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**2009 Fundraising Goal:**  
**\$156,000**  
*(See page 6 for details)*

*Asombro Insights is published quarterly by the Asombro Institute for Science Education, a nonprofit organization dedicated to increasing scientific literacy by fostering an understanding of the Chihuahuan Desert. Please direct all inquiries to:*

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## A Celebration of Butterflies and the Desert

There was much activity and excitement surrounding two fun-filled public education events at the Chihuahuan Desert Nature Park this quarter. The annual “Butterfly Flutterby” event on August 15 and a new event, “Don’t Know Much About the Desert,” on October 17 drew 265 people to enjoy learning and exploration in the park.

Butterflies flitted about and graced us with their presence during the Butterfly Flutterby, as the sounds of laughter echoed throughout the park from the 10 activity stations. Creating butterfly water dishes to attract butterflies to the backyard, constructing butterfly hats and puppets, and face-painting were a few of the favorites among the children. Adults enjoyed learning about butterfly gardening and testing their knowledge with butterfly trivia. Did you know butterflies are seen fluttering when temperatures reach 86° F and above? In addition, a bucket auction raised \$250 for Asombro’s education programs.

Thirteen middle school students from the Academy for Young



*Volunteer Doug Burkett teaches visitors about a Trans-Pecos Ratsnake at the Don’t Know Much about the Desert Program.*

Scientists program served as “butterfly experts” at the stations. They received training from Dr. David Richman, professor and curator of the Arthropod Museum at NMSU. They did a wonderful job teaching children and adults alike about butterflies. Dr. Greg Forbes, an entomologist at NMSU, was also on hand to assist during the event.

The first annual “Don’t Know Much About the Desert” was a success! The Greater Las Cruces Chamber of Commerce Conquistadors officially opened the 0.4 mile Arroyo Trail with a ribbon cutting ceremony. Participants enjoyed guided tours on the new trail and learned about the Chihuahuan Desert through 11 activity stations. Newcomers and “desert rats” alike were enlightened with stations showcasing archaeological artifacts, geology, soil, plants, arthropods, snakes, birds, and mammals.

Both events were successful thanks to efforts of 62 volunteers assisting in set-up, running stations, parking, registration, and clean-up. We are grateful for your support and dedication!



*Participants in the annual “Butterfly Flutterby” event create butterfly dishes to attract butterflies to their backyard.*

## ***Notes from the Director***

### **Camino Real Middle School Students Step Outside for Science Class**

By Dr. Stephanie Bestelmeyer

The definition of a “classroom” is being expanded considerably this year for 7th grade students at Camino Real Middle School in Las Cruces. A new partnership between the Asombro Institute for Science Education and Camino Real is getting students outside in an arroyo next to their school to learn more about the unique desert ecosystem.

Every month this school year, Asombro Institute staff members will visit each of the thirteen 7th grade science classrooms to lead students through inquiry-based studies to learn more about the desert. Students will also visit the Chihuahuan Desert Nature Park in March 2010 to apply what they’ve learned to a more remote desert location.

The partnership began this summer when Camino Real teacher and department chair Melissa DeLaurentis approached the Asombro Institute for Science Education about collaborating to bring more inquiry-based science to her students. The 7th grade curriculum focuses heavily on ecosystems, so this seemed like the perfect opportunity to create a program that combines many of the resources and programs the Asombro Institute has been developing for years.

In August, we worked in collaboration with Principal Ralph Ramos, Ms. DeLaurentis, and the two other science teachers, Ms. Weston and Mr. Wagner, to create the program. Students will conduct a year-long study of vegetation differences in two areas of the arroyo. Using the Asombro Institute’s Schoolyard Desert Discovery curriculum, they will be examining vegetation cover differences, soil characteristics, microclimates,



arthropod diversity and abundance, and vertebrate communities.

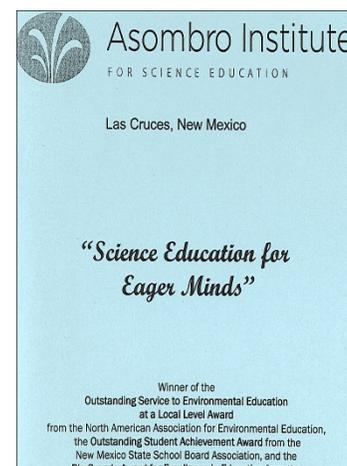
By creating and refining qualitative conceptual models each month, students will attempt to make sense of the relationships between many abiotic and biotic variables. Several evaluation tools will be used throughout the year to assess the students’ understanding of science concepts and the scientific process.

The Asombro Institute for Science Education staff is so excited to be working with the talented staff at Camino Real Middle School on this project. You have probably heard about the need to get students outdoors to participate in authentic research, and this is a wonderful example of how schools and nonprofits can work together to get it done.

### ***Check it Out!***

We have updated our Education Program Guide for the 2009-10 school year. This guide provides a description of field trip stations and classroom programs (by grade level) that are available from the Asombro Institute. This serves as a great planning tool for teachers and special interest groups alike. Information from the program guide is now available online, and hard copies of the guide are available upon request. Please contact the office (575-524-3334) for your copy.

Hard copies and electronic copies of the Asombro Institute’s 2008 Annual Report are also now available. The annual report includes a summary of education programs offered, site development progress, finances, and a list of donors. Request your copy by calling the office (575-524-3334) or e-mailing Executive Director Stephanie Bestelmeyer (stephanie@asombro.org).



# In the Heart of the Dunes

## New Research of White Sands National Monument

*By David Bustos*  
*Chief of Natural Resources*  
*White Sands National Monument*

As New Mexico's most visited park, who would think anything new could be found at White Sands National Monument? At first glance the landscape appears bleak and devoid of life, but a closer look will reveal tremendous biological diversity, including a high number of endemic plants and animals, amazing geological features that are being compared to Mars, and incredible hidden interactions within the unique soils of the monument. The sheer size of the world's largest pure white gypsum dune field has allowed for amazing new discoveries.

Within the last two years, two research volunteers have made incredible discoveries of new species at White Sands National Monument. Mr. Eric Metzler and Dr. Greg Forbes have discovered 15 species of moths new to science. In a paper recently published in the on-line journal, *Zoo Keys*, Mr. Metzler and Dr. Forbes described two of the species as new to science. One of the two species, *Protogygia whitesandsensis*, "the White Sands Moth" was named in honor of the unique habitat of White Sands National Monument. Mr. Metzler and Dr. Forbes have also documented over 350 species of moths new to the monument. A few other discoveries that have occurred through this study include a transparent wasp, a pure white leaf hopper, and a wasp with white eyes.

Within the past two years, over 15 sets of fossil footprints have been found throughout the monument along the ancient lake bed of Lake Otero, and modern day Lake Lucero. These fossil footprints were made by proboscidean (mammoth) track makers. Radiocarbon ages from the



*These fossil footprints were made by proboscidean (mammoth) track makers over 30,000 years ago.*

track-bearing beds suggest that the fossil tracks were made over 30,000 years ago. Several of these tracks came from mammoths with an estimated shoulder height ranging from five feet (juvenile) to a tremendous 15-foot (adult) and had estimated walking speeds of 6-7 km/hr. Most recently, a visitor found part of a fossilized mammoth tusk while attending a tour of Lake Lucero. The tusk provides further support for the presence for these ancient giant track makers.

Ever since the Mars Rover Opportunity landed on the surface of Mars in 2004, scientists have begun to see White Sands National Monument in a whole new way. This is because when Opportunity landed it found itself in a large playa – a dry lake bed interdunal environment similar to that at White Sands, called Meridiani Planum. Like White Sands, many of the rocks and dunes in this area are sulfates, and are composed of the mineral gypsum (Calcium Sulfate), the same mineral that makes up the snow white dunes of White Sands.

This new relationship to Mars has brought about many new and exciting research projects. The major focus of these projects is based on three areas: What influence does the atmosphere have on gypsum soils of White Sands and Mars, what is the atmosphere currently like on Mars, and what was it like in the past? Second, how

is gypsum formed, concentrated, and broken down to form the dune fields of White Sands and Mars? And the final question, how do dunes at White Sands and Mars develop, form, and migrate?

Perhaps of all the new discoveries, the most surprising have come from the hidden interactions of the gypsophilic (gypsum loving) plants and the bacteria and fungi that are associated with their root systems (endophytes). These endophytes allow the plants to be extremely drought and saline tolerant. New research by the Jornada Experimental Range may also allow other plants to take on these same traits allowing non-gypsophilic plants to become highly drought and saline resistant.

As the need for antimicrobial resistance increases with antibiotics becoming less effective, the search for antimicrobial agents is of great importance. Some of the newest research at the monument is focused on the antimicrobial properties of the halophilic microorganisms that live within the gypsum soils, and their incredible ability to repair themselves. It is believed that there is a wealth of knowledge to come from the halophilic microorganisms within gypsum soils of the monument.

From a place that at first glance would appear to be a barren dunescape, it is astonishing to think so much has been discovered in recent years. White Sands National Monument is an amazing place with new discoveries waiting to be found over every dune.

### **About the Author**

David Bustos is the Chief of Natural Resources at White Sands National Monument in New Mexico.

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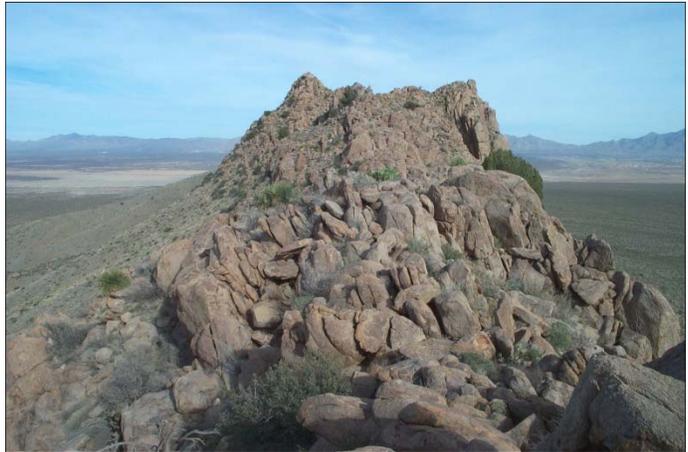
## Site Development Corner

**By Justin Van Zee**  
**Chair, Site Development Committee**

Autumn is a beautiful time of year in this part of the Chihuahuan Desert. Warm, clear days are common, and nights are cool and crisp out on the range. If you're a frequent visitor to the Nature Park, you've probably noticed how things are changing in the desert: nights are quieter because invertebrates are slowing down their activities; birds like Swainson's Hawks and Turkey Vultures have moved out of the region; and most plants have reached their maximum size for the year and will start to senesce. Mesquite shrubs everywhere will soon drop leaves, and the landscapes where they dominate will mostly appear brown to red, determined by the soils of the area.

It pays to be a frequent visitor to the Chihuahuan Desert Nature Park. The benefits far outweigh the short drive north of the city. Even in a moderately sized city like Las Cruces, the pace of life can be fast and hectic most days. Construction and traffic congestion have made travel frustrating lately. City growth is permanently changing urban and exurban landscapes, and businesses come and go almost as quickly as the seasons. Personal electronic devices like cell phones, wireless computers, the internet and home gaming systems connect us all to each other and occupy our spare time, but at the same time separate us from the natural environment we inhabit and that supports us.

Take time out several times a year to get out of town, disconnect from the hustle and observe the little details of how the desert is put together. Take yourself, your family, kids or a good friend and visit a location at the Nature Park that you find interesting.



Go to the exact same place and see how it's different each time you visit – season after season and year after year. Write down your observations and take some photos. See how animals and weather have changed even the tiniest features of the land and notice which plants have grown or died. This creates a sense of connection, appreciation and curiosity for the desert all around us. Children have potentially the most to gain from activities like this because they are at the beginning of a long timeline, a lifetime, of observations and memories. These are the types of memories and stories that people and cultures closely connected to their natural environments can pass on to succeeding generations. Nature can ignite imaginations.

The next time you have a bad day at work, get fed up with traffic or are upset about the economy, take that short drive north of Las Cruces to the Nature Park. Forget the negatives for awhile and observe how the cycle of life has been sorting itself out in the Chihuahuan Desert for thousands of years.

## *Field Course for Budding Scientists*

The Academy for Young Scientists, a program offered through New Mexico State University for middle school students interested in science, came to the Chihuahuan Desert Nature Park on July 23. Twelve middle school students participated in a field course on desert vegetation facilitated by the Asombro Institute.

Students studied and identified common shrubs, forbs, and grasses native to the Chihuahuan Desert and assembled their own herbarium. As young scientists, they participated in authentic field research by recording measurements from Asombro's vegetation demonstration plot and new rainout shelter station. Rainout shelters are set up in the Nature Park to divert

moisture from a select number of plants to simulate the potential effects of global climate change. Students measured moisture content of the soil, recorded plant size, and calculated the ground cover percentage within the rainout shelter sites and in control plots.

The course included a nature hike on the 1.2-mile Desert Discovery trail where different types of vegetation were identified. Students also learned about the biology and historic uses of the soap-tree yucca (*Yucca elata*). They enjoyed the opportunity to weave bracelets and necklaces from yucca leaves and create natural artwork by making paint brushes and painting masterpieces using a natural paint made from hematite.

## El Paso Teachers Focus on Schoolyard Desert Discovery



On Saturday September 26, while many teachers were focusing on getting a few extra hours of well-deserved sleep after a long week of teaching, 15 teachers woke up early to learn how to bring more inquiry-based activities related to water to their students. These teachers attended the

Asombro Institute's teacher workshop on water in the desert, held at the El Paso Water Utilities' Tech<sub>2</sub>O facility in east El Paso.

The middle and high school teachers represented all three school districts in the El Paso region: El Paso Independent School District, Socorro School District, and Ysleta School District.

During the workshop, teachers were introduced to the Asombro Institute's Schoolyard Desert Discovery Water Module, which teaches about long-term precipitation patterns, evaporation rates, irrigation practices, and more through the use of hands-on, inquiry-based activities. They then examined the [www.ecoplexity.org](http://www.ecoplexity.org) website to discover background materials, field protocols, and simple online statistics calculators to analyze data.

We thank Diane Perez, Lorraine Sanchez, and the rest of the Tech<sub>2</sub>O staff for all of their help in organizing and facilitating the workshop.

## Calendar of Events

**Nov. 7-8**

**Doña Ana Arts Council's Annual Renaissance ArtsFaire.** Visit the Asombro Institute's booth in the Children's Realm or buy some delicious KettleKorn to support our education programs. 10 AM - 5 PM on Saturday and 10 AM - 4 PM on Sunday. \$5 for adults; free for children under 12. Young Park (1 block south of intersection of Lohman and Walnut in Las Cruces).

**Nov. 28 and Dec. 26**

**Lake Lucero Tours at White Sands National Monument.** 10 AM and 2 PM each day. A 3-hour trip to the playa that is the source of the sands. Drive 18 miles (one way) and hike 3/4 mile into Lake Lucero. Explore the geology of the unique area. Tour fee: \$3 per adult, \$1.50 per child and Golden Age Pass holders.

Call 575-679-2500 to schedule.

## Education Programs

Here are the programs your donations helped us provide in July, August, and September.

**So far this year, the Asombro Institute has facilitated programs for 12,065 students, teachers, and adults!**

July 2	Canutillo Summer School - field trip	Sept. 19	Chihuahuan Desert Fiesta
July 11	El Paso Libraries - animal adaptations	Sept. 21	Camino Real M.S. - scientific method
July 15	El Paso Libraries - animal adaptations	Sept. 22	Camino Real M.S. - scientific method
July 18	El Paso Libraries - animal adaptations	Sept. 23	Camino Real M.S. - scientific method
July 23	Academy for Young Scientists - vegetation field course	Sept. 23	Deming HS - <i>Hierarchy &amp; Classification</i>
Aug. 8	Academy for Young Scientists - Butterfly Flutterby training	Sept. 24	Sierra M.S. - field trip
Aug. 15	Butterfly Flutterby	Sept. 25	Deming Aptoberfest
Aug. 26	Las Montañas H.S. - field trip	Sept. 26	Region 19 teacher workshop
Sept. 3	Booker T. Washington Elem. - <i>I'm a Scientist, Too</i>	Sept. 29	Central Elem. - <i>I'm a Scientist, Too</i>
Sept. 11	Empty Piñata Kickoff - skulls	Sept. 30	LC Catholic School - <i>Classification</i>
Sept. 15	Sunrise Elem. - <i>I'm a Scientist, Too</i>	Sept. 30	Southern NM State Fair Year of Science
Sept. 16	Sunrise Elem. - <i>I'm a Scientist, Too</i>	Oct. 1	Southern NM State Fair Year of Science
Sept. 17	Valley View Elem. - <i>I'm a Scientist, Too</i>	Oct. 1	Hillrise Elem. - field trip
		Oct. 1	Quail Unlimited - talk on organization
		Oct. 2	Southern NM State Fair Year of Science

## Help Asombro Grow into the Future

**2009 Fundraising Goal:**  
**\$156,000**



**Jan. 1 - Sept. 30, 2009**

**Contributions: \$19,800**

**Grants: \$90,600**

**Program Fees: \$6,700**

**Fundraising Activities: \$1,800**

**Merchandise Sales: \$1,000**

**Interest: \$100**

We are nearing the end of our fiscal year and still need to raise \$36,000 to reach our 2009 goal of \$156,000. Help the Asombro Institute achieve this goal in the following ways:

- Renew your membership
- Give an end of year donation
- Give the gift of an Asombro membership to one of your family members or friends this Holiday season
- Shop online through **iGive.com**
- Grocery shop at Albertson's through the Albertson's Community Partners program

**To Donate Now:** You may renew your membership, give an end of year donation, or give a gift membership in someone else's name by mailing in the form opposite this page. Or, conveniently donate online by visiting **www.asombro.org**. Simply click on the "Donate Now" button located at the bottom of our homepage.

### **Do Your Online Holiday Shopping Through iGive.com**

Before you shop online this Holiday season, please log onto **www.iGive.com**. When you enter the more than 700 name brand store web sites through **iGive.com**, a percentage of every purchase goes directly to the Asombro Institute. Log onto the web site and choose "Chihuahuan Desert Nature Park" as your cause. These donations cost you nothing, but they really add up!

### **Grocery Shop at Albertsons**

For those of you who don't know about this fantastic fundraiser, here's how it works. Contact us, and we will send you a Community Partners card. Every time you shop at Albertsons, have the cashier scan the card. Albertsons donates a percentage of our supporters' purchases directly to the organization. It's really that easy! Please call the office or e-mail Paul ([paul@asombro.com](mailto:paul@asombro.com)), and he will get a card to you right away.

**Many thanks to auction donors for our VIP event!**

Los Colcheras Quilt Guild  
Hotel Encanto de Las Cruces  
Justin Van Zee

Cate & Kevin Schneider  
Angelica Wagner  
Jim Spencer

Mary Beth Harper  
Rink Somerday  
Donna Yargosz

**Thank you to all of our supporters for your ongoing commitment to the Asombro Institute! Share your enthusiasm for this organization with family and friends by lending them a newsletter to read, directing them to our website ([www.asombro.org](http://www.asombro.org)), or inviting them to one of our events.**

**Please contact us at  
575-524-3334 with any questions.**

YES! I want to support the Asombro Institute for Science Education's efforts to increase scientific literacy by fostering an understanding of the Chihuahuan Desert. All donations are welcome. Please sign me up in the following category:

- Quartz (\$15 +)                      One-year subscription to *Asombro Insights*.
- Gypsum (\$50 +)                      One-year subscription to *Asombro Insights* and tickets to the Butterfly Flutterby.
- Jasper (\$100 +)                      Everything above plus invitations to a VIP event at the site.
- Obsidian (\$250 +)                      Everything above plus invitations to a VIP tour.
- Peridot (\$500 +)                      Everything above plus a limited-edition print of the Chihuahuan Desert Nature Park.
- Turquoise (\$1000 +)                      Everything above plus a custom cactus garden planter.

I would like \$\_\_\_\_\_ of this donation to go to the Asombro Institute for Science Education endowment fund.

Please make checks payable to *Asombro Institute for Science Education* or charge to:

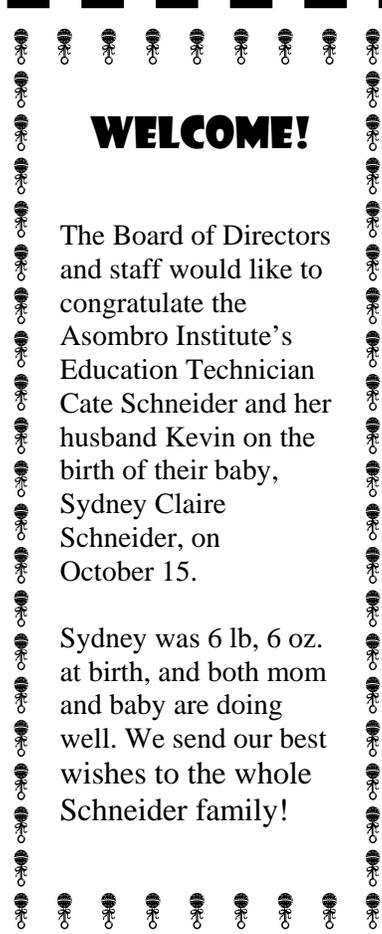
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## WELCOME!

The Board of Directors and staff would like to congratulate the Asombro Institute's Education Technician Cate Schneider and her husband Kevin on the birth of their baby, Sydney Claire Schneider, on October 15.

Sydney was 6 lb, 6 oz. at birth, and both mom and baby are doing well. We send our best wishes to the whole Schneider family!

## New and Renewing Members

Our thanks go to last quarter's donors. We are so grateful for your support!

### Turquoise

Clifford Pelton  
Donna & Michael Yargosz

### Obsidian

The Courtright Family  
Angela & John Mortland

### Quartz

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Bill Brown  
John and Eleanor Byers  
Jean A Davis  
Beverly Denney  
Sandra Geiger  
Nigel Holman  
Laura Humphreys  
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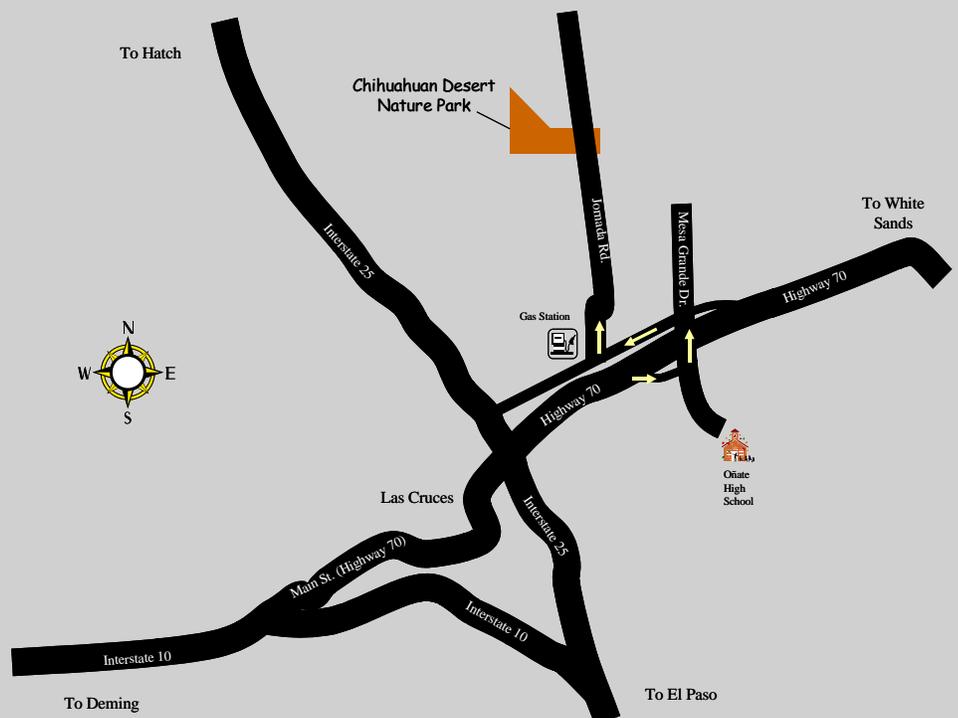
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## Directions to the Chihuahuan Desert Nature Park Open Tuesday - Saturday, 7AM - 5PM

- From I-25 in Las Cruces, head east on Highway 70.
- Take the Mesa Grande Drive exit (at Oñate High School).
- Make a U-turn under the highway to head west. After the U-turn, stay in the right lane.
- Turn right (north) on Jornada Road.
- Follow Jornada Road north for 6.5 miles. After approximately 1.5 miles, the road is unpaved.
- Turn left at the Chihuahuan Desert Nature Park sign.
- Follow the entrance road to the parking area and trailhead.



**ENJOY!**