

It's Time to Celebrate!

By Katherine Watson, Executive Director

You did it! You talked with the County and told them you wanted a new nature center, and the County listened. You donated your money, time, and expertise to fill the nature center with engaging exhibits that would help everyone learn about and feel connected to our nature. And now, it's time to celebrate! By the time you read this article, the building will be finished, the exhibits will be installed, and PEEC staff and volunteers will be putting the finishing touches on everything to have it ready for Earth Day 2015—the first Earth Day in the new Los Alamos Nature Center.

There's so much that's new to take in that you might feel a little overwhelmed. We at PEEC certainly do, and we've been living with all this change for many months now. For example, look at this beautiful new newsletter template and our new logo, designed by Brian Hurshman of Sparkplug Studio. He designed it to reflect our mission (especially the canyons, mesas, mountains and skies part) and to keep some of the feeling of our old logo, while updating it for a new era in our organization. Our website has a new look, too check it out at www.peecnature.org. Then there's the new building and exhibits that are so many leaps ahead of where we've been. They reflect accurately the thousands of hours of work that went into making them the absolute best we possibly could.

Please don't think that all these changes to our exterior mean that our core is changing as well. We're still the same friendly, helpful people focused on our mission of enriching people's lives by connecting them with our canyons, mesas, mountains and skies. We're still YOUR nature center, and our main goal is still to be a community treasure. Come visit us at 2600 Canyon Road and see for yourself: Earth Day 2015 will be a great time to see all that's new!



Photo by Minesh Bacrania, bacrania.net.

The Site of Sights

by Chick Keller

As the Grand Opening of the county's Nature Center approaches, people are commenting on its splendid site, situated literally on the border between downtown and wilderness with sensational views to the mountains.

The story of how we arrived at this site is one of careful work by a small group of dedicated PEEC people. Three years ago, as the county's Capital Improvement Program (CIP) moved ahead with the Nature Center as one of its projects, PEEC realized that we didn't really have a site for the building. We formed a subcommittee of Board members tasked with identifying several candidates from which to pick.

Looking around Los Alamos we first realized that there weren't many sites that would fulfill our needs. But here and there candidates appeared. Each had its positive and negative characters. A site next to the Rim Trail might look great as a welcome to Los Alamos, but it was deemed too sunny, windy, and expensive to provide utilities. Just east of the hospital and below Trinity Drive, the old DOE site seemed quite good until we learned that it was reserved for possible future commercialization. The old sewage treatment site would have given us a large, dark site for star gazing, but it was deemed too distant from town and too isolated. At first we didn't consider our present site (called "the old skate board site") because we were told another group had first "dibs."

Then we heard the skateboard site was available and it fulfilled nearly all our criteria: owned by the county, close to town, adjacent to a natural canyon habitat, even in a rare, dark area suitable for astronomy. And the view!

In addition it was what is called a 'brown' site, one that has been used before and was not attractive for commercial purposes. Another plus was that utilities ran right through the site, reducing construction costs. Its only drawback was its compact size, but even that was judged as adequate. The site sub-committee rated each of the top candidate sites on a set of criteria, but it was clear this one would win. And so we had our site.

The next problem was how to use the site, especially how to situate the center building, as designed, onto it. Primary was the desire to have its exhibition room face directly on the view of the Jemez Mountains. Other considerations, such as shadowing to minimized safety hazards from icy walks, and how to orient it towards the sun for optimum warming and cooling, were involved. Location of parking and gardens also entered. The result is an excellent location, meeting our criteria nearly perfectly. The building is set far back on the site with a welcoming foreground for approaching visitors,

One constant problem was the nearness of the wildlife observation room to the canyon drop off, which would make it hard to have sufficient space for bird feeders and a small pond. Close work with the builder resulted in their extending the lot with fill and a retaining wall. That gives us the small, but acceptable area we now have.

And so the construction began. The builder, Klinger, did a superb job of site preparation. Before any construction they dug up the site to a depth of some 20 feet and 'strained' the old fill debris out of it. Using a huge, strange looking but effective 'strainer' they had the soil fall through while catching blocks of concrete, iron rebar, metal girders or all sizes of wires. These were then carted away. The soil was replaced, heavily compacted every few feet of depth until the desired level was reached. Thus, they would be constructing on a good, firm base devoid of underground materials that might cause settling problems later.

There followed many other elements of site preparation, such as special drainage, enlargement of parking lot area, and protection of the copse of ponderosa immediately fronting the building, etc. The result is a hardscape easily used for our outdoor exhibits, gardens, landscaping. We even have space for a 'human sundial' where individuals can stand so that their shadows will tell the time of day and season of the year!

The arrangement of the outdoors features was done to be welcoming and easy to access.

All of this is more apparent now that the building is complete. The views from inside are amazing. Access to gardens and sundial are direct. Parking is adequate and close.

Much of the success of a building like our nature center is due to care in its site. We're excited that we have achieved this success.

Out and In the New Nature Center

by Esta Lee Albright

As we turn into the nature center's driveway, the building and grounds are spread before us in beauty. The building dazzles us with its intriguing architecture; then we're eager to explore both outside and inside.

The parking area is landscaped with trees, shrubs, and grasses that were chosen because they do well in our environment. Because of our latearriving springtime planting season, the gardens in front of the building will display their patterns in nature later.

Leading away from the building and sculpture are three gardens. Each has a different focus, but all share the purpose of helping us learn about local plants that grow well with little water. Three rocklined raised beds have the shape of our familiar "finger mesas." Their curving walls are works of art: dry stone walls of blocks of quartzite sandstone. One garden features pollinating plants, which will attract bees, birds, and butterflies. Another has drought-tolerant plants, including hybrids. Finally, there is a garden of natives – shrubs, grasses, and other plants of the Pajarito Plateau.

Wandering the whole site we find features now and more to come: rocks to sit on, a geological timeline, unusual colored rocks, a human sundial, a water swale with two bridges. On the opposite side of the center we discover another garden especially planned to attract wildlife, visible from the wildlife viewing room inside the center.

Outside the Center: Ponderosa Pine

Los Alamos Nature Center is at the junction of two habitat zones, the juniper-piñon (6 – 7,000 feet elevation) and the ponderosa habitat (approximately 7 - 10,000 feet). Past the native plants garden farthest to the south, a tall ponderosa tree stands like a sentinel. It has the classic ponderosa profile: lower branches beginning high up the trunk, the trunk itself straight and tall, and the crown a gentle cone shape to access more sun. In Latin, ponderosa means "heavy, weighty, or significant," good descriptors of this impressive evergreen. But this sentinel is not guarding a contentious border. Nearby and around the site, wild plants of both zones blend together.

Young ponderosas' shapes form open pyramids. The bark is thin and dark grav to flaky and blackish - already somewhat fire-resistant. At a year old the seedling may rise three inches above the ground but already have a two-footlong taproot - thus somewhat wind resistant. Ponderosa pines do not bear cones until they are 45 to 60 years old. About then the bark changes to its well-known furrows and takes on a reddish color. At 125 - 150 years, the bark changes again to red-orange and yellow. The layers of bark look like jigsaw puzzle pieces or an impressionist painting, a mosaic of yellow and brown. Oils give the bark an aroma that some people call vanilla and others call butterscotch.



Construction on the nature center works around this stand of Ponderosa pines. Photo by Bonnie J. Gordon, Los Alamos Daily Post, 5/27/14.

The blending of habitat zones at our elevation contributes to the diversity of wildlife living here. A ponderosa is a haven or shelter, a larder or dining room, a nursery, or protection from storms and predators.

Chipmunks and Abert's squirrels store the yellow to reddish-brown cones in caches. They bury them, maybe forget to return, and a new tree may sprout. Many birds and small mammals find food and cover among the thick branches. Food and shelter on the forest floor beneath the large tree attract whitetail and mule deer.

Pinus ponderosa, with long needles in bundles of three, a height of perhaps 230 feet, and a diameter of five to eight feet, is a true symbol of the West. There are giants among us.

Sources:

Fagan, Damien, "The Ponderosa Pine Tree," *Desert USA*, www.desertusa.com/flora/ponderosa-pine-tree.html.

- Foxx, Teralene and Dorothy Hoard, *Flowering Plants of the Southwestern Woodlands*. Otowi Crossing Press, 1984.
- "Ponderosa Pine," *Tree New Mexico*, www.treenm.com/nm-treespecies-/ponderosa-pine/.
- Sargent, Charles Sprague, *Manual of the Trees of North America* Boston, MA: Houghton Mifflin Company, 1905.



Sketch courtesy of the private collection of Roy Winkelman.

Outside the Center: Gambel Oak

Between the sentinel ponderosa and Canyon Road is a fairly dense stand of Gambel oaks, mixed with short ponderosas. This area hasn't reached the thicket stage yet; it attracts wildlife and children looking for hidden paths to explore. In April the oaks have finally shed their brown, dead leaves that stay almost all winter. Summertime dress is leaves that are dark green above and velvety light green below. In fall the trees are bronze.



Gambel oak branch from http://wnmu.edu/academic/nspages.

Listing wildlife that depends on Gambel oak is like charting complicated game trails through the seasons. Twigs and foliage provide browse for elk, mule deer, bighorn sheep, and white-tailed deer. Acorns are important food for wild turkeys, squirrels, and black bears. Using the brushy growth for cover, birds nesting, perching, and displaying include scrub jay, chickadees, towhees, hawks, goldfinches, house sparrows, grosbeaks, nuthatches, bushtits, vireos, warblers, and more.

Gambel oak (*Quercus gambelii*) stands also are important to watershed protection. They stabilize soil, control erosion, and retard snow melt. On the nature center site, Gambel oaks grow wild on steep slopes down into the canyon.

Sources:

- Foxx, Teralene and Dorothy Hoard. Flowering Plants of the *Southwestern Woodlands*, Otowi Press, 1984.
- Jester, N., et al. *Gambel Oak Management*, www.ext.colostate.edu/pubs/natres/06311.html.
- Leidolf, Andreas, et al., *Bird Communities of Gambel Oak: A Descriptive Analysis*, www.fs.fed.us/rm/pubs/rmrs_gtr048.pdf.
- Simonin, Kevin A., "Quercus gambelii." In: *Fire Effects Information Systems*, www.fs.fed.us/database/feis/plants/tree/quegam/al.html.
- Thank you to Natali Steinberg for information about the gardens and plants.

Inside the Center

Entering the nature center building, we turn to the left and immediately stop to visually wonder at what we are seeing. Through the glass wall looking west, we see a progression of beauty – the variable canopy of treetops rising out of the canyon just below the window, then a portion of the town, the changing seasons on many mountainsides of the Jemez mountain range, the peaks touching the almost unbelievable blue of the New Mexico sky.

Spread before us inside are carefully designed temporary and permanent exhibits about the nature of the Pajarito Plateau. Four major exhibits center on canyons, mesas, mountains, and skies. A special focus is the live animals and fish in displays of their wild, natural habitats. We find our favorites from the exhibit room of the former nature center, and there are two relative newcomers to get to know, the canyon tree frog and the harvester ants.

Inside the Center: Tree Frogs

Featured in the canyons exhibit are live canyon tree frogs (*Hyla arenicolor*), small, lively creatures that live in many of our low-lying areas. They are amphibians, starting life as free-swimming tadpoles that have hatched from eggs laid in a pool. The exhibit tree frogs were captured in their tadpole stage in White Rock and in an area near the former PEEC building.

Soon the tadpoles develop legs and begin to look a bit more like real frogs. Unlike our expectations from their name, they don't live in trees. Canyon tree frogs find cozy, narrow crevices in rocks, so they have quite a choice of real estate in our canyon floors and walls. They may crowd together in their precarious home, climb down at night to forage near water, then return to the same crack in the rock at daytime.

Their rock climbing is aided by large adhesive toe pads on all four feet. The pads are shaped like suction cups and have tiny divisions that spread apart for a good grip on the rocks. The last two bones of each toe have extra cartilage segments between them, so the frogs swivel the toe and flatten it against the surface. Their hind feet are webbed. Long legs are used for long leaps.

Canyon tree frog colors are perfect camouflage on any rock face: tan, gray, or olive in irregular bars, perhaps green or gray spots on roughskinned backs, and yellow or light orange on the undersides. Adult males have a dusky throat patch. In the exhibit, we need to look long at the gray, brown, and tan rock face in order to spot the two-inch-long tree frogs, for they seem to disappear in a narrow horizontal crack. Once found, they can be discovered lined up and looking at us with large black eyes.

In the wild, the cracks and crevices they choose for home are usually near moist areas in canyons. In the spring breeding time, males tune up their mating calls to a sound that's described as abrupt, explosive, bleating, and rivet-popping. The exhibit has a button that, when pressed, releases a recording of the call.

Sources:

- Fagan, Darmian, "Canyon Tree Frogs," *Desert USA*, www.desertusa.com/reptiles/canyon-treefrogs.html.
- Roorabaugh, Jim, "Canyon Tree Frog," *Online Guide to the Reptiles and Amphibians of Arizona*, www.reptilesofaz.org/Turtle-Amphibs-Subpages/h-h-arenicolor.



Canyon tree frog photo by Beth Cortright.

Encyclopedia of Life, eol.org/pages/1019243.

Inside the Center: Harvester Ants

Live critters in the exhibits have a myriad of lifestyles and survival methods. The complex excavation site of the red harvester ants (*Pogonomyrmex barbatus*) is a fascinating example. Harvester ants are known for their painful stings, yet we admire them as social insects, consistently assuming a high level of cooperation and an organized division of labor.

Reproductive and non-reproductive tasks are divided into a caste system. Some ants are specialized for reproductive functions, while others are responsible for defense, caring for the brood, and foraging for food. Research shows that the system of division of labor arises naturally with the first formation of the group, rather than as a later adaptation.

Worker ants are expert excavators, digging several feet down from the surface. They produce a maze of tunnels about a half-inch in diameter and chambers several inches wide. The chambers are used for the queen ant's housing, garbage disposal, seed storage, and the nurseries of larvae that will be a new generation. Foraging ants may travel 40 feet from the nest to collect seeds from a dozen nearby plant species and return to storage chambers. Patrolling ants stop and interrogate intruding ants. Maintenance ants tend the nest by carrying ant trash and excavated dirt to the surface. Generally, younger ants seem to work at subsurface chores, while senior ants have surface duty.

As a colony grows, subterranean workers expand the nest, forming the system of tunnels and galleries that we see in the exhibit. Part of the nest is a dome of earth and gravel that the ants build up from excavated materials and from surface scrapings nearby. These mounds are the hallmark of our western harvesters. The little bits of rock on top of ant mounds give a snapshot of the kinds of rocks that exist underground, as the ants bring up subsurface bits of material.

Harvester ants are remarkable in both social habits and body features. Not always visible, the pinchers at the front of the head carry food, dig, and defend. When harvester ants fight, they pinch and hold on. Ant eyes are similar to flies' eyes. Small eyes are connected to form two large eyes that see movement very well. Feelers at the front of the head are organs of smell, and ants use them to communicate. Ants release pheromones (chemicals of differing smells) to communicate with each other. The feelers hone in on these smells as signals.

With these wonders of anatomy and colony organization, ants are thought to be the primary soil workers in the southwest. Nest-making aerates the soil, retains soil moisture, improves drainage, and fertilizes and distributes many native plants. They are subjects of countless research projects. According to a Stanford University news release, studies have shown that an individual ant is not very bright, "but ants in a colony, operating as a collective, do remarkable things."

Sources:

"Harvester Ants," *Desert USA*, www.desertusa./07/jul107/ant.html.

"Red Harvester Ants,"en.wikipedia.org/wiki/Red_HarvesterAnt.

Life Studies, www.lifestudiesonline.com/antbody.htm.

Thanks to Jennifer Macke for information about the Center's tree frogs and harvester ants.



The harvester ant exhibit during installation at the new nature center; photo by Jonathan Creel.

Inside AND Outside the Center: Sky

Sun, moon, and clouds form a constantly changing panorama and are seen well from the nature center site. Outside, trees and land forms enclose it enough for nighttime star-gazing. Moon phases, clouds, planets, constellations, sunsets – all bring us to star gaze and listen to astronomers and learn about the special beauty of the sky. These and more will be topics of programs in the planetarium, the large round form that is the tallest part of the building.

This spring to the west at twilight the planet Venus will be dazzling bright. June 30 and July 1 will find Venus teaming up with Jupiter for display high in the western sky at dusk.

"It is during the first seven months of 2015 that Venus will perform like a sequined showgirl in the night sky," writes Joe Rao on SPACE.com. "Without a question or doubt, 2015 will be Venus' year."

And our nature center's, too.



PEEC's Director of Interpretation, Jonathan Creel, introduces kids to the wonders of our skies using the planetarium dome. Photo by Minesh Bacrania, bacrania.net.

So, with these brief nature notes about only a few of the wonderful things to be found in the new center, here is a reminder that the grand opening ceremony will be on Earth Day, April 22 at 2 p.m. And so it begins.

Source:

Rao, Joe, "Planet Venus to Dazzle Stargazers in 2015 Night Sky," www.space.com/28151-how-to-see-Venus-2015.html.

Important! Changes Coming to Your Membership

With the move to the new nature center, PEEC is changing its membership program. Visit peecnature.org/membership to learn more. Options include individual and family memberships, and a lifetime membership. Questions about how this will affect you? Call 662-0460 or email center@peecnature.org.

Annual Report Corrections

Our donors are very important to us. The following people were inadvertently left out of our annual report. We apologize for the error.

\$4,999 - \$1,000 Los Alamos Garden (Club	\$999 - \$500 Earl & Linda Hoffman
\$499 - \$100 Jane Clements Michael & Kelly Dolejs Russ & Venita Durrer Casey Finstad Marilyn & Richard Fos Paul & Rosmarie Free Cindy & Jack Hills Jack Markin & Kathy	si ster derickson Hirons	Richard J. Koch Mary Marzili Dorothy Montoya Robert Reedy Anne & Joseph Slowik Helene Suydam Jane Sherwood

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Acorn woodpeckers frequent the wildlife garden at the new nature center. Photo by Bob Walker.

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FEATURED EVENTS

Battleship Rock Fossil Outing APRIL 11 Nature Center Grand Opening APRIL 22 Earth Day Festival APRIL 25 New Mexico Slot Canyons JUNE 2 Birding Hot Spots in New Mexico JUNE 23 PBS Science Café: Marvel at Birds JUNE 27