grande rises above three feet in depth, the hot spring is inaccessible.

*If you really want to swim,* Balmorhea State Park (about a three-hour drive north of Big Bend) boasts the "world's largest spring-fed swimming pool." Contact Balmorhea State Park at 432 375-2370 for more information.

# Leave No Trace in Big Bend

### Plan ahead and prepare

Big Bend is a land of extremes. Plan on high desert temperatures in the summer with little to no shade; in the winter freezing temperatures are possible in the Chisos Mountains. Schedule your visit to avoid peak season. Visit in small groups. Split larger parties into groups of 4-6. Use a map and compass to eliminate the use of marking paint, rock cairns or flagging.

### Travel and Camp on Durable Surfaces

Durable surfaces include established trails and campsites, rock, and gravel. Protect riparian areas by camping at least 100 yards from springs, creek beds, and tinajas. Good campsites are found, not made. While on the trail, walk in single file in the middle of the trail, even when wet or muddy. Keep campsites small. Focus on areas where vegetation is absent.

### Dispose of Waste Properly

Pack it in, pack it out. Inspect your campsite and rest areas for trash or spilled foods. Pack out all trash, leftover food, and litter. Deposit solid human waste in cat-holes dug 6 to 8 inches deep at least 1/4 mile from water, camp, and trails. Cover and disguise the cat-hole when finished. *Pack out toilet paper and hygiene products.*

### Leave What You Find

Preserve the past. Examine, but do not touch, cultural or historic structures and artifacts. Leave rocks, wildflowers and other natural objects as you find them. Avoid introducing or transporting non-native species. Do not build structures, furniture, or dig trenches.

### Minimize Campfire Impacts

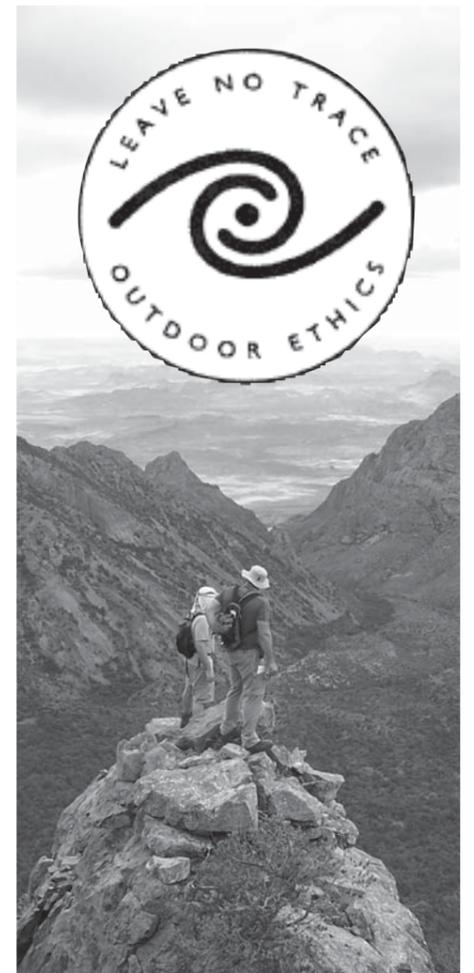
*Campfires are not allowed in Big Bend National Park.* In order to cook foods you may use a backpacking stove, portable fuel stove or the barbeque grills in your campsite.

### Respect Wildlife

Observe Big Bend's wildlife from a distance. Do not follow or approach them. 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. Pets are not allowed in the backcountry or on trails. Pets should be on leash and under supervision at all times.

### Be Considerate of Other Visitors

Respect other visitors and protect the quality of their experience. Be courteous. Yield to other users on the trail. Step to the downhill side of the trail when encountering pack stock. Take breaks and camp away from trails and other visitors. Let nature's sound prevail. Avoid loud voices and noises.



It's not just about today—do your part to maintain the resources of Big Bend exactly as you see them so that future visitors can do the same.



## Backcountry Regulations

### GROUNDFIRES AND WOODFIRES ARE PROHIBITED.

Use only gas stoves or charcoal within a BBQ grill. Pack out all evidence of use. Smoking is prohibited on all Chisos Mountains trails.

### PACK OUT ALL LITTER.

Help preserve the park's natural beauty by packing out all litter, including cigarette butts and toilet paper.

### NO PETS ON TRAILS OR IN BACKCOUNTRY.

Pets may harm or be harmed by wildlife, and can attract predators.

### DO NOT CUT SWITCHBACKS ON TRAILS.

Although cross-country hiking is allowed, help prevent trail erosion by staying on marked trails.

### COLLECTING ANY NATURAL OR HISTORICAL FEATURE OR OBJECT IS PROHIBITED.

Leave park features intact for others to enjoy.

### CONTAMINATING NATURAL WATER SOURCES AND THEIR SURROUNDINGS IS PROHIBITED. CAMP AT LEAST 100 YARDS FROM ANY WATER SOURCE.

Desert water sources and springs are fragile and vital for the plants and animals that depend on them for survival. Soaps, oils, skin lotions, and food residues from bathing and washing can seriously impact water quality. Minimize your impact to areas surrounding springs, seeps, and other temporal water sources.

### CAMP WITHIN DESIGNATED SITES.

When camping in a designated site prevent resource damage by camping within the area outlined by rocks, logs, or brush.

### GENERATOR USE IS NOT PERMITTED IN BACKCOUNTRY CAMPSITES.

Natural quiet is a protected resource; help preserve a quiet wilderness experience.

### IN OPEN ZONES, CAMP AT LEAST 1/2 MILE AND OUT OF SIGHT FROM ANY ROAD AND AT LEAST 100 YDS. FROM ANY TRAIL, HISTORICAL STRUCTURE, ARCHEOLOGICAL SITE, DRY WASH, OR CLIFF EDGE.

Minimize your impact to the natural landscape.

### BURY HUMAN WASTE AT LEAST 6 INCHES DEEP. PACK OUT TOILET PAPER.

Human waste is unsightly and unsanitary. Carry a digging trowel. Locate latrines 1/4 mile from any water source and well away from camp.

### POSSESSION OF FIREARMS, OTHER WEAPONS, AND TRAPS IS PROHIBITED.

### MOTORIZED VEHICLES & BICYCLES ARE PERMITTED ONLY ON DESIGNATED PUBLIC ROADS.

Off-road vehicle travel causes visual and environmental damage.

### DO NOT FEED WILDLIFE.

Feeding wildlife is illegal; it often results in having to destroy the animal. Keep food, ice chests and cookgear in a hard-sided vehicle or food storage locker where provided.

## Getting a Permit

A permit is required for all river use, horse use, and overnight backcountry camping, and can be obtained in person only, up to 24 hours in advance of the trip. Permits can be written for as many as fourteen (14) consecutive nights in the backcountry. Park staff can assist you with trip planning based on your needs and current trail conditions. Permits can be obtained at all visitor centers during normal operating hours.

## Overnight Use Fee

A \$10-per permit fee is required for all overnight backcountry use permits, including multi-day river trips, and overnight backcountry camping. This fee is payable when the permit is issued, and all funds collected go to projects to improve or protect the backcountry experience, including hardening/improving river access points, backcountry campsite maintenance, and trail maintenance.

## Plan Ahead

Detailed information on backcountry campsites in the Chisos Mountains and along the backcountry roads are available on the park's website at [www.nps.gov/bibe](http://www.nps.gov/bibe)

A wide variety of maps, books, hiking guides and river guides are available for purchase at park visitor centers. If you would like to order them in advance of your trip, call the Big Bend Natural History Association at (432) 477-2236 or visit their online bookstore at [www.bigbendbookstore.org](http://www.bigbendbookstore.org)

## Hiking & Backpacking

Big Bend National Park offers over 200 miles of hiking trails in the Chisos Mountains and desert terrain. A permit is required for all overnight trips in the backcountry. Decide how much distance you want to cover and how much time you have. Desert hiking can be unpleasant or deadly in hotter months.

In the Chisos Mountains, the Southeast Rim Trail and a portion of the Northeast Rim Trail from the Boot Canyon/Southeast Rim junction are closed during the peregrine falcon nesting season (February 1 - May 31).

Zone camping permits are available for those 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.

## Backcountry Roads

For those who wish to camp in the backcountry without having to backpack, Big Bend offers over seventy primitive campsites along backcountry roads. While some sites are accessible to most vehicles, a high clearance and/or four wheel drive vehicle is necessary to reach others. Other than a nice view, isolation, and a flat gravel space, these sites offer no amenities and no shade. A backcountry permit is required to use these sites.

## 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.

## Horses

Visitors are welcome to bring and use their horses in the park. A stock-use permit is required and may be obtained in person at any of the park's visitor centers up to 24 hours in advance of the trip. Every horse user should obtain a copy of the regulations regarding use of horses in the park.

While horses are not permitted 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. The Chisos Mountain and Burro Mesa trails are day-use only.

## Floating the Rio Grande

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, which have rapids varying in difficulty from Class I to Class IV. Between the canyons, the river is generally slower-paced. The Rio Grande Wild and Scenic River extends downstream beyond the park boundary for an additional 127 miles.

If you plan to take a river trip in Big Bend National Park, you may bring your own equipment, or you can hire a guide service. Three local companies (see page 16 for telephone listings) provide guide service in the park—you may reserve a trip by contacting them directly. If you plan to use your own equipment, you must obtain a permit at a park visitor center. Stop by the Panther Junction Visitor Center for your permit and for current river condition information prior to your trip.

Permits for the Lower Canyons of the Rio Grande Wild and Scenic River may be obtained at the Persimmon Gap Visitor Center. Permits for floating Santa Elena Canyon may be obtained at the Barton Warnock Center in Lajitas. However, we encourage all parties to get their permits at a park visitor center when possible, to obtain the most up-to-date river information and conditions.



When available at designated backcountry campsites, please store all food items in the animal-proof food storage lockers provided.

## Standard Backcountry Road Conditions

	Road open to:	Notes
<b>Croton Spring</b>	All Vehicles	Slippery mud after any rain
<b>Dagger Flat</b>	All Vehicles	Bumpy but ok for cars; very sandy near end of rd.
<b>Glenn Springs</b>	High Clearance	Narrow road; no RVs, Trailers or wide vehicles
<b>Grapevine Hills</b>	All Vehicles	Usually passable for all vehicles to trailhead
<b>Hot Springs</b>	All Vehicles	Narrow road; no RVs, Trailers or wide vehicles
<b>North Rosillos</b>	High Clearance	Deep ruts and sand; little-traveled
<b>Juniper Canyon</b>	High Clearance	High-clearance vehicles only; rough, rocky, & slow
<b>Old Maverick</b>	High Clearance	Rough; often impassable after heavy rains
<b>Old Ore</b>	High Clearance	High-clearance vehicles only, 4X4 recommended
<b>Paint Gap</b>	All Vehicles	High-clearance past PG 3 campsite
<b>Pine Canyon</b>	High Clearance	High-clearance vehicles only; rough, rocky, & slow
<b>River Road East</b>	High Clearance	High-clearance vehicles only
<b>River Road West</b>	High Clearance	High-clearance vehicles only, 4X4 recommended
<b>Black Gap</b>	4X4 only	4x4 required! never maintained

**Always inquire** at a visitor center regarding updated road conditions before heading out, and be prepared for any contingency. Weather conditions (such as heavy, or any, rain) may cause road conditions to deteriorate. Remember: all vehicles must be street legal and stay on established roadways.

# Safety is *Your* Responsibility

*Big Bend is unfamiliar country to most visitors yet it need not be dangerous. Whether hiking the highcountry, rafting the Rio Grande, observing wildlife, or simply driving the scenic roads of this wilderness park, let safety be your constant companion. Spend a moment reviewing these common safety concerns so that you may have an enjoyable visit.*

*Big Bend is wild country. In fact, many people visit precisely because it is so remote and rugged. But remember, as you enjoy the splendor of this great wilderness area, to make safety a priority. By giving forethought to your actions you can have a safe, exciting, and rewarding experience in Big Bend National Park.*

## Driving

Of the few accidental deaths in Big Bend that occur some years, most result from car accidents. Drive within the speed limit, 45 mph maximum in the park, and watch for javelina, deer, and rabbits grazing along road shoulders, especially at night. Federal regulations require that ALL occupants of a vehicle wear seats belts while in a national park. Remember, too, that you share the road with bicyclists and pedestrians. Some park roads, such as the road into the Chisos Basin, are steep and winding and require extra caution. The Basin Road is not recommended for RVs over 24 feet or trailers over 20 feet. Finally, always select a designated driver before drinking alcoholic beverages.

## Heat

**Desert heat can kill you.** Carry and drink at least one gallon per person, per day. Wear a hat, long pants, long-sleeved shirt, and sun screen when hiking. Springs are unreliable and often dry up for much of the year. Travel in the early morning or late evening hours rather than during the heat of the day.

## Mountain Lions

Big Bend is mountain lion country, especially the Chisos Mountains. While lion attacks are rare, two have occurred in the last twenty years. Should you encounter an aggressive mountain lion, hold your ground, wave your arms, throw stones, and shout. Never run. Keep groups together and consider hiking elsewhere with young children if you come across a special mountain lion warning sign posted at a trailhead.

## Hiking

Exploring this desert and mountain country on foot requires both mental and physical preparation. Trails vary from well maintained in the Chisos to primitive and barely visible in the desert. Plan hikes within your ability. Take along a map and compass and know how to use them. Flash floods may occur following thunderstorms so avoid narrow canyons or dry washes. Stay low and avoid ridges during thunderstorms. Carry a flashlight and a first aid kit. Let someone know where you're going and when you expect to return. If you get hurt or lost, stay in one place to conserve water and energy.

## Fire

Fire danger is always an important safety consideration in Big Bend. *Wood or ground fires are not permitted in the park*, and you must exercise caution in the use of gas stoves, charcoal grills, and cigarettes. During drought conditions some restrictions may apply to the use of these heat sources. Check with a ranger for the latest information about fire safety in the park. *Smoking is prohibited on all trails in the Chisos Mountains.*

## Poisonous Animals

Venomous snakes, scorpions, spiders, and centipedes are all active during the warmer months. Wear shoes or boots at night instead of sandals. Inspect shoes and sleeping bags or bedding before use and always carry a flashlight at night. While snake bites are rare, they usually occur below the knee or elbow. Pay attention to where you walk and place your hands.

## Desert Wildlife

Black bears, javelinas, skunks, coyotes, and raccoons frequent Big Bend's campgrounds. Although they sometimes appear tame, all of the animals in the park are wild, and could pose a threat to your health and safety if you attempt to approach or feed them. *Never feed any of Big Bend's wildlife.* To prevent these creatures from becoming habituated to people, store all food, coolers, cooking utensils, and toiletries in a hard-sided vehicle, preferably in the trunk of your car. Food storage lockers are available for hikers and campers in the Chisos Mountains. Dispose of garbage properly in the special animal-proof dumpsters and trash cans provided.

Remember to report all bear or lion sightings to a ranger.

## Swimming

Hot weather makes the muddy Rio Grande look very inviting, but swimming is not recommended. Water-borne micro-organisms and other waste materials can occur in the river and cause serious illness. The river can be hazardous, even in calm-looking water. Strong undercurrents, deep holes, and shallow areas with sharp rocks and large tree limbs are common and make the Rio Grande unsafe for swimming. If you do choose to swim, wear a life jacket and avoid alcohol.

*If you really want to swim*, Balmorhea State Park (three hours north of Big Bend) boasts the "world's largest spring-fed swimming pool." Contact Balmorhea State Park at 432-375-2370 for more information.



## Share the Road

Every year park rangers investigate an increasing number of motorcycle accidents. Unfortunately, a significant number involve serious injuries.

### Be alert

Animals may dart out from road edges. Other drivers may pay too much attention to the scenery and cross over the center line into your travel lane or may suddenly stop their vehicles in the middle of the road to observe wildlife. These and other unforeseen conditions can lead to motorcycle accidents.

### Suggestions for Motorcycle Riding

- Watch for vehicles straying over the center line.
- Stay alert for sudden stops or traffic slow-downs, especially around scenic pullouts or other congested areas.
- Wear brightly colored clothing or jackets to increase visibility to other motorists.
- Be aware of road surfaces as you ride. Never over-ride the road conditions.
- Watch for wildlife at the road edge.
- Secure your motorcycle and valuables when you are away from your bike.
- Ride with headlights on.

## Survive the Sun

In all seasons, whether walking, backpacking, or day hiking, follow these tips to conserve your internal water reserves:

### REDUCE YOUR ACTIVITY

During the warmest days, generally from May through August, avoid hiking in the lower elevations during the heat of the day—generally from 10:00 am to 6:00 pm.

### FIND SHADE

Shade in the desert means the difference between excessive heat gain from the radiant sun and sheer comfort. In an emergency, a person resting in the shade will survive longer than someone exposed to the sun.

### DRINK YOUR WATER

Don't try to conserve the drinking water you have. Whether strolling in the Basin, or hiking the South Rim Trail, you must DRINK your available water. Carry plenty of drinking water—at least 1 gallon per person per day. Balance your food and water intake. Eat a salty snack every time you take a drink of water.

### REDUCE ALCOHOL & CAFFEINE INTAKE

Water is the best remedy for dehydration and listlessness. The diuretic effects of caffeine and alcohol can result in an accelerated loss of body water.

### PROTECT YOUR BODY

Our sensitive skin burns easily; it needs shade, sunscreen, sunglasses, a widebrimmed hat, and proper footwear. Dehydration is accelerated by exposed skin, so keep your clothing on. Wear long-sleeved, loose-fitting, light-colored clothes.

# Weather and Climate

## Weather

Elevational differences in Big Bend mean that temperatures can be vastly different in different areas of the park. The lower areas along the Rio Grande are very hot during the summer months, while the Chisos Mountains are considerably cooler. Winter weather generally occurs between November and February, with temperatures dropping dramatically as cold fronts move through the area. Between June and October thunderstorms and flash floods may occur. Bring clothing for both warm and cool weather, as well as rain gear, when visiting Big Bend any time of the year.

## Winter and Spring

Winters are generally mild, although periods of cold weather are possible. Fronts and storms can blow in quickly, lowering temperatures throughout the park.

Spring brings warmer temperatures; the river tends to be the warmest place in the park. Plan your activities with the weather in mind; visit the river in the morning, and always carry plenty of water.

## How Hot Is It?

Average temperatures and rainfall at Panther Junction elevation 3,750 feet

	Avg. High/Low	Avg. Rainfall"
January	61/35	.46
February	66/34	.34
March	77/45	.31
April	81/52	.70
May	88/59	1.50
June	94/66	1.93
July	93/68	2.09
August	91/66	2.35
September	86/62	2.12
October	79/53	2.27
November	66/42	.70
December	62/36	.57
Yearly Avg.	79/47	15.34"

Temperatures in the Chisos Basin vary 5-10 degrees below these readings, while daytime temperatures along the Rio Grande average 5-10 degrees warmer.

## Area Phone Numbers

### 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**  
Castolon 432 477-2666  
Chisos Basin 432 477-2264  
Panther Junction 432 477-1158  
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

**Park Gasoline Service**  
Panther Junction (diesel) 432 477-2294  
Rio Grande Village 432 477-2293

**Campground Stores**  
Rio Grande Village 432 477-2293  
Chisos Basin 432 477-2291  
Castolon 432 477-2222

### Services outside the Park

**Lodging**  
Lajitas  
Lajitas Resort 877 525-4827

**Marathon**  
Gage Hotel 432 386-4205  
Marathon Motel 432 386-4241

**Study Butte/Terlingua area**  
Big Bend Motor Inn 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 Ranch Resort 432 371-2416

**Camping**  
Big Bend Motor Inn 800 848-2363  
Big Bend Ranch State Park 432 424-3327  
Big Bend Travel Park 432 371-2250  
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  
Terlingua Ranch Resort 432 371-2416

**Convenience Stores/Gasoline**  
Big Bend Motor Inn 800 848-2363  
Lajitas Trading Post 432 424-5040  
Study Butte Store 432 371-2231  
Stillwell Store & Station 432 376-2244

**Medical Services**  
Terlingua Fire and EMS 911  
Lajitas Infirmary 432 424-5111  
Big Bend Medical Center 432 837-3447

**Banks**  
Quicksilver Bank/ATM 432 371-2211

**Float Trip Outfitters/Rentals/Guide Services**  
Big Bend River Tours 800 545-4240  
Desert Sports 888 989-6900  
Far Flung Outdoor Center 800 839-7238

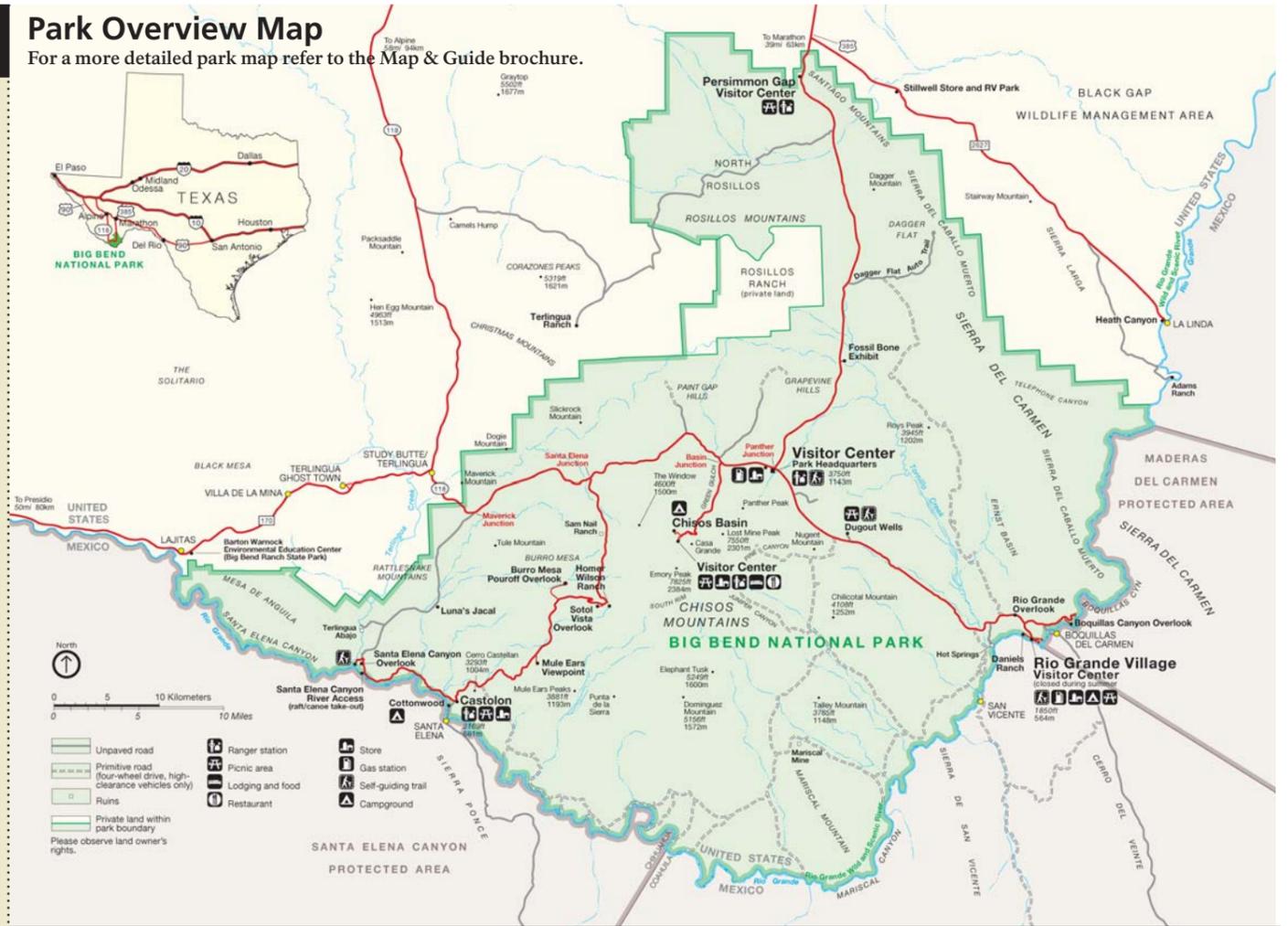
**Horseback Riding**  
Big Bend Stables 800 887-4331

*The facilities and services listed here are located within the greater Big Bend area, and vary from 30 to 100 miles from Big Bend National Park. The communities of Terlingua/Study Butte (30 miles west) and Marathon (70 miles north) offer basic services, including gas stations, restaurants, lodging, and campgrounds. Alpine, 100 miles to the northwest of the park, offers the greatest number of services.*

*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*

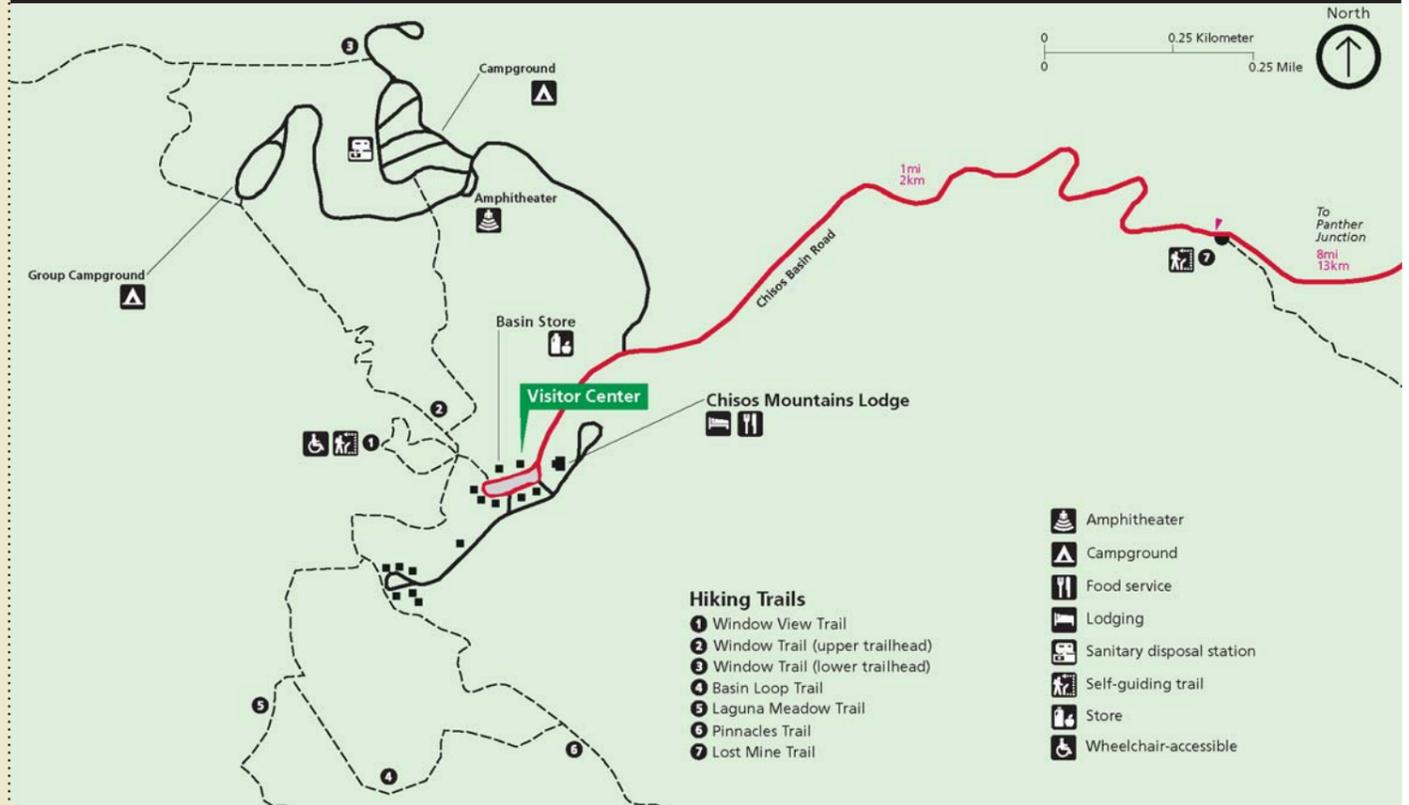
## Park Overview Map

For a more detailed park map refer to the Map & Guide brochure.



## Chisos Basin

5401ft 1646m



## Rio Grande Village

1850ft 564m

