



In This Issue:

- 2 Notes from the Director
Office Move
VFW and NPSNM Grants
- 3 Desalination Plant in El Paso
- 4 Site Development Corner
Committee Reports
- 5 Spring Break Camp
Education Programs
- 6 Star Gaze
Volunteer Report
Calendar of Events
- 7 Membership Form
New & Renewing Members
- 8 Map to the Nature Park

Star Gaze
Saturday May 16
8:00 PM
Chihuahuan Desert Nature Park

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.

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Participants “Visit the Past” at the Nature Park

On February 28, more than 100 people drove their modern cars and wore their modern clothes to the Chihuahuan Desert Nature Park. Yet when they got to the Park, they took a step back in time to learn about life in the Chihuahuan Desert hundreds to millions of years ago.

The annual “Visiting the Past” family education event featured ten hands-on activity stations for visitors of all ages to enjoy. Each station allowed visitors to learn about fossils, archaeology, and anthropology by participating in fun and informative stations.

Visitors interested in fossils were treated to a large display of fossilized animals and plants. Those interested in how scientists discover fossils and archaeological sites got to participate in a simulated dig and try to piece together pottery shards.

For the many visitors interested in learning how early inhabitants of the desert did everyday tasks, there were stations where visitors could make a clay pot, grind corn using a mano and metate, make jewelry with a pump drill, use natural dyes, and even use an atlatl to throw a spear. Local experts also demonstrated flint knapping, basket



Volunteer John Douglas demonstrates how to use a mano and metate to grind corn. Photo by Barbara Chamberlin.

weaving, and making a drying rack. The success of this event once again depended on the generosity and expertise of many local groups. We are especially grateful to the NMSU Museum for sharing their expertise and materials. We also thank the Progress Club of Las Cruces and 18

volunteers who shared their time to teach people about the past.

If you missed “Visiting the Past” this year, be sure to watch for it in 2010. Like all other Asombro Institute for Science

Education programs, we will continue to update it each year.

“I love seeing all the young kids here, but honestly retired folks like us are learning just as much as they are. You’re never too young or too old to learn about the desert, and you guys have done such a nice job making sure there is something for everyone to enjoy!”

Participant at Visiting the Past

Notes from the Director

Gadsden Teachers and Students Are “Stepping Out for Science”

By Stephanie Bestelmeyer, Ph.D.

The Asombro Institute for Science Education’s newest science education initiative will get approximately 1,000 students from southern Doña Ana County outside their classrooms to learn about science and the desert. The goal of our “Stepping Out for Science Project” is to enhance students’ understanding of and interest in environmental science by engaging them in outdoor learning opportunities. The project is funded primarily through a grant from the New Mexico State Park’s Outdoor Classroom Program.

The project officially began on April 18 with a workshop for 10 teachers from seven schools in the Gadsden Independent School District (which includes the New Mexico towns of Anthony, Berino, Chamberino, Chaparral, La Union, La Mesa, Mesquite, San Miguel, Santa Teresa, Sunland Park, and Vado). More than 40 teachers applied to participate, indicating the great need and interest in quality science education in this region. At the workshop, teachers learned



Teachers Evangelina Vejar and Thelma Peterson examine pitfall trap contents as part of the Stepping Out for Science workshop.

about field trip sites, including our Chihuahuan Desert Nature Park, the Mesilla Valley Bosque State Park, and White Sands National Monument.

Because of the Gadsden District’s budget issues, which severely limit field trip funding, each teacher in the Stepping Out for Science workshop received training on our Schoolyard Desert Discovery Project. This curriculum, developed and refined over the past eight years, includes more than 30 hands-on science activities that can be done in the classroom and schoolyard. Teachers also have

access to borrow Science Investigation Kits, which include more than \$500 of equipment and consumable supplies needed to do all activities in the curriculum.

In May, five Stepping Out for Science teachers and up to 500 students will receive a fully funded field trip to the Chihuahuan Desert Nature Park, thanks again to funding from the New Mexico State Parks. The other five teachers and 500 additional students will receive a classroom and schoolyard science program at their school with Asombro Institute staff members. These programs are sponsored by a generous grant from the Native Plant Society of New Mexico.

Asombro Institute for Science Education staff members are excited to offer this new program for teachers and students in the Gadsden School District. We look forward to supporting their efforts as they begin “Stepping Out for Science” and experiencing the wonder of science and our fascinating desert home.

Our Administrative Office Is Moving!

During the third week of May, the administrative office for the Asombro Institute for Science Education will move to a new location. The new office address is 401 E. College Avenue, just west of Union from the main New Mexico State University campus in Las Cruces. Use of this space is being donated by our long-term collaborator, the USDA-ARS Jornada Experimental Range. We are so grateful for their ongoing support and look forward to future collaboration. The new space gives us much needed additional space, including room to hold teacher workshops and small education programs.

As we move into this next phase, we remain extremely grateful to the World Wildlife Fund for generously providing us with office space on the Downtown Mall for the last seven years. Their in-kind support has allowed us to expand our programs and our staff considerably, bringing science to life for thousands of people.

Please give us a call (575-524-3334) if you would like to get a tour of our new space.

Kay Bailey Hutchison Desalination Plant

By Karol Parker
El Paso Water Utilities

El Paso Water Utilities' Kay Bailey Hutchison Desalination Plant began operating in August 2007. It employs a unique inland application of reverse-osmosis technology and serves as a model for other inland cities in need of alternative water resources.

El Paso has used groundwater from the Hueco Bolson since 1903, and the rate of withdrawal exceeded the rate of recharge for many years. In 1989, El Paso Water Utilities commissioned a 50-year plan for securing a sustainable water supply. The plan outlined the means for reducing potable water demand through conservation and the reuse of treated wastewater. It also called for acquiring additional raw water from alternative sources such as desalination of brackish (salty) groundwater.

El Paso Water Utilities, the City of Juárez (Chihuahua, Mexico) and Fort Bliss commissioned the U.S. Geological Survey to develop a groundwater model for the aquifer in 1997. The model determined that 20 million acre-feet of brackish water could be recovered and treated. In 2001, funds were approved for the design of a 20-million-gallon-per-day El Paso Water Utilities desalination facility. Fort Bliss was concurrently considering construction of a 7.5-million-gallon-per-day desalination plant. It was agreed that a single, larger facility would be more economical for both parties, and a partnership was formed to design and construct the plant.

El Paso is located too far from coastal areas to discharge concentrate, the residuals from the desalination process, to the ocean. Deep-well injection, commonly used

for disposal of brines pumped by the petroleum industry, was selected as the preferred method of disposal. This technique had seldom been used in the United States for concentrate disposal, and never at the scale needed for El Paso's desalination plant; however, with proper design, it would save money and consume minimal land without adversely impacting the environment.



Construction of the 27.5-million-gallon-per-day plant began in 2005. The facilities include a two-stage, reverse osmosis treatment plant served by 30 wells and approximately 15 miles of pipelines. The concentrate is transported 22 miles across the desert to a disposal site and injected more than 3,500 feet below the surface into porous rock formations. The overlying limestone and shale rock configurations prevent the upward movement of the concentrated minerals, which protects the aquifer's fresh water reserves.

The final project cost was \$87 million, significantly less than the \$100 million engineer's estimate. The plant delivers water for considerably less than other options such as the indirect potable reuse of reclaimed water or importing supplies from remote west Texas areas.

The Kay Bailey Hutchison Desalination Plant is a critical component in El Paso's diversified water portfolio. Desalination is a drought-proof water resource that helps El Paso avoid water restrictions during years of river drought. In addition, the wells for the plant intercept the brackish water that flows toward fresh water wells, and this prevents the degradation of water quality in those areas.

The Hutchison Plant makes desalination a viable option in inland areas by demonstrating the feasibility of deep-well injection and providing a prototype for the design of injection wells and surface injection facilities. The plant also houses a fully functional pilot plant for desalination and concentrate management research. Ongoing research will provide valuable data for locations where deep-well injection is not viable. The innovative design of the plant was accomplished without the benefit of documented experience or information from facilities of similar complexity or magnitude. Therefore, the studies, pilot plants, research and permitting processes will be invaluable to other inland communities.

About the Author

Karol Parker has been the El Paso Water Utilities public affairs officer since 1997. She previously worked in corporate training at South Central Bell and BellSouth Services in Birmingham, Alabama, and as associate director of residence advertising at New England Telephone in Boston, Massachusetts. She has a bachelor's degree in English and journalism from the University of Alabama and a master's degree in public relations from Boston University.

Site Development Corner

By Justin Van Zee

President, Board of Directors

We are nearing the end of the biologically dormant time of year at the Chihuahuan Desert Nature Park. With only a few millimeters of rain falling since the end of the monsoon season last year, these last several months have been especially quiescent. In many years, slow-soaking, multi-day frontal rain showers from October to January help germinate an abundance of annual plants, blanketing some areas of the desert with vibrant colors. Not this year.

Even though conditions are dry right now, increasing temperatures are starting to activate life at the Nature Park. Honey mesquites have been leafless and thorny for the last 6 months, but are now starting to push out new, tender leaves. Leaves and flowers growing from these hardy shrubs will soon provide abundant food for insects like honeybees, ants, flies, beetles and other bees. If you have a keen eye, you might even see a blackfoot daisy (*Melampodium leucanthum*), feather plume (*Dalea formosa*), prickly-leaf dogweed (*Thymophylla acerosa*) or claret cup hedgehog cacti (*Echinocereus triglochidiatus*) blooming near dry rills or under shrubs where a little extra soil moisture is available to them.



Beautiful red claret cup hedgehog cactus flowers can now be spotted by Chihuahuan Desert Nature Park visitors.

When temperatures warm up even more in the next two months, the ground will be crawling with ants and the air will be full of tiny bees and flies. Creosote flowers will be blooming soon, attracting multitudes of bees and flies, which are especially active just after sunrise at the Nature Park.

Other signs that the summer months are not far away and life is revving up around Las Cruces are the return of turkey vultures and Swainson's Hawks.

When we finally receive ample amounts of rain, watch carefully how quickly biological organisms respond. In a matter of a few minutes, mosses, lichens and cyanobacteria growing on the soil will turn green or

other colors. Hours later, male ants will be swarming, looking for females to mate. Days later, annual plants will be vigorously sprouting and perennial shrubs will seem to fill their tissues with water. Everything responds on their own timescale, and you'll notice something new or different every year. This is what the Chihuahuan Desert Nature Park can offer everybody, of all ages – the amazing cycles of life and complex interactions of different organisms, happening right in front of us.

Asombro Institute Committees Are Off to a Great Start

At the start of 2009, the Asombro Institute for Science Education Board of Directors launched two new committees. Volunteers were invited to join both committees at the annual membership meeting.

Both the Communications Committee, chaired by Board member Mary Beth Harper, and the Fundraising Committee, chaired by Board member Sally Hunt, are off to a great start.

The Communications Committee has made good progress on a marketing and public relations plan for the organization. They are evaluating proposals for introducing the Asombro Institute for Science Education and its Chihuahuan Desert Nature Park to people new to the community.

The Fundraising Committee is working on restructuring the membership database to make it more useful to staff and Board members. They also spearheaded the addition of an online donation mechanism, which is now functional as the "Donate Now" button that appears on the Asombro Institute's website (www.asombro.org).

If you would like to share your expertise and energy with the Asombro Institute for Science Education, please consider joining one of these committees. Contact Executive Director Stephanie Bestelmeyer (575-524-3334 or stephanie@asombro.org) for details.

Spring Break Camp Brings Fun and Learning to Local Students

From March 23 – March 26, staff members and volunteers from the Asombro Institute for Science Education hosted a spring break camp for middle school students in the National Science Foundation - funded Southern New Mexico Academy for Young Scientists Program. This project is directed by Susan Brown at New Mexico State University. The Asombro Institute for Science Education is one of several project partners who have joined forces to provide out-of-school-time science opportunities for interested students.

The spring break camp offered 28 hours of science activities for students. The first three days of the camp were held on the New Mexico State University campus. The fourth day was held at the Asombro Institute's Chihuahuan Desert Nature Park.

During the camp, participants engaged in 40 activities to learn about climate, weather, rocks, soil, arthropods, birds, and field ecology techniques. Emphasis was placed on getting students outside as much as possible to complete activities, and all activities (indoor and outdoor) were hands-on. Students collected data each day and learned how their data fit with data collected by professional scientists in the region. Because the camp took place over spring break, Asombro Institute staff members also made sure to include several science-related art projects and games.



Students conducted a bird point count during the first spring break camp hosted by the Asombro Institute for Science Education.

Despite strong winds gusting during the field trip to the Chihuahuan Desert Nature Park on March 26, students enjoyed their day in the field. The favorite activity was the Desert Discovery Trail hike, where students were challenged to find something (plant, animal, rock, etc.) that started with every letter of the alphabet. They also worked in teams to design a field study, investigated bird beak adaptations, and created their own dichotomous keys to identify animals.

Education Programs

Here are the programs your donations helped us provide from January 29 - March 31, 2009.

Jan 29	Picacho Middle School - Field Trip	Mar 4	Zia Middle School - Field Trip
Jan 29	Annual Meeting	Mar 5	East Picacho Elementary - Science Fair
Jan 30	Picacho Middle School - Field Trip	Mar 6	Dona Ana Elementary - Field Trip
Jan 30	Camino Real Middle School - Science Fair	Mar 6	Homeschool Group - Field Tour
Feb 5	Picacho Middle School - Tracks	Mar 7	Generation 2000 Event in El Paso
Feb 5	Sierra Middle School - Science Fair	Mar 8	Generation 2000 Event in El Paso
Feb 9	Chaparral Middle School - Field Trip	Mar 10	Sonoma Elementary - Weather
Feb 10	Chaparral Middle School - Field Trip	Mar 11	MacArthur Elementary - Earth Movers
Feb 11	MacArthur Elementary - Solar System	Mar 11	Central Elementary - Earth Movers
Feb 11	Central Elementary - Solar System	Mar 11	Jornada Elementary - Weather
Feb 12	Sonoma Elementary - Field Trip	Mar 11	Zia Middle School - Tracks
Feb 12	Valley View Elementary - Solar System	Mar 12	Valley View Elementary - Earth Movers
Feb 17	Sunrise Elementary - Solar System	Mar 12	Zia Middle School - Tracks
Feb 18	Sierra Middle School - Field Trip	Mar 12	Jornada Elementary - Math and Science Night
Feb 18	Sunrise Elementary - Solar System	Mar 13	Sonoma Elementary - Field Trip
Feb 19	Chaparral Middle School - Field Trip	Mar 14	School to World Career Fair
Feb 19	Desert Hills Elementary - What's Under Your Feet	Mar 16	Booker T. Washington - Earth Movers
Feb 19	Chaparral Middle School - Tracks	Mar 16	Mesilla Valley Christian - Field Tour
Feb 20	Chaparral Middle School - Field Trip	Mar 17	Sunrise Elementary - Earth Movers
Feb 20	Chaparral Middle School - Tracks	Mar 17	Mesilla Park Elementary - Field Trip
Feb 23	Zia Middle School - Field Trip	Mar 18	Sunrise Elementary - Earth Movers
Feb 24	Zia Middle School - Field Trip	Mar 18	Chaparral Middle School - Tracks
Feb 25	Chaparral Middle School - Tracks	Mar 19	Vista Middle School - Tracks
Feb 25	Zia Middle School - Conceptual Modeling	Mar 19	Mesilla Park Elementary - Field Trip
Feb 25	Booker T. Washington - Solar System	Mar 20	Sierra Middle School - Field Trip
Feb 26	Zia Middle School - Field Trip	Mar 23-26	Spring Break Camp (see above)
Feb 27	Zia Middle School - Field Trip	Mar 27	Rincon Community Center - Arthropod Identification
Feb 28	Visiting the Past Public Education Event	Mar 30	Jornada Elementary - I'm A Scientist Too
Mar 2	Vista Middle School - Field Trip	Mar 31	Picacho Middle School - Field Trip
Mar 3	Zia Middle School - Field Trip		

Star Gaze at the Chihuahuan Desert Nature Park



Date: Saturday May 16, 2009

Time: 8:00 PM

Location: Chihuahuan Desert Nature Park (see map on pg. 8)

Cost: FREE!

Join members of the Astronomical Society of Las Cruces for a tour of the skies. The Chihuahuan Desert Nature Park provides an incredible, dark sky viewing area. Members of the Astronomical Society of Las Cruces will have their telescopes on hand to give visitors an amazing view. Some highlights expected for that evening include:

- Saturn will be high in the south at sunset
- There should be good views of several open clusters
- We may even see a few galaxies if it is dark enough



Volunteer Report

As you can see on page 5, the first quarter of 2009 was even busier than ever at the Asombro Institute for Science Education. More than 4,900 K-12 students, 100 teachers, and 500 other adults took part in Asombro Institute for Science Education programs like field trips, classroom programs, and public events.

Without incredible volunteers, our staff of four people would have had to turn down many of these requests for programs. However, we were able to say “yes” to most teacher requests because 51 volunteers donated 800 hours in the first quarter of 2009. They ran field trip activity stations, assisted staff members in classrooms, ran hands-on activity booths at the Visiting the Past event (see page 1), and helped with all of the behind-the-scenes preparations needed to pull off these efforts.

If you would like to learn more about volunteering and joining this group of dedicated, talented, generous individuals, please call Program Coordinator Rink Somerday (rink@asombro.org or 575-524-3334). Thank you, volunteers!



Donna Yargosz donates more than 100 hours each month to assist with education programs, Board duties, and other tasks.

Calendar of Events



May 13 - Talk on food production and sustainability by Connie Falk from the New Mexico State University Ag Economic and Ag Business Department for the Native Plant Society of New Mexico, Las Cruces Chapter. Talk begins at 7 PM in the Social Center at University Terrace Good Samaritan Village, 3011 Buena Vida Circle, Las Cruces.

May 16 - Star Gaze at the Chihuahuan Desert Nature Park (see above)

June 10 - Talk on flowering plants of the San Juan National Forest by Ray Bowers for the Native Plant Society of New Mexico, Las Cruces Chapter. Talk begins at 7 PM in the Social Center at University Terrace Good Samaritan Village, 3011 Buena Vida Circle, Las Cruces.

Albertsons Community Partners Program

Call the Asombro Institute office today (575-524-3334) to receive your Albertsons Community Partners card. Show the card to the cashier when you shop at any Albertsons, and they donate a percentage of your bill to the Asombro Institute. It's just that easy!

For those of you already using your cards, thank you for your support!

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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New and Renewing Members

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

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 Sally Hunt & Dawn Tschabrun
 VFW Post 6917
 Donna & Michael Yargosz

Peridot
 MountainView Regional Medical Center
 Arlene Tugel

Obsidian
 Joel & Peg Brown
 GFWC Progress Club of Las Cruces
 Michael Weland



Jasper
 John Bunn
 Doug & Laura Burkett
 Neil Fuller
 Jim & Ginny Herrick
 Melly & Brian Locke
 Elba Serrano
 Norman E. Todd

Gypsum
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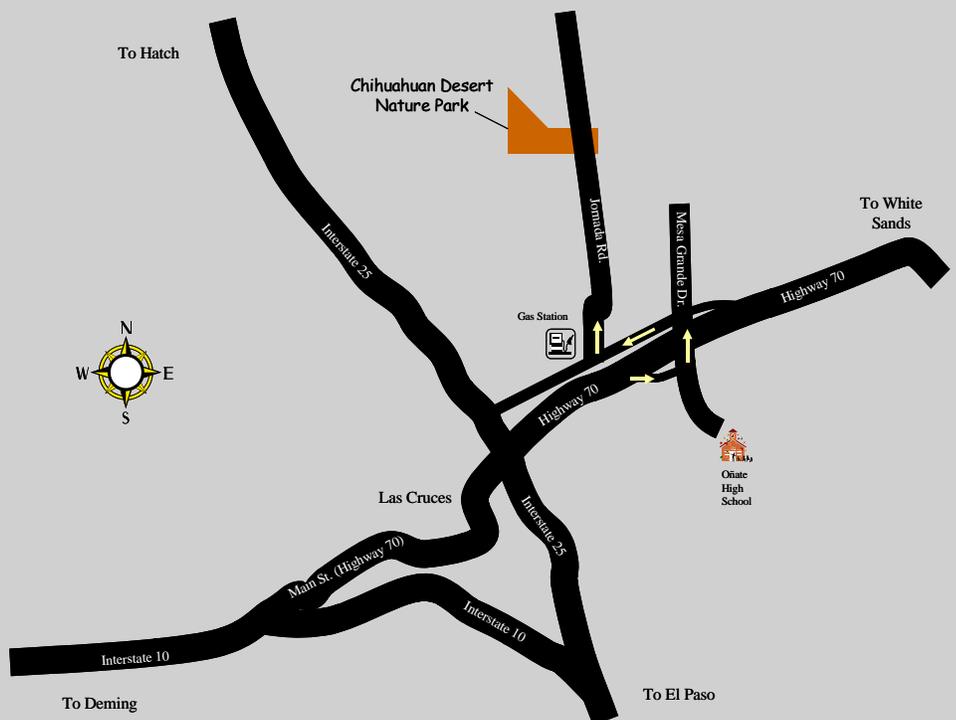
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Directions to the Chihuahuan Desert Nature Park Open Tuesday - Saturday, 7AM - 5PM

- 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!