



NEWSLETTER

Pajarito Environmental Education Center

60 Barranca Rd., Los Alamos, NM 87544

Volume 1, Number 2

Spring 2002

President's Message

from Claudia Lewis

Water seems to be in the news just about everywhere. Maine is bracing for water shortages and problems with contamination. Florida will be out of water in three years if precipitation doesn't replenish its aquifers. Controversy is swirling in California over a large new development near Palm Springs that when completed will use 6 million gallons of water a day just to sprinkle its 12 golf courses. In many places on the globe, potable water is hard to come by and its scarcity results in famine and war. Close to home, Santa Fe's municipal reservoirs are at 30% normal, emergency water measures have been put into effect, and there is great concern about fire danger in the city's watershed. Up here on the Pajarito Plateau, we are suffering another severely dry spring. We all know that the beautiful sunny days of late come with a price. Upcoming events in Santa Fe, part of "Moving Waters: The Colorado River & the West," will deal with water, culture, and values to generate regional consciousness of water-related issues. This series is sponsored by seven western states' humanities councils, with events happening in 22 cities and towns throughout the West. What better time than now to devote Earth Day 2002 to WATER. Please join us on April 20th as we celebrate this life-giving force and ponder its importance to our lives and the environment we live in.

Here is a tentative schedule for

Earth Day 2002 Events

For all hikes and outdoor activities, bring water, food; wear sturdy shoes and a hat.

Thursday, April 18, "From Ice-Age to Greenhouse: the Scoop on a Million Years of Changing Climate," talk by Synte Peacock, LANL postdoc, 7 p.m., Senior Center classroom. Organized by the Pajarito Group of the Sierra Club.

Friday, April 19, Earth Day Poetry Fest. Read your own nature poetry or that of your favorite poet! Michael Smith, moderator. 7:30-9 p.m., R Books.

Saturday, April 20

9-4 or 9-12:30 or 12:30-4: Research Park Stock Pond Restoration. Volunteer to help enhance a wetland area and build a new trail section. Help all day, or morning, or afternoon. Lunch-snacks provided! Craig Campbell, landscape architect, and Janie O'Rourke, trail historian, will explain the project at 9 a.m. Meet at the Research Park. To volunteer call LACDC at 662-0001 <lacdc@losalamos.org> or Janie O'Rourke (663-0524). Sponsored by the LA Research Park, PEEC, and Los Alamos Pathways.

10 a.m.-12 noon: "The Power of Water," 2-mile hike (1.5 to 2 hours) led by Dorothy Hoard. Rocky trail with moderate uphill stretches. Meet at corner of 45th and Arizona, the Mitchell Trailhead.

10:30 a.m. "Clean Up a Little Canyon in the Heart of LA," led by Chris Judson.

Everyone welcome, but people with rock climbing experience (and their own equipment) would be useful in one section. Meet at the High School parking lot across from Texaco. Wear long pants, shoes (not sandals) and gloves.

1-3:30 p.m.: Water-wise Gardening Techniques, LA Master Gardeners. Learn how to make compost, select plant materials, and use mulch to reduce your landscaping and gardening water needs. Demonstration Garden by County Municipal Building.

1-3:30 p.m.: Backyard Habitat Program, National Wildlife Federation Backyard Habitat Stewards. Is your yard wildlife friendly? How to landscape for the birds, butterflies, and bees. Demonstration Garden by County Municipal Building.

Los Alamos Cats Indoors Series on Caring for Los Alamos Wildlife:

- ◇ 1:00-1:45: Fur and Feathers Rescue and Rehabilitation, Inc. Several topics of interest including Los Alamos wildlife since May 2000, mountain lions in Los Alamos, rescue and care of spring babies, questions and discussion. Mesa Public Library lobby.

Programs in the Children's Section of Mesa Public Library:

- ◇ 1:45-2:30: Tom Wyant, local snake expert ("the snake guy"), program with live rattlesnakes and a short video on snake safety. How to tell non-harmful snakes from poisonous ones.
- ◇ 2:30-2:45 Charles Luhan, animal control officer, program on local animal ordinance that prohibits both cats and dogs from roaming.
- ◇ 2:45-3:00 drawing for Beanie Babies
- ◇ 3:00-4:00 National Geographic video "Secret Life of Cats."

3-4 p.m.: Harvey Frauenglas, reading and discussion of his book *The Cider Master of the Rio Oscuro*. R Books.

7-9 p.m.: Water Forum. Panelists include Don Neeper (New Mexico Citizens for Clean Air and Water), Elizabeth Keating (LANL)

and Tim Glasco (Los Alamos County). Betty Ehart Senior Center.

Sunday, April 21

1-2 p.m.: PEEC Site Committee tour of the Olive Street sewage treatment site.

Discuss possible use as a home for PEEC, possibility of land donation. Meet in High School parking lot close to Orange St..

2-4 p.m., "An Old, but Still Evolving Backyard Wildlife Habitat," Fred Gross, 9 La Rosa Court, White Rock. See a registered Backyard Habitat from 1980 that is still providing new food sources and improving water management.

PEEC thanks the following gracious sponsors: C. B. Fox, Los Alamos Medical Center, Los Alamos National Bank, Los Alamos Public Library, Senior Center, Los Alamos YMCA, Neptune and Company, and R Books.

Research Park Pond Project

Jeff Heikoop

Last summer Janie O'Rourke asked if I would be interested in looking at a small wetland pond on the new Los Alamos Research Park land. I was aware of the wetlands in Pueblo Canyon and Sandia Canyon, which receive wastewater from the county and lab sewage treatment facilities respectively, but I had never heard of this pond during my three years in the area. I was pleasantly surprised to find a small pond with lush cattail growth, teeming with tiger salamanders and chorus frog tadpoles (identified by Laura Marsh of LANL's Ecology group and her students). Janie was interested in tying the pond in to the county trails network so that trail users could stop and enjoy this unique habitat. In addition, this pond, located immediately adjacent to the historic Duran Road, may have been a stock pond associated with the Duran homestead. Janie wished to see the pond preserved and enhanced for the enjoyment of visitors and to

make sure that runoff from nearby parking lots and from the Research Park building and lawns did not impact water quality.

Kevin Holsapple, director of LA Commerce and Development Corporation, was interested in these ideas and asked wetlands expert and landscape designer Craig Campbell to create a rehabilitation plan for the pond. These efforts will begin this Earth Day, April 20, 2002. Native species will be planted around the pond and a bench and viewing platform will be built. I was asked to address water quality issues, particularly the ability of the wetland plants and soils to eliminate any excess nutrients being put in the pond. The idea was put forth that this pond could have educational value and could be ideal for student field trips. Constructed wetlands that Craig Campbell has built in Albuquerque have been used for just that purpose. We also learned that the idea that this pond was historic was controversial. Some people felt that the pond was oddly located to be a stock pond and that it was probably associated with construction of the fire station.

Having an interest in nutrient reduction in wetlands and the natural history of this region, I offered to look into these questions. First I would use geochemical techniques that I had developed for the Sandia Canyon wetland to characterize nutrient sources and processes responsible for nutrient attenuation in the pond. To address the age of the wetland I would look at past air photos and would also core and date the pond sediments. Since this effort would take more spare time than I had (any of you with toddlers will understand), Olivia Martinez of LANL's Community Relations Office kindly arranged for me to receive funding for a small portion of my time to work on this project.

Wetlands have an amazing ability to reduce water pollution. Constructed and natural wetlands are used around the world to treat wastewater from homes, farms, factories, and small communities. Wetland plants consume copious amounts of nutrients, bind pollutants to their fine-grained soils and produce such high rates of organic material that their sediments are quickly depleted of oxygen. This can lead to detoxification of elements such as chromium and to the elimination of nitrate as nitrogen gas. In the

Sandia Canyon wetland, nitrate discharged from LANL's sewage treatment plant enters the wetland at concentrations below EPA limits of ten parts per million. Water flowing from the wetland has barely detectable amounts of nitrogen. Nitrogen is taken up by cattails as the water flows through the wetland and is eliminated as nitrogen gas in the oxygen-depleted sediments. I have been developing techniques to look at the chemistry of the cattails in the Sandia wetland to understand the nutrient attenuation processes occurring there. I look at the nitrogen isotopic signature of the plants. Nitrogen comes in two flavors, one with



seven protons and seven neutrons ("light nitrogen") and one with seven protons and eight neutrons ("heavy nitrogen"). Chemically these two are identical, but the small mass difference between the two types can impart distinct isotopic signals during various chemical processes. For my purposes the important factors were that sewage wastewater had more of the heavy nitrogen, whereas background nitrogen in this area had more light nitrogen. In addition, the release of nitrogen gas from oxygen-poor soils left heavy nitrogen behind. In areas of the Sandia wetland where plants were taking up a lot of

wastewater nitrogen and in which nitrogen was being lost from the wetland soils as nitrogen gas, the plants had a signal reflecting a nutrient source with more heavy nitrogen. Thus I could actually map out the patterns of nutrient attenuation in the wetland simply by taking a small clipping from the tops of cattails and analyzing the isotopic composition on a mass spectrometer. This monitoring technique is handy because it does not involve disturbing the wetland soils. In essence, the plants themselves become monitoring wells. I am also using this technique in the Valles Caldera National Preserve to look at water quality issues arising from wastes from elk and prior cattle grazing.

I collected cattail clippings from the Research Park pond last fall and will do so again this spring. I will relate their isotopic



composition to nutrient sources affecting the pond and to processes responsible for removing nutrients from the water column. I will compare these measurements to nutrient signals in the pond water and in the water flowing into the pond from a small outfall and from a drainage ditch. I will also use this technique to look at organic material preserved in the sediments of the pond to reconstruct the history of nutrient input through time. If the pond was used as a stock pond, for instance, then the oldest organic material might have a lot of heavy nitrogen associated with nitrogen input from livestock. By looking at carbon isotopes in this same material, we can also determine when the plants were exposed to periods of drought.

So far, with the help of Danny Katzman and Ken Lepper of LANL's Earth and Environmental Sciences Division, one core was taken from the pond this past winter when the pond was dry. The core bottomed

out in Bandelier tuff and contained about three feet of pond sediment. Air photos suggest that there may have been a wet feature at this site since at least 1935, varying between a more pond-like to a marshier environment. In the 1935 photo, there appears to be a pond-like feature at roughly the right location, at the northwest corner of a homestead. With digitized photos I can determine if the features noted are in precisely the same location, but for the time being the assertion that this pond predates the Laboratory remains equivocal. Even if the pond does predate the Laboratory, there is no guarantee that the pond has not been dredged, in which case the sediments in the core might post-date the Laboratory. To address this, we will examine the sediments immediately above the Bandelier tuff in the core. If the sediments contain exotic materials, such as granite or quartzite that are not naturally found on the Pajarito Plateau, then a post-Laboratory age for the sediments is suggested (these exotic materials were used during construction of the Laboratory and are found in younger canyon sediments). We will also analyze wood fragments found at the very bottom of the core by carbon-14 dating. If these fragments do not contain "bomb" carbon resulting from atmospheric testing in the 1950's, then the oldest core material is likely pre-Laboratory. Ken Lepper will also try to apply a dating technique called Optically Stimulated Luminescence to determine the last time that quartz grains in the core were exposed to sunlight. We will also examine variation in sediment type, presence of charcoal, and other core characteristics.

This project will be completed by next fall and the results will be incorporated into an interpretive display. We hope people will be able to visit the pond, enjoy the sight of cattails, birds, and tadpoles, listen to the sounds of chorus frogs, and learn something of the environmental history of a unique part of our County.

Catch the Migration Sensation!

Steve Fettig

A Zone-tailed Hawk, a Three-toed Woodpecker, and a Blue Grouse treated participants to rare and thrilling views during last year's spring migration count. Tom and Kathy Stephens also heard an even rarer (for New Mexico) Chestnut-sided Warbler singing from an oak-cover hillside near Escobas Mesa.

Anticipation is running high for this year's count since Turkey Vultures, White-throated Swifts, and House Wrens have started to return.

The spring migration count is part of Migratory Bird Day (IMBD) and is celebrated annually across Canada, the US, Mexico and Central America. For the counts, children and adults alike gather to enjoy the spring weather and discover what birds have arrived in our yards, forests, and parklands from wintering areas to the south.

The purpose of the day is counting as many birds in the county as possible. The results provide a snapshot of the spring migration. There are several ways to participate: count the birds as you walk your favorite trail in the Santa Fe National Forest or in Bandelier; count the birds while birding with other birders in Los Alamos County; count the birds that visit your yard, your bird feeder, or your bird bath. You can participate for the whole day, just the morning, or just one hour. Participation is free. Bird checklists will be provided to participating groups.

The theme for this year's International Migratory Bird Day is recognition and conservation of the places that migratory birds need--habitats at either end of their seasonal journeys and stopover points along the way. For more information visit IMBD Web site at <http://birds.fws.gov/imbd/>.

If you are interested in helping to count the birds, please contact Stephen Fettig osprey@cybermesa.com or 662-6785.

Mountain School Yard Habitat

Michele Altherr

Teachers and volunteers from the community have begun work on Mountain Elementary School's first school yard habitat project. It will be ready for planting on Earth Day, April, 22, 2002. It will be located at the school entrance and provide food, water, and shelter for butterflies and hummingbirds. It will be a permaculture design--we will be attempting to recreate a natural system in which nature does most of the work of sustaining the garden.

Classes across the school will be participating at different levels. Some classes will be learning about the habitat by "adopting a plant." Several sixth graders are making creative "adopt a plant" donation jars using recycled materials. Other classes will grow annuals from seeds in reused toilet paper tubes. Others will help decorate the halls for Earth Day by making butterfly and hummingbird squiggle mobiles. Earth Day at Mountain is shaping up to be a celebration of learning and community service.

Mountain's habitat has been made possible by donations from Los Alamos National Bank and Metzgers. Two extraordinary community people, master gardener Mary Zemach and National Wildlife Federation habitat steward Fred Gross, have guided us. Our schools are fortunate to be part of such a giving community!

We live in a spectacular setting. The Mountain School Yard Habitat Team believes that children's learning should extend beyond the classroom walls into their environment. Someday we hope to gather support from the community to create a native plant trail and outdoor classroom on the Mountain campus.

PEEC Web Site Under Construction

Recently Eric Black, a talented middle school student, volunteered to construct a web site for PEEC. He offered to help

because he enjoys volunteering and is interested in the outdoors and preserving the environment. Eric read books and taught himself about web design and computers. He has started a "very small" web hosting and design business with a grant from the LA Commerce & Development Corporation.

When he's not doing homework, Eric enjoys programming simple applications and watching old movies. He has participated in the Science Fair and History Fair. He also does some work for PAC-8. Isn't it great to have such talented youth contributing to our community?

Vulture Sightings

In the wake of Carlyn Jarvis's article in the *Monitor* on vultures (March 8) and Chick Keller's in the first issue of the PEEC newsletter, PEEC has received several phone calls reporting vulture sightings. The vultures

seem to be drifting back one or two at a time. Ron Harper's sighting was the first. He saw a lone vulture over Los Alamos Canyon around 7 a.m. on March 15. A few days later, on March 18, Alison Leon saw two over the golf course. The next day, the Kellers spotted one floating over Los Alamos Canyon--perhaps the same one Ron saw. Several days later our loner was joined by a few more--Bob Rohwer reported seeing four or five on the 27th around 5 p.m. as he drove over the Omega Bridge. Over in Frijoles Canyon Chris Judson saw the biggest group yet--ten floating above the canyon on March 25. And Nancy Shera sighted two in the air above Rendija Canyon on the 28th. Stephen Fettig pointed out that Jim Travis reports in the Los Alamos Breeding Bird Atlas that 28 years of observation give a median arrival date for vultures in the county of March 31. Based on the vultures' return this year, Spring has indeed come early!

Calendar of Natural History Events

Month of April

Moving Waters

"Moving Waters: the Colorado River and the West," is a program to generate regional consciousness of water-related issues. Santa Fe events schedule at www.movingwaters.org.

Saturday, April 20 (Thursday, Friday, and Sunday too)

Earth Day 2002

Support Earth Day, have fun, and learn something by taking part in one of the many Earth Day activities PEEC and other organizations are sponsoring.

Saturday, May 11

International Migratory Bird Day

To help count migrating song birds, contact Stephen Fettig at 662-6785.

Saturday, June 29, 9 a.m.

Los Alamos Annual Butterfly Count

Steve Cary leads the Los Alamos Butterfly Count. Meet at Burnt Mesa Trailhead (Bandelier). Adults \$5; children under 12 free. No expertise needed! For information, call 662-2662.

PEEC Board of Directors

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Membership Form

Membership valid through Earth Day (April) 2003

Name: _____

Mailing address: _____

Phone number: _____

E-mail address: _____

Membership dues \$20 (Please make checks payable to PEEC): _____

Optional contribution: _____

Check the ways you could be involved:

- Develop programs
- Lead educational activities
- Help with site selection
- Give a guest lecture
- Support one-time events (e.g., Earth Day)
- Raise funds/write grants
- Edit newsletter
- Manage membership database
- Design or maintain Web page
- Help develop PEEC as an organization
- Just be a member

Would you like to offer any special interests and skills? Please specify.

What would you like a community environmental education center to be?

Please return this form and your check to: PEEC
60 Barranca Road
Los Alamos, NM 87544.

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