Nature Notes

VOLUME 15, NUMBER 3, SUMMER 2015 PAJARITO ENVIRONMENTAL EDUCATION CENTER

Kids Love Your Nature Center!

By Katherine Watson, Executive Director

Did you try to visit the nature center in May? If you did, you might have found yourself surrounded by happy, excited children. We had almost 1,000 students come to the nature center for field trips in just this one month. Phew! (You'll be happy to know that our educator, Siobhan, is enjoying a well deserved two months off.) Lots of kids came from Los Alamos, but some were from Espanola, Rio Rancho, and other far-flung places. We're excited that because of your support, this beautiful new building allows us to connect kids from all over with nature.

What did students do on their field trips? The topics they study depend on their grade level, since we match curriculum to state and national standards. But there are some components that stay the same no matter the grade level. The students have a hands-on science experience in the Los Alamos National Laboratory Science Learning Center (our classroom); they explore the exhibits and hunt for clues to answer questions; they go on a hike through nearby Kinnikinnik Park, learning about local plants, geology, and wildlife. (For more on this topic, see Siobhan's article on the next page.) And they play in the nature play area—usually in the incredibly fun gully that the Los Alamos Jewish Center has kindly opened up for nature play.

Our mornings are a little quieter here now that the students are gone. All that remains are their ambitious forts in the nature play area (come check them out—you can play there, too, all summer!) and, our favorite part of the year, their post-field-trip evaluations. I wish you could see the hand-drawn pictures that accompany these quotes, but at least you can read some of their words (if you sound out the spelling):

At the Nature Center I discovered…

"I lerned at Peak about Ant lonens [ant lions] and they dig cone shaped hole and it wates for a Ant to drop into ther hole and then thay eat tem for there super I liked it." (First Grader)

"…fuzzy leaves, flowers, cool lizards, and a frog. I saw a black widow. I also saw bug marks on sticks. It was lots of fun and I loved all of it. All of the stuf was fun." (First Grader)

"…that animal scat comes in different shapes sizes, and colors. Like a bunnis is round, small, and dark brown. And a black bears is oval, large and brown. I learned a lot, I cannot wait til the next time I go." (Second Grader)

"On the nature walk I found skiwgle trees. I discovered on the nature play area that you can make anything out of sticks. I found a lizerd inside. I liked foloing the clues. I had a great time with you!" (Second Grader)

Come visit us soon—we think you'll have a great time, too. And thank you—your support is what makes all of this possible.

Kinnikinnik Park: Hot Spot for Discovery

By Siobhan Niklasson, Education Programs Director

One of the challenges of outdoor education is that you never know what you are going to find. You could set up a spectacular lesson about light and shadow only to wake up the morning of the lesson to driving rain. Or you could prepare information about a particular flowering plant, to find that the vagaries of spring had clobbered all the flowers the week before.

So how do you plan for 1000 students to visit the nature center in the space of a month, when, in addition to all the regular uncertainties of the outdoors, you have a brand new location with unknown features?

We realized quickly that the trails of Kinnikinnik Park were perfect for our field trips. The area was unfamiliar to our educators, but with a sense of adventure and groups of eager students helping us look, we would find out what the park had to offer.

Kinnikinnik Park is perched on a canyon-edge piece of land next to the aquatic center. That it exists at all can be largely credited to the foresight of Chick Keller, who asked the County to preserve it in 1984 as construction work began at the aquatic center. Chick appreciated the value of the canyon-edge habitat so close to downtown, and the county agreed. What nobody had considered at the time was that thirty years later, the Los Alamos Nature Center would occupy the lot next door, and the park would become a major part of its nature-based education efforts.

Each of PEEC's regular first- to third-grade field trips has a theme: wildlife, geology, or plants and soil. With the theme of the day in mind, we set off into Kinnikinnik Park.

One of the first things that strikes us as we walk into the park is the richness of bird sounds. On the edge of the canyon, we're simultaneously on the ground and at the canopy level of the trees growing further down. So we quiet ourselves and spend a few moments listening to the birds.

Continuing along the trail, we walk over outcrops of Bandelier tuff, part of the 300 cubic kilometers of volcanic rock formed just over a million years ago by ash flows from the Valles Caldera in the span of no more than a few weeks to months (Shari Kelley and Kirt Kempter, PEEC Geology Nature Guide, http://peecnature.org/learn/nature-guides/geology-guide/).

Bandelier tuff is soft, and we can reach down and pick up a chunk of it and break it between our fingers. We observe that the sand on the trail is weathered from the same rock, and forms the mineral basis for the soil in the park. The soil here is thin, in places giving way to bedrock, and in other places accumulating to a few inches and allowing larger plants to grow.

In the drainages, we see Kinnikinnik Park's namesake plant, a low-growing bush that spreads out in dips in the topography and helps to stabilize the soil.

The Ponderosas, Douglas firs and Limber pines here are gnarled and thin, attesting to their challenging habitat. Some of the trees are rooted directly into cracks in the rock. Others, rooted in the thin soil, have blown over but continue to grow, slowly bending back to vertical.

We can see pinholes in the bark of the trees. Coming across a fallen log, we peel back the bark and see what made these holes: beetles and their larvae burrow through the bark and feed on the nutrient-rich phloem of the inner bark. Larger holes in the bark show where birds have made their own meals of the insects.

After a month of field trips, we're starting to become more familiar with the stories hidden in Kinnikinnik Park. The coming seasons and years will teach us more about how the ecosystem of park functions and changes. Next spring's students will have their eye on how things have changed since their last visit.

Children learning about Kinnikinnik Park. Photo by Siobhan Niklasson.

Raven Haven

By Marilyn Lisowski

When we designed our covered kitchen porch on North Mesa, my husband never envisioned that it would become a bird sanctuary. He planned a table for two, breakfasts on Sunday mornings, fresh mountain breezes, breath-taking views of the canyon below. But he made a fatal error. He turned down my choice for the table and never picked out a replacement more to his liking. The porch sat empty.

Ten years passed. One day I discovered a clay bird feeder that we'd received as a wedding present and never used. The rest is history. The feeders multiplied from seeds and water dishes to suet cages, thistle socks, impaled fruit, and tube jelly. Birds visited, first in pairs, then in dozens, and now in throngs.

This year a raven, almost two feet long, landed with a thud on the porch railing. His thick beak was longer than his head, and his head sloped back from the beak, unlike the round head of a crow. As he came down, smaller birds vanished as if by magic. The raven drank deeply from the water bowl and launched himself back up through the ponderosa pines and over the canyon. The lesser birds ventured cautiously out to the food again.

After that, our raven came every day. He began to bring his own food, hunks of bread, biscuits, pie crusts. Instead of merely drinking, he flung the food into the water and left it to soak while he soared over the expanse beyond us, returning always to gobble the soggy globs. One day he appeared with his mouth stuffed with layers of pancakes. He deposited them on the railing, lifted the top piece in his beak, dipped it into the water bowl, and chugged it down. He must have noticed that he moved the water bowl perilously close to the railing edge because he reached out with one claw and held it steady. He dipped each pancake in turn, let it sog, and chowed it down, all the while grasping the water bowl with his claw. He left some pancakes and came back later, repeating the dunking and eating.

From time to time my husband and the raven lock eyes through the sliding glass door. This mutual, rapt staring sometimes lasts more than a minute as the gaze conveys male messages, shared values. "I'm a guy," the looks seem to say, "I have big responsibilities." The raven never looks away first.

Several weeks ago, a pile of what looked like green barf lay by the water dish. I looked closely and saw that it was concentrated Campbell's split pea soup, gelatinous and lumpy. Thoughtlessly, I brushed it off the railing to the rocks, twelve feet below. But at once I was seized with remorse. I thought of the work that raven did - his head thrust deep inside a can in someone's trash, filling his huge mouth and craw, managing not to lose the mass while winging the distance to our porch railing. Was it a gift for me? I was penitent. I left a soda cracker beside the water dish. Ten minutes later, the raven appeared and dropped with a loud thump onto the railing. He looked around for the split pea soup, seized the soda cracker instead, inhaled it in one gulp, and continued to peer in all directions for the culprit. I hid behind a curtain.

The next day, a smaller raven appeared. And in a slow flash of dim-witted insight, I realized that they were a pair, that they were not feeding themselves, or offering it to me, they were regurgitating and stuffing all this hard-earned food into their babies.

Then the food changed. No more bread. It was now protein in the form of mice, lizards, and other baby birds. All got plunked into the water dish, swished about, chomped and swallowed, to be regurgitated later into the gaping mouths of the offspring. I toss the feathers, fur, disembodied feet, and other revolting remains over the side and refill the water several times a day.

The prey has evolved into adult birds and larger mice. A Western Tanager, dazed from crashing into our sliding glass door, sat shaking on the deck. The raven was upon him instantly, twisting his neck, lifting him away, still alive and flapping weakly. Feathers now regularly clump in the water dish, blood spatters on the railing and posts. I close my eyes and hose off the porch. Feathers fly.

"We could stop this gross carnage," my husband informs me. "Let's bring in all the food and water, hose the porch clean. Put out a table for two."

"You'd starve those baby ravens? And what about the tiny finches, grosbeaks, tanagers?"

"They're draining our budget dry," he moans.

But he's as fascinated by the show as I am. The birds' future is assured, as are the soon-to-be fledgling ravens, because he'll never choose that table.

Raven dipping a mouse. Photo by Marilyn Lisowski.

Marilyn's Raven

By Akkana Peck

Once upon a midnight foggy
In my pond I saw, all soggy
Something grim and gooey, something
Floating in a pool of gore;
"What is this?" I wondered, gagging;
As, approaching, morale sagging,
I beheld an embryonic
Tanager outside the door --
Poor dead baby bird that lay there
All disgorged outside my door --
Raven food, forevermore.

Tarantulas on the Move!

By Wade Harrell

The arrival of summer rains in northern New Mexico signals the start of the breeding season for many desert animals. Frogs and toads are heard calling from pools, and insects are heard calling from trees. Although not as noisy, tarantulas also become active at this time.

The most common species seen in our area is the Oklahoma brown tarantula, Aphonapelma hentzi. They spend the majority of their time in burrows, from which they emerge for a few hours at night during the warmer months to hunt for insects and small vertebrates. In winter they stay underground with their burrows sealed up against the cold. Because of their nocturnal habits, few people see tarantulas even in areas where they are common. When people do encounter tarantulas, it's usually in late summer and early fall, when they can be seen lumbering across roads and through yards.

Although many people call this phenomenon a "migration," they are not truly migrating—they are looking for mates. The tarantulas people see out and about are almost always adult males. The females and immature males remain in or near their burrows (unless driven out by flooding or ants). Males must brave cars, predators, frightened humans, and other perils to find females. Adult males can be differentiated from females by the hook-like structures on the underside of the first pair of legs, which are used in courtship. The males also have bulb-like structures on the ends of their pedipalps (appendages that look like a short pair of legs next to the fangs) that are used to transfer sperm to the female. This gives the male's pedipalps a clubbed appearance, while the female's are more pointed.

When a male finds a female's burrow, he taps with his pedipalps to signal to her. This drumming to let the female know he's there and would like to mate. If he's lucky, she will respond in a receptive way and will tap her own signal back to him. They may tap back and forth for a while before she emerges to mate. At this point the male will use those hooks on the underside of his front legs to lift the female by her fangs so he can transfer the sperm from the bulbs on his pedipalps to a special pocket on the underside of her abdomen where she will store it until she is ready to make an egg sac, which may happen months later.

If the female is not receptive to his drum solo, she may emerge from her burrow and try to eat him. Female spiders are almost always larger than the males, so he has to be ready to beat a hasty retreat if she's in the mood for dinner instead of mating! In fact, she may try to eat him afterwards even if they do mate, so either way he's ready to run. Although this seems like a tough life for the male, his days are numbered anyway because he generally dies at the end of his first and only breeding season even if he's not eaten by a female or some other predator. By contrast, females live many years--even decades.

At some point during the winter while the female is sealed in her burrow, she will make an egg sac. She will first lay down a thick bowl-shaped mat of silk onto which she will lay several hundred eggs. She will also add the sperm she's been storing and roll the silk into a ball with the eggs inside. Then she spends most of her time holding the sac in her pedipalps and periodically "massaging" the sac. It is thought that this is to mix the sperm and eggs to ensure proper fertilization. Several months later (usually spring or summer) the tiny tarantula spiderlings emerge from the sac and disperse from the mother's burrow to begin life on their own. Their mother, meanwhile, will concentrate on hunting so she can get fattened up for the next breeding season.

People have nothing to fear from tarantulas. Tarantulas in our region are not likely to bite unless treated roughly, and even if they bite the venom is not strong enough do anything other than cause moderate, temporary pain. If you happen to see a wandering male tarantula this summer, wish him luck on his dangerous mission!

Wade Harrell will bring specimens from his Harrell House of Natural Oddities to the Nature Center on July 1st.

The Tribulations of Fish

Part I: Design and Plumbing

By Jennifer Macke

During the exhibit design process for the new nature center, we considered the possibility of expanding PEEC's native fish exhibit to include native Cutthroat Trout. Local trout enthusiast Jim O'Donnell suggested adding trout and was interested in helping to find funding for an aquarium exhibit that included native trout.

With PEEC's 5 years of experience with native fish… how hard could this be?

Fishy History at Old-PEEC

PEEC began its experience with native fish in 2010 when we acquired a 180-gallon aquarium. Former students of Los Alamos High School may remember this exact aquarium, as it had been a beautiful saltwater reef tank in David Thurston's biology classroom for many years. For several years, we put this old tank to good use. The aquarium was large, but simple to operate. Just your basic big glass aquarium with a jumbo-sized canister filter, and a few other accessories.

The original fish acquired in 2010 were caught from the East Fork of the Jemez River. They were caught with the help of NM Game & Fish agent Richard Hansen, who used electroshock to bring the fish to the surface. We selected a nice group of 3 native species: Rio Grande Sucker, Rio Grande Chub, and Longnose Dace. These species live together peacefully, and are not protected by New Mexico law, and thus no permit was necessary to display them.

Within a few weeks, these fish had adapted to captivity, and it wasn't long until they learned to come to the feeding area to beg for food. Water quality was tested carefully for the first few months, but with the help of some "well-aged" gravel from Mr. Thurston's old aquariums, there were no significant problems in getting the tank established.

Designs for New-PEEC

In early 2014, we met with our exhibit design team and their fish consultant. Keeping trout would require that the new tank have a chiller and some other additional equipment. An exhibit tank should also have a secondary quarantine tank for new fish, so plans were made to include a smaller tank as well. We would need a floor drain for draining water out of the tanks easily, and a water filtration system for easy refills.

Given the limitations on space in the new building, where would the quarantine tank and other support equipment be placed? A storage room next to the planetarium had been planned to accommodate storage of the planetarium chairs. Much to the chagrin of the planetarium planners, we shoehorned the quarantine tank, work space, sink, and drain into this storage room. [In the end, no space was available for storage of the planetarium chairs, but that's another story….]

Trout Unlimited, a fishery conservation organization, pledged funding to build the exhibit. PEEC agreed to include Cutthroat Trout, and we passed the point of no return….

Paperwork

The Cutthroat Trout is a state-listed threatened species. Thus, keeping them in captivity requires an educational-use permit from the New Mexico Department of Game and Fish. How hard could this be? Only 7 pages. We'll need a veterinarian to sign on, a trout-based curriculum, detailed husbandry plans, 5 letters of support from other organizations… hmm, things are starting to get a little more complicated.

Plumbing, Diapers, and Panty Hose

In March 2015, the installation of a whole new 200-gallon aquarium began in the new nature center. Almost everything had to be custom-made for the exact requirements of the project and the space available. Hmm, Now what is all that PVC pipe and equipment under the tank? This *is* looking more complicated.

After the tank was built and filled with water, the aquarium builder/consultant provided a training session. Chris Altenbach patiently explained the connections of all the plumbing, valves, and electricals. Two pumps, a sump, a UV sterilizer, and a massive chiller. Multiple power strips, LED lamps, 8 big red valves, and about a mile of PVC pipe. Six of us attended the training: Beth Cortright, Jonathan Creel, Jim O'Donnell, Dan Poretti, myself, and our veterinarian, Bob Fuselier. Within the first 10 minutes, we were all wondering if plumbing might have been the best prior training for understanding this exhibit!

Some of the details about the exhibit's maintenance were also a bit surprising. Since the tank itself is made of acrylic, not glass, we would need to clean it very carefully with a special cleaning fluid and soft cotton. What is the softest cotton? Evidently, cloth baby diapers. And to hold aquarium carbon in the filter, Chris A. recommended using sections of nylon panty hose. Evidently, he had gotten some strange looks at Smith's when he had gone to purchase diapers and panty hose the night before!

Old Fish

The exhibit plan called for the display of all 4 of the native fish that live in the Jemez River drainage: Rio Grande Suckers, Rio Grande Chubs, Longnose Dace, and Cutthroat Trout. Three of these species had been living in the aquarium at old-PEEC and simply needed to be brought over to the new tank. After they arrived, we began to gradually lower the temperature in preparation for trout, which prefer colder water. Over the course of a week, we lowered the temperature from about 68F to 50F. This is a big change for any fish, but the old fish seemed to benefit from it, as their body colors became more pronounced. This was also the first time in several years that they had had a current of flowing water to swim in, and some of them were clearly enjoying that too.

New Fish

Seven Springs Fish Hatchery has a breeding program for Rio Grande Cutthroat Trout. Jim O'Donnell worked with Tony Jacobson at the hatchery to arrange for the hatchery to deliver a group of two-year-old juvenile trout. To our surprise, they turned out to be surprisingly large. The largest one has a mouth almost as big as our smallest dace.…

The trout were initially placed in the 50-gallon quarantine tank, and they made it clear that they weren't too happy about being moved from the trout raceway to an aquarium. Despite their large mouths, they refused to eat anything for many days. After a week or two, some of them began to eat, and they showed no sign of disease. The ones that were eating well were moved from quarantine to the exhibit tank.

Grand Opening

On opening day in mid-April, the exhibit looked great. We had succeeded in setting up a working aquarium with all 4 species of native fish in great condition. The aquarium was all nice and clean and shiny-new. As a prelude to Part II of this series, it should be mentioned that a brand new aquarium is a dangerous place to live, if you are a fish.

To be continued…

In Part II of this saga, the intrepid Fish Team will encounter bacteria, chlorine, sludge and more. How hard can this be?

Rio Grande Cutthroat Trout. Photo by Josip Lancaric.

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

The Nature Center Observation Room

By Bob Walker

One of the new attractions at the new Los Alamos County Nature Center is the wildlife observation room. This dual-purpose room is located at the northwest corner of the building and has comfortable seating and four large windows that look out toward a small wildlife area. The room offers binoculars for visitors to use and has microphones outside to allow visitors to hear inside what they are seeing outside. It has proven to be a very popular addition to the visitation opportunities at the Nature Center.

The wildlife area is bounded by a split-rail fence, and beyond the fence is a terrific view of Discovery Canyon. Take a seat, relax, and enjoy the view as birds, chipmunks, and squirrels scamper about. If you see something out there you don't recognize, there are reference materials nearby that you can consult, because the Observation Room doubles as the Nature Center's library.

Wildlife is attracted to the area for three reasons – we provide food, water, and cover (all of which helped us to qualify the Nature Center as a Certified Wildlife Habitat). For food, we put out a variety of bird seed, suet, fruit, and hummingbird nectar. Water is provided by a beautiful water feature that simulates a slow moving stream, thus attracting birds and animals by sight and sound. The trees near the canyon edge provide excellent cover for the wildlife, as a place they can escape to if they feel threatened.

The Observation Room in the Nature Center. Photo by Minesh Bacrania.

Since its opening, over forty species of birds have been reported at the Nature Center, and most of these have been seen from the observation room. Most common are seed-eating birds like finches and sparrows, nut- and suet-eating birds like woodpeckers, nuthatches, and chickadees. Larger birds like doves, robins, crows, and ravens will occasionally drop in to check out the area, and in the sky, you'll see swallows, vultures, and raptors. May is migration month, and it's always exciting to see some of our less common birds as they move through the County, like tanagers, grosbeaks, and warblers. In the summer, you will enjoy seeing hummingbirds regularly visit the nectar feeder.

Our wildlife visitors are unconcerned with Nature Center hours; our trail camera shows that visitors arrive all during the night. In addition to our daytime visitors, we have had nocturnal visits from raccoons and skunks.

We plan to continue enhancing the area, adding more plantings, adding a puddling area to attract butterflies, and installing a "PEECaBoo" wall so that outdoor visitors can look directly into the area without scaring away all the wildlife.

If you have not checked out the observation room yet, come in and sit for a spell on your next visit to the Nature Center.

PEEC Staff

Katherine Watson, Executive Director
Jonathan Creel, Director of Interpretation
Siobhan Niklasson, Education Programs Director
Beth Cortright, Nature Center Manager

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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