

New Mexico Archaeology

THE NEWSLETTER OF THE FRIENDS OF ARCHAEOLOGY

MUSEUM OF NEW MEXICO FOUNDATION

WWW.NMARCHAEOLOGY.ORG

FEBRUARY 2024

GREETINGS, FRIENDS!

JOHN TAYLOR-MONTOYA
OAS EXECUTIVE DIRECTOR

Before I begin my message, allow me to offer a brief introduction: My name is John Taylor-Montoya; I am the Executive Director for the New Mexico Office of Archaeological Studies.

I began my role as Director here in January 2024, and I can still remember the day I turned in my paperwork at the old Bataan Memorial building in downtown Santa Fe. It was around noon and the sun was shining; a frigid winter breeze was blowing. The breeze brought with it the smell of delicious New Mexican food cooking in nearby restaurants and the unmistakable scent of piñon burning in fireplaces. Despite the cold wind, I felt the warm feeling of home.

New Mexico is my home in more than just a metaphorical sense. I was born and raised in New Mexico, and my family has deep roots in the state. Santa Fe is more than just a place of historic importance or an area with significant archaeological sites. Some of my ancestors, and members of my immediate family, are buried in Santa Fe. To me, this is sacred ground.

I know that I am not alone in my strong connection to New Mexico's shared past, and I feel privileged to now work with a group of folks who share a passion for our history: the Friends of Archaeology. Since

See **Greetings**, on Page 7.



FACING FORWARD

OAS EXECUTIVE DIRECTOR SHARES HIS THOUGHTS ON PAST, FUTURE

JOHN TAYLOR-MONTOYA
OAS EXECUTIVE DIRECTOR

I was born and raised in New Mexico. As a young child, I was one of many poor kids who attended La Luz Elementary in Albuquerque's North Valley. In the school library, I found a book that encapsulated my two greatest loves: art and archaeology. Thus began a fascination with the past that lasts to this day. But my path into archaeology was not just spurred by the discovery of that book.

Growing up, my family didn't have much money. We didn't take vacations to

beaches or Disneyland or exotic locations. Instead, my parents packed a lunch, put gas in the car, and drove to historic sites and monuments throughout the state. Those experiences helped foster my fascination and love for the history and culture of this great state.

My parents had always emphasized education and excelling in school, and there was never a question of whether I would get a college degree. When my art career failed to pan out, I knew that archaeology was the path I would take.

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SORTING IT OUT

New Mexico Office of Archaeological Studies Field Technician Steven Needle and Crew Chief Fiona Shaffer, above, spent a cold winter afternoon shelling and sorting dried beans grown and harvested by OAS Field Technician Isaiah Coan, left, during the 2023 growing season. Instructional Coordinator Chinara Lucero, bottom right, removed dried kernels from several ears of corn also grown in the OAS garden. The beans and corn will be used in education outreach talks and demonstrations offered to communities throughout the state during the upcoming year.



Office of Archaeological Studies

The Office of Archaeological Studies was the first museum program of its kind in the nation. OAS staff conducts international field and laboratory research, offers educational opportunities for school groups and civic organizations, and works to preserve, protect, and interpret prehistoric and historic sites throughout New Mexico.

Friends of Archaeology

The Friends of Archaeology is an interest group within the Museum of New Mexico Foundation that supports the OAS. To join the FOA, you need only become a member of the Museum of New Mexico Foundation and sign up. Visit www.nmarchaeology.org for information. We're also on Facebook, at www.facebook.com/FriendsOfArchaeologyNM.

Mission Statement

The mission of the Friends of Archaeology is to support the Office of Archaeological Studies in the achievement of its archaeological services mandate from the State of New Mexico through participation in and funding of research and education projects.

FOA Board

Chair: Jerry Cooke

Treasurer: Marja Springer

Board Members:

Barbara am Ende, Margaret Armstrong, Joyce Blalock, Donna Coleman, Greg Dove, Susan McMichael, Tom Noble, Jerry Sabloff, and Sherill Spaar

Contributors to the Board:

Shelby Jones, Melissa Martinez, Lauren Paige, Thatcher Seltzer-Rogers, John Taylor-Montoya

LEAVING A LEGACY

ONE MAN'S GENEROSITY CONTINUES TO MAKE A DIFFERENCE AT OAS



Office of Archaeological Studies, at the Center for New Mexico Archaeology.

Leaving a legacy gift to the Office of Archaeological Studies is a powerful way to contribute to the preservation of New Mexico's cultural heritage. Perhaps no one understood this better than Dr. Don Pierce. A former pathologist known for his acerbic wit and flashy sense of style, Pierce retired to Santa Fe, where he became a Museum of New Mexico Foundation member, a Friends of Archaeology member, and a research lab volunteer. Before his death in 2013, Pierce made arrangements for a portion of his \$1.7 million estate to go toward an endowment fund and a capital fund shared by OAS and the Conservation Department of the Museum Resources Division.

Pierce's thoughtful planning led to the creation of one of the most impactful legacy gifts ever received for archaeology and conservation. Today, that gift provides approximately \$40,000 in annual income that continues to support several important research laboratories at OAS.

"Without (the Pierce Fund), our labs would not exist at the capacity that they do," says Shelby Jones, OAS laboratory supervisor. The Pierce endowment fund pays for research time, while his capital fund supports equipment purchase and repairs.

By supporting OAS research and educational programs, legacy gifts of all types and amounts ensure that the stories embedded in the ancient landscapes of

New Mexico will continue to inspire and educate for years to come. Legacy gifts provide direct support for research and education and are invested into endowments managed by the state's fiscal agent and nonprofit partner, the Museum of New Mexico Foundation.

Founded in 1962, to support New Mexico's state museum system, The Museum of New Mexico Foundation currently manages 40 endowments valued at close to \$30 million. These endowments support New Mexico's four state museums, eight historic sites, and the Office of Archaeological Studies. In addition to legacy gifts, which are earmarked for endowments, the MNMF receives other gifts in the form of bequests, beneficiary designations of IRA accounts, stock or bank accounts, and insurance policies or proceeds, together with gifts of art, real estate, and other assets, all of which provide direct support to the state museum system.

Make a lasting impact by donating to the MNMF, and the beloved institutions it supports, by leaving a legacy gift to the Office of Archaeological Studies. We're here to help you consider various options for a gift that is right for you. To get started, contact Lauren Paige, Director of Leadership Giving for OAS at lauren@museumfoundaton.org or (505) 982-2282. For additional information, please visit mnmflegacy.org. ❖

EDUCATION

GOODBYE TO 2023 & HELLO TO 2024!

CHINARA LUCERO
INSTRUCTIONAL COORDINATOR

We wrapped up 2023 with a bang! In November and December, the education team reached a total of 6,752 New Mexicans.

We participated in the Fiber Arts Festival in Santa Fe and the Festival of the Cranes at Bosque del Apache. We also visited a handful of schools and participated in the Department of Cultural Affairs' Winter Tradition Celebrations offered at multiple museums and historic sites throughout the state.

Thanks so much to all the entities that allowed us to share space with them during the 2023 holiday season!

In 2024, the OAS educational team is looking forward to visiting new areas and communities around New Mexico, as well as collaborating with new partners. We are currently booking events at numerous libraries, schools, museums, historic sites, and state parks throughout the state.

For our first event of 2024, the New Mexico Museum of Natural History and Science invited us to join them for their First Friday Fractals event. We brought along our "Touch and Feel" tabletop exhibit, and spent a lovely evening talking about prehistoric archaeology and how basket weaving and ceramic designs relate to fractals. The crowd was excited to learn more and asked a lot of great questions.

We have already received some amazing feedback and have been invited to attend future events at the museum. Not a bad kick-off for 2024! ❖



Scott Jaquith

BACK TO THE 'GAP'

TOUR OF CRESTON AT COMANCHE GAP WILL PICK UP WHERE OCTOBER 2023 TOUR LEFT OFF

Exploring New Mexico's archaeological landscape is never a completed goal. There is always another hill, another valley, another angle of the sun, or another sinuous curve sheltering new inspirations and amazements.

Such is the enchantment of exploring New Mexico's rich cultural history, particularly Comanche Gap and the imposing Creston, one of two volcanic dykes that crisscross the Galisteo Basin. The Creston is a natural boundary between the world of the Pueblos to the north and the Plains Peoples to the south.

The dike is the world-famous location of a rich assortment of rock art that has long attracted the attention of both scholars and the public. Reviewing last October's tour, Susan McMichael quoted Polly Schaafstma's phrase describing Comanche Gap as a "magical place bristling with protective powers." This is indeed the case.

With each footprint along the dike, new images are revealed, inspiring curiosity and contemplation. Standing next to a powerful image fashioned from the deep past is one of the most stimulating experiences

archaeology has to offer.

FOA members and friends will have a second opportunity to experience another chapter of cloud-beings and warriors as we continue our westward journey along the Comanche Gap Creston. This second excursion to Comanche Gap will begin where we left off on the San Cristobal Ranch portion of the dike and will continue over the fence onto New Mexico State Trust Land. The State Trust Land images include some of the most spectacular of the shield figures.

FOA has received permission to conduct several tours over the weekend of May 4 and 5. Each tour will follow the same path. The tours will depart from the parking area in the morning. Tour groups will be limited to 12 participants each. The cost will be equal to or less than \$85 per person. In all cases, the hike is strenuous, requiring that participants clamber over blocky talus slopes with some steep ascents. We will be accompanied on each tour by a State Land Office archaeologist. Please stay tuned to <https://friendsofarchaeology.eventbrite.com> for further details. ❖

BEHIND THE SCIENCE AT OAS

NONDESTRUCTIVE PRETREATMENT FOR RADIOCARBON SPECIMENS

MARVIN W. ROWE, SHELBY A. JONES,
AND GARY SANFORD
OAS RADIOCARBON LAB

The New Mexico Office of Archeological Studies is the site of a very special process that is about to become even more special and unique. Dr. Marvin Rowe developed and operates a unique system for carbon-14 sampling and dating. The usual process of carbon-14 dating results in the destruction (burning) of a fairly large organic sample to obtain the ratio of carbon-12 to carbon-14 required to determine a sample's age. Dr. Rowe's process, however, uses a plasma to extract a VERY small amount (milligrams) of carbon-12 and -14 from the sample in the form of a gaseous CO₂. These amounts are so small that the process may be called "nondestructive." Most of the time the sample is large enough, and the effect on the object is so minimal, such that to the naked eye there is not any change to the object at all.

One challenge has been learning how to clean samples prior to performing Dr. Rowe's process. This is done to remove organic contaminants that may interfere with obtaining carbon dioxide gas sample from the targeted material. Years ago, Dr. Rowe experimented with a pretreatment technique utilizing supercritical carbon dioxide to perform this "cleaning." During preliminary studies, the use of supercritical carbon dioxide resulted in "nondestructive" cleaning of the sample, which has no visible effect on the specimen. Using a nondestructive pretreatment to remove contaminants and nondestructive plasma sampling, the end result has NO EFFECT AT ALL on specimens! You can see that this would be the process of choice for irreplaceable or fragile archeological specimens.

A substance is defined as a supercritical fluid (SCF) when both the temperature and pressure are above the substance's critical point. At these usually very high values, distinct liquid and gas phases do not exist and the SCF demonstrates properties of both gases and liquids in an intriguing manner. One unusual behavior is its high solubility of organic molecules,



OAS volunteer Gary Sanford has built an operating supercritical fluid (SCF) system (or multiple systems). The first unit is now complete, and OAS is ready to begin detailed testing of the device.

which has many applications.

SCFs are used for purposes ranging from the extraction of natural fragrance from flowers to creating decaffeinated coffee, to applications in food science, pharmaceuticals, cosmetics, biotechnology, fossil and biofuels, microelectronics, and dry cleaning.

Extraction of organic chemicals from a material using SCFs is a fairly simple concept and is often more efficient than normal extraction methods. SCFs allow continuous extraction using common, inexpensive, and more importantly non-toxic materials. The first step is to select a solvent to expose to high temperatures and pressures in the laboratory, allowing it to reach the SCF state. The most commonly used solvents are CO₂ and water (H₂O) because of their availability, their relatively low critical point

temperatures and pressures, and their non-toxicity. The critical point of CO₂ is 305K (89.3°F) and 72.9 atmospheres; any pressure and temperature greater than both these values allows CO₂ to exist as a SCF. For certain applications, it is helpful to add a polar substance, like methyl alcohol to the CO₂ or H₂O solvent mixture to enhance cleaning properties.

The second step of the extraction involves exposing the target material to the supercritical solvent. Returning to the coffee bean example, caffeinated beans are exposed to SCF-CO₂, the SCF-CO₂ permeates through the bean carrying out the caffeine in a dissolved state. The SCF-CO₂ and caffeine mixture can be depressurized and cooled, which allows the CO₂ to vent off as a gas. This leaves the extracted caffeine behind, separate from the now

See **Science**, on Page 6.

TOUR

FOA PLANS TWO-DAY TRIP TO FORT STANTON

Friends of Archaeology is planning a two-day trip to Fort Stanton in southern New Mexico this April.

Situated on 240 acres and including 88 structures, Fort Stanton is the most intact Territorial-era fort in the Southwest.

Established in 1855, Fort Stanton has a rich history and unique built environment. The fort was involved in numerous nineteenth century conflicts, including the Civil War, the Lincoln County War, and the Apache Wars.

Following the fort's decommission in 1896, Fort Stanton was re-purposed as the nation's first federal sanatorium and, until 1952, was a leading medical research center for the treatment of tuberculosis. During World War II, it also became the site of the first German internment camp in the United States.

In 1952, the State of New Mexico took control of Fort Stanton. The site assumed



The chapel at Fort Stanton.

a variety of roles including a tuberculosis hospital, a treatment center for people with severe disabilities, a prison, and a drug-rehabilitation facility.

On Friday, April 12, at 5:30 p.m.,

tour participants will meet for a group dinner at a nearby restaurant in Ruidoso. After dinner, Dr. Oliver Horn, regional manager of the Fort Stanton Historic Site, will offer a lecture on the history and importance of Fort Stanton and the fort's status as a historical site. On Saturday, April 13, Horn will lead a 4 hour walking tour of the grounds. The tour will begin at 10 a.m.

Tour organizers are currently arranging for Friday night lodging, at a special group rate, at a nearby hotel in Ruidoso Downs (Best Western or similar). Participants will be responsible for their own motel and dinner costs. More details about this trip will be available after sign-up. Please be aware that this trip is limited to 14 participants.

Cost of this tour is \$135. Sign-up starts at 7 a.m., Monday, March 18, at <https://friendsofarchaeology.eventbrite.com> ❖

SCIENCE

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decaffeinated bean. Depending on the application, the extracted organic substance is viewed as a waste material (the caffeine during the decaffeination process) or the sellable good (the natural fragrance or essential oil from plants).

So, what is SCF's application at the Office of Archaeological Studies?

The traditional pretreatment preparation of samples for radiocarbon (C-14) sampling and dating involves washing the material in a 50°C (122°F) bath of sodium hydroxide (NaOH, a common ingredient in drain cleaner). Unfortunately, typically, one- to two-thirds of a sample is destroyed in that process; yet it was considered a necessary evil to ensure that the target material was free of any contaminating carbons. Over the years, other less caustic methods have been suggested and used effectively to clean C-14 samples prior to dating, but none can truly be called nondestructive.

In the early 2010s, Rowe first suggested

that contaminate extraction using SCFs could be an efficient and nondestructive means of pretreating archaeological artifacts for radiocarbon dating. That thought resulted in a collaboration with a number of colleagues (from the Los Alamos National Laboratory, the University of Arkansas–Fayetteville, and the University of Colorado). A joint manuscript was published describing those preliminary results (Rowe et al. 2013).

After one of Rowe's colleagues, Dr. Jerry King, Professor Emeritus of Engineering at the University of Arkansas–Fayetteville, retired, he offered enough of his excess equipment such that OAS could build their own SCF cleaning device, in support of the radiocarbon plasma oxidation sampling laboratory.

Gary Sanford, a retired engineer and an OAS volunteer, undertook the arduous task of selecting the appropriate parts from King's gift and recombining them to build an operating SCF system (or multiple systems). Due to Mr. Sanford's dedication and knowledge, the first SCF unit is now complete, and we are ready to begin

detailed testing of the device to evaluate its efficacy for cleaning archaeological artifacts before radiocarbon dating. ❖

Reference:

M. W. Rowe, J. Phomakay, J. O. Lay, O. Guevara, K. Srinivas, W. K. Hollis, K. L. Steelman, T. W. Stafford, Jr., S. L. Chapman and J. W. King 2013 Application of supercritical CO₂ co-solvent mixtures for removal of organic material from archaeological artifacts for radiocarbon dating, *Journal of Supercritical Fluids* 79:314-323. <https://doi.org/10.1016/j.supflu.2013.01.002>

OAS IS LOOKING FOR VOLUNTEERS!

If you are interested in doing volunteer work at the New Mexico Office of Archaeological Studies, send an e-mail to our volunteer coordinator, Shelby Jones, at shelby.jones@dca.nm.gov. Hurry! Our new program starts this fall.

FORWARD

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My career in archaeology began in earnest while studying at the University of New Mexico, where I received a Bachelor of Science degree in Anthropology with a minor in Geography. It was at UNM that my interest in lithic technology and early hunter-gatherers (Paleolithic and Paleoindian) first began.

Graduate school and other career opportunities took me out of state for a while. I earned a Master of Arts degree at the University of Oklahoma and, later, a Doctorate from Southern Methodist University. At SMU I had the chance to study under renowned Paleoindian archaeologist David Meltzer.

My path in public archaeology began more than 20 years ago when I worked for the Oklahoma State Archaeologist. I've taken a few twists and turns since, but I returned to New Mexico in 2012, in order to run the regional office of R. C. G. & A, Inc.

When I took over that office, the company was not well known in the Southwest. We had one local client and an inexperienced staff. In two years, all eligible staff had acquired their required permits, our client list had expanded, and we were managing a multi-million dollar project for a high-profile energy company.

Four years later, we had become a highly competitive firm in a challenging market and our corporate footprint had expanded beyond the state of New Mexico. Nearly a decade later, my office was acquired by another cultural resource management firm where I served as director of the Albuquerque office prior to starting my time at the New Mexico Office of Archaeological Studies. ❖

BROWN BAG TALK

TALK ON CHASING THE PLUMED SERPENTS OF THE SOUTHWEST

Explorer and engineer Ron Barber will offer a special brown bag lecture starting on Wednesday, March 6, at noon at the Center for New Mexico Archaeology.

This talk will focus on the significance of the plumed, horned, and/or crested serpent depicted in rock art at many sites up and down the Rio Grande corridor, into Mexico, and into the Four Corners region.

In some locations, these serpents appear to have horns. In some cases, they have a combination of both horns and plumes. In other cases, the crest is unclear. The appearance of plumed or horned serpents in the Southwest has been widely attributed to the infusion of the Mesoamerican plumed serpent ideology from the highlands of Mexico. This theory is challenged, however, by the horned serpent imagery itself, which appears very early in the Southwest, particularly in Utah Basketmaker and Barrier Canyon style sites and likely had an early influence on Ancestral Puebloan cultures. The early horned serpent ideology may have fused together with the plumed serpent to form the combined horned and plumed serpent imagery seen at discrete locations in the Southwest.

This presentation will summarize crested serpent rock art locations, regional styles, and temporal sequences and compare them to other mural and ceramic images.

Ron Barber is a mechanical engineer with 40 years of experience at national laboratories in California and New Mexico. He has applied his engineering background to develop a systematic approach to surveying and identifying glyphs for potential study, as well as developing three-dimensional models of the interaction of light and sun.

Barber began working on the Stone Calendar Project about 13 years ago. The study focuses on petroglyph panels and their relation to light and shadow calendars used by many indigenous cultures throughout the Southwest. His team has worked with the National Park Service, the National Forest Service, the Bureau of Land Management, numerous Native tribes, and private landowners to identify calendrical sites and to assist in cultural interpretation. The study continues to branch out into many other interesting sidetracks, the lecture "Chasing the Plumed Serpents" being one of them.

This talk will be held in the OAS library at the Center for New Mexico Archaeology. Seating is available on a first-come, first-served basis. This talk will be held **Wednesday, March 6, 2024, at noon**. The lecture will be provided in an online format, either on the Friends of Archaeology Facebook page or the FOA YouTube channel. ❖

GREETINGS

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joining OAS, I have had the opportunity to meet the Friends of Archaeology Board and I have spoken with several members. I have learned a lot about the great things FOA is doing and I look forward to learning more as we work together. I am really excited about exploring new opportunities and taking the partnership of OAS and FOA to new places.

We are going to do great things together. And by "we" I don't just mean myself and the FOA. There is also an outstanding staff here at OAS, with technical expertise in a number of fields including prehistoric

ceramics, prehistoric lithic technology, and human osteology.

You are no doubt familiar with the great work being done in our labs. But you should also know that we are working on many new and exciting developments as well. You also already know our outstanding production and publications staff, who transform our work into quality professional products and also produce the Friends of Archaeology newsletter. We all have so much to share and we are looking forward to sharing it with you.

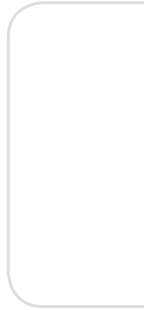
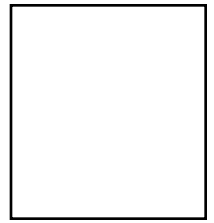
Saludos Cordiales,
John Taylor-Montoya



MUSEUM OF NEW MEXICO FOUNDATION

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BROWN BAG TALK

LECTURE FOCUSES ON 60 YEARS OF ARCHAEOMAGNETISM IN THE U.S.

In the early 1960s, scientists began using paleomagnetism and geomagnetism for applications in archaeology, bringing the field of archaeomagnetism to the United States. Since then, eight scientists and their students have amassed a dataset of over 51,000 specimens and respective data from over 5,377 archaeodirectional sites. Most of the research was conducted with an enterprise mindset, resulting in few academic publications, many of which are in hard-to-access reports. When published, data were usually presented as interpretations and were generally averaged using statistical conventions different from today's standards. As such, very little archaeomagnetic data are accessible, leading to limitations in global field modeling and archaeomagnetic dating

curve development.

Shelby Jones, PhD, has salvaged the surviving data for almost the entirety of the US's archaeomagnetic records. As the laboratory supervisor and a project director for OAS, she continues her work with this massive database and sample library, ensuring its accessibility for ongoing research. Join OAS and FOA to learn about archaeomagnetism, past research using the dataset, and how the dataset contributes to global initiatives.

This free talk will be held in the OAS library at CNMA. Seating is available on a first-come, first-served basis. The talk is on **Wednesday, March 27, 2024**, at noon. The lecture will be provided in an online format, either on the Friends of Archaeology Facebook page or the FOA YouTube channel. ❖

MAKE YOUR MARK ON NM ARCHAEOLOGY!

Please consider supporting the Office of Archaeological Studies by making a gift to education or research by check, credit, stock, IRA rollover, or planned gift. Your tax-deductible donation through the Museum of New Mexico Foundation will have a lasting impact. One hundred percent of your donation will be directed to the OAS. No administrative fees are charged. Give online: museumfoundation.org/give/. For questions, or to donate, contact Lauren Paige, at (505) 982-2282, or via e-mail at lauren@museumfoundation.org.

