Asombro Insights

January February March 2009

Volume 18, Issue 1

A publication of the Asombro Institute for Science Education (home of the Chihuahuan Desert Nature Park)

In This Issue:

- 2 Notes from the Director Meet Cate Schneider
- 3 The Tarantula
- 4 Site Development Corner
- 5 Real World Real Science Education Programs
- 6 Annual Meeting Calendar of Events Albertsons Program
- 7 Membership Form
- New & Renewing Members 8 Map to the Nature Park
- 8 Map to the Nature Park

Annual Meeting! Thursday Jan. 29 6:30 - 8:00 PM NMSU Campus, Wooton Hall

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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2008 - Science Education, One Person at A Time

The Board of Directors and staff of the Asombro Institute for Science Education entered 2008 vowing to focus on quality science education for one person at a time. We would continue to refine and improve our field trips and classroom programs for K-12 students, our workshops for teachers, our monthly public education events, and the facilities at the Chihuahuan Desert Nature Park that make these programs possible.

Now that 2008 has come and gone, we can look back and see that amazing things happened because of this individual focus. With the support of generous donations from our supporters and grants from several sources, we were able to reach 13,939 students, 563 teachers, and 3,300 other adults with our programs in 2008.

The majority of our time was spent on our field trips and classroom programs for K-12 students, which continue to gain praise from administrators, teachers, and of



New facilities at the Chihuahuan Desert Nature Park (like this large shade structure over the amphitheater) opened up new possibilities for education programs. Other additions in 2008 included a soil pit display, new shade ramadas, and a new restroom facility.



In 2008, 13,939 students took part in hands-on education programs hosted by the Asombro Institute for Science Education. Programs took place in classrooms, schoolyards, and at the Chihuahuan Desert Nature Park.

course the students themselves. The quality of these programs was also recognized by the New Mexico School Board Association with the Excellence in Student Achievement Award in May.

We debuted several new public programs at the Chihuahuan Desert Nature Park in 2008, including Archaeology Day, Useful Plants of the Southwest, and the GPS Scavenger Hunt. These programs joined our menu of popular events that continued from previous years like the Butterfly Flutterby and several nature walks.

Staff were excited to debut a new teacher workshop for high school teachers in June 2008. Twelve high school teachers took part in a 10-day advanced ecology workshop and completed a full research project on their own. Workshops also took place in Colorado, Oregon, and Puerto Rico using many of the tools

Notes from the Director Volunteer With the Asombro Institute!

By Stephanie Bestelmeyer, Ph.D.

Did you know that people who volunteer have lower mortality rates, lower risk of heart disease, and lower rates of depression than people who do not volunteer?

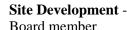
If you are interested in reaping some of these benefits as well as gaining a great sense of accomplishment, we have plenty of opportunities for you! In fact, in 2009 the Asombro Institute for Science Education is launching three committees that will be made up of volunteers with one staff member liaison. Committees will likely meet every two months. Committees include:

Communication - Headed by Board member Mary Beth Harper, this committee will develop a communications plan for the organization. This plan will include strategies for publicizing the organization's work, awards, and public events. We are in need of people with expertise and/or interest in media, marketing, and public relations.

Fundraising - Headed by Board member Sally Hunt, this committee will develop a fundraising plan for the organization. The plan will include ideas for grant proposals, major gifts, endowment expansion,

" £verybody can be great because everybody can serve." Martin £uther King, Jr.

and other fundraising activities like the Albertson's Community Partners Program (see page 6). We promise no door-to-door sales here! All that is required is a willingness to figure out how to keep funding coming in to continue the organization's successful programs.





Justin Van Zee will lead this committee in making plans for maintaining existing Chihuahuan Desert Nature Park facilities and planning new ones. Anyone interested in building projects, trails, and other outdoor work is welcome to join.

Other Volunteer Opportunities

There are also plenty of other ways you can volunteer, from assisting with education programs, preparing for programs, helping with office tasks, or working on trail maintenance and other projects at the Nature Park.

We need you! Please contact us by phone (575-524-3334) or e-mail (stephanie@asombro.org). We can find a task that will be fun for you and will contribute significantly to our mission of increased science literacy for children and adults.

Meet the Asombro Institute's Newest Staff Member: Cate Schneider



Editors Note: On January 5, we welcomed our newest staff member, Education Technician Cate Schneider. Cate will be working 10 hours per week, assisting with administrative and education program tasks.

My husband, Kevin, and I moved to Alamogordo from Northern Arizona last May. We are very happy to be here and are in awe of the unique and diverse landscapes that surround us. Kevin's career with the National Park Service brought us here for his new position at White Sands National Monument. I feel lucky to have found the Asombro Institute to continue my passion for environmental education.

I graduated from the University of Maine with a Masters degree in kinesiology. About 5 ½ years ago, I changed my career from health education to interpretation and environmental education. I began as a Park Ranger in Yellowstone National Park, and spent two years teaching for their curriculum-based residential program for 3rd - 8th graders. It was an unforgettable experience, especially moments such as witnessing the students light up while observing wolf pups through a spotting scope on early Spring mornings. Before moving here, I was the manager of interpretation for a concessioner that operated in both Glen Canyon National Recreation Area (boat tours, marinas, lodging) and Grand Canyon National Park (whitewater rafting).

I have always been an outdoor enthusiast, which motivated me to hike more than 1,700 miles of the Appalachian Trail. I love backpacking, hiking, camping, running and anything that involves water (I am adjusting to the lack of water here). Born and raised in Maine, I find this part of the country a stark contrast from home, but equally beautiful and exhilarating. I look forward to my work here at the Asombro Institute and contributing to the efforts of improving science literacy for the communities of southern New Mexico and western Texas.

The Tarantula

By Jay W. Sharp

In their book, *Insects of the Southwest*, entomologists Floyd Werner and Carl Olson call tarantulas the "gentle giants of our spider world."

Fearsome looking, the tarantulas – diverse and the largest of the spiders – hold a place in the folklore of cultures across the world. Surprisingly, they also become novel and treasured pets in the homes of some people. More surprisingly, they serve as delicacies at the dining tables of indigenous peoples of the Amazon.

Appearance and Anatomy of United States' Tarantulas

- Tarantulas of the U. S. hairy and tan to reddish brown to black in color – typically reach a height of two to three inches, a body length of two to three inches, and a leg span of three to five inches.
- Male tarantulas "are usually longer and slimmer than females and have much smaller abdomens on average," according to the American Tarantula Society Internet site, "So You Found a Tarantula," by Brent Hendrixson.
- Like other spiders, the tarantula has an exoskeleton, or outer shell, that includes a fused head and thorax connected at a narrow waist to an oval-shaped abdomen.
- The tarantula's fused head and thorax have eight marginally functional eyes in two groups on the forehead, a mouth with two backward-pointing fangs below the eyes, and two pedipalps (leg-like appendages) for food handling near the mouth. The head portion also contains the brain.
- The abdomen contains several vital organs and has silk-producing spinnerets at the tip.
- The spider's four pairs of legs connect to the fused head and thorax.

Distribution

"There are about 850 species [of tarantulas] worldwide," according to Barron's *Tarantulas and Other Arachnids*. More than four dozen species populate the U. S. range, according to Hendrixson.

Habitat and Prey

Typically, in the southwestern United States, tarantulas live in solitude in desert basins, mountain foothills and forested slopes. They occupy various kinds of nests, with many species taking up residence in burrows or crevices, which may be sequestered in the ground, along cliff faces, among rocks, under tree bark, or between tree roots. Some line the burrow with silk. Some surround the entrance with a silken "welcoming mat," which vibrates like guitar strings, sending signals to the spider, cloistered in its burrow, if potential prey should touch the strands.



Tarantula on stucco wall (note the urticating hairs on the abdomen).

"A tarantula will attack literally anything that it can subdue: beetles, grasshoppers, locusts, other spider, small lizards and mice," said biologist Fred Punzo, quoted by Pete Taylor in National Wildlife magazine, "Natural Inquiries." Tarantulas kill by injecting venom through their fangs into their prey.

Life Cycle

During mating season, which varies from spring through fall, depending on the species and conditions, the males leave their burrows, sometimes en masse, to seek willing females. A male, encountering the silk surrounding the entrance to a female's burrow, calls and dances amorously. He may be rejected or embraced. In either event, he may get eaten up, becoming "a readily available source of protein to fuel development of the next generation," said Pete Taylor, writing for National Wildlife magazine. Several weeks after mating, the female, said Taylor, produces an egg sac, and six or seven weeks later, "hundreds of tiny spiderlings hatch to begin the cycle anew." After a few weeks, the young disperse to take up their lives. As tarantulas mature, they molt several times, each time shedding their old exoskeleton for a new one. The males may live for several years, the females, for several decades.

A Few Tarantula Facts

• The name "tarantula" apparently originated in the 14th century, in the Italian city of Taranto, where people felt compelled to dance the wildly erotic Tarantella if bitten by a spider (Source: <u>BIRDSPIDERS.COM</u>, Rick C. West, Arachnologist).

 One Venezuelan species has a leg span of some 11 inches; another South American species, a body diameter of some 2 ½ inches; an Arizona species, a body length of only 1/3 inch (Source: <u>BIRDSPIDERS.COM</u>, Rick C. West, Arachnologist).

Most American tarantulas have barbed and mildly venomous "urticating" hairs on their abdomens. They use their legs to "cast" the hairs into the faces of threatening animals, inflicting irritation on soft tissues and eyes (Source: National Health Museum Internet site, Robert J. Wolff, Ph.D.).

About the Author

Jay W. Sharp is a Las Cruces, New Mexico, resident who has written more than 200 articles for various publications, including DesertUSA

(www.DesertUSA.com), a comprehensive resource about the North American deserts and Southwest destinations. He has also written 250 documentary motion pictures, including an outdoor TV series that ran for three years and appeared in 111 markets nationwide.

Site Development Corner

By Justin Van Zee

President, Board of Directors

Have you ever taken a walk in the desert and wondered what this area looked like hundreds or thousands of years ago? Was the area we call the Chihuahuan Desert always a desert? Were there forests, grasslands, or even lakes, rivers, and oceans

nearby? Which animals walked on the landscape and flew in the skies? How different was the climate compared to today? How common were phenomena we call "natural disasters," such as volcanic eruptions, earthquakes, or even asteroid impacts?

There is a way that we can start to answer all of these questions today, and it's right beneath our feet – soils. Even better, there is a location just north of Las Cruces at the Chihuahuan

Desert Nature Park where we can see tens of thousands of years of history displayed in front of us, as if someone opened a very old book. The challenging task now is to learn how to read the language of that book, or how to decipher what those soils are showing us.

A new trail will open soon at the Chihuahuan Desert Nature Park. We're calling it the Arroyo Trail, and it will highlight some aspects of the Nature Park that haven't been seen before. Most of the Desert Discovery Trail works its way through creosote shrubland and then up the rocky slopes to

(2008 Review, continued from page 1)

developed by Asombro Institute for Science Education staff members.

Many of these new programs were possible because of new facilities at the Chihuahuan Desert Nature Park. In early 2008, a new restroom facility and new, metal shade ramadas were installed. A soil pit display and interpretive signs were installed later in 2008. The Science Demonstration Site, originally installed in 2001, went through a major overhaul which greatly facilitates its use for school groups who use it to collect and analyze long-term data on plant restoration following disturbance. Finally, a large shade structure over the amphitheater opened up exciting new Vista Bench. In contrast, Arroyo Trail will travel up one of the largest arroyos in the Park, featuring unique arroyo vegetation and a long stretch of exposed soil along a naturally eroded bank. In one area, this soil profile is three meters (almost 10 ft.) tall. Soil scientists have been recently studying this profile and discovered three different paleosols,



Soil scientist Arlene Tugel uses an auger to analyze the soil near the future Arroyo Trail.

which are old soils that formed during previous environments on stable landscapes. The oldest of these paleosols formed in sediments from the Doña Ana Mountains more than 25,000 years ago.

Even though many hours of work were required to identify the details of these three paleosols, that's just the tip of the iceberg. We can learn so much more from a natural soil feature like this. More accurate aging of the different layers

can be determined with specialized techniques, and other analytical methods can even tell us what type of vegetation was dominant at specific times in the past. Identifying isotopes within different soil layers can reveal where sediments originated.

Unraveling the mysteries of soils is fascinating work. It helps us understand where we are today and which forces of nature brought us here. We are lucky to have a natural feature like this right in our own backyard and to have incredible volunteers with the expertise to interpret it.

possibilities for use of the amphitheater, even during the hottest summer months.

These developments reinforced the decision to change the organization's name in 2008 to the Asombro Institute for Science Education. We are proud to tell people that "Asombro" means "wonder" in Spanish, since we know that our programs are bringing a sense of wonder to all those who participate.

Finally, we would like to thank our members and the more than 150 volunteers who donated 2,300 hours in 2008. You make these successes possible, and we are so grateful for your support.

Real World - Real Science Program Serves As Model Field Trip Program

The "No Child Left Inside" campaign is gaining momentum throughout the country, ensuring that all students receive environmental education as part of their schooling. In many cases, No Child Left Inside is prompting teachers to find ways to fit field trips back

into their busy classroom schedules.

While we support this worthy goal and the considerable evidence showing the benefits of outdoor experiences, better models are needed of how to prepare students for their outdoor experiences, what to do with students when they are outside, and how to extend these experiences back into the classroom.

The Asombro Institute for Science Education staff developed the Real World -Real Science Program to serve

as a model of this enhanced field trip concept. The project consists of four modules on topics that fit into the middle school curriculum: global climate change, soil, arthropods, and vertebrates. Each module includes:

Pre-field trip activities that introduce students to the topic.

- One or two 45-minute studies that students complete while they are on a field trip to the Chihuahuan Desert Nature Park.
- Post-field trip studies that students complete in their schoolyard with the assistance of Asombro Institute

staff members who visit the students' classroom in the week after the field trip.

A student-designed stewardship plan that students will complete in their class, school, or the community.

In this second year of the program, nine teachers participated in a workshop on Saturday January 17 to learn about the program and choose the module their students will complete this spring. With the assistance of Dr. Eric Hagedorn at the University of Texas, El Paso, we have also

developed evaluation tools that will help us quantify students' gains in science literacy based on the program. Support for this year's Real World - Real Science Program comes from an Environmental Education Grant to the Asombro Institute from the Environmental Protection Agency.

Education Programs

Here are the programs your donations helped us provide from November 2008 - January 21, 2009.

- Nov 1 & 2 Renaissance Faire Nov 5 - East Picacho Elem. - Animal Adaptations Nov 6 - Gadsden High School - field trip Nov 6 - Texas Region 19 - teacher workshop Nov 7 - Central Elem. - field trip Nov 8 - Farmer's Market - bird wheel Nov 10 - Sunrise Elem. - field trip Nov 11 - Sunrise Elem. - field trip Nov 12 - Central Elem. - Animal Adaptations Nov 13 - Valley View - Animal Adaptations Nov 14 - Booker T Washington Elem. - Animal Adaptations Nov 14 - Sonoma Elem. - Earth Movers Nov 17 - MacArthur Elem. - Animal Adaptations Nov 18 - Cesar Chavez Elem. - Arthropod ID Nov 18 - Sunrise Elem. - Animal Adaptations Nov 19 - Cesar Chavez Elem. - Arthropod ID Nov 19 - Sunrise Elem. - Animal Adaptations Nov 20 - Cesar Chavez Elem. - Arthropod ID Nov 20 - Valley View Elem. - field trip Nov 21 - Booker T Washington Elem. - field trip Dec 2 - Sunrise Elem. - Arthropod ID Dec 3 - Sunrise Elem. - Arthropod ID Dec 4 - Hillrise Elem. - field trip
- Dec 5 Sunrise Elem. field trip Dec 5 - Sonoma Elem. - Weather Dec 8 - MacArthur Elem. - Arthropod ID Dec 10 - Central Elem. - Arthropod ID Dec 11 - Valley View Elem. - Arth. ID Dec 12 - Vista Middle School - career day Dec 12 - Sunrise Elem. - field trip Dec 13 - Mesilla Valley Bosque State Park - grand opening Dec 16 - Alameda Elem. - Biomes Dec 17 - Booker T Washington Elem. - Arthropod ID Dec 20 - Winter Nature Walk Jan 7 - MacArthur Elem. - Weather Jan 7 - Central Elem. - Weather Jan 8 - Valley View Elem. - Weather Jan 12 - Doña Ana Elem. - Animal Adaptations Jan 12 - Chaparral Community Center - Zoology ID Jan 14 - Booker T Washington Elem. - Weather Jan 15 - Organ Community Center - Zoology ID Jan 16 - Rincon Community Center - Zoology ID Jan 17 - Real World - Real Science teacher workshop Jan 20 - Sunrise Elem. - Weather Jan 21 - Sunrise Elem. - Weather



Rhonda Alden (Chaparral Middle School) learn about arthropod diversity during the January 17 workshop.

Asombro Institute for Science Education Annual Meeting

Date: Thursday January 29, 2009

Time: 6:30 - 7:00 PM (social) and 7:00 - 8:00 PM (meeting)

Location: Wooton Hall Conference Room

(on the corner of Knox and Frenger Streets on the New Mexico State University campus in Las Cruces)

Highlights:

- 1. See photos and hear about the organization's accomplishments in 2008
- 2. Vote on the election of Board officers (proposed slate: President Justin Van Zee; Vice President Mary Beth Harper; Secretary Mark Sechrist; Treasurer Donna Yargosz)
- 3. Discuss plans for 2009
- 4. Meet members of the Board of Directors and staff
- 5. Buy tickets and bid on wonderful items in the bucket auction. All proceeds benefit the Asombro Institute's science education programs.

Calendar of Events

- January 29 Asombro Institute Annual Meeting (see above)
- February 11 Talk on shifting vegetation patterns in the Chihuahuan Desert by Heather Throop 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.

- **February 14 -** Guided trip to Jornada Experimental Range research sites by Heather Throop for the Native Plant Society of New Mexico, Las Cruces Chapter. Meet at the east parking lot of K-Mart on Highway 70 in Las Cruces at 8:00 AM. Bring lunch, water, and sun protection.
- **February 28** <u>Visiting the Past Public Education Program</u> at the Chihuahuan Desert Nature Park. Join us from 9:00 AM noon for fun, educational activities about local archaeology, anthropology, and fossils. There will be arts and crafts for the kids including making your own take-home clay pot. Participants can grind corn and throw an atlatl (what the past inhabitants of the area used to hunt their food). Learn about fossils and view some spectacular specimens. At one station, you can even learn how to gather data about artifacts like a scientist! The event is free and families are welcome.

Help the Asombro Institute When You Buy Groceries

If you buy groceries at Albertsons (anywhere in the United States), there is an easy way you can help the Asombro Institute for Science Education. Here's how it works:

- Call (575-524-3334) or e-mail (information@asombro.org) the Asombro Institute and request an Albertsons Community Partners card. We will mail one to you.
- Show this card to the cashier when you purchase your groceries.

That's it! Albertsons donates a percentage of our supporters' purchases directly to us each quarter. This program has resulted in thousands of dollars for the organization in past years.

Please do your part by calling or e-mailing us today so we can get you a card. 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. <u>All donations are welcome</u>; the minimum donation to receive a printed copy of the newsletter is \$10. 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 +)	verything 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.		
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