



Natural Resources Education Quarterly

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Mission:

Facilitate programs and services in environmental education for the people of the San Luis Valley.

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Focus On Careers: The Work of an Archaeologist

By Vince Spero, Rio Grande National Forest



Most people do not know that the U.S. Forest Service employs archaeologists, about forty just in Colorado. In fact the U.S. Forest Service, National Park Service, Bureau of Land Management, and the U.S. Army Corps of Engineers have about 800 archaeologists. Forest Service archaeologists are responsible for

identifying and protecting prehistoric and historic cultural resources on FS lands. They are part of a team of employees that provide input when planning projects such as timber sales, land exchanges, or campground expansions.

Before providing input to a team about a project, a cultural resource inventory is performed. This inventory involves a systematic search of the proposed project area looking for evidence of prehistoric or historic use of the land. Evidence can take the form of prehistoric campsites with stone tools such as projectile points, grinding stones for processing food, and stone knives for skinning animals and cutting meat.

Careers Continued on page 3. . .

Over 50 Ancient and Modern Ways to Use Cattails

By Frances Dibbern, Alamosa, Baca, Monte Vista National Wildlife Refuges



Cattails are amazing water-loving plants that have been used by wetland wildlife throughout time as shelter and food. The usefulness of this plant does not end with wildlife, humans have been using cattails in a myriad of creative ways for centuries.

Cattail Leaves

Native Americans and early pioneers used silky cattail floss in homes as pillows, bedding and stuffing for furniture. It can also be spun like cotton to produce textile fabric. Dry floss

makes an excellent tinder to start fires. Archaeologists believe the floss was used as an absorbant padding for infants and women. Cattail floss was also used to insulate clothing including vests, coats, and quilts. Native Americans and early settlers also used the floss as caulk for canoes and cabins. Cattail leaves make a good pulp for paper making.

The fibers in cattail stems can be used as a substitute for jute, and those of the leaves can be used for textile.

Cattail mats, from the leaves, have been found in an archaeological dig in a Nevada cave dating back 10,000 years. Woven, cattails served Native Americans in many ways. The Mexican Kickapoo Indians used

Continued on page 4. . .

Check out our NEW website!

www.slv-ecec.org

Education Resources

Project Archaeology is coming to the San Luis Valley!

Great Sand Dunes National Park and Preserve presents a **Project Archaeology** workshop this fall. Project Archaeology is an educational program designed to teach America's young citizens to make wise decisions regarding the stewardship of heritage resources, particularly those on public lands. **We need a minimum of 10 teachers in order to offer the course. Read the details below and if you're interested in the workshop, call or email Kathy Zelenka by September 25th at 378-6344 or Kathy_Zelenka@nps.gov.**

Cost \$30 Grades 4-7 Credit 1 graduate credit from Adams State College (in addition to the course cost)

Location New Visitor Center and outdoors at Great Sand Dunes

Date a weekend between mid-October to mid-November (exact date to be determined by course participants)

Workshop content Workshop participants will discover the science of archaeology through lessons in *Intrigue of the Past: A Teacher's Activity Guide for Fourth Through Seventh Grades*. An archaeologist and teacher will lead the course with assistance from Great Sand Dune's Education Specialist. Teachers will receive *Intrigues of the Past*, which contains 28 classroom-tested lessons as well as a student handbook specific to Colorado.

Educational content: Project Archaeology supports existing curriculum in science, math, history, social studies, art, language arts, and higher level thinking skills.

Calendar

September

Sign up for fall class presentations or field trips on the following topics: forest, dunes, wetlands, farms, birds and much more.

New ECEC website lauched!

www.slv-ecec.org

October

1st- Feathered Friends Art Contest
Deadline

2nd- Open House (10am-3pm) at the New Dunes Visitor Center. Entrance fees will be waived. Join us for light munchies and a look at the new building and exhibits.

10th-16th- National Wildlife Refuge Week at Alamosa, October 16 will be the Grand Opening of the Wetlands Discovery Room at Alamosa NWR

17th- 6pm potluck followed by a presentation, "Love of Nature ... Global Warming?" at the RuthMarie Center in Del Norte

TBA- Project Archeology Workshop see left

EE Contacts

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| Geology, Ecosystems, Cultures & Archaeology | Great Sand Dunes National Park and Preserve. . . Kathy Zelenka. . . 719-378-6344 Kathy_Zelenka@nps.gov |
| Wetland Ecosystems and Wildlife | Alamosa, Baca, Monte Vista National Wildlife Refuges . . . Kristen Gilbert. . . 589-4705X101 |
| Water and Soil Conservation | SLV Conservation Districts & NRCS . . . Angie Graber. . . 589-3907 X117 |
| Service Learning | Volunteer Connections. . . . 719-589-5688. . . vcf@amigo.net |
| Sustainable Development and Culture | EarthNest Institute. . . . Nicole V. Langley. . . 719-206-2222 |
| Natural Resource Conservation Camp at Beaver Creek | Colorado State University Extension Service. . . Robert Mathis. . . 657-0213 |
| Forest, Range and River Ecosystems | Rio Grande National Forest . . . Mike Blakeman . . . 852-6212 |
| Other Resources | Colorado State Forest Service. . . Boyd Lebeda SLV Resource Conservation and Development. . . Jim Mietz |



Student Archeologists at Great Sand Dunes

By Kathy Zelenka, Great Sand Dunes National Park and Preserve



Students working at site.

This summer, Harriet and Eleanor Taylor from the St. Vrain Valley School District accompanied their teacher Dani Hoefler, archaeologist Ted Hoefler, and Great Sand Dunes staff on a test excavation of a hearth site within the Monument.

The excavation was part of a multi-year project of archaeological monitoring at several locations within the Monument and Preserve. Previous testing at this site yielded both prehistoric and historic cultural materials.

Both of the girls commented that being able to do an excavation from start to finish in one day was helpful in understanding the process of archaeology field work. Harriet said, "the excavation, which was part of the larger historic site we helped survey in 2000, was interesting because it gave a broader picture of the human use of the area than one would see doing just one aspect of the archaeology."

The students helped survey and excavate the hearth, making detailed field notes and collecting pieces of charcoal and several small flakes. The charcoal samples were sent for carbon dating. Field notes, photos, monitoring forms, and site records will be provided to RMC Consultants, Inc. for

detailed analysis, curation, and incorporation into the final report of the multi-year project.

If you would like to incorporate archaeology into your classroom studies and learn more about the history and prehistory of our area, consider signing up for the Project Archaeology workshop that will be offered this fall. See the article in this newsletter for further information.



Feathered Friends Art Contest

Color, draw or paint an original artwork depicting any North American bird, and win great prizes and support local wildlife conservation at the same time!

For entry forms call **Lisa Rawinski at 852-3830.**

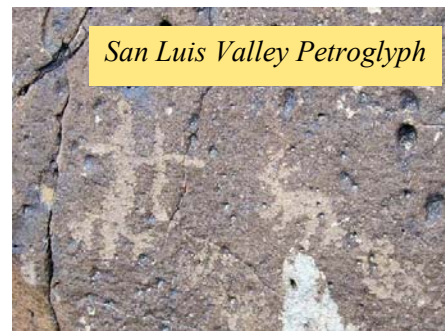
Deadline October 1, 2004

Career Continued from page 1...

Prehistoric rock images, ancient structure foundations made of rock, pottery fragments, and bones are sometimes found. Historic sites, often relating to past mining, logging, or ranching, usually include buildings and other structures.

When archaeological sites are found, artifacts and features are painstakingly documented. Site maps are formulated in order to provide spatial information. After the inventory, reports are written and integrated into the environmental analysis for the project.

Archaeologists and other agency officials also work with Native American Indian tribes in order to learn about and protect important cultural properties important to them such as religious sites or traditional food gathering areas.



San Luis Valley Petroglyph

Protection and preservation of important cultural sites are the main objectives of the Forest Service archaeologist, but interpretation and research are also important. Many of the informational signs you see on the National Forest directly involved archaeologists in the planning effort. Forest Service archaeologists often work with museums, college and university researchers, and vocational groups to address the research potential of the more important cultural sites. For more information on what a Forest Service archaeologist does please contact any Forest Service office.

Cattails Continued from page 1.

cattails to cover their wigwams. Woven cattails were used in the production of rush bottomed chairs.

They wove the leaves into commonly used items: sandals, hats, fans, flyswatters, awnings, baskets, partitions in homes and roof thatching are some examples of ways cattail



Cattails can be eaten like corn on the cob and taste similar to asparagus and artichokes.

leaves made everyday life better.

Cattail Heads

The entire cattail head when saturated with animal fat made an excellent torch. Cattail's golden pollen has been used by the Navajo and Apache in religious ceremonies. The cattail pollen is nutritious, high in protein, and easy to harvest without damaging the plant. Pollen can add extra nutrition and golden color to bread, biscuits, cornbread, pancakes, dumplings, and rice. The golden cattail pollen can be added to smoothies, or sprinkled over yogurt, pudding, and salads. Caution: Folks who suffer from allergies should consult their doctor before incorporating pollen into their diet.

Roots

The Cattail Research Center of Syracuse University found that the

starch extracted from cattail roots contains as much protein as corn or rice and more carbohydrates than potatoes. Cattails also furnish calcium.

The starch is the most abundant during winter months. The extracted starch can supplement or replace wheat flour altogether. Cattail flour can be used to make pancakes, bread, biscuits, cake, and to thicken sauces or gravy. It can be added to cornmeal for johnny cakes. Cattail starch can be used as a sizing for fabrics.

The Iroquois Indians boiled the root to extract a syrup which they used to sweeten foods. Mashed cattail roots have been used as a poultice to soothe bruising. The buds, or "corns," found on the harvested roots are edible. Native Americans and early settlers used these buds roasted or boiled. The modern cook might incorporate them into vegetarian fajita, or stirfry.

Cattail silk is buoyant and water repellent as well as a good insulator. During World War II, the US Navy substituted cattail fiber floss for kapok in life vests, because, at the time, the Dutch East Indies was occupied by the Japanese, which had been the source for the buoyant kapok. The Germans manufactured compressed boards out of cattail floss for heat and sound insulation. In the 1940's the floss was used in a Paris hospital as a dressing for burns.

In winter and early spring when the first green shoots appear, the tender light colored center was regarded as quite a delicacy in the Don Valley, in Russia, where it commonly named Cossack Asparagus. Caution: at this stage of growth, cattail looks like many other wetland plants which are poisonous. It is best not to eat any plant unless you are absolutely sure of what it is.

In the spring the woody stalks shoot up from the base. The flower

spikes resemble two corndogs, end to end. Boil for 10 minutes and serve buttered. There is a woody inedible center, like a corndog. The flavor is little like asparagus and artichoke.

After the female flowers are fertilized, they produce brown cylindrical clusters resembling a brown hotdog. Once mature the female flower explodes into a fluffy mass. Native Americans parched the fluff to extract the tiny seeds imbedded within. The tiny parched seeds were good to eat. Recent studies have indicated that the seeds contain an oil that has some industrial value.

Medicinal Uses

The cattail has been used in many medicinal ways. Ash from the leaves has been used as antiseptic and antibiotic for wounds. Poultices made from the mashed root were applied to cuts, stings and burns. The sticky excretion found at the base of the plant was used by Native Americans as an antiseptic for small wounds and



Cattails were also used to make duck decoys and baskets.

toothaches.



Arte del Horno— The Art of Building an Adobe Oven

By Nicole V. Langley, EarthNest Institute

For many folks in the San Luis Valley, this is the time of year to fire up the family *horno*, that beehive-shaped adobe oven which graces the patios and back yards of many Hispano families in the southern part of the Valley. Be sure to

pronounce it “OAR-no”, leaving off the initial “h”, and if you flap that “r” just right you might pass for one who really knows. About twenty of us gathered at the home of Lynette DePriest, near Sanford, for a muddy-hands-on *horno* workshop offered by EarthNest Institute.



Participants in front of completed horno.

We started with an expert *adobero* to tell the story of the *horno*, and to fill in those important details of placement, texture, and ceremony which make the earth-oven much more than a Moorish back yard appliance. Our expert, Arnold Valdez, a native of San Luis and a life-long appreciator of *horno*-baked chicos and bread, was our *adobero*. He greeted us at the cleared site with: a pile of 200 adobe bricks, buckets, wheelbarrows, tarp, trowels, hoes, shovels, a pile of sand, a bag of straw, plenty of earth, a wire-mesh screen for sieving lumps, and a source of water.

The word “mud” doesn’t do justice to the rich cookie-dough texture and the careful thought which went into concocting our perfect adobe mortar. Responding to the call for “more mud!” wheelbarrow loads of chocolaty mortar were absorbed by increasingly expert flicks of the trowel and the rubbing of many hands into that familiar belly-shaped a traditional Spanish *horno*.

As Arnie explained, “Now that the summer winds are calming down and as fall harvest approaches, it will soon be time for feasts and fiestas. The adobe oven or *horno* is the most efficient cooking device for transforming white corn into

chicos and for baking up to thirty or forty loaves of bread at one time.” Introduced in the Southwest by the early Spanish settlers, the *horno* is still the favorite traditional cook-stove of native American and Hispano people.

At the end of the day, as we placed a ceremonial little corn flower over the doorway of the finished *horno*, we understood why this simple artifact of adobe architecture is still treasured as a beautiful cultural icon in many

communities of the Valley.

Most people think of the *horno* as a Native American invention, but its origin, dates from the Roman occupation of Spain from 192 B.C. to A.D. 411. The Roman cook stove was an earlier version, called the *furnus* (from which we get the word “furnace”). The *horno Árabe*, or the Moorish beehive-shaped

oven we know today, came to Spain from North Africa during the first Moorish invasions in the eighth century. While the rest of Europe suffered from the plague and other Medieval troubles, the 700 years of Moslem rule in Spain left behind the exquisite architecture, algebra, plumbing systems, and the widespread use of adobe.

Learning how to build the *horno* was a valuable cross-cultural experience for EarthNest’s college intern, Ann Amberg, who is completing her B.A. in Integral Ecology at Prescott College, Arizona. Undergraduate and graduate

students from many universities will be earning independent study and field-based credits at EarthNest as they explore the San Luis Valley and her many Nature-based educational resources.

This workshop was one of others to come. It was an introduction to adobe – sun-dried mud brick – construction, including several techniques of mud mortaring and mud plastering. As we learned to place the adobe bricks to create the rounded dome of the oven and the graceful arch of the oven door, I felt this one day, under such excellent instruction, provided a solid basis for more ambitious adobe projects. After all, Mr. Valdez, our humble *adobero* for this project, studied advanced adobe dome construction techniques in India. I asked Arnie which of his many achievements he was most proud of, and I expected him to mention his receiving the John Gaw Meem Award for his thesis on Hispano vernacular architecture, or maybe his Loeb Fellowship of Advanced Environmental Studies at Harvard University Graduate

School of Design. But no. “My happiest achievement was to co-design and supervise construction of the domed adobe chapel of the Capilla de Todos Los Santos, right here at home in San Luis.”

Our Valley has many heroes. EarthNest seeks them out, amplifying

their voices and their teachings by bringing students from far and wide to learn from our people, our traditions, and our land.

After one full day of playing in the mud, and with such a delightful outcome, we all felt ready for greater adobe adventures – and for some nice hot *horno*-baked bread.



Working on the horno

Teacher Resources Page

Everyone Has a Story: Conducting an Oral History

Grades: 5th - 12th
(adaptable)

Group size: One class, split into small groups of 2-3 students

Time: 1 class period for the introduction

1 class period for the interviews if they happen in school (interviews could also take place on a half day field trip or as a homework assignment)

1 class period for final presentations and discussion

Vocabulary: interview, perspective, questioning, characteristic, history, complexity, diversity

Materials: Tape recorders, Clip boards, Pen/pencil, Paper

Location: At school and/or in an appropriate interview location

Safety issues to consider:
Field trip safety, safety during interviews

This lesson plan and the associated oral history transcripts can be found in the new Oral History section of Great Sand Dunes' web site:

<http://www.nps.gov/grsa/resources/overview.htm> Click on the icon that says "Cultures" to get to the Oral History section.

If local students choose to do oral histories on something connected to Great Sand Dunes, their transcripts can be posted on the Dunes' web site. Call Kathy Zelenka for details. 378-6344

Theme

Students will work cooperatively to decide on a theme and investigate it through oral history interviews. Through this work, students will understand that everyone has a story.

Learner outcomes

Students will work together to choose a theme to investigate. (This could be one of the subject categories from the web site or a theme that is specific to your community, centering on a particular significant event, historic building, or tradition.)

Students will describe and demonstrate three good questioning and oral history interview techniques.

State standards addressed

Colorado Content Standards: Reading and Writing 1 – 5; History 2.1, 2.2, (standards 3 – 6 are addressed when a related topic is chosen for procedure #6); Geography 2.1 – 2.3.

Background Information

Oral histories can be good tools for finding out different perspectives, interpretations, and/or experiences of historical events. They can help increase our understanding today of the

complexities of history.

Procedure for Lesson

1. Have students read at least one transcript from the Oral History Interviews on Great Sand Dunes' website. As they read, students will make a list of the types of questions that were asked.

2. Play a game of "20 Questions" with the class, having students write their questions on the board to create a list as the game progresses.

3. Based on the "20 Questions" game and what they read in the oral history transcript, hold a discussion on what the students think were good questions for finding out information and what were less effective. The trend of starting with general, open-ended questions and working towards more specific questions should be discussed.

4. As a class, brainstorm a list of the characteristics of good questions and interview techniques. Have students vote on the top three good questioning techniques. Incorporate these into a rubric for assessing the final projects.

If these ideas have not been brought up in the student-generated list, emphasize the importance of

- a) thinking before an interview about what you'd like to learn and writing down questions beforehand, and
- b) listening more than talking during the interview.

6. As a class, decide a topic to investigate. This could be one of the subject categories from Great Sand Dunes' Oral History Interviews or it could be something more specific to your community, such as an historic event, building, or tradition.

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Teacher Resources Page. . . continued

7. After the topic has been selected, decide who would be an appropriate audience to interview (i.e., family, residents of a nursing home, other students, etc.)

8. Divide the students into pairs or small groups to develop questions and conduct interviews together.

9. Help students set up the interviews, choosing an appropriate location and putting a time limit on the interview, say half an hour.

Each group will prepare an oral presentation based on what they learned about the topic the class was investigating. Students will play a portion of their taped interview and share with the class which questions they asked that got the most interesting answers.

Critical Thinking Questions

Make two lists on the board: one containing reasons why it is important to tell oral history stories and the other containing reasons why it is important to be a good listener when stories are being told. Discuss why each is important and how both ideas support each other.

See the Extension section for an optional critical thinking discussion that could take place after the oral presentations.

Assessment

After the student groups give their oral presentations, the class will grade each group's questions and interview techniques using the rubric students generated in step 4. Participation in discussions and completion of the interview and oral presentation will help assess depth of understanding.

Extensions

As part of their oral reports, student groups will create a collage or drawing that represents what they learned in their interview. As each team reports, their drawing will be added to a "quilt" that the class constructs. After all of the oral presentations, the class will discuss or write about what they thought they knew about the topic before the interviews, what they learned from their own interview, and what they understood about the topic after listening to the whole "quilt" of interviews.

Post transcripts of student interviews that relate to Great Sand Dunes on the Dunes' website. Contact Kathy Zelenka to learn how. 378-6344

*Spotlight on
Agriculture
and Water Education*

Several agricultural and water education opportunities are available for all age groups, covering a number of subject areas. Fall programs include:

Harvest Tours: Tour of a local farm and observe harvest in the San Luis Valley. Visit the fields, talk to producers, and learn how products are transported, stored, and packaged before they reach the grocery store.

River & Riparian Study Center: Experience Rivers and Watersheds like never before! The River and Riparian Study Center provides an interactive and hands-on look at river systems. Learn all about sediment transport, meanders, riparian areas, and channelization. The Study Center can easily be transported to your school, so schedule a viewing today.

The Ground Water Model: Have you ever wondered about the San Luis Valley's supply of groundwater? This educational model illustrates water movement, the relationships between surface water and ground water, how water is replenished or recharged underground, and how it is depleted. The model is available for presentations in your classroom.

To schedule a presentation, please contact:

Angie Graber, Education & Public Affairs Specialist

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