Nature Notes

VOLUME 17, NUMBER 3, SUMMER 2017 PAJARITO ENVIRONMENTAL EDUCATION CENTER, LOS ALAMOS, NM

Summer Camp Snapshots

Beth Cortright and Tony Hinojosa led another successful Backpacking Adventure for Teens program the first week of June. This year the group encountered snow at Lake Katherine, a highlight of the trip. Photo by Beth Cortright.

Nature Odyssey's Rocking and Flowing camp, led by Siobhan Niklasson and Kayti Herring, explored watersheds and volcanos and left kids saying, "Best day ever!" Photo by Siobhan Niklasson.

This year's Living Earth Adventure Program enjoyed rafting, camping, hiking, and climbing. Photo by Beth Cortright.

Stream ecology, edible plants, and birding put smiles on the kids' faces in the Nature Odyssey Moving and Growing camp led by Sandra West and Liz Turner. Photo by Liz Turner.

The Most Watched Celestial Event in American History

On August 21, 2017, one of the greatest spectacles of our time will take place across most of North America: a total solar eclipse. The Moon will pass between the Earth and the Sun, and the Moon's shadow will trace a path directly across the United States from coast to coast.

While solar eclipses happen at least twice a year somewhere on Earth, the last time there was a total solar eclipse in the USA was in 1979. At that time the Sun merely grazed the states of Washington, Idaho, and Montana. The August 2017 total solar eclipse is expected to be the most watched celestial event in American history.

A total solar eclipse occurs when the Moon is close enough to Earth to block the entire disk of the Sun from view. The partial phases of a total solar eclipse leading up to totality are incredible to watch. The Moon will first appear as a small dark dent in the edge of the Sun, growing to a large bite. If you are in the path of totality, the Sun will eventually become a thin crescent and will then disappear completely for a couple of minutes [except for the soft corona surrounding the black Sun]. Daytime will turn to deep twilight. Bright stars and planets will be visible in the daytime sky. After totality the process will reverse itself, as the Sun emerges from behind the Moon. It is a sight that should not be missed!

How much of a total solar eclipse you can see depends on where you are located. The closer you are to the centerline of the path of the Moon's shadow, the greater the percentage of the Sun will be blocked and the longer the solar eclipse will last. In order to experience totality, you need to be directly under the Moon's shadow. This path of totality is extremely narrow, and for the 2017 total solar eclipse the path is only at most 75 miles (120 km) wide. If you are too far north or south of the path of totality, you will only see a partial solar eclipse. Those who are unable to travel to the path of totality should not worry, since everyone in the continental United States and most of Canada will be treated to a partial solar eclipse.

Reprinted with permission from Celestron Eclipsmart Solar Binocular Instruction Manual

Total solar eclipse progression. Photo by Fraser Goff.

A "B" View of the Eclipse

By Rick Wallace

The nature center and surrounding areas will experience a partial solar eclipse, and you will need eye protection during the entire event: certified solar filters over glasses, binoculars, or cameras. Never look at the partial phases with your naked eyes! In our area, the eclipse will start at 10:20 a.m. on August 21, reach maximum extent—80% of the Sun's diameter covered by the Moon—at 11:46 a.m., and end at 1:15 p.m. For more information, search the web for "eclipse in Santa Fe, NM, 2017."

Be Prepared for the Eclipse

Thanks to support from Del Norte Credit Union, you can pick up a free pair of sun-viewing glasses at the nature center starting July 26, while supplies last.

It is important to never look directly at the sun without proper eye protection.

Total solar eclipse seen in Mexico, 1991.
Photo by Rick Wallace.

Citizen Science: Glimpsing the Sun's Inner Corona

By Galen Gisler

The solar corona, an extensive low-density atmosphere surrounding the sun and extending millions of miles into interplanetary space, is only visible from the ground during a total solar eclipse. We know that the temperature of the corona is in the millions of degrees, much hotter than the visible surface of the sun, the photosphere. The question arises, how does the corona get to be so hot?

From space, we have been able to study the outer corona using an instrument called a coronagraph, which blocks out the intense light of the sun itself. But coronagraphs are incapable of showing us the part of the corona closest to the photosphere. The outer corona has been shown to be very dynamic, changing with time both slowly and rapidly. The surface of the sun is also dynamic, with flares, prominences, and sunspots that come and go over time.

But what about the inner corona? How does it respond to changes on the sun's surface and communicate those changes to the outer corona? If we could watch the dynamics of the inner corona, we might better understand how the corona as a whole is heated.

Only total solar eclipses give us glimpses of the inner corona. But from any one spot on earth, we can see the inner corona for only the few minutes of totality, not enough time to explore its dynamics. The total eclipse of August 21, 2017, will stretch across the North American continent, from Oregon to South Carolina. It will take the moon's shadow 90 minutes to cross the continent. If we could assemble dynamical data on the inner corona from observations made all the way along that path, we would have the first-ever, extensive record of the dynamics of the inner corona.

This is the aim of the Citizen Continental-America Telescopic Eclipse (CATE) Experiment, organized by Matt Penn of the National Solar Observatory in Tucson. Volunteers with identical equipment (telescope, mount, video camera, and robotic controller) will be deployed at more than 60 sites along the path of totality to take data that will then be assembled into a 90-minute record of the inner corona's dynamics.

PEEC volunteer Galen Gisler, with the help of other volunteers, is leading a group of eight enthusiastic Los Alamos High School students on an educational expedition to central Wyoming. The group will be stationed near the center line of the eclipse with one set of CATE equipment. We are proud to be taking part in this important scientific experiment.

Sarah Kaplan of the *Washington Post* has recently published an article on our experiment: https://goo.gl/KpeZEq.

PEEC's Eclipse Events

Eclipse Night, Summer Family Evening Program
Wednesday, July 26, from 6:30 to 8 p.m.
Rick Wallace and Paul Arendt will show eclipse photos and demonstrate solar alignment in the planetarium. Galen Gisler will talk about the Citizen Continental-America Telescopic Eclipse (CATE) Experiment. Look through telescopes and identify objects in the night sky with the help of Dave North and Akkana Peck.

Photographing the Eclipse
Tuesday, August 1, from 7 to 8:30 p.m.
Rick Wallace and Fraser Goff will share tricks and tips for capturing the solar eclipse on film.

Eclipse Update
Friday, August 25, from 7 to 8 p.m.
Galen Gisler will share images and information about the solar eclipse and introduce objects that will be visible in the night sky during the Pajarito Astronomers' Dark Night program on August 26.

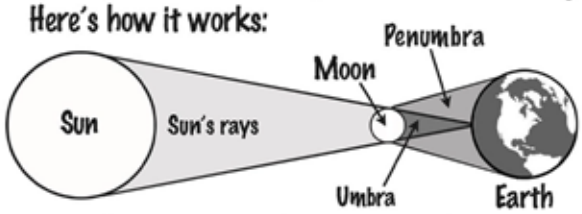
Nature Notes Fun Page

It's SUMMERTIME and Roady and Bugsy get eclipsed and almost eaten by bears!

SUMMER SOLAR ECLIPSE!

This summer we'll be able to see an unusual partial solar eclipse! That means, from certain areas on earth, the moon will pass in front of the sun, and when it does, it will look something like this.

Here's how it works:



The best view is when you are in the umbra, or the area where the shadow of the moon is strongest. In New Mexico we'll be in the penumbra, where a portion of the sun will be covered. The eclipse will happen on August 21st. In Los Alamos, it will go from 10:20 AM to 1:15 PM, with the best view at around 11:45 AM, so get ready! But don't forget, looking at the sun directly will hurt your eyes, so get some special eclipse viewing glasses.

While supplies last!

Stop by the center in August to pick up a FREE pair! Thanks to Del Norte Credit Union!

Roady and Bugsy go camping

But they didn't know they were attracting BEARS to their campsite! Lucky for them Ranger Rhonda came along and told them how to fix their campsite to be more "bear smart," and the bears soon went away. Can you tell what they did wrong? Hint: Bear's sense of smell is 2,100 times stronger than ours. Answers below.

WORD SEEK: Find these summer nature words in the puzzle below. They can be forward, backward, vertical, horizontal, or diagonal!

CAMPING – HIKING – LONG DAYS – FISHING
SEEING WILDLIFE – FLOWERS – CATCHING BUGS
PICNICS – HIDE AND SEEK – SWIMMING

A	G	R	S	L	O	E	T	W	K
H	E	P	E	S	G	A	Z	O	E
C	O	Q	E	N	U	S	A	S	E
A	G	N	I	P	M	A	C	B	S
T	E	K	N	V	H	I	F	E	D
C	I	I	G	F	N	Q	L	R	N
H	A	A	W	C	J	I	O	S	A
I	E	I	I	M	S	S	W	S	E
N	H	P	L	C	I	I	E	Y	D
G	W	X	D	M	M	A	R	A	I
B	L	H	L	M	R	Z	S	D	H
U	M	A	I	P	G	R	E	G	X
G	U	N	F	I	S	H	I	N	G
S	G	C	E	F	L	I	U	O	W
B	A	S	W	T	E	A	O	L	H

Answer to puzzle can be found on the PEEC website, at peecnature.org/learn/nature-notes/

There are a lot of camping smells that mean food to a bear's nose and can attract them from far away. The best way to avoid a bear encounter is to use sense with your scents. 1. Never leave food out on the picnic table. Put everything that smells inside your car or in a bear-resistant container. 2. Cooking utensils and even sunblock & other lotions should also be in a bear-resistant container away from your tent. 3. BBQs have lots of meat juice and grease. Clean and put things away! 4. Dispose of your garbage in a bear-proof dumpster. At least Roady & Bugsy didn't bring food in their tent with them! That's practically an invitation to bears to visit while you're sleeping!

This young boy is one of many kids who let their imaginations run wild in our nature play area. Photo by Bob Walker.

You Can Get Kids Outside

By Katherine Bruell

What do you remember most about playing outside as a kid? Was there a special spot that you made your own? Did you play in a little stream or even a trickle of rainwater, building dams? Did you build fairy-sized or kid-sized houses out of sticks, branches, and rocks?

We talk a lot about how kids don't play outside enough these days, and here at PEEC that's a condition we're working hard to change. We give all our field trip visitors a chance to build forts in the land that the Los Alamos Jewish Center so graciously lets us use. And from our Nature Playtimes program for toddlers and preschoolers, to our summer camps and our new Hike and Play program, we work to build in opportunities for unstructured nature play in everything we do with kids.

At the nature center, we have two outdoor play areas—the fort-building area past the end of the parking lot and our nature play area just beyond the landscaped garden beds in the front of the building. These areas are full of kids using their imaginations and testing their strength whenever we have a kids' program going on, but are often empty at other times. Occasionally a family or two will gather at the sandbox, but mostly the nature play areas are unoccupied, while families stream inside the nature center to play in the Children's Discovery Area. And we can see why—the discovery area has the fun diorama, the puppet theater, and lots of other toys, games, and stuffies. It's a pretty attractive place to be.

But what if the nature play area outside was just as attractive? What if it had an exciting entry—maybe with an archway for big people, and a crawl-though space for little people? What if you had to walk an obstacle course to get into the nature play area? What if there was a stream trickling down the hillside into a pool where you could float stick boats or get your feet wet? What if there was an inviting path into a loose parts area, where you could build and imagine in a cool, shady hideout?

PEEC has big plans to build all these things and more in the nature play area. We've begun fundraising for the project, and have gotten started with gifts from the Emily L. Bradley Memorial Fund and the Los Alamos Rotary Club. The Rotary Club will also provide volunteers to help dig in to the project and build the new sandbox. We hope that more of you will share our vision and join these groups in contributing what you can to make an inviting, welcoming space for nature play at the nature center. You can give directly to the project at http://peecnature.org/nature-play/ or by sending a check to PEEC earmarked for nature play. With your help, we'll get kids outside again, discovering the magic and wonder of playing in nature.

"With your help, we'll get kids outside again."

Tanager Time

By Marilyn Lisowski

Western Tanagers are bright yellow birds with red heads and dark wings marked by wing bars. These breathtaking flits of tropical color accent our canyons and mesas every April. Swooping in from Central America and Mexico to escape the heat, they drop down, singly, in monogamous pairs, or in small flocks. Quickly, they establish territory, ready to mate and raise baby tanagers in our cool air. Many migrate farther north into the mountainous conifer forests of the West from New Mexico to the panhandle of Alaska.

The first Louis and Clark Expedition recorded this luminous bird in 1806, naming it the Louisiana Tanager, in honor of the just-purchased territory.

Female Western Tanagers are not colored so brilliantly. They are dusty olive over yellow, to dusky gray with narrow wing bars. Who could imagine such a polar opposite to the gorgeous male? Neither Lewis nor Clark noticed the females, probably blinded by the splendor of the males.

Enchanted, I hang fruit suet, oranges, and grape jelly and murmur softly to them. I try to attract every Western Tanager within a hundred miles. Last summer after tossing down papaya skins, our backyard became a carpet of moving feathered flames with at least 30 birds. This was not without risk. Predator birds were attracted. A tanager crashed into our sliding glass door, and before the hapless avian hit the deck, a raven zoomed in, snatched it in its beak, and flew off to feed it to raven babies.

Tanagers are exceedingly territorial. "They're like ill-tempered fruits," offered my husband. He snapped a picture of two quarrelling male tanagers. "You'd think, with all the enemies out there, they would at least protect one another."

Western Tanagers confront each other over food, displaying aggression instead of cooperation. Photo by Paul Lisowski.

But he's thinking of the harmonious Acorn Woodpeckers, who stand guard while another eats, who raise young in common nests. Not Western Tanagers; they peck their mates when irritated. They attack other tanagers and defend each crumb of food as though declaring all-out war.

"They can't be perfectly beautiful and perfect," I murmur, thinking of certain movie stars. "Besides, they help control the pest population."

Tanagers gobble insects like bees, wasps, grasshoppers, caterpillars, and ants. They also like berries, snatches of orange, bits of suet, and grape jelly.

Their nests are little cups made of twigs, rootlets, grasses, and pine needles attached far out on a high branch to escape predators, like hungry bears. A female will lay three to five bluish-green spotted eggs and sit on them for two weeks. When the nestlings hatch, both parents forage for food to feed the babies. The nests are almost impossible to see, perched high in the foliage, which is disappointing for us, but fairly good for baby tanagers. Even though a flimsy branch may not take the weight of a bear, snakes will slither up to gobble an egg. Squirrels wait for an opportunity to enjoy a yolk-filled treat at the expense of the tanager parents. Hawks and ravens dine on the eggs too, as well as the young. Owls locate them on nightly forays for food to feed the owlets. It's a wonder any baby tanagers survive. Those that do make it fledge in another two weeks and stay with their parents a while longer.

In late August, Western Tanagers leave their summer homes and wing south again to Mexico and Central America. There they flock under foliage canopies and gorge on tropical insects until it's spring up north again—time to return and start a new family.

How Does Our Garden Grow?

By Rebecca Shankland

This was the root question of the PEEC Garden Committee when it started planning the outdoor landscape for the new nature center. Becky Oertel challenged her group to design something simple, sustainable, and educational for the community.

Gradually, decisions fell into place:

- Raised beds would make it easier for us to maintain and for visitors to admire. Clearly visible labels would make it easier to share knowledge.
- An irrigation system that gathered water from the building's roof and stored it in a cistern would keep our water use low.
- Our capital campaign funds would allow us to design three gardens in the shape of the finger mesas of the Pajarito Plateau and have them built by Oasis Landscaping under Phil Hoffer's direction.

The three gardens focused on three elements that would inspire nature-lovers: a native garden, a drought-tolerant garden, and a pollinator garden.

Native Garden
As lovers of the trails that wind through our canyons, mesas, and mountains, we wanted to showcase wildflowers that can be tamed for domestic beauty. Perky Sue, blue flax, harebell, chocolate flower, and many penstemons travel well from the trail-edge to the backyard.

Drought-tolerant Garden
Of course, our native plants have learned to live with erratic weather, especially with long, dry periods. But flowers that manage on short water rations have been cultivated all over the world and in plant nurseries. We've chosen hybrids like lavender and African daisy, plus natives like Rocky Mountain penstemon and three-leaf sumac.

Pollinator Garden
As nature-lovers, we know that bees, butterflies, and hummingbirds have an up-close relationship with flowers that benefits both plant and creatures. We designed this garden to have blooms through the seasons and keep our winged or walking visitors happy all the time. Our local fauna prefers native flora, but we do use hybrids for brilliant colors. Favorites here are butterfly milkweed, blue sage, hairy golden aster, and purple geranium.

Extra facts from Natali Steinberg: The native garden gets watered once a week, but the other two are watered three times a week. The mulches differ for each garden: the native garden gets native pine needles and other things like the deadheads (flower heads that have gone to seed) that can go into the soil; the drought-tolerant garden uses only pine needles; and the pollinator garden has wood chips.

The PEEC gardening tradition was begun long ago on Orange Street by Dorothy Hoard, Chick Keller, and Natali Steinberg. Many others have contributed knowledge and hard work: Selvi Viswanathan, Bob Walker, Mary Carol Williams, Cathy Strong, Becky Shankland, Bob Dryja, and Linnea Poretti.

PEEC's gardens flourish during warm months, providing outdoor education for all ages. Photo by Stephen Shankland.

Our Mission: Enriching people's lives by strengthening their connections to our canyons, mesas, mountains, and skies.

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Inspiring the Next Generation:

"I love coming! You teach me the coolest things. Every time I come, I learn something new. I love PEEC."

—3rd grader at Barranca after visiting on a class field trip this spring

Nature Center Hours:

Monday 10-4
Tuesday 10-8
Wednesday 10-4
Closed Thursday
Friday 10-4
Saturday 10-4
Sunday 1-4

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This curious creature visited the nature center on Thursday, June 8, when we were closed. Thankfully, the critter cam worked. It is a good reminder to bring bird feeders inside at night.

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