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american archaeology

SPRING 2013

a quarterly publication of The Archaeological Conservancy

Vol. 17 No. 1

Saving Shipwrecks

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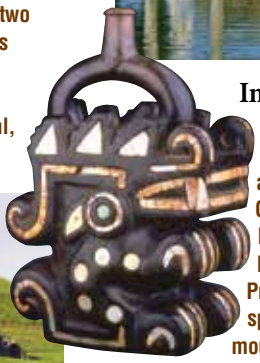

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Travel the lush tropical islands of Java, Sulawesi and Bali with Prof. Richard Cooler, Northern Illinois U. Highlights include the legendary Borobudur and Prambanan temples, a spectacular trip through mountain villages to the Dieng plateau, Solo's old Javanese culture and the largest temple complex in Indonesia at Panataran. We will spend four days studying the distinctive architecture and funerary rituals of Tana Toraja and end our tour with five days in the magical paradise of Bali. In addition, we have commissioned private musical and dance performances throughout our tour.

Ancient Rome (12 days)

Examine the monuments of each historical period of Rome as a unit with Prof. Myles McDonnell, Baruch College, CUNY. We begin with Early Rome and the Etruscans, Republican Rome and Rome of the Caesars, Late Republican and Augustan Rome, Early Empire, High Empire and Christian Rome, and end with the Imperial Palaces of the Later Empire. We will spend a day at the ancient port, Ostia Antica, and another at Tivoli, visiting Hadrian's Villa. By looking beneath the contemporary levels of the city we will rediscover significant parts of the ancient city that still exist on the banks of the Tiber.

Byzantine to Baroque (12 days)

Travel from Assisi to Venice with Prof. Ori Z. Soltes, Georgetown U., as we trace the development of art and history in both the Eastern and Western Christian worlds. After four days in Assisi and medieval Cortona, we continue to Arezzo, Padua and Ravenna, where we will see churches adorned with some of the richest mosaics in Europe. Our tour ends with three glorious days in Venice. Throughout we will experience the sources of visual inspiration for a thousand years of art.

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COURTNEY MICHALIK/INDIANA UNIVERSITY

ILLINOIS STATE ARCHAEOLOGICAL SURVEY

COVER: Underwater archaeologist Charlie Beeker holds several solid silver platters from the *Nuestra Sedonia Begoña,* an18th-century Spanish ship that sank off the coast of the Dominican Republic. The platters, which weigh about 35 pounds, are sealed together by concretion.

CREDIT: Courtney Michalik/Indiana University

Lay of the Land

LIZ LOPEZ

Mark Michel, President

Archaeology and Conservation Management

Across America, ecologists, wildlife managers, and conservationists are working to restore native species and native habitats to areas that have been heavily altered by humans. Hundreds of land trusts as well as governmental organizations are hard at work trying to recover some of America that has been damaged or lost. So how do they know what plants and animals were there prior to being disrupted by humans or changed by environmental forces like climate?

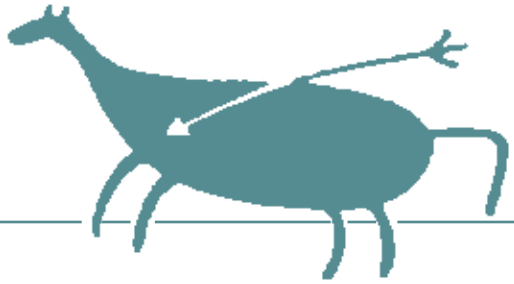
In this issue of *American Archaeology* (see "Where the Prehistoric Buffalo Roamed," page 39), we examine the role of archaeology in recreating the past ecosystems of America. For the last 50 years, archaeologists have been recovering plant and animal remains from ancient sites dating back more than 10,000 years. This data can then be used to re-create the ecosystem over a long course of time and tell us what plants and animals were present in a particular time period. Using this evidence, conservationists can intelligently plan restoration projects with a high degree of accuracy.

For example, when the National Park Service studied the issue of restoring wolves to Yellowstone National Park, the archaeological record proved beyond a doubt that wolves were there for thousands of years. The archaeological record can re-create the ecosystems of Eastern rivers, telling us, for example, which mussels (now long gone) were present over time. This in turn can tell us what the river was like—warm, muddy, slow moving, etc.

This is a great opportunity for archaeologists and conservationists to join forces to better understand past environments and restore some of them for public enjoyment.

Mark Michel

Letters



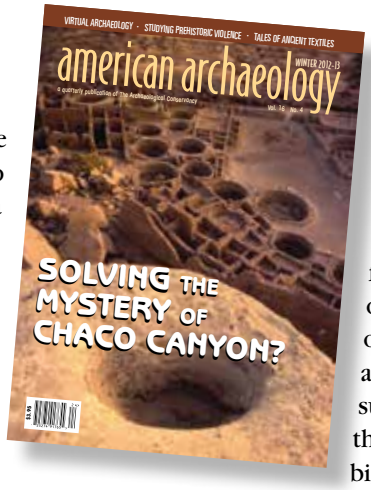
Pointless Barking

I was bemused to see my current Chaco work treated like a joke or a crackpot theory, which it is not. You'll have to take my word for it; readers won't learn much from "Chaco through a Different Lens" (Winter 2012-13) about how the *altepetl* might help us better understand Chaco. The writer, Mike Toner, chose instead to compile startled reactions from my archaeological friends.

Joseph Needham, the historian of science in China, endured similar guff from his colleagues, who knew for a certainty that science started with Thales and Pythagoras. Needham consoled himself with an Arab proverb: "The dogs bark, but the caravan moves forward." Toner's article, alas, was more about the barking than the caravan.

Please see "Chaco through the Looking Glass" at www.stevelekson.com.

Stephen H. Lekson
Curator of Archaeology and
Professor of Anthropology
University of Colorado
Museum of Natural History
Boulder, Colorado



Assessing the Evolution of Chaco

Steve Lekson's article "Chaco, Through a Different Lens" identifies an often overlooked aspect of settlement pattern at Chaco Canyon: that substantial settlements that likely supported the big towns in the Canyon were located in the drainages surrounding but outside of the Canyon.

Years ago my colleagues and I described this phenomenon as the "Chaco Halo."

A challenge for future researchers is to determine how much time depth is associated with this pattern to assess the evolution of the Chaco Canyon system. Whether or not this pattern has any connections to Mesoamerica remains to be seen, but as Lekson has previously observed, the few Mesoamerican elements present there seem to appear as embroidery on an Anasazi fabric.

Lekson may believe that in his latest version "he has solved the mystery" of Chaco, but there are clear reasons to remain skeptical.

David E. Doyel, Ph.D.
Scottsdale, Arizona

Sending Letters to *American Archaeology*

American Archaeology welcomes your letters. Write to us at 5301 Central Avenue NE, Suite 902, Albuquerque, NM 87108-1517, or send us e-mail at tacmag@nm.net. We reserve the right to edit and publish letters in the magazine's Letters department as space permits. Please include your name, address, and telephone number with all correspondence, including e-mail messages.

Editor's Corner

Charlie Beeker was grappling with one of archaeology's big problems: how to prevent looting. One typical method is to store artifacts in a museum. Beeker, the founder and director of Indiana University's Office of Underwater Science, chose this method, but he's gone about it in a way that's anything but typical. (See "Museums Under the Sea," page 26.)

Beeker does his work underwater, excavating historic shipwrecks in the U.S. and the Dominican Republic. Raising and conserving the remains of ancient vessels and their associated artifacts is both difficult and expensive, so why not leave the shipwrecks in situ, and make the site a museum?

"We see the oceans and seas as a great museum," said Jim Delgado, the director of maritime heritage for the National Oceanic and Atmospheric Administration's National Marine Sanctuaries Program. Indeed, NOAA has 14 underwater museums that feature thousands of shipwrecks.

Beeker has established a number of underwater museums in the Dominican Republic, Florida, and California. In addition to preserving the shipwreck, he also preserves the ecosystem that has grown on and around the vessel's remains.

There are no glass cases or underwater guards to protect these shipwrecks from treasure hunters; nonetheless, the concept has proven effective in thwarting looters. And visitors—divers and snorkelers, in this case—can have an experience they won't get in a typical museum.

Michael Bawaya

WELCOME TO THE ARCHAEOLOGICAL CONSERVANCY!

The Archaeological Conservancy is the only national nonprofit organization that identifies, acquires, and preserves the most significant archaeological sites in the United States.

Since its beginning in 1980, the Conservancy has preserved more than 450 sites across the nation, ranging in age from the earliest habitation sites in North America to a 19th-century frontier army post. We are building a national system of archaeological preserves to ensure the survival of our irreplaceable cultural heritage.

Why Save Archaeological Sites?

The ancient people of North America left virtually no written records of their cultures. Clues that might someday solve the mysteries of prehistoric America are still missing, and when a ruin is destroyed by looters, or leveled for a shopping center, precious information is lost. By permanently preserving endangered ruins, we make sure they will be here for future generations to study and enjoy.

How We Raise Funds:

Funds for the Conservancy come from membership dues, individual contributions, corporations, and foundations. Gifts and bequests of money, land, and securities are fully tax deductible under section 501(c)(3) of the Internal Revenue Code. Planned giving provides donors with substantial tax deductions and a variety of beneficiary possibilities. For more information, call Mark Michel at (505) 266-1540.

The Role of the Magazine:

American Archaeology is the only popular magazine devoted to presenting the rich diversity of archaeology in the Americas. The purpose of the magazine is to help readers appreciate and understand the archaeological wonders available to them, and to raise their awareness of the destruction of our cultural heritage. By sharing new discoveries, research, and activities in an enjoyable and informative way, we hope we can make learning about ancient America as exciting as it is essential.

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Events

MUSEUM EXHIBITS • TOURS • FESTIVALS • MEETINGS • EDUCATION • CONFERENCES

❖ NEW EXHIBITS

UNIVERSITY OF NEBRASKA STATE MUSEUM

University of Nebraska State Museum

Lincoln, Nebr.—The first peoples of the Great Plains transformed the natural resources of this diverse region into tools, food, clothing, and shelter. In turn, their solutions to the challenges of life on these vast grasslands became cultural traditions that also shaped language, marriage, artistic expression, and religion. Discover these enduring traditions in "First Peoples of the Plains: Traditions of Land & Sky," the newly renovated exhibit gallery that celebrates Native American cultures of the past and present. (402) 472-2642, www.museum.unl.edu (Ongoing)

ANCHORAGE MUSEUM

Anchorage Museum

Anchorage, Alaska—"Dena'inaq' Huch'ulyeshi: The Dena'ina Way of Living" is the first comprehensive exhibition about Dena'ina Athabascan people. This groundbreaking exhibit features about 200 Dena'ina objects from museums across the globe such as sinew-backed bows, arrows fletched with hawk feathers, caribou skin clothing adorned with woven quill work, antler war clubs, beaded bags, birch cradles and baskets. Dena'ina history and culture are brought to life through these artifacts as well as traditional art, music, storytelling, re-created settings, and hands-on activities. (907) 929-9200, www.anchoragemuseum.org (Through January 2014)

MUSEUM OF INTERNATIONAL FOLK ART/KITTY LEAKEN

Museum of International Folk Art

Santa Fe, N.M.—The new exhibit "New World Cuisine: The Histories of Chocolate, Maté y Más" tells the tale of the earliest cultural mixing to take place in the Americas through food. The exhibit highlights foods that originated in the New World and foods that were brought over from Europe via Spain and Asia via the Spanish Manila Galleons. More than 300 objects related to food harvesting, preparation, table settings, kitchen items, and utilitarian and decorative implements illustrate the rich culinary traditions of the Americas. (505) 476-1200, www.internationalfolkart.org/exhibitions (Through January 4, 2014)

Bowers Museum

Santa Ana, Calif.—Arts from the sophisticated pre-Columbian cultures of Mexico and Central America are highlighted in "Pre-Columbian Exhibits," a series of galleries displaying the power and sophistication of the mysterious cultures that rose and fell in ancient America. The ceramic and stone arts of West Mexico, Costa Rica, and Panama are featured. A gallery devoted to the famous "Limestone Tomb of Lord Pacal" includes a life-size reproduction of the elaborately decorated and highly symbolic limestone sarcophagus excavated at the pyramid in the Maya city of Palenque in Chiapas, Mexico. (714) 567-3600, www.bowers.org (Ongoing)

PAWNEE INDIAN MUSUEM

Pawnee Indian Museum

Republic, Kans.—A new temporary exhibit "Edward S. Curtis Photographs: a Sacred Legacy" showcases numerous Curtis photographs, some of which are original prints from the early 1900s. This rare exhibit will be displayed in four-month installments, with the first being Plains Indians, the second Southwestern tribes, the third Northwestern tribes, and the fourth native people of Alaska. (785) 361-2255, www.kshs.org/pawnee_indian (Through September 30)

MUSEUM ASSOCIATES/LACMA

Los Angeles County Museum of Art

Los Angeles, Calif.—A selection of 38 masterworks of Maya art is the focus of the new exhibit "The Ancient Maya World: Masterworks from the Permanent Collection." In Classic-period Mesoamerica (A.D. 250–900), the Maya organized themselves into a network of independent kingdoms ruled by a divine lord or k'uhul ajaw. Each kingdom competed with one another for resources and trade. Although the Classic Maya never achieved political unification, the mutual emphasis on divine kingship, a shared calendar, and the widespread use of an elite hieroglyphic script attest to a common worldview. These works of art adhere to a strict set of artistic and stylistic conventions, principles that reflect ancient Maya cosmology and stand as the source material for understanding both the ancient people and their living descendants. (323) 857-6000, http://lacma.org/art/exhibitions/installations (Through October 30, 2013)

❖ CONFERENCES, LECTURES & FESTIVALS

Arizona Archaeology Expo and Heritage Awareness Month

Events, exhibits, and other activities will be held statewide through the month of March, many of them free. The theme is "Life on the Edge: Feast or Famine in Arizona's Past."The Arizona Archaeology Expo will be held on March 16 at the historic Agua Fria National Monument, featuring archaeology-related hands-on activities, craft demonstrations, special displays, and other educational events. Cultural and historical demonstrations, talks by archaeologists, interactive activities, and tours of local sites will help make the past come alive. www.azstateparks.com

Middle Atlantic Archaeological Conference

March 7-10, Cavalier Hotel, Virginia Beach, Va. The conference will focus on the latest archaeological research in the Middle Atlantic region that reaches north to south from New York to Virginia, and east to west from the Atlantic Coast to West Virginia. There will be paper and poster presentations, discussion groups, special workshops, and tours to local sites. www.maacmidatlanticarchaeology.org/conference.htm

Society for California Archaeology Annual Meeting

March 7-10, Doubletree Marina, Berkeley, Calif. The plenary session theme "The Past is Our Present: California Archaeology for a Modern World" will examine the ways in which archaeology is relevant to the major events and concerns of our time. Symposia, papers, and posters will focus on this relationship. A full day symposium will be held on the prehistory and history of Baja California. (530) 342-3537, www.scahome.org

Southwest Seminars "Ancient Sites, Ancient Stories II" Lecture Series

March 19-May 27, Mondays at 6 p.m., Hotel Santa Fe, NM. This weekly lecture series honors the work of The Archaeological Conservancy with fascinating lectures by distinguished scholars. (505) 466-2775, www.southwestseminars.org

Natchez Powwow

March 23-24, Grand Village of the Natchez Indians, Natchez, Miss. Traditional Native American dancing, traditional foods, and crafts will be featured at the 23rd annual Natchez Powwow. From 1682 to 1729, the Grand Village was the tribe's main ceremonial center. It's now a National Historic Landmark featuring a museum, a reconstructed Natchez house, and three ceremonial mounds. Contact Chuck Borum at (601) 442-0200, cborum@hotmail.com, or go to www.natchezpowwow.com

Society for American Archaeology

April 3-7, Hawaii Convention Center, Honolulu, Hawaii. This year's meeting will include poster sessions, symposia, paper presentations, an exhibit hall, and local excursions. An authentic Hawaiian lu'au will be held Saturday at the Bernice Pauahi Bishop Museum. (202) 789-8200, www.saa.org

International Rock Art Congress

May 26-31, Marriott Pyramid North, Albuquerque, N.M. Hosted by the American Rock Art Research Association, this year's meeting includes professional and avocational rock art researchers and preservationists from around the world. The meeting's theme "Ancient Hands Around the World" is meant to bring together the diverse interests of the many people who study and work to conserve rock art in all countries. The congress features lectures, poster presentations, and field trips. Contact Donna Gillette at (805) 343-2575, rockart@ix.netcom.com, or go to www.IFRAO2013.org

Evidence of Early, Widespread Cacao Usage

Cacao has been found in vessels ranging from Florida to Utah.

Analyses of pre-Columbian ceramic vessels from the Southeast, Midwest, and Southwest indicate that cacao usage was more widespread in what is now the U.S. and that it began earlier than previously thought. Researchers said they've found traces of cacao, a beverage produced from the beans of the Theobroma cacao tree, which is native to the tropical areas of the Americas, in vessels from Mississippian sites in Arkansas, Missouri, Florida, Mississippi, Illinois, and other areas. These vessels date from the 11th to the 14th centuries. The researchers also found cacao on ceramics from an 8th-century site in Utah, which is the oldest evidence of cacao in the U.S.

PRESIDENT AND FELLOWS OF HARVARD COLLEGE, PEABODY MUSEUM OF ARCHAEOLOGY NUMBER 33-44-10/3040 (DIGITAL FILE #15930213)

Traces of cacao were found on this abajo red-on-orange bowl from Alkali Ridge Site 13.

Dorothy Washburn, an archaeologist with the University of Pennsylvania's University Museum, and chemists William Washburn (Dorothy's husband) and Petia Shipkova of Bristol Myers Squibb, analyzed vessels from a number of sites in the Southwest, Southeast, and Midwest. Cacao was previously found on ceramics at Chaco Canyon and other sites in the Southwest, but the earliest evidence of usage dated to the 11th century. There is no previous evidence of cacao in the Southeast and Midwest.

William Washburn and Shipkova used high performance liquid chromatography and mass spectrometry analyses of samples collected from the vessels to detect residues of theobromine, a chemical compound that's the biomarker for cacao. Testing of 11th- and 12th-century ceramics from Cahokia and other Mississippian sites in the Midwest revealed traces of cacao in some of the 56 different vessels analyzed. They also found theobromine on ceramics from 13th- and 14th-century sites in several areas in Arkansas, Mississippi, and Florida.

The researchers found traces of theobromine and caffeine, both of which occur in cacao, in vessels tested from Site 13 and from other sites on Alkali Ridge in southeastern Utah and from two Pueblo I (circa A.D. 700-900) sites in Colorado. Consultation with botanical experts ruled out the possibility that the theobromine and caffeine could have resulted from a plant native to the area. They've published their findings on the Southwest ceramics in an on-line article in the *Journal of Archaeological Science*. An article on their research concerning the Southeast and Midwest ceramics is under review by the journal *American Antiquity*.

"We suggest that cacao consumption was a practice that was brought north by migrating people, both into the Southwest, Midwest, and the Southeast," said Dorothy Washburn, pointing to the new, non-local ceramic vessel forms, many with new decoration systems as evidence for these migrating groups. "These discoveries on over 150 vessels we have tested now open the door to further research. The question is no longer whether cacao is present in the U.S., but what does this presence mean in terms of interaction with the source, Mesoamerican states that are known to have consumed it as a stimulating drink." —*Tamara Stewart*

Ancient Shaman Stones Discovered in Panama

Unusual stones suggest 5,000-year-old rituals.

A cache of nearly 5,000-year-old stones found in Panama could be the earliest known material evidence of shamanistic practice in lower Central America. The stones were found during an excavation led by Ruth Dickau, an archaeologist at the University of Exeter, in England.

"It's important evidence of a ritual practice—we believe by a shaman or healer— almost 5,000 years ago, living within a society that was practicing some horticulture, but still moving around the landscape." Dickau said.

Dickau unearthed the cluster of about a dozen stones roughly 20 inches below the surface behind a boulder in the back of a prehistoric rock shelter near the town of Boquete, in 2007. A report about the find was recently published.

The way the stones were piled suggests that they were probably stored inside a bag or basket, which subsequently decomposed, she said. Charcoal found in a soil layer directly beneath the stones was radiocarbon dated to 4,800 years ago and charcoal in a layer above them was dated to about 4,000 years ago. Before the stones were discovered, the earliest material evidence related to shamans in Panama and neighboring Costa Rica dated to about 1,800 years ago.

Richard Cooke, archaeologist at the Smithsonian Tropical Research Institute in Panama, who co-authored the report, said the stones suggest a degree of cultural continuity in the area for many thousands of years.

RUTH DICKAU

These stones from the ancient cache indicate shamanistic practices.

Present-day shamans from nearby indigenous tribes and in Central and South America use similar stones that they keep in pouches. Shamans used unusual stones for divination and for curing and diagnosing illnesses. Dickau said the stones act as a conduit for shamans to communicate with the spirit world. In some rituals, the shaman chants and blows smoke over the stones. If the stones move, that indicates a response from the spirits, which the shaman interprets.

According to Stewart Redwood, a consulting geologist, the cache includes several types of quartz, chalcedony, and magnetic stones, possibly from the mountainous central area of Panama and Costa Rica. One stone was fashioned into a cylindrical tool and one was naturally eroded into a shape similar to a flower. Dickau said they are different from other stones unearthed at the site that were used for tool making and food processing.

The rockshelter, known as Casita de Piedra, was first occupied 9,300 years ago, based on a radiocarbon date of charcoal in the lowest cultural stratum. Throughout its history, the rockshelter was probably used for extended periods as a camp for hunting and domestic activities, she said. It continued to be used for about 1,000 years after the cache of stones was left there. *—Paula Neely*

Discovery Offers New Clues to Hunley's Fate

The Confederate submarine could have been too close to the Union ship it sank.

Recently discovered remnants of a torpedo system used by *H.L. Hunley* indicate that the legendary Civil War submarine could have been just 18 feet away from the USS *Housatonic* when it detonated a spar-mounted explosive charge that destroyed the Union ship, according to Michael Scafuri, archaeologist at Clemson University's Warren Lasch Conservation Center.

The new evidence may help solve the lingering mystery about why the innovative hand-cranked submarine and its eight-man crew vanished after completing the first successful submarine combat mission several miles off the shore of Charleston, South Carolina on February 17, 1864.

The shattered remains of the copper charge's casing bolted to the tip of a spar, a long pole that was attached to the lower bow of the *H.L. Hunley*, were revealed this winter after conservators removed a concreted layer of sand, shell, and marine organisms.

"You can see how the sleeve of the torpedo was peeled back by the force of the explosion like a petal. It's one of the most significant discoveries in the course of this project," said Scafuri.

Based on the discovery, researchers now know that a two-foot torpedo was positioned under the stern of the *Housatonic* and possibly triggered while it was still attached to the 16-foot spar. "It was risky, but it was done with a sense of urgency. They needed to break the blockade that was strangling Charleston," he said.

Knowing the location of the sub and the strength of the blast will enable the research team to virtually recreate the event and learn what happened to the sub and crew. It's possible that shockwaves from the explosion may have rendered the crew unconscious or even killed them, Scafuri said. Archaeological excavations have revealed that the crewmembers were sitting at their stations when they died. There was no evidence of any attempt to escape the sub.

A gold pocket watch found with the remains of the *H.L. Hunley's* captain could also have been affected by shockwaves. It seems to have stopped working at approximately the same time the *Housatonic* exploded.

The *H.L. Hunley* was found on the ocean bottom in 1995, about 1,000 feet out to sea from the resting place of the *Housatonic*. It was recovered and taken to the lab in 2000. So far, no damage to the sub from the explosion has been discovered. Researchers hope to learn more after concretion is removed from the hull next year. Ironically, the spar was one of the first artifacts recovered from the ocean. It has been stored in the lab waiting to reveal its secrets for 12 years. —*Paula Neely*

A researcher examines the spar tip.

FRIENDS OF THE HUNLEY

Investigations of Alleged Wal-Mart Bribery Continue

New York Times report leads two congressional committees to investigate construction of store near ancient pyramids in Mexico.

According to investigations by the *New York Times* and two Congressional committees, Wal-Mart de Mexico paid hundreds of thousands of dollars in bribes, often calling them "donations," in order to build a Wal-Mart store near Teotihuacán, a 2,000-year-old site outside Mexico City, in 2004. The bribes were used to bypass zoning and archaeological preservation laws.

The *Times* stated that Wal-Mart executives bribed Mexican officials to allow the store to be built in an area that was zoned non-commercial. The National Institute of Anthropology and History (INAH), charged with protecting Mexico's cultural heritage, is also implicated for not having conducted a required archaeological survey and test excavations prior to construction. INAH officials acknowledged that the building site was not surveyed, and that it is possible that ancient remains were destroyed during construction of the superstore.

Amid protest that the store was too close to such an important cultural treasure and that its presence would undermine the town's traditional public markets, former Wal-Mart de Mexico lawyer Sergio Cicero Zapata contacted company executives in Bentonville, Arkansas, and alerted them to the bribery. This prompted an internal investigation by Wal-Mart that the *Times* revealed was stopped in 2006. Wal-Mart resumed its investigation in 2011.

The Congressional committees are investigating Wal-Mart for possible violations of the Foreign Corrupt Practices Act, which prohibits bribing foreign government officials. In a January 10, 2013 letter to Wal-Mart CEO Michael Duke, Representatives Elijah E. Cummings, ranking member of the House Oversight and Government Reform Committee, and Henry A. Waxman, ranking member of the House Energy and Commerce Committee, wrote of "new allegations that Wal-Mart systematically bribed officials throughout Mexico in order to evade zoning, environmental, and permitting laws at the company's Bodega Aurrera store in Teotihuacán, Mexico. We are concerned that your company's public statements that the company was unaware of the allegations appear to be inconsistent with documents we have obtained through our investigation. Contrary to Wal-Mart's public statements, the documents appear to show that you were personally advised of the allegations in October 2005."

JIM WALKER

People walk on the Avenue of the Dead at Teotihuacán.

The letter also referred to documents, including a November 2005 email to Duke and other senior Wal-Mart executives from Maritza Munich, then general counsel of Wal-Mart International, noting allegations of bribes paid to obtain permits for the Teotihuacán store. The letter also asked that Wal-Mart authorize Munich to brief committees' investigators on these issues, but thus far the company has failed to do so, according to Karen Lightfoot, communications director for the Energy and Commerce Committee.

A Wal-Mart public relations official declined to comment on these charges, citing the company's internal investigation. —*Tamara Stewart*

Forty-Thousand-Year-Old Chinese Individual Related to Modern Native Americans

DNA analysis establishes connection between ancient and living populations.

An international team of researchers has established a genetic connection between a 40,000-year-old modern human found in a cave in China and living Native Americans and Asians. This is the first time that the nuclear DNA of an early modern human has been used to establish the genetic relationship between anatomically modern early humans and present-day humans.

The researchers, led by Svante Pääbo and Qiaomei Fu of the Max Planck Institute for Evolutionary Anthropology in Leipzig, Germany, and the Institute of Vertebrate Paleontology and Paleoanthropology of the Chinese Academy of Sciences in Beijing, China, conducted analysis of DNA extracted from the leg bones of an ancient human found in 2003 in Tianyuan Cave in Zhoukoudian near Beijing. They determined that the Tianyuan individual was related to the ancestors of many present-day Native Americans and Asians, but the individual's genetic profile had already diverged from the ancestors of Europeans.

"This individual lived during an important evolutionary transition when early modern humans, who shared certain features with earlier forms such as Neanderthals, were replacing Neanderthals and Denisovans, who later became extinct," said Pääbo. The team's results also show that the Tianyuan individual did not carry any larger proportion of Neanderthal or Denisovan DNA sequences in its genome than do present-day people in the region.

MAX PLANCK INSTITUTE FOR EVOLUTIONARY ANTHROPOLOGY

Excavators work at the Tianyuan Cave near Beijing, China.

Working in a laboratory jointly run by the Max Planck Institute and the Chinese Academy of Sciences in Beijing, the research team studied nuclear and mitochondrial DNA using new techniques that enabled them to sequence a small amount of ancient human DNA despite the presence of large amounts of microbial DNA.

"The fact that an individual who lived in the Beijing area 40,000 years ago carried a mitochondrial genome that is potentially ancestral to mtDNAs in all these areas suggests that there is at least some population continuity from the earliest modern humans in Eastern Asia to present-day populations in these areas," the researchers conclude in their study, published in the February issue of the *Proceedings of the National Academy of Sciences.*

"DNA sequences from additional early modern humans across Eurasia will further refine our understanding of when and how modern humans spread across Eurasia," said Qiaomei Fu.

—Tamara Stewart

DIGGING UP GEORGE WASHINGTON

FROM BOSTON TO BARBADOS, ARCHAEOLOGISTS HAVE STUDIED SITES RELATED TO THE NATION'S FIRST PRESIDENT.

BY DAVID MALAKOFF

Brushing teeth. Sewing. Curling a wig. Conjure an image of George Washington, Revolutionary War hero and first President of the United States of America, and it is unlikely that any of these mundane activities come to mind. For archaeologists studying the places where the great man lived and worked, however, a growing number of discoveries—including bone toothbrush handles, metal straight pins, and ceramic wig curlers—are offering a fresh glimpse into some ordinary moments in an extraordinary life.

"Through archaeology, we are continuing to learn things about George Washington that simply could not be learned any other way," said Jed Levin, an archaeologist and chief historian at Independence National Historical Park in Philadelphia, Pennsylvania. Some of the discoveries—including the location of Washington's boyhood home at Ferry Farm near Fredericksburg, Virginia—are helping fill in details about his often-difficult early years. Others, such as slave quarters associated with many of Washington's residences, have helped fuel passionate discussion—and even protest—over his paradoxical role as both a freedom fighter and a slave owner. And architectural remains found at Washington's presidential mansion in Philadelphia have even offered tantalizing hints about the origins of the modern White House's Oval Office.

All told, about a half-dozen Washington-related sites, scattered from Boston, Massachusetts to the Caribbean island of Barbados, have attracted renewed attention from archaeologists over the past decade. Although scholars have scrutinized Washington's life for nearly two centuries, "the archaeological evidence is giving us a clearer picture of who George Washington was, and how he becomes the man he became," said David Muraca, the chief archaeologist at Ferry Farm.

Washington's earliest years, growing up on the fertile

Archaeologists excavate Mount Vernon's South Grove midden in the early 1990s. They uncovered refuse that dated to the period prior to the American Revolution.

MOUNT VERNON LADIES' ASSOCIATION

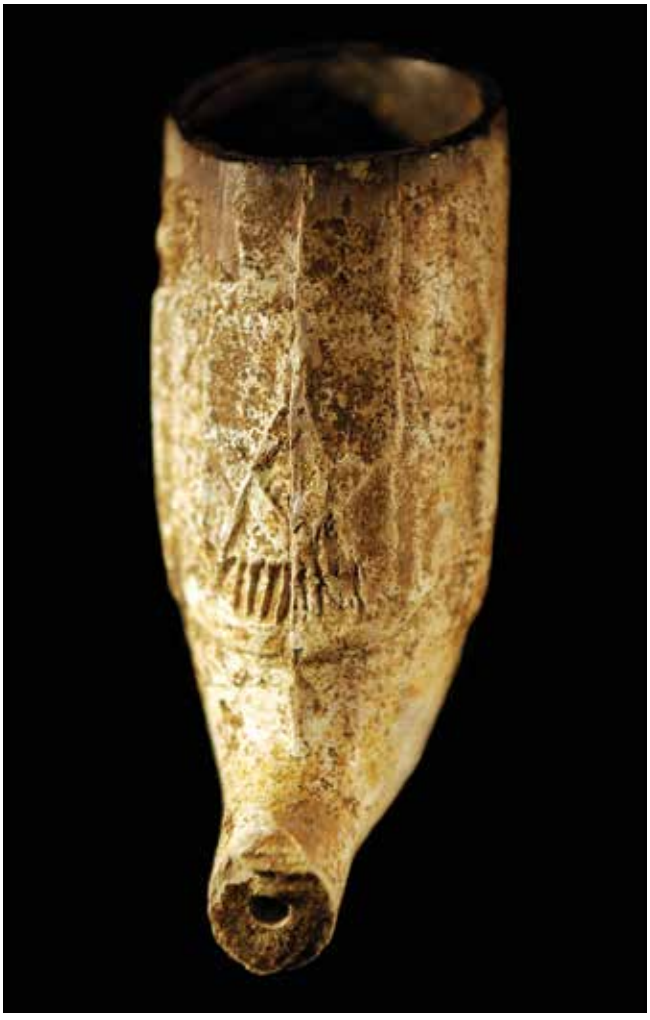
This small stoneware figurine of a monk was part of a collection that Washington owned.

coastal plain of eastern Virginia, have long been something of a mystery. "When you look at his biography, the first chapters are pretty thin, there are a lot of gaps," said Muraca. Historians know that he was born in 1732 in a brick house built by his father, Augustine, on land along Pope's Creek, a tributary of the Potomac River near Colonial Beach, Virginia. The young George lived there just three years before the family moved, however, and the house ultimately burned in 1779. By 1882, self-trained archaeologists had begun exploring the site, launching a decades-long scholarly debate over the exact location of the birthplace.

Today, archaeologists are convinced that the natal home sat near an inaccurate replica built in the early 1930s by well-meaning but ill-informed history buffs. That construction project was "a great archaeological crime," a senior National Park Service official wrote at the time, because it obliterated the remains of a Colonial-era brewery that was once believed to have been the birth house. Ironically, a government engineer working on the replica re-discovered the foundation of the actual birthplace, which was dubbed Building X at the time. Since the 1930s, several waves of archaeologists have extensively excavated Building X and nearby areas, finding numerous artifacts linked to the Washington family, including fine china and wine bottles marked with Augustus Washington's seal. They've also found structures and less elegant pottery believed to have been used by the family's slaves, a topic once ignored by scholars. But past researchers didn't have many of the sophisticated tools and techniques available to today's archaeologists, "so we haven't yet used the material culture found on the site to inform us as much as we could," said Amy Muraca, an archaeologist at the George Washington Birthplace National Monument and David Muraca's wife.

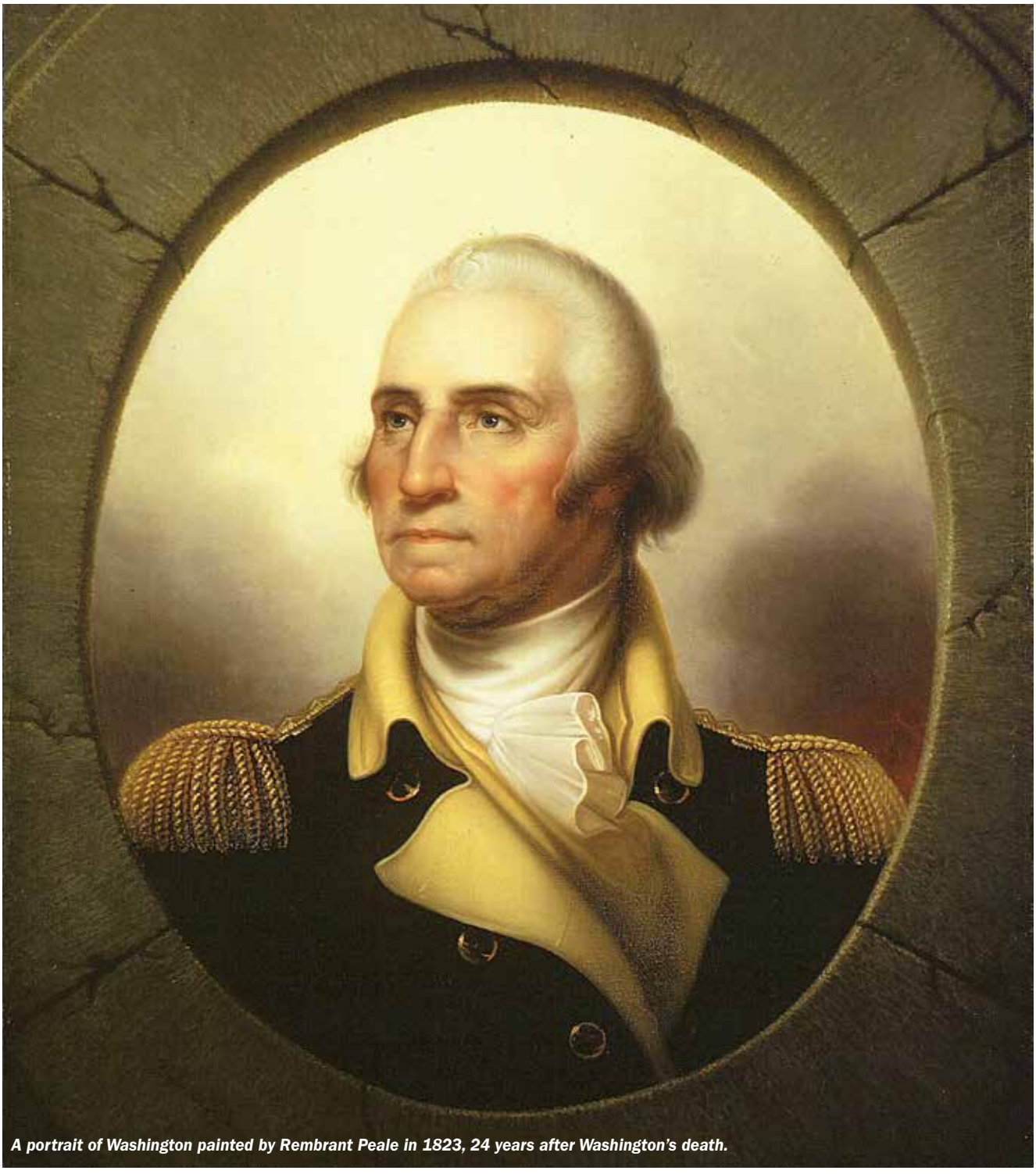
In a bid to wring more information from the site, she is now working with researchers from the University of South Florida to launch an extensive reexamination of the birthplace's existing data and collections. They want to better understand the occupation sequence and the changing material fortunes of the larger Washington family, who occupied the birthplace site for some 60 years starting in the early 1700s. The researchers also hope to get a clearer picture of the enslaved people, Native Americans, and others who trod the same ground. "It is important to remember that the Washingtons were not the only ones here," said Amy Muraca. "We want to fully repopulate this landscape, and see how it changed over time."

Such techniques are already helping archaeologists learn about Washington's often difficult formative years at Ferry Farm on the nearby Rappahannock River, where he lived from age six until his early 20s. Since 2002, the George Washington Foundation, which owns the site, has sponsored a series of large-scale digs that have yielded evidence of numerous structures. They've also cataloged "thousands and thousands" of artifacts, said David Muraca, including some



GEORGE WASHINGTON FOUNDATION

A pipe bearing Masonic inscriptions.



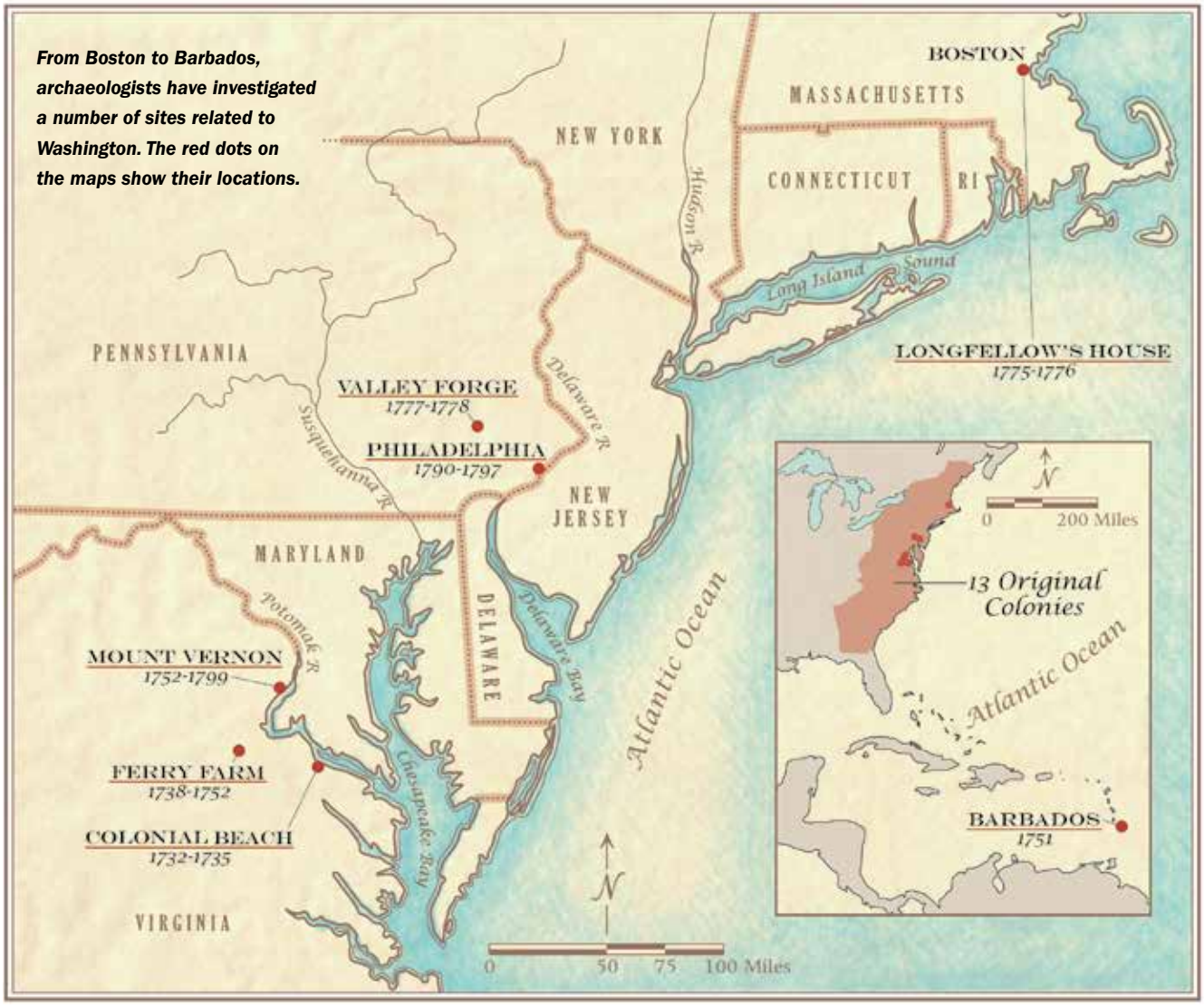
MOUNT VERNON LADIES' ASSOCIATION

A portrait of Washington painted by Rembrant Peale in 1823, 24 years after Washington's death.

that hint at the hardships created by the death of Washington's father, Augustine, in 1743 when George was 11.

Perhaps the biggest find was announced in 2008, when researchers revealed that they had finally confirmed the location of the Washington family's one-and-a-half-story wooden home. "People had been looking for it for years, but had gotten off on some false leads," said David Muraca. This time, however, the archaeological evidence was overwhelming. Years of careful, systematic digging had revealed evidence of a large foundation, measuring about 53 feet by 28 feet, as well as three chimneys, two stone-lined cellars, and two simpler root cellars.

The site was filled with small artifacts, including chunks from plaster ceilings and painted walls. In one cellar, they even found burnt plaster and charcoal, apparently created by a small fire that historians know broke out in the house on December 24, 1740. There were also numerous fragments of 18th-century pottery and other ceramics, glass shards, toys such as clay marbles, and even a few toothbrush handles made of bone. Although researchers can't definitively link any of the items to George Washington, "you have all this evidence of very rich domestic life, of mundane chores,



INFORMATION ILLUSTRATED

of the Washington children being prepared for their lives," said David Muraca. For instance, archaeologists have found "a notable number" of ceramic wig curlers, small cylinders used to groom the hairpieces that were all the rage among fashionable men of the time. Although George Washington wasn't known to have worn a wig (he powdered his hair), his younger brothers did, and "in the curlers, you can see the Washington boys taking on one of the most important social aspects of gentry life, the buying and maintaining of wigs," said David Muraca. Scholars also have been intrigued by the bowl of an 18th-century pipe, blackened from heavy use, that bears the crest of the Lodge of the Masons, an important social organization that George Washington is known to have joined in the 1750s.

Other finds document the financial difficulty the family experienced after the death of Washington's father, which shifted the bulk of the family's assets and income to George's two older half-brothers. "George's life is blown up… you can just see the family's income plunge in the material record," said David Muraca. For example, "prior to Augustine's death, the archaeological record suggests that the family was buying high-quality wares," typical of "wealthy Virginia families—which they were, maybe in the top 10 percent." After Augustine dies, however, "it appears Mary Washington is buying things that are gentry in style but not the best materials; she gets ceramic figurines for the mantelpiece, for example, but they are made of less expensive white salt-glazed stoneware, not porcelain."

Deprived of his father, George began to spend more time with Lawrence, the half-brother who inherited what became Mount Vernon, a large plantation on the Potomac River near what is now Alexandria, Virginia. Lawrence, however, had tuberculosis, and in the fall of 1751 George accompanied him to the busy island port of Bridgetown, Barbados in hopes of finding a more curative climate. The two-month visit marked the only overseas trip George ever made, and his first exposure to urban life.

Bridgetown was "probably the largest, most cosmopolitan city the young George Washington had ever seen," archaeologist Anna Agbe-Davies of the University of North Carolina, Chapel Hill, wrote in a 2009 study published in the *International Journal of Historical Archaeology*. As at other Washington-related sites, however, the exact location of his residence became the subject of lengthy debate. Many

historians pointed to a Colonial-era structure called Bush Hill House, which became part of a military base, and in 1999 the Barbados National Trust asked archaeologists to determine whether or not the house had existed when Washington visited, and whether the great man had left any mark.

But trying to pin down "a two-month period in the two-and-a-half century span of a property's occupation is like a search for the proverbial needle in a haystack," Agbe-Davies noted in her study. Still, during digs in the early 2000s, researchers stripped away old plaster to analyze the building's construction and conducted "fine-grained analyses" of 18th-century stoneware and other ceramics found in the oldest layers of several debris deposits. Together, the evidence strongly suggested that the house and a related kitchen "were standing when Captain Richard Crofton, the Washingtons' landlord, obtained the property in 1746." The researchers also turned up ceramics that might have been used by the slaves that served the brothers, as well as evidence of later military uses of the site, which today is a museum.

In the end, Barbados proved to be no answer to Lawrence's health problems, and he died in Virginia a year after the trip. The loss of his beloved brother, however, ended up assisting George's rise, as it essentially gave him control of Mount Vernon in 1754. By the time he died in 1799, Washington had expanded the plantation to include more than 8,000 acres of farm and forestland, a stately mansion and outbuildings, and lucrative milling, whiskey making, and fishing operations.

Today, the Mount Vernon Estate, Museum, and Gardens is a historic destination that draws one million visitors annually, and perhaps no Washington site has gotten more attention from archaeologists. The first excavations began in the 1930s and focused on efforts to restore the plantation buildings, gardens, and grounds to what they looked like in Washington's time, said Eleanor Breen, deputy director for archaeology at Mount Vernon. These days, that's still a goal: In late 2012, for instance, a small crew completed excavations in the manor house's so-called laundry yard aimed at determining the exact location of a fence shown on an early map. Among other things, they discovered evidence of three postholes that, together with previous finds, gave carpenters enough information to start building a replica.

Scholars are reexamining Mount Vernon's massive collection of historical documents and artifacts to better understand the economic, social, and cultural forces that shaped Washington's life and times. One unusually rich lode has come from a trash pit that once sat just south of the main house's kitchen. Discovered by accident in 1948, and then more fully excavated in the early 1990s, the South Grove midden has yielded more than 120,000 artifacts, including ceramics, glass, toys, tobacco pipes, wig curlers, scissors, oyster shells, animal bones, and crab claws discarded between 1735 and 1775. "It's been an incredible source of information for studying both Lawrence's and George's households," said Breen.

Shifts in the kinds of ceramics, plaster, and household

Carved bone blades of a folding fan recovered from the South Grove midden. These, and the items below, came from Mount Vernon.

A fragment of a scabbard collar engraved with Washington's cipher.

The end of a hunting whip that bears the complete cipher.

MOUNT VERNON LADIES' ASSOCIATION

MOUNT VERNON LADIES' ASSOCIATION / GAVIN ASHWORTH

objects that were thrown into the yard over time appear to reflect "events such as Lawrence's arrival at Mount Vernon, his death, and George Washington's arrival, marriage, and rise in status," she said. Hundreds of straight pins, for example, appear to date to the late 1750s, when George married the wealthy Martha Dandridge Custis. Records show he ordered up to 20,000 pins at the time, Breen said, suggesting the new couple had embarked on "large scale textile manufacture, perhaps to make clothes for a growing slave population."

Other Mount Vernon artifacts reflect "the incredible revolution in consumerism that was occurring in Washington's time," she said, as increasingly wealthy American colonists gained greater access to both imported and locally-made goods. Researchers have found the blades of numerous fans, for example, including some that may have been associated with slave quarters. "Fans in slave quarters? That raises some interesting questions about how we think about the social structure and consumer culture of the time," Breen said, noting that researchers tend to think of fans as luxury items belonging to gentility.

Another artifact from the midden, a small sheet of silver that once adorned a sword's scabbard and bears Washington's initials, may hint at his rising social standing. "It looks like he may have shifted from the use of a family coat of arms to his initials later in his life, as he became a public figure," she said. The public can now inspect pictures of that artifact and 399 other items from the midden on a special website that Mount Vernon has developed (www.mountvernonmidden.org). It also includes extensive data about the items, and links to information drawn from historical documents and scholarly studies.

Researchers at other Washington-related sites also continue to make intriguing finds. In Boston, for instance, they are trying to figure out if fragments from more than a dozen wine bottles found in the basement of poet Henry Wadsworth Longfellow's house are related to Washington, who used the home as his military headquarters for nine months during the Siege of Boston, the opening phase of the American Revolutionary War, in 1775 and 1776. The glass fragments, uncovered in 2001 during a construction project at the Longfellow House-Washington's Headquarters National Historic Site, were found in a deposit that researchers have dated to between 1759 and 1791. It also included the remains of food items that Washington's staff was known to have ordered during his stay, but researchers say those items might also be related to families that lived in the house before and after the war.

Other archaeologists are taking a closer look at another of Washington's headquarters, this one at Valley Forge, Pennsylvania, where the Continental Army spent the brutal winter of 1777-78. More than 20 years ago, archaeologist David Orr of Temple University in Philadelphia was part of a team that identified some possible Washington-era structures and a trash pit beside the modest stone house where Washington lived, at times with his visiting wife Martha. "I never dreamed that … years later I'd be organizing my students to come back and dig the whole thing," he said. Beginning in 2009, former Temple doctoral student Joe Blondino led teams that excavated a

COLONIAL WILLIAMSBURG FOUNDATION

Excavators work at Washington's home in Barbados. It's believed that George lived here for two months with his half-brother Lawrence.

PATRICE JEPPSON

Washington lived in Philadelphia for most of his presidency. The excavation of his mansion attracted over 250,000 visitors.

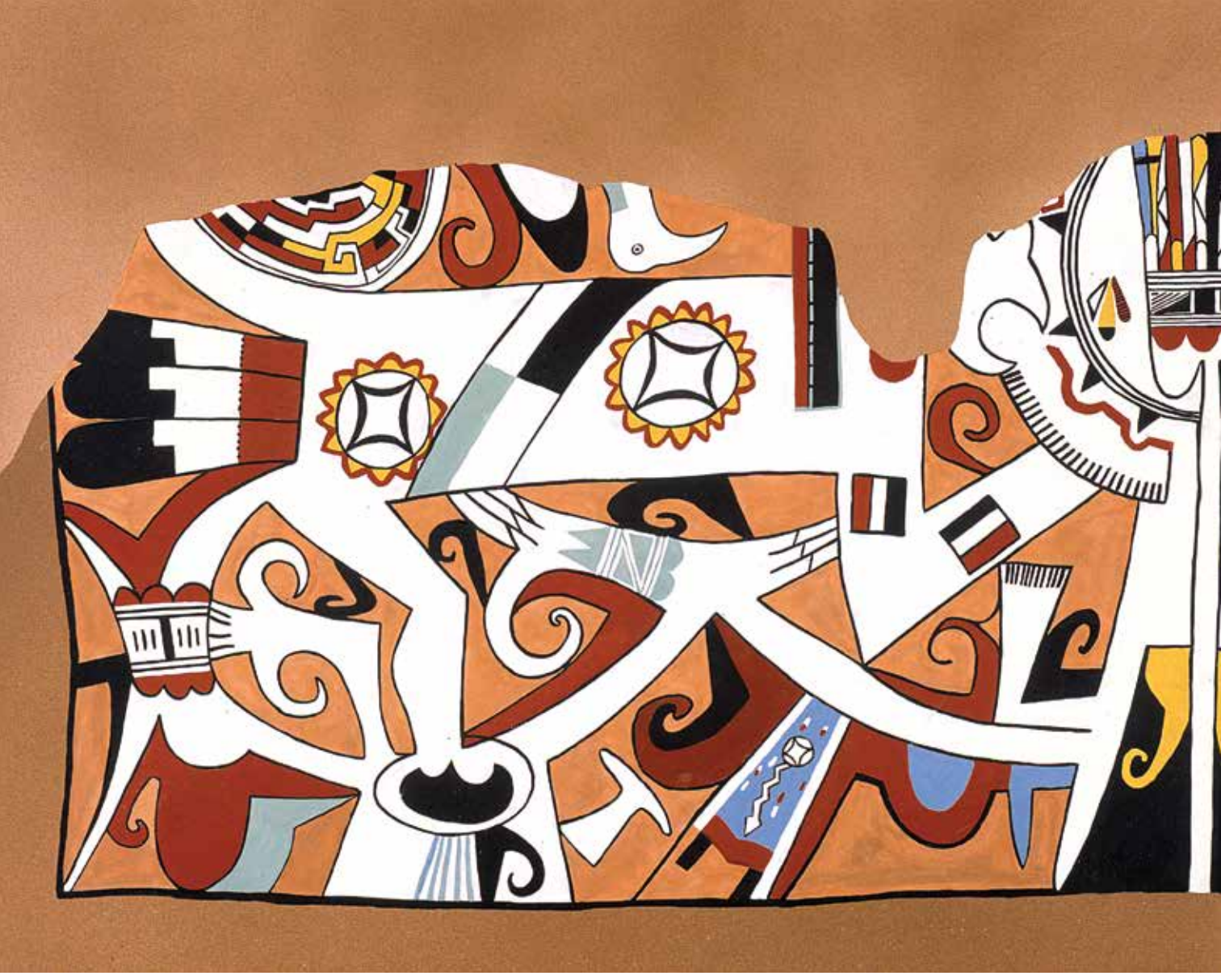
stone-lined 18th-century well that likely provided water for Washington's household, a refuse pit that yielded ceramics, a Revolutionary War-style belt buckle and a bone knife handle, and features that produced musket balls and ceramic pipes. The diggers also homed in on a major target, finding soil discolorations that could be evidence of the wooden footings for a log dining hall—mentioned in a letter written by Martha Washington—that Washington added to the stone house. "He wanted to make more room," said Orr. "You had all these guys crowded into this little house in cold weather."

Another residence that Washington expanded—the downtown Philadelphia mansion he occupied for most of his presidency, from 1790 to 1797—has also gotten a closer look. In 2007, archaeologists spent four months excavating the foundations of a large backyard kitchen where his slaves and servants had toiled. The dig was a response to a years-long controversy over plans to construct a new facility to house the Liberty Bell, which sits adjacent to the mansion site at Independence National Historical Park. Historians and African-American groups objected to planned interpretive displays that they argued gave slavery inadequate attention; some also argued that the new building added insult to injury, since it would literally pave over the site of slave quarters associated with the Washington mansion. The battle "really called public attention to this jarring paradox—Washington the symbol of freedom, juxtaposed against the slaves who served him," said the park's Jed Levin. Ultimately, the new center was built with revised displays, and Levin was asked to lead a dig of the mansion site that ultimately drew more than 250,000 visitors. "It was the most amazing experience of my career," he said.

The diggers also found some surprises, such as an underground passageway that apparently allowed workers to move between the kitchen and the main house. "That had never been documented before," Levin said. They also found the stout footings of the monumental bay window that Washington had added to the house. "It was big—maybe 20-feet wide by 16-feet high," said Levin. Historical documents show that Washington used the window as a kind of ceremonial backdrop for receiving guests, Levin said. "It must have been very dramatic." It also appears to have helped serve as an architectural inspiration for the oval rooms that were included in the White House in Washington, D.C., and ultimately gave rise to the modern Oval Office. "The bay window is the great grandfather of the Oval Office we know today," said Levin. "Washington helps to define a formal, official style."

Such discoveries may be "just footnotes to Washington's story," Levin said. "But they are details that we'd never know if we hadn't done the archaeology."

DAVID MALAKOFF *is a staff writer for the journal* Science. *His article "Iberia, Not Siberia?" appeared in the Summer 2012 issue of* American Archaeology.



Puebloan Polychrome

This is a reproduction of a colorful Hopi Pueblo kiva mural. The original mural, which dates to the A.D. 1400s or 1500s, features an abstract design incorporating bird, feather, feline, flower, rainbow, and shell jewelry motifs.

Archaeologists are trying to understand why the Ancestral Puebloans incorporated much more color in their lives around A.D. 1300.

By Nancy Zimmerman

MUSEUM OF NORTHERN ARIZONA. CATALOG NUMBERS NA820.R.3.3A/2306 AND NA820.R.3.3B/2306

At the beginning of the 14th century something mysterious happened to the Ancestral Puebloans of the Southwest. Their signature black-on-white and black-on-red pottery gave way to more colorful ceramics. Whereas the earlier styles of kiva murals emphasized bichrome, abstract symbols, after A.D. 1300 paintings featured anthropomorphic figures and naturalistic treatments of space and form in vibrant, varied colors. An explosion of colors was also seen in their rock art, baskets, and other textiles.

"The way people make color choices is actually fascinating," observed archaeologist Marit Munson of Trent University in Ontario, Canada. "A key question is what happens in a society that might change the way people use color over time. For example, the Industrial Revolution affected how people used color by providing new technologies that offered a broader array of colors that could be used in new ways with a greater variety of objects."

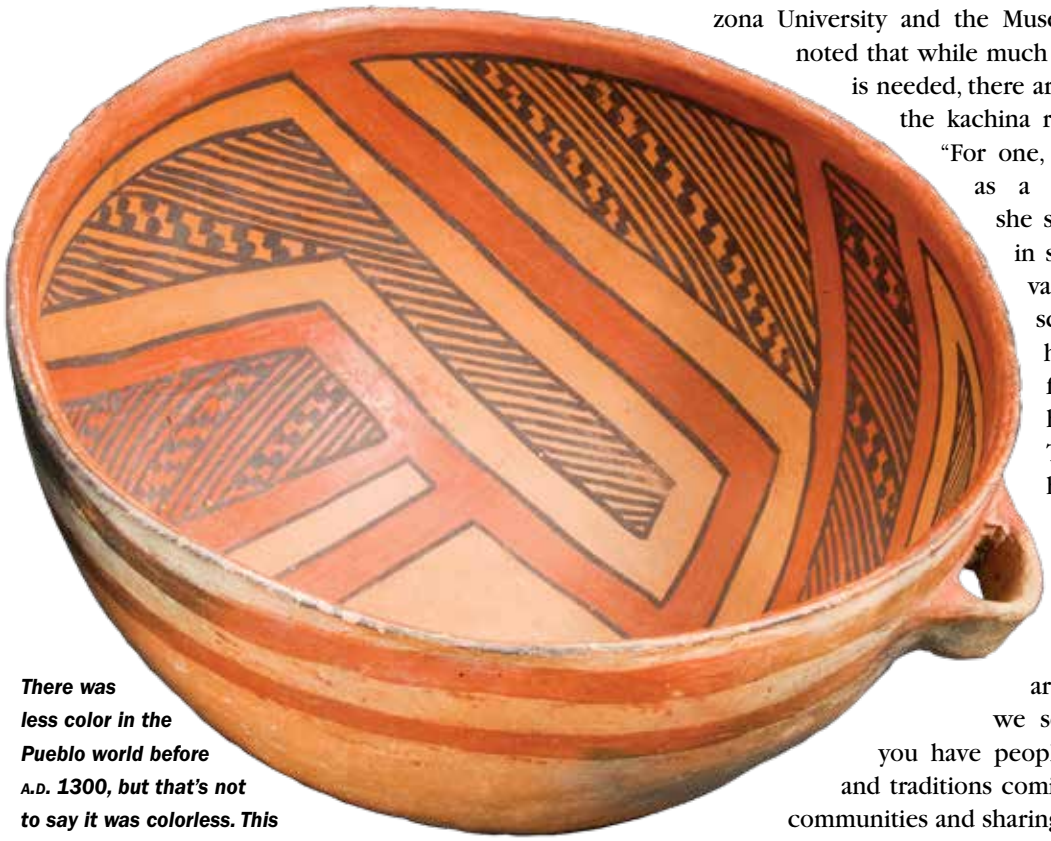
Though color existed in Ancestral Pueblo life before 1300, its dramatic expansion at this time suggests a similar cultural milestone. The commonly accepted theory for this change is that it resulted from the rise of the kachina religion, which some researchers believe developed in the Southwest through interaction with Mesoamerican ideas and practices. (Some archaeologists suspect the religion came to the Southwest via migrants from Mesoamerica.)

Kachinas are supernatural beings that are propitiated to ensure rainfall, protection, healing, fertility, and other desirable conditions. Kachinas are portrayed in paintings, dolls, and rituals as colorful beings whose striking hues are of great symbolic importance.

CURTIS SCHAAFSMA

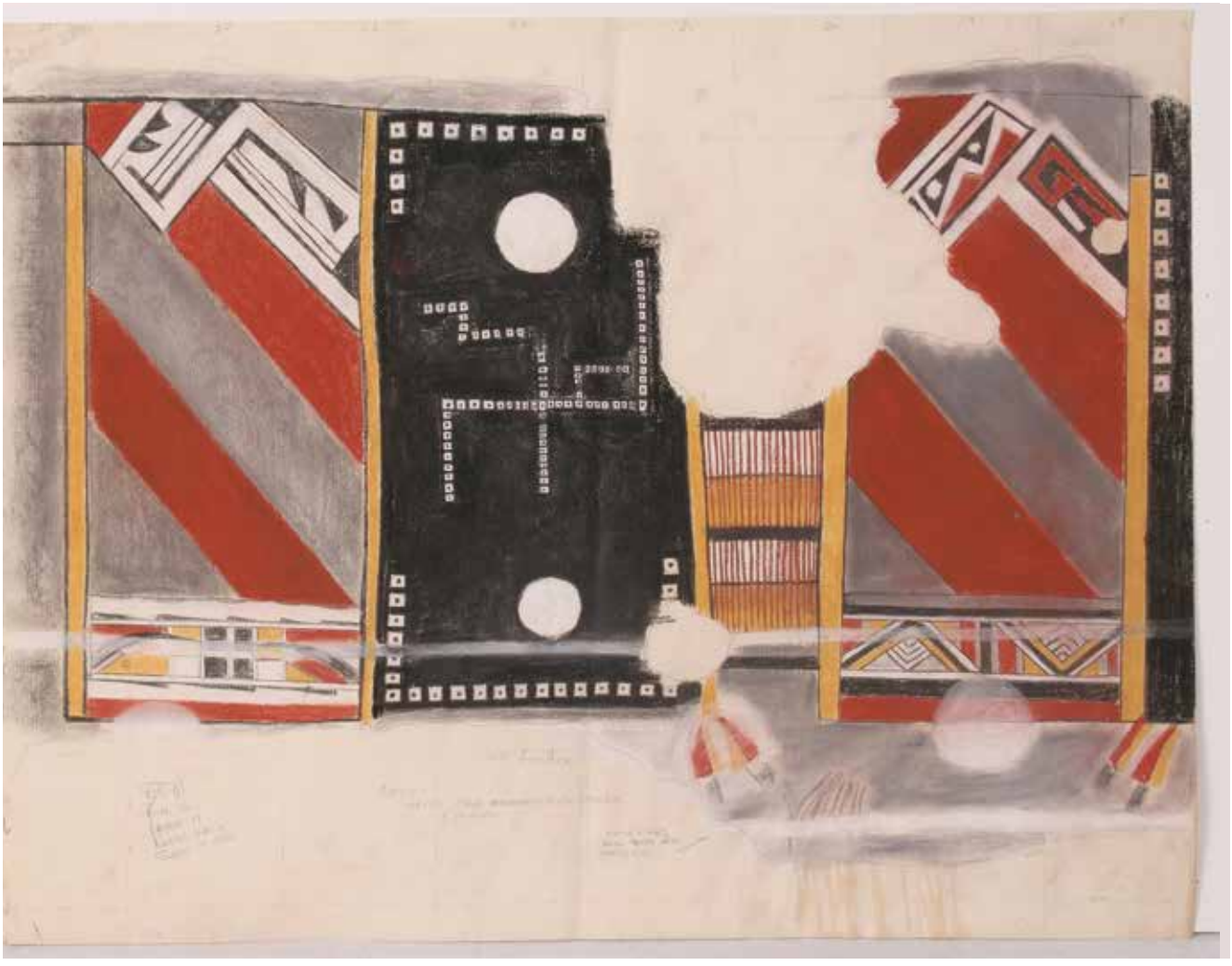
A rock painting of a turquoise mask with a towering feathered headdress. Turquoise, which in some cases refers to water or the sun, was used in small amounts for special figures.

Kelley Hays-Gilpin, an archaeologist at Northern Arizona University and the Museum of Northern Arizona, noted that while much more research in this area is needed, there are several factors related to the kachina religion that are pertinent. "For one, we have its development as a large-scale phenomenon," she said. "I'm sure it had roots in smaller-scale practices in a variety of areas, but it grew in scope around 1300. Two, we have larger communities forming, which probably had more craft specialists. Those specialists would have developed more technical knowledge of making paint, obtaining pigments, sometimes via long-distance trade, and making the more elaborate artifacts and mural paintings we see after 1300. And three, you have people with different histories and traditions coming together in these large communities and sharing artistic and technological traditions. So you get a lot of diversity in artistic and ritual



MUSEUM OF NORTHERN ARIZONA, CATALOG NUMBER A1077

There was less color in the Pueblo world before A.D. 1300, but that's not to say it was colorless. This polychrome bowl, for example, dates to approximately A.D. 1200.



MAXWELL MUSEUM OF ANTHROPOLOGY

A kiva mural from Pottery Mound in central New Mexico is depicted in this drawing. It's thought that the mural was created sometime between 1350-1500.

expression, and you probably also get some practitioners forging new identities. One strong thread in the new styles was the colorful kachina imagery."

Scott Van Keuren, an archaeologist at the University of Vermont, has studied the evolution of pottery in the western Pueblo region during the 12th to 14th centuries. After 1300, people generally stopped making black-on-white pottery in favor of polychrome wares, he said. "The color scheme changes we see by 1300 likely were part and parcel of changes in ancestral Pueblo religion," said Van Keuren. He noted that the primary colors of most polychromes—red, black, and white—are significant in Puebloan cosmology. "In general, I see the changes in ceramic style at the end of the 1200s as marking a period of experimentation with the new technologies and decoration as migrant potters joined new communities and began to work with previously unfamiliar clays, pigments, and techniques."

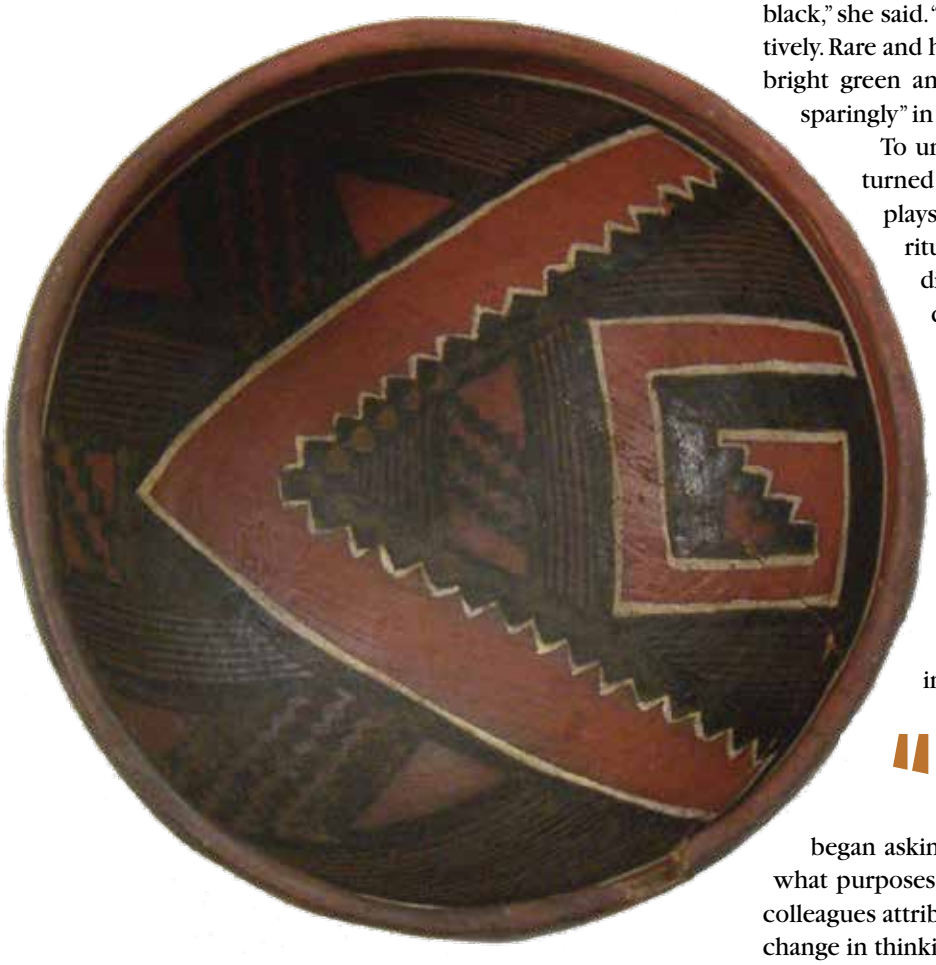
Polly Schaafsma, a research associate with the Museum of New Mexico in Santa Fe, studies the ethnographic record for clues about the use and significance of color choices in rock art. She focuses primarily on rock art created between approximately 1350 and 1600 during the Pueblo IV period. "There are several factors involved in the choices of pigments and colors used in rock paintings," said Schaafsma. "The amount of paint needed for a rock painting often dictated the use of the most readily available resources. As a result, white and red often dominate rock painting sites, since white clays and other white pigments, along with red ochres, were readily accessible. During Pueblo IV, however, the overall palette was significantly expanded, particularly in the rock paintings produced by southern Rio Grande Pueblos."

The colors used during this time were apparently chosen because of their availability and also their "use for emphasizing contrasting details, and most importantly for (their) symbolic properties," she said. "The increased use of color enriched the meaning of an image and thus its communication potential."

The greatest range of colors occurs in rock paintings in the southern Pueblos, where contrasting hues were used for emphasis and for delineating the details of complex ceremonial figures, masks, and animals. "Facial patterning of kachinas was often delineated by differential applications of

This Hopi polychrome jar embellished with bird, flower, and geometric images dates to the 1400s.

MUSEUM OF NORTHERN ARIZONA, CATALOG NUMBER A2205



Glaze-painted designs are featured on this 14th-century red ware bowl.

SCOTT VAN KEUREN

reds and oranges, and sometimes green, turquoise, yellow, or black," she said. "Black and white pigments were used selectively. Rare and highly valued greens and blues, varying from bright green and turquoise to blue-gray, occur somewhat sparingly" in this area.

To understand this expanded palette, Schaafsma turned to the modern-day Pueblos, where color plays a significant role in public ceremonial and ritual activities. Colors are associated with different aspects of the cosmos, such as the directions and, by extension, maize, animals, and flowers that are also linked to the directions according to the locations of their natural habitats. "But there are a number of variables that complicate addressing color symbolism from the past," said Schaafsma. "Today directional color symbolism is not standardized among the Pueblos, and we can expect that color associations would have been variable in the past as well. Also, a given color may take on different meanings according to its context."

"People have been aware of the use of color in the Southwest for a long time," added Munson. "But they only recently began asking when, where, which colors, why, and for what purposes were they used." Munson and some of her colleagues attribute this recent interest in color to a gradual change in thinking among North American archaeologists.

"In the 1960s through to the early 1980s, many archaeologists decided they needed to be scientists in a rather strict

MUSEUM OF NORTHERN ARIZONA, CATALOG NUMBER NA1001.R.2.3/3202

A colorful kiva mural depicting a scarlet macaw from the Hopi site Kawayka'a. This is a reproduction of the original mural, which dates to the 1400s.

CURTIS SCHAAFSMA

Black face and red feathers, both of which are seen in this morning star diety, are associated with war.

and mathematical way," explained Hays-Gilpin. "I suspect it had to do with getting funding from the National Science Foundation. But anthropology and archaeology have always comprised a unique combination of humanities and sciences. We're finally getting back to our humanities side. Today I can ask question about what we'd call art and religion without getting as much criticism as I used to. Some of my fellow graduate students in the 1980s were really hostile to the idea of thinking about imagery, color, ritual practice, symbolic meanings, and even drawing on the knowledge of contemporary Pueblo people to help us understand the archaeological record. That's changed gradually over the past 20 years or so, and fortunately, we have a broader view of science today."

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MUSEU

By Michael Bawaya

The Caballo Blanco site could become a living museum in the sea. It features these two Columbus-era anchors and a breech block from about A.D. 1500. The shipwreck has not been found, so it may have survived running into the Caballo Blanco reef. These items were apparently thrown overboard in an attempt to lighten the ship.

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UMS

Under the Sea

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To thwart treasure hunters, Charlie Beeker and other archaeologists are turning historic shipwreck sites into underwater museums that preserve the vessel and attract tourists.

When Charlie Beeker began diving in 1963, historic shipwrecks were considered little more than repositories of artifacts that were there for the taking. By 1974, when he took a diving instructor course in Key Largo, Florida, most of the wrecks in the Florida Keys had been damaged by divers. Anchors and cannons served as landscape ornaments in front of restaurants and hotels along U.S. Highway One, the road running through the Keys, according to Beeker.

Then this seemingly hopeless situation began to change. The Abandoned Shipwreck Act was passed in 1988. As a result ownership and management of historic shipwrecks were clarified on federal, state, and tribal submerged lands. In 2000 a national system of Marine Protected Areas was established. These acts brought about major changes in the perception and preservation of shipwrecks, which were elevated from mere plunder to historical treasures.

Consequently, some of the treasure hunters that worked the Keys moved south to Caribbean countries like the Dominican Republic, where the pickings can be as easy as they once were in Florida and other U.S. coastal areas. For example, in the Dominican Republic treasure hunters can, with impunity, plunder wrecks under existing salvage laws so long as the government gets half the take.

So Beeker, who subsequently founded Indiana University's (IU) Office of Underwater Science, is also working in the Dominican Republic, intent on thwarting the treasure hunters. "I tell my students we're in the Dominican Republic because we need to be there," said Beeker, who directed an IU underwater field school last December off the small beach of La Caleta. The beach is part of a national park near Santo Domingo, the capital of the Dominican Republic.

Beeker is trying to wean the Dominican Republic government from treasure hunting revenue. He has worked in the country for roughly 20 years and this was his fourth visit to La Caleta, where, according to historical accounts, the Spanish frigate *Nuestra Sedonia Begoña* wrecked a short distance from the beach in 1725. While doing a magnetometer survey in March of 2010, he and his crew identified an anomaly that matches the size and location of the ship, and they've also found a cannon and numerous other artifacts that appear to be related to it. Consequently, though they've not actually sighted the vessel, Beeker believes they have found the *Begoña*, but he added that further investigations are necessary to prove it.

The Morales site is a living museum in the sea featuring cannon and shipwreck artifacts near a coral reef. Divers, like the one seen here, can view historical items in situ.

JOHN FOSTER

The *Nuestra Sedonia Begoña* was a Spanish ship owned by the governor of the Canary Islands, a Spanish archipelago located off the coast of northwest Africa. It was en route from Venezuela to Puerto Rico when it encountered a violent storm. The captain diverted the ship to Santo Domingo, where he chose to wreck the sinking vessel a short distance from the beach so that he and his passengers could make their way to the shore.

The *Begoña* was carrying contraband coins and other treasure. John Foster, an IU archaeologist who codirected the field school, surmised the governor was trying to avoid paying taxes on this cargo to the Spanish Crown. "What we're doing here is looking at the issue of contraband on an 18th-century merchant ship, Foster said, adding that there's not much information in the literature about this topic.

The evidence suggests the wreck is about 600 feet off shore in shallow water. The field school divers are excavating an area roughly 200 feet from the shore, where, during previous field schools, they've recovered many of the artifacts. Some of the items are "precious artifacts," Beeker said, such as a crushed gold cup, 85 pounds of silver dinnerware, and Spanish coins. They've also found the bottom of a wood treasure chest. Eventually the divers will work their way to the *Begoña*'s presumed location.

Beeker is a big man with a no-nonsense demeanor. As he barked out orders, his crew snapped into action. He spent a considerable amount of time, movie-director-like, observing the divers from the comfort of a wood and rattan rocking chair with "Charlie" painted on the back. Though they were submerged in shallow water, he identified the divers' locations by the bubbles they produced on the surface and, knowing the underwater site as he does, their locations told him if they were following his directions.

After giving them instructions on shore, Beeker dispatched small teams of divers armed with proton magnetometers, which detect anomalies in the earth's magnetic field, metal detectors, and a dredge into the water. When the divers get an indication of a metal object buried beneath the sea floor, the dredge is used to remove the sand by suction and reveal the object. The dredge, which operates like a powerful vacuum hose, "wants to dig a hole to China," Foster observed.

Though underwater archaeology employs the same principles and methods as its terrestrial brethren, it is in some ways fundamentally different and vastly more complicated. Take basic communication, for example. When submerged, divers can't speak to each other, so gesturing serves as their lingua franca; that, or writing on a waterproof slate.

Beeker has addressed this problem by outfitting his divers with full facemask communication systems that cover the eyes, nose, and mouth so they can speak. However, to speak underwater is one thing, to be heard, quite another. To achieve the latter, words are transmitted through a

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John Foster holds a* macana*, a Taino war club recovered from Manantial de la Aleta in 1997. The macana was radiocarbon dated to* A.D. *1420. La Aleta was a Taino offering site where the preservation of organic artifacts is amazing.

microphone in the facemask and then converted into sonar, a signal that is easily transmitted underwater. The signal is then reconverted by a transducer into words when received by another diver or crewmembers on shore.

Depending on the depth they're working at, the divers can only stay down for certain lengths of time or they risk decompression sickness, known as the bends, due to the absorption of nitrogen in their body tissue. Therefore they wear wrist watch-like computers that monitor vital information such as their time in the water, the depth throughout the dive, and nitrogen absorption. The devices also indicate when they need to surface. "Every five seconds it will take a reading and log it," said Jessica Keller, a master's student at IU.

While terrestrial sites are carefully mapped, there's less emphasis on mapping submerged sites, according to Keller, because the topography can change from one day to the next due to the current or severe weather. "This is a dynamic environment," she said. Hurricane Sandy passed by in late October, rearranging the location of the cannon, among other things. "The hurricane moved a 2,000-pound object," said Keller.

The artifacts recovered from the sea, even those that are well preserved, require timely conservation. These items are extremely fragile because of being saturated with salt, which has to be removed. Depending on what the artifacts are made of, other conservation measures also have to be taken soon. Failing that, metal artifacts will quickly corrode when exposed to air, and organic materials such as wood, leather, and textiles can degrade within hours.

COURTNEY MICHALIK/INDIANA UNIVERSITY

Archaeologist John Foster surveys the* Begoña *shipwreck site with a magnetometer.

During the field school the researchers recovered a bronze short sword hilt, a Spanish coin, silver or pewter dinnerware, and pottery sherds made by the Taino, the pre-Columbian inhabitants of the region. They also found a large concretion weighing roughly 50 pounds that includes a cup or chalice, pottery sherds, and what could be a large bead. (Concretions form when sand grains, coral, shell particles and marine plants build up on submerged objects, frequently encasing them,) Other concretions appear to contain canon balls, deck nails, and a rigging hook.

Unfortunately, the researchers aren't the only ones making discoveries. The divers shared the cove with residents who swim and fish there. A fisherman in a small boat, known as a *yola*, nearly struck one of the divers as he rowed to shore. Come the weekend "there will be 150 kids" here, Beeker said, and they constitute another breed of treasure hunters who threaten the artifacts. Several armed guards, courtesy of the country's Ministry of the Environment, patrol the park. Nonetheless, according to Beeker, "the locals have scoured this beach and they've found all kinds of coins."

To eradicate treasure hunting, Beeker has struck a different deal with the Dominican Republic's government. "We're the only ones who have come to the country and said, 'We don't want a 50-50 split. It all belongs to the government,'" he said.

"Treasure hunting is allowed everywhere else, but not here," or in the country's other national parks, Foster said. "Treasure hunting is a losing proposition," he continued, "because it involves digging up and taking everything away. It's good at the time," but it's unsustainable, and eventually "it will be completely gone." Beeker hopes to hasten its demise by turning wrecks into underwater museums.

For years people who value shipwrecks for their historical importance have raised them with the intention of preserving and displaying them in museums. Turning that concept on its head, Beeker and other preservationists have

COURTNEY MICHALIK/INDIANA UNIVERSITY

As part of their underwater museums work, students from Indiana University maintain and preserve the fragile ecosystem. Here they repair coral at the Captain Kidd shipwreck site. The coral fragments, which were damaged by a storm, are re-attached so they will grow again.

concluded it's better to bring the museum to the shipwreck than the reverse.

The idea, though novel, is not new. According to Jim Delgado, the director of maritime heritage for the National Oceanic and Atmospheric Administration's National Marine Sanctuaries Program, it dates back to the 1970s. NOAA, along with other federal agencies such as the National Park Service, have embraced it. "We see the ocean and seas as a great museum," Delgado said, noting that NOAA has established 14 national marine sanctuaries that are "big museums in the sea with thousands of shipwrecks."

Beeker's personal experience with underwater museums goes back to 1989, when he played a key role in establishing the San Pedro Underwater Archaeological Preserve State Park in the Florida Keys. The preserve is named after the *San Pedro*, a Spanish galleon that sank in a hurricane in 1733. As a result of treasure hunting that began in the 1960s, nothing but a scattered pile of ballast stones remained on the surface of the site, so Beeker assisted the State of Florida Bureau of Archaeological Research by leading a team that reconstructed the wreck site.

The preserve, which is 18 feet underwater and can be seen by snorkelers as well as divers, features an information plaque, seven replica cannons, an anchor, and buoys for mooring boats. Beeker helped establish a number of other underwater preserves in Florida and California as well as three living museums in the sea, as they're called, in the Dominican Republic. Divers and snorkelers visiting these sites are admonished to "take only photos, leave only bubbles."

One of these museums contains the remains of the *Cara Merchant*, the ship that the infamous Captain Kidd commandeered and then abandoned in 1699 as he traveled to New York in hopes of acquitting himself of piracy charges. When Beeker identified the wreck as the *Cara* in 2008, the discovery received international press coverage and was the subject of a National Geographic Society documentary. He and Foster are working on several other wreck sites that they intend to convert into underwater museums. "They're doing a very good job for my country," said Francis Soto, the technical director of the Dominican Republic's Office of Underwater Patrimony in the Ministry of Culture.

A Colombian naval officer visited La Caleta to discuss the underwater museum concept with Beeker, who had earlier met with representatives of Haiti. "I've got a calculated plan," Beeker said, that being to establish museums in the sea throughout the Caribbean. Though it might seem curious that he's trying to gain a toehold in Colombia via a naval officer rather than, say, a cultural or environmental minister, Beeker has concluded who better than the navy to enforce underwater preservation laws.

His concept of preservation extends beyond the wreck

itself to the ecosystem that has, over the years, sprung up on and around the vessel. "We're making an archaeological project an environmental project," said Beeker. "We have a holistic view of the resource." At first some archaeologists, who intuitively understood the importance of preserving shipwrecks, were slow to grasp the point of preserving the associated ecosystems, according to Beeker. But over the years they've become more agreeable to his approach.

"I think it's a wonderful project," David Conlin said of Beeker and Foster's work in the Dominican Republic. Conlin, the chief of the National Park Service's Submerged Resources Center, noted that the museums of the sea provide a method for preserving the shipwrecks without burdening the Dominican Republic government with the huge expense of raising and conserving them on land, an option he compared to adopting a St. Bernard puppy: "It sounds like a good idea at first, but then it eats you out of house and home."

That said, he, like Delgado, allowed that there are circumstances in which raising a shipwreck is preferable to leaving it in situ. The historical significance of some vessels is so great that they merit the effort and expense of being raised for study. In other cases a shipwreck needs to be raised because it's degrading. "We found that with the *Monitor*," Delgado said, referring to the USS *Monitor*, the famed ironclad battleship employed by the Union during the Civil War. The *Monitor* sank in 1862 off the coast of North Carolina, and, because the wreck was losing its integrity, parts of it were raised in the late 1990s and early 2000s.

There are also those situations in which "you can't count on people's good behavior to preserve the wreck," said Delgado. Though most visitors to underwater museums do behave, the National Park Service no longer allows diving at one of its sites, the *HMS Fowey* at Biscayne National Park in Florida, because of past looting.

But before beginning projects in other Caribbean nations, Beeker still has plenty of unfinished business in the Dominican Republic. He and Foster plan to return there this summer to continue their search for one of Columbus' ships. In his second voyage to the New World, Columbus, intent on colonization, came with 17 ships, and he established La Isabela, the first European settlement in the New world, in 1494. At least six of those ships sank. "We found an anchor that may well be from one of Columbus' ships," said Foster. "People have been looking for a Columbus shipwreck for over 100 years. If we found one it would be quite an accomplishment."

They've also completed proton magnetometer and metal detecting surveys and found a number of anomalies, the locations of which match the places where, according to historical accounts, the ships sank. They've excavated four times at La Isabella, which is an unusually difficult site because the sea floor consists of a gelatinous mud that is very difficult for dredges to remove. (National Geographic also did a documentary on Beeker's research on this project.) The surveys indicate the anomalies are about 12 feet under the seafloor and, because of the mud, they've only been able to penetrate to roughly half of that depth. But this summer they'll come armed with more powerful dredges that they hope will be equal to the challenge.

As for the *Begoña* site, once they definitely locate the shipwreck, Beeker and Foster plan to make the site an underwater museum. The Dominican Republic, in Beeker's estimation, could

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***A conglomeration of silver coins recovered from the* Begoña.**

MICHAEL BAWAYA

As they enter the water, the divers encounter several local people swimming. Many of the artifacts recovered from the* Begoña *are very valuable, so the divers conceal them in waterproof containers when bringing them to shore. The divers take this precaution because some of the locals have taken Spanish coins from the site.

become a diving destination that rivals the Cayman Islands, and he's puzzled as to why it hasn't. He envisions motorboats moored nearby that could take groups of divers out to sea, some of whom would visit the *Begoña*, but the only boats at La Caleta are a handful of small, uncomfortable yolas, rowboats that can accommodate a couple of people.

There is a dive shop of sorts, but to Beeker it's a symbol of frustration. It was built with U.S. money with the idea of also serving as an interpretative center for the national park; but all the money's spent, the building lacks a roof, and its exterior walls are covered with several Taino-themed murals that portray some mythical scenes from the past. He dismissed them as "Taino on steroids."

Furthermore, the partial remains of several ancient Taino can be seen in the building's courtyard. "It's just pathetic," he said of the building and the exposed remains. "We've sent e-mails. We've talked. But the problem is nobody's really in charge. This government is not organized nor funded well enough to support their national park system."

Dealing with the country's political system can be challenging, in part because some of the government ministries he's involved with don't work together well. Beeker has managed to get the ministries of environment, culture, and tourism to join forces, which he counts as a major accomplishment.

"A lot of people don't want us to be successful," he said. The local fishermen, for example, complain that the underwater museums, which prohibit fishing, interfere with their livelihoods. And then there are the treasure hunters who must realize Beeker and his allies could put them out of business.

One of the treasure hunters tried to get a permit to excavate the *Begoña*, even though the site is considered to be part of a national park, but the government awarded the permit to Beeker. Things are different in the Dominican Republic than they were 20 years ago, Francis Soto said. The treasure hunters are only interested in gold and silver, but he and other officials are now more interested in protecting and promoting their country's maritime cultural heritage.

After a day's work at the *Begoña* site, the IU crew dined alfresco at a restaurant in Santo Domingo's *Zona Colonial* district. Beeker, sitting at the head of a long table, sipped a margarita, puffed on a Dominican Republic cigar (he thinks they're better than Cubans), and spoke of the difficulty and expense of excavating at La Isabela. Nonetheless, he's confident they will at some point find a Columbus' shipwreck, and that will result in another living museum in the sea.

Fighting the treasure hunters is a never-ending battle, but there are indications that, at least in this part of the world, the Charlie Beekers are winning.

MICHAEL BAWAYA *is the editor of* American Archaeology.

Finishing the Job

FERREL ANDERSON

Elaine Bluhm (left) talks to people visiting the Crawford Farm site in July, 1960. In the foreground of the photograph are several Sac storage pits.

It was a worst-case scenario: the excavation of a significant site ended abruptly when the site was destroyed. The incomplete excavation uncovered important data, but it remained unknown because a report was never written. Some 50 years later, archaeologists are working to piece the data together and make the public aware of this project.

By Susan Caba

MARK WAGNER picked up a 50-year-old matchbox and slid it open, revealing a scattering of lead shot. He put the matchbox down, exchanging it for a small carton that originally held artists' pastels, soft sticks of ground pigment; its contents now are a few ceramic pipe fragments. Popping the cap of a 35-millimeter film canister, he revealed tiny brass charms nestled in tissue.

More items, their inked catalog tags faded with time, are arrayed on tables under florescent lights. Rusted knives, thick chunks of handblown green glass, a large section of a brass kettle—these are artifacts from Saukenauk, once the home of Black Hawk, the Sac warrior-chief who fought doggedly to preserve his tribe's claim to ancestral lands along the Rock River in what is now Illinois. His last battle, a three-month effort to stave off white settlers and the U.S. military, took place in 1832 and is known as Black Hawk's War.

Saukenauk sprawled across the landscape near the confluence of the Mississippi and Rock Rivers in the northwest corner of Illinois, where that state abuts Iowa and Missouri.

Mark Wagner analyzes iron trade knives recovered from the site. The knives date from the late 18th to the early 19th centuries.

The artifacts that Wagner displayed were recovered in a series of excavations led by University of Illinois archaeologist Elaine Bluhm between 1958 and 1961 on a ridge known as the Crawford Farm, named for the tenant farmer who leased the land at that time. (The Sac usually moved their villages every 15-20 years as a result of depleting the surrounding resources. Between 1790-1810 Saukenauk was located on the Crawford Farm site.)

The site yielded dozens of burials and features such as pits and postholes that suggested at least 100 homes. Researchers also recovered metal rings and buckles, hundreds of beads, coins, and other artifacts that the Sac obtained in exchange for furs. The settlement was home to between 4,000 and 5,000 Sac, making it among the largest communities, Native American or otherwise, in the region at that time.

"I don't know of another site in Illinois that has produced this much; this is a pretty big assemblage," said Wagner, gesturing to the tables. Bluhm documented the project in four notebooks, with detailed field notes and photographs. But she never published her findings. Now it is Wagner's job to repackage the artifacts to meet modern curation standards, catalog them, correlate them with Bluhm's notes, interpret their meaning in the context of the well-documented historic record of the Sac in Illinois, and publish the results.

"Saukenauk was a nationally important site and undoubtedly important to the Sac. Everybody knew lots of work was done and everybody talked about it. It was a fabled excavation, a part of archaeological lore," said Thomas Emerson, director of the Illinois State Archaeological Survey (ISAS). And with the absence of a published report the project, according to Wagner, "developed a mystique."

Because she worked for the University of Illinois at the time, the artifacts and Bluhm's documentation were stored in the university's archives. ISAS, under the auspices of the Illinois Department of Transportation, is responsible for surveying the state's highway construction sites to determine their impact on cultural resources. Crawford Farm was sold to provide fill for the construction of Interstate Highway 280, and consequently "there is a transportation connection," said Emerson, who, due to the importance of the site, feels ISAS has a responsibility to complete Bluhm's work.

Emerson said Saukenauk is emblematic of the fate that numerous Indian communities suffered from the arrival of European Americans. Black Hawk's defeat marks the final chapter in the Indians' resistance to the white settlers' advance. It is particularly well documented in historic records because Black Hawk dictated a memoir to a government interpreter, vividly describing a way of life the Indians wanted desperately to maintain.

Emerson chose Wagner, the interim director of Southern Illinois University's Carbondale Center for Archaeological Investigations, to write the report because of Wagner's long-standing interest in Native American and European American contact in this region and time period. Wagner recently completed another unpublished ISAS project: a report on a Kickapoo Village in Illinois. The Kickapoo and the Sac were closely related.

While a newly minted archaeologist might be flummoxed by the task of reconstructing someone else's work, Wagner was confident because of his decades-long experience working on similar projects. "I've had a lot of experience

CENTER FOR ARCHAEOLOGICAL INVESTIGATIONS

ISAS

These silver ball and cone earrings were probably traded to the Sac by Europeans in exchange for furs.

in dealing with these types of large sites," he said. "If you have that kind of experience, you can look at an old project like this and know how to write it up." It also helps that Bluhm took good field notes and numerous photographs that "show a lot of the work," said Wagner. "A lot of projects back then didn't have many photos. The cost of film ate up budgets." He estimated the report will take two to three years to complete. Bluhm, who has late-stage Alzheimer's, will be credited as coauthor.

THE ARTIFACTS in the university's custody—Wagner estimates there are 20 cartons—represent only a portion of Crawford Farm's yield. ISAS repatriated the burial goods and skeletal remains to the Sac in the early 2000s and looters took hundreds of other items.

The university's collection was shuffled around over the decades, and some of the artifacts were either lost or stolen, while others lost their labels. Wagner is using Bluhm's documentation to restore order by, for example, identifying an unlabeled item in one of the photographs of the dig, then referencing her notes that pertain to the photograph to deduce the item's provenience.

The photographs are also important, Wagner said, because they document the high quality of Bluhm's fieldwork. That, in turn, reaffirms his confidence in her notes. "When you look at the photographs, you can see the work is pretty meticulous," he said.

Bluhm was one of the first female archaeologists to direct excavations, said Wagner. She wore slacks when excavating, which at that time was very unusual attire for women, so, to avoid attention, she sometimes wore a dress when traveling to the site and then changed on arrival. She was not at all the stereotypical 1950s' woman, according to her daughter, Jennifer Herold. "She was a terrible housekeeper," said Herold. "She was a terrible cook. But when it came to her notes, she almost gave you a 3-D version of the dig. Her whole thing was that future archaeologists should be able to

THE DIVISION OF RARE AND MANUSCRIPT COLLECTIONS, CORNELL UNIVERSITY LIBRARY/BY CHARLES BIRD KING

The famous Sac leader Black Hawk is believed to have lived at Crawford Farm from the late 1700s to the early 1800s.

KANSAS STATE HISTORICAL SOCIETY

This historical photo shows a mid-1800s Sac and Fox house that is similar to the homes that once stood at Crawford Farm. The Fox were a closely related tribe that lived with the Sac.

Sac women continued to manufacture traditional clothing into the early 1800s using iron awls like this one.

read her notes. It was the only aspect in her life that she was detail-oriented."

The Crawford Farm artifacts support Black Hawk's description of life in Saukenauk, particularly the Indians' involvement in the fur trade, Wagner said. The Sac left their villages every fall to hunt and trap, returning in the spring to plant corn and trade the skins of various animals for blankets, cloth, guns, gunpowder and flint, brass and tin kettles, gear for their horses, and other goods. "The Indians had a lot of input into what they got in trade," said Wagner. "They weren't being duped. They would reject low-quality goods."

Many of the artifacts suggest the national and international reach of the fur trade. Some of the decorative shell beads they used were only made in New Jersey. The artifact collection includes locks, side plates, and hammers from British rifles, as well as various other goods from Europe. One piece of silver is marked with the name of Montreal silversmith "Robt. Cruikshank."

These items also provide insight into the pace of modernization of Sac life. During the time Bluhm excavated, many archaeologists and anthropologists assumed that Native Americans lost their cultural identities due to their interactions with European Americans. That opinion was so prevalent up until the mid 1900s, said Wagner, that researchers saw little point in investigating sites of this time period.

"There was a feeling that, by the late 1700s or early 1800s, they had lost all their culture because they were no longer making pottery or stone tools. But modern technology was more of an addition than a replacement. They maintained their traditional culture but assimilated modern materials and technology," he said. "They may have been using imported shell beads, but they were still using them to decorate their clothing in traditional ways." He added that the Sac were "very particular consumers and they want certain things, but they don't want everything. They don't want frock coats; they don't want dishes. They want blankets and cloth, so they could make clothing in their own styles."

In other cases, however, new products did in fact bring about a measure of cultural change. "They had quit making arrowheads, and eventually lost that technology, because they had guns. The women had given up making clay pots," Wagner said, holding a large piece of a brass kettle. "To a

ISAS

The British might have given this leopard-engraved silver gorget to the Sac as a present to cement a political alliance between the two.

large extent, that technology was all gone. Once they had begun using metal kettles or pots—which were lightweight, mobile, didn't break—they wouldn't go back to using clay pots."

Despite these changes, "their language is still the same, family structure is still the same. Women want brass kettles because it frees them from making clay pots," he said. "But they are still eating the same sort of crops, hunting the same animals. If you look at the sites, they are still Native Americans."

Wagner also noted that trading and adoption of items from other cultures went both ways. "The Europeans adopted canoes—there's no one saying Europeans had lost their culture. They started wearing leather buckskin—there's no assumption that they had lost their culture.

BLUHM INTENDED to publish her findings, and she took her records with her as she moved from place to place. But there was never money or time enough to get it done. "Back in those days, even if you could get money for an excavation from some agency, they would not give you money to analyze it and write the report. You had to do it all on your own time," Wagner said. "Getting the analysis pulled together, that's the hard part of any project. Plus, because there wasn't an agency demanding a report, it falls to the back of the stack," he added. "When we work on projects today, the money and the deadlines are both provided."

The dig seemed star-crossed from the beginning. From her first visit on Nov. 8, 1958 until the final days of the project, Bluhm had to contend with looters. They had been excavating Crawford Farm for two years before she, hearing of their discoveries, became aware of the site. By the time she was leading her first field school there, they had disturbed at least 36 burials and dozens of pit features.

During her first visit she was told the looters had recently discovered new burials. She immediately set to work with a student, spending three days mapping the area despite rain, snow, and ice. Bluhm returned with more help the following weekend, and again over the university's Thanksgiving break. By the end of the month, she had established a grid, prepared a detailed contour map, and excavated 10 burials. But even as she and her students worked, the looters found more burials. Due to the absence of preservation laws at that time, Bluhm couldn't stop them from digging, but she did, with their permission, document the skeletal material and artifacts they uncovered.

By 1960, Bluhm foresaw the project taking at least two more years to complete. Believing she had the permission of wealthy Wisconsin lumber baron E.W. Davis, who owned the property, Bluhm urged the National Park Service to buy the site. Davis had been supportive of her project, contributing $1,000 for the 1959 field school and another $1,000 to help pay for repatriation of burial remains. But he sold the land abruptly in the spring of 1961 for highway fill. Bluhm learned of the sale on April 24, when she returned to plan that year's excavations.

This silver heart brooch, which the Sac obtained by trade, would have been fastened to clothing.

An engraved silver locket top.

ISAS

ISAS

These engraved tomahawk smoking pipes could also have been a gift from Europeans to a Sac leader.

Contractors were already at work, scraping the ridge with bulldozers. The looters were also at work, hurriedly excavating burials that contained grave goods such as silver ornaments, iron and brass pipe axes, copper pots, long shell beads, iron spears, and antler arrow heads.

Bluhm and a few students worked frantically over the next eight days, grading, mapping, and excavating features as long as the light allowed. Her final day on the site, May 1, was particularly grueling—she and one student uncovered, excavated, and documented 33 features, working with equipment ranging from hand trowels to borrowed earthmovers. Some of the large pits they uncovered contained material, she wrote, that was "greater in amount and of higher quality than any artifacts previously found at the site, outside of those associated with burials." The following day, she returned to the university. "For all intents and purposes … the site no longer existed," said Wagner, who estimated that roughly 15 percent of Crawford Farm was excavated prior to its destruction. "That part of it," Jennifer Herold said, "just killed her."

HIGHWAY PROJECTS today must include an archaeological survey to determine if important cultural resources will be disturbed and, if so, whether the impact would be significant enough to require alteration of the project. The preservation laws were enacted in response to the destruction of archaeological sites throughout the country during the construction of the interstate highway system.

But the first of those laws, the National Historic Preservation Act, wasn't passed until 1966. The National Environmental Policy Act, which extended protection beyond historic buildings to include their surroundings, went into effect in 1969 and was further extended in 1976 to include archaeological sites and other historic resources that weren't already on the National Register of Historic Places. President Richard Nixon ensured money for the projects with an executive order in 1971, requiring states to allocate money from federal projects to look for and preserve cultural artifacts. In 1992, the law was expanded again to provide additional protection for preservation of Native American and Native Hawaiian cultural resources, including funding archaeological and paleontological salvage projects.

"The laws that are in place now were not in place then," said Wagner. "Illinois now has laws protecting human remains, even on private property. There would be no way any of this would happen today. (The Illinois Department of Transportation) wouldn't go near that location—it would relocate the highway."

"It was just at the beginning of the historic preservation movement," said Emerson. "Nobody really understood the scope. It was unclear about how it was going to work."

Despite Saukenauk's destruction, Emerson was philosophical. "I'm looking at the upside. Archeologists got out there. Elaine did a tremendous amount of work under difficult conditions and we're getting it analyzed. We'll get a report and we'll get it to the public." At which time Saukenauk, and Bluhm's fabled excavation of it, will finally become part of the archaeological record.

SUSAN CABA *is a freelance journalist who writes about the arts, material culture, and the built environment. Her article "The Beginnings of Urbanism?" appeared in the Spring 2011 issue of* American Archaeology.

Where the Prehistoric Buffalo Roamed

KENNETH CANNON

An 8,000 year-old male bison skeleton was excavated along the north shore of Yellowstone Lake, in Yellowstone National Park. Isotopic analysis of the upper third molar indicated that, though the bison subsisted largely on cool season grasses, its diet was more varied than that of modern Yellowstone bison.

Researchers believe that the study of ancient faunal remains, known as zooarchaeology, should play an important role in modern wildlife management.

By Mike Toner

In the last 50 years, bones, shells, and other animal remains have played a growing role in archaeology's understanding of ancient human cultures. Centuries-old middens have yielded information about what people hunted and ate, and how diet reflected social status within a given community.

R. L. LYMAN

This humerus of a young northern fur seal was recovered from a roughly 500-year-old site on the Oregon coast. The discovery indicates that this species, which is no longer found in this area, once lived there. Information such as this can help modern marine biologists distinguish between invading species and ones that are recolonizing areas they once occupied.

More recently, several archaeologists have advocated that some of these zooarchaeological data be used to inform environmental and wildlife management decisions that range from simple hunting regulations to proposals for "rewilding" North America with the sort of animals that roamed the continent during the last Ice Age. The archaeologists noted that today's wildlife management decisions rely in part on knowing the geographic range and abundance of species in the past—knowledge that is severely limited by the fact that biological surveys or historical records cover only the recent past.

"The archaeological record can provide (much) greater time depth than the historical record," said University of Missouri archaeologist R. Lee Lyman, a leading proponent of employing zooarchaeological data in the service of environmental decision-making. "Most wildlife managers today are lucky to have 50 years of data on which to base their decisions," Lyman said. "In some cases, we have 50,000 years worth. That's a tremendous advantage when you're trying to understand long term trends."

So far that ability to peer into what Lyman called "deep time" is more impressive in theory than practice, but the possibilities have stirred a flurry of interest among archaeologists. Ancient DNA extracted from herring bones found in prehistoric coastal settlements, for example, is being examined for insights into the decline of the Pacific herring fishery. Prehistoric shell middens in Chesapeake Bay are being studied for clues about the bay's diminished oyster industry. Isotopic ratios in bison teeth from prehistoric kill sites near the Yellowstone basin are being studied for clues about how to manage free roaming bison. These isotopes, by revealing where they fed and what they ate, provide information about ancient migration and diet.

Lyman lamented that biologists are skeptical that studies of ancient faunal remains could inform their 21st-century decision-making. "Conservation biologists often muddle along with imperfect knowledge, not knowing the consequences of their activities," he said. But that hasn't stopped archaeologists from finding ways to make such information useful.

During the 1970s, for instance, sea otters from Alaska were introduced on the Oregon coast, where fur hunters wiped out the species a century ago, in the hope that they would regain a foothold there. The effort failed, and a team of Portland State University scientists found a possible explanation as to why. DNA analysis of otter bones in prehistoric archaeological sites in the Pacific Northwest showed that the otters that had once roamed the coast were genetically more akin to today's California otters, which are better adapted to the lower latitude climate than the transplants from Alaska.

In California's Owens Valley, wildlife managers built a series of artificial reservoirs to protect endangered fish from reduced stream flows caused by the diversion of water to urban areas. But research on fish from prehistoric sites in the valley by Virginia Butler of Portland State University shows

that the endangered fish survived extended droughts in the past, and that they may be more threatened by non-native predatory fish that invaded the man-made reservoirs than by reduced water levels.

Texas wildlife managers have many ways of dealing with the growing deer populations in suburban neighborhoods and surrounding areas. But some of these, such as culling deer herds are unpopular with the public, and others, such as capture, transport, and release, are very expensive. But faunal remains from archaeological sites studied by University of North Texas archaeologist and ecologist Steve Wolverton suggested that hunting might not be such a bad thing for the deer. He found that modern deer bones in areas of central Texas where hunting is now restricted are significantly smaller than those of ancient deer remains. This is presumably because exploding modern deer populations exceed available food supplies. In contrast, deer bones in parts of Central Texas where hunting is allowed are as large as those of their prehistoric ancestors.

Biologists in Washington State hope to assure the recovery of endangered sandhill cranes by establishing breeding colonies in areas where the birds reproduced in the past. Because the birds have been scarce for nearly a century, historical records are of limited help in identifying such places. But the discovery of juvenile sandhill crane bones from a 1,500-year-old-midden in northwestern Washington by Kristine Bovy of the University of Rhode Island has provided new insight on where the birds once bred and might be able to do so again today.

Echoing Lyman, Wolverton said "the zooarchaeological record can provide long-term observations that are empirical and of much greater time depth than the historical record. It can enable conservation scientists to contrast modern conditions with a variety of past ones." Without it, they can only guess what constitutes so-called natural or pristine conditions, which many archaeologists and ecologists argue ceased to exist once humans arrived in the New World.

Nonetheless, to the chagrin of researchers like Evan Peacock, many wildlife managers and conservation biologists appear to be unimpressed by, or ignorant of, zooarchaeological data. "Mississippi has tens of thousands of prehistoric sites and many of them contain the remains of fresh water mussels," said Peacock, a Mississippi State University archaeologist. "The traditional view of these shell deposits has been 'they gathered shellfish; they ate shellfish; we find the shell.' But these sites can be a significant source of information about the pre-modern environmental conditions of a particular waterway."

During the excavation of a 500-year-old Mississippian

DONGYA YANG, SFU

Camilla Speller of Simon Fraser University analyzes ancient DNA samples from herring bones. This information offers insights into the decline of herring fisheries on the Northwest coast.

village in Hinds County, Mississippi, in the mid-1970s, for instance, bags of freshwater mussel shells were set aside for later analysis. Twenty-five years later, Peacock decided to look at the shells and he discovered a gold mine of ecological information. He identified more than 20 species of fresh water mussels, including three that modern biological surveys have never detected in the Big Black River drainage.

For biologists, the presence of a rare mollusk like the Western Fan Shell in a river where it does not now exist is noteworthy. Fresh water mussels may not get the attention that the bald eagle and the buffalo do, but they are key indicators of the environmental stresses caused by dams, channelization, and water pollution. "The Southeastern United States has one of the richest and most diverse fresh water mussel faunas on the planet," Peacock said. "But they are also one of the most threatened groups of organisms in North America."

Because mussels can't move to another stream, those that can't tolerate changes in their environment simply disappear. But because many streams were degraded long before they could be surveyed, archaeological deposits preserve a history of conditions that would otherwise never be known. "Without zooarchaeological data, even the best surveys present only the 'after' picture," explained Peacock.

Over 17,000 mussel shells from 14 species were recovered from this 800-year-old Bilbo Basin site in southern Mississippi. Modern surveys in southern Mississippi streams today typically note as few as five species.

JASON GARDNER AND EDWIN JACKSON

The storehouse of such information is potentially vast. So far, he has examined more than 77,000 mussel shells from 42 archaeological sites in Mississippi and documented at least 69 mussel species, including several that no longer exist in streams where they once thrived. In recognition of the value of this data, the research was funded by the Mississippi Museum of Natural Science through a grant from the U.S. Fish and Wildlife Service. Given the scope of such information and the ability to access it on line (www.mississippimusselbiogeography.com), Peacock is hopeful state authorities will soon use it as a guide for restoring mussel populations.

Archaeologists at the Arizona State Museum have received a similarly cool response to a database that they developed under a $91,000 grant from the Arizona Game and Fish Department. The zooarchaeological data from 1,800 sites in the state has been publicly available (faunaz.asu.edu) for three years, but, ironically, largely ignored by the very agency that funded it. Dave Weedman, the agency's aquatic program manager called the information "intriguing," but said "no one here has used it in any management capacity."

Conversely, when, after decades of study, the National Park Service reintroduced the gray wolf to Yellowstone National Park in 1995, they did so knowing that the wolf, last seen there in 1926, had inhabited the area long before humans arrived. This information came from research done by Utah State University archaeologist Kenneth Cannon. "We were able to establish on the basis of paleozoological data that the wolf had been a part of the Yellowstone ecosystem for close to 25,000 years," said Cannon.

If the strength of applied zooarchaeology is the ability to peer further back in time, its weakness—at least in the eyes of contemporary biologists—is the inherent bias in any remains associated with an archaeological context. Prehistoric humans didn't pay much attention to modern field survey protocols. Bones and shell were gathered for purely pragmatic reasons, and they may have been transported long distances from where they were hunted or found.

Wolverton, who with Lyman has co-edited the new book *Conservation Biology and Applied Zooarchaeology*, said such factors don't necessarily make the information irrelevant, but he acknowledged zooarchaeologists face an uphill battle in their efforts to inform the conservation community.

For starters, he said, archaeology is a social, not a natural science, and consequently archaeologists "are often characterized as pseudoscientists by members of other scientific disciplines." He added that archaeologists often don't realize that their data is frequently discounted because "conservation actions occur in economic, social, and political contexts."

There are, however, those who appreciate zooarchaeology's glimpse into deep time. Some advocacy groups are pushing programs to restore large wilderness areas of North America to conditions that existed—or that they

KAREN CARR

Some people advocate the "rewilding" of North America by introducing relatives of the mammoths and other megafauna that lived here thousands of years ago.

think existed—before the arrival of Europeans. The American Prairie Reserve, for instance, has acquired rights to nearly 300,000 acres in Montana for the reintroduction of free roaming buffalo on land that once supported millions of them. The ultimate goal is a wilderness corridor for free ranging mammals—antelope, big horn sheep, elk, bears, and wolves—that would reach all the way to the Yukon.

But Cannon said bison bones from archaeological sites suggest that primeval North America may have had distinct subspecies of bison. There are subtle physical differences between mountain and plains bison, and the former had smaller herds and may not have roamed as far as the latter. "Management of the genetic diversity and integrity of threatened populations is going to be an important issue in conservation biology," he said. Zooarchaeology could also help clarify the relationship between predators and their prey in the prehistoric past.

The questions loom even larger for a more controversial call to restore North America's ecological equilibrium by introducing relatives—modern camels, lions, and elephants—of the now-extinct megafauna that roamed the continent 12,000 years ago.

The "Pleistocene rewilding" idea, advocated by the Rewilding Institute in Albuquerque, New Mexico, and a handful of other groups, is rooted in the theory—itself controversial—that human predation was largely responsible for the mass extinctions that occurred after the last Ice Age. Though ecologists' embrace this hypothesis, known as Pleistocene overkill, it remains hotly contested in the archaeological community.

"The concept of Pleistocene overkill has taken on a life of its own outside of paleontology and archaeology," explained zooarchaeologist Lisa Nagaoka, of the University of North Texas. "Many conservation biologists and ecologists treat overkill as a fact when, in fact, for many archaeologists overkill is simply one of many hypotheses proposed to explain the extinctions."

Lyman said more effort is needed, both by archaeologists and biologists, to bridge the intellectual chasm between the disciplines. "They have a very different perspective from those of us in archaeology," he said. "And when you don't understand something, you tend to disregard it."

MIKE TONER *is a Pulitzer-Prize-winning writer who lives in Atlanta, Georgia. His article "Chaco, Through A Different Lens" appeared in the Winter 2012-13 issue of* American Archaeology.

Passing the Torch

Having preserved an ancient mound site for more than 50 years, Gordon and Lucille Redtfeldt turned to the Conservancy to guarantee its preservation in perpetuity.

CORY WILKINS

The mound, which is roughly six-feet high, is covered by tall grass in the distance.

After returning from World War II, in which he served as a bomber pilot and was a war prisoner, Gordon Redtfeldt took an intense interest in California archaeology and Indian culture. He painted reproductions of Native American rock art and participated in amateur and professional archaeological excavations, becoming a member of the Archaeological Survey Association.

A cousin of Gordon's wife, Lucille, owned property near the city of Hanford in the fertile San Joaquin Valley, and in the late 1950s the cousin decided to level a mound on his land in order to farm it. Gordon was asked to monitor the destruction of the mound, which happened to be a Yokut site located near ancient Tulare Lake.

A huge number of artifacts and

CORY WILKINS

This shell bead is one of the many artifacts recovered from the mound.

approximately 44 human burials were uncovered before the work ceased. The remains were reburied and much of the mound was left intact. Recognizing the importance of the site, Gordon and Lucille purchased the mound property in March of 1958 to prevent further destruction.

Part of the Southern Valley Yokuts' territory included the rivers and tributaries that emptied into the now-dry Tulare Lake. Within the last 150 years, the widespread use of agricultural plowing and land leveling in the San Joaquin Valley has threatened or destroyed most of the ancient mound settlements in the region. The Redtfeldt mound is an exception. "In my opinion, prior impacts to the site probably resulted in the destruction of some mound and mound skirt deposits representing no more than 15 percent of the total volume of cultural deposits," said archaeologist Greg White, of Sub Terra Consulting. He added that "over 75 percent of the original volume of the mound remains intact."

The Redtfeldts turned the land into a private preserve and they subsequently allowed researchers to investigate the site. Nelson Siefkin, then a graduate student at the University of California Bakersfield, excavated the site and also analyzed the artifacts that were recovered when part of the mound was leveled. He did this for his master's thesis, which he completed in 1999. It focused on the relationship between paleoenvironmental conditions, subsistence, and population trends among the Yokuts.

The artifacts from the mound site include ground and battered stone tools like handstones, pestles, and mortars, as well as projectile points, drills, and bifaces. Various ornaments and beads made of shell, steatite, and historic glass were also recovered. There was also faunal material from local birds, fish, reptiles, and mammals that were food staples for the Southern Valley Yokuts. Though only a small portion of the mound was excavated, these artifacts contribute to our understanding of the Yokuts, who occupied the mound from 1,700 to 500 years ago.

In early 2012 the Conservancy reached an agreement with the Redtbeldts to purchase the site to ensure its permanent preservation, and last December the acquisition was finalized. It was Gordon and Lucille's desire to see the site, now known as the Redtfeldt Archaeological Preserve, be maintained for future generations.

—Deanna Commons

CONSERVANCY
Plan of Action

SITE: Redtfeldt

CULTURE AND TIME PERIOD: Southern Valley Yokuts, A.D. 300-1500

STATUS: The Conservancy acquired the site.

ACQUISITION: The Conservancy needs to raise $60,000.

HOW YOU CAN HELP: Please send contributions to The Archaeological Conservancy, attn: Redtfeldt, 5301 Central Ave. NE, Ste: 902, Albuquerque, NM 87108-1530.

Protect Our Irreplaceable National Treasures

acquisition

UNIVERSITY OF SOUTH FLORIDA

An Ancient Preserve in Idaho

The Conservancy obtains a more-than 10,000-year-old cave where large game was hunted and processed.

CORY WILKINS

This picture was taken from the inside of Owl Cave, where Folsom points and various other artifacts have been found.

The Conservancy has purchased the Croft Archaeological Preserve, its first preserve in Idaho. Located on the eastern portion of Idaho's Snake River Plain, roughly 19 miles northwest of Idaho Falls, the preserve consists of three caves that were created by collapsed lava tubes. The most extensively studied of the three is Owl

CORY WILKINS

This is one of the other two caves on the Croft preserve. It's not yet known if it contains cultural deposits.

Cave, which was first recorded in the 1960s by Helen and Richard Gildersleeve of the Upper Snake River Prehistoric Society (USRPS).

Owl Cave was initially excavated under the direction of B. Robert Butler, of Idaho State University, from 1965 to 1971. The excavators, digging to a depth of six feet below the surface, uncovered numerous projectile points in conjunction with a layer of faunal remains that consisted of more than 70 bison. The evidence suggests that this represents a bison drive where the animals were driven, trapped, and then speared inside the cave. The large deposit of bison bones dates to roughly 8,000 years ago, and it rests on top of a layer of rock debris from ceiling or wall collapse.

From 1974 to 1977, Susanne Miller, a doctoral student at Idaho State University, and the USRPS conducted excavations that dug beneath the collapsed rock debris, uncovering Folsom-style fluted points as well as mammoth, bison, pronghorn antelope, and camel remains. These deposit s date to over 10,600 years ago. The mammoth bones displayed signs of butchering and modification, evidence that humans and mammoths not only co-existed, but that the mammoth was hunted as an economic resource. There is evidence of sophisticated processing technology of the mammoth bones, including percussion fracturing and marrow extraction.

For decades, the Croft family has owned and maintained one of Idaho's most important archaeological sites. Their sincere interest in protecting the cultural resources on their property resulted in important research opportunities. Wanting permanent preservation of the site, the Crofts turned to the Conservancy to create the preserve, which consists of a 10-acre parcel containing the three caves. The Crofts will continue to play an active role in the management and stewardship of the place they hold dear. —*Cory Wilkins*

UNIVERSITY OF SOUTH FLORIDA

Revealing the Mystery of Teipana

The Conservancy acquires a site that appears to be Teipana, a pueblo abandoned in the mid-17th century.

JIM WALKER

Archaeologist Michael Bletzer (middle) and other researchers look at roomblocks on the northern edge of the site.

The Mexican colonizer Juan de Oñate named the Piro Indian pueblo of Teipana (or Teypana, Teypama) "Socorro"—meaning aid or help—in 1598. He chose that name because the residents gave the Spanish colonists food and other needed items. In 1626, Franciscan fray Alonso de Benavides founded the mission of Nuestra Señora del Socorro at Pilabó Pueblo, located about six miles away from Teipana. The former Pilabó Pueblo became the modern town of Socorro, but the location and fate of Teipana, the original Socorro, was for

many years a mystery.

In 1980, archaeologists Michael Marshall and Henry Walt undertook archaeological and historical investigations along the Rio Grande north and south of Socorro. Known as the Rio Abajo Survey, this was the first systematic survey of archaeological sites in the area since the 1930s. Marshall and Walt located numerous previously recorded sites and discovered new ones. Following clues provided by locals, they found a large, previously unrecorded pueblo south of the town of Luis Lopez, which Marshall named Plaza Montoya after a nearby farmer. Although few structural remains were visible on the surface, Marshall was able to discern a rectangular adobe pueblo surrounding a central plaza that covered an area about the size of two football fields. He estimated the pueblo to have had some 200 rooms and, based on surface ceramics, to have been occupied between about A.D. 1500 and 1650.

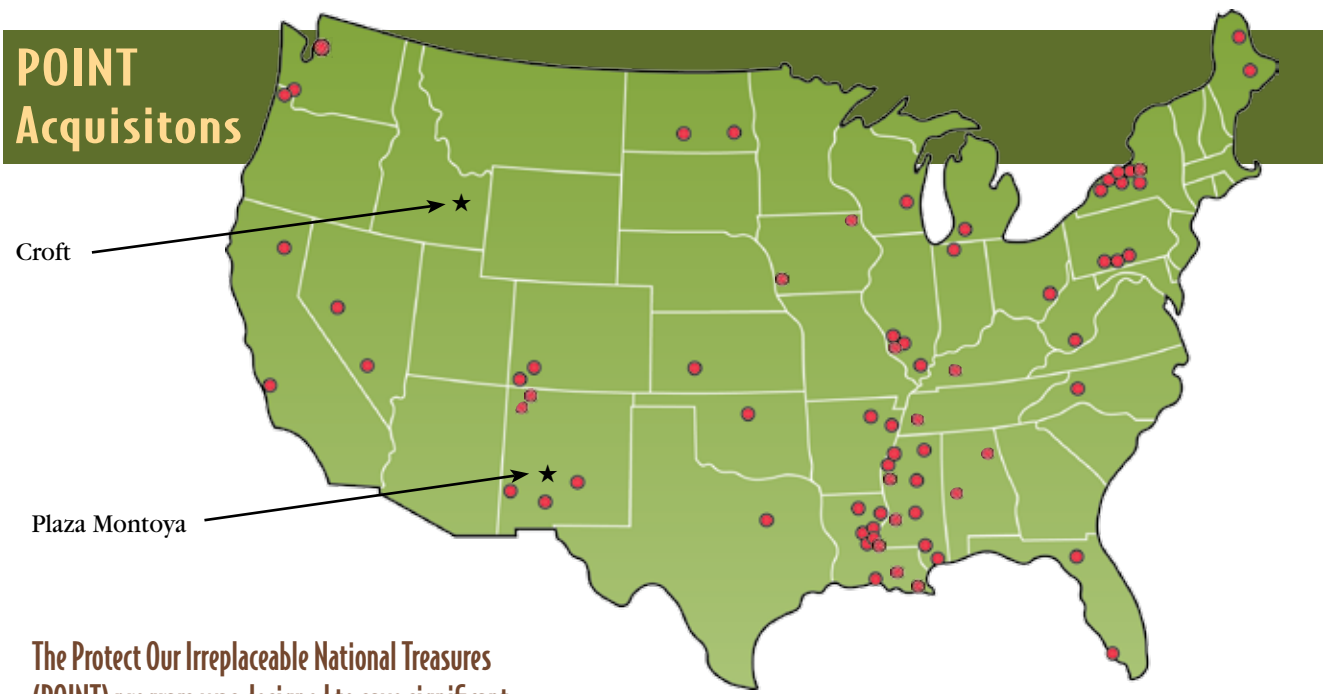
Spanish documents indicate that Teipana was located on the west side of the Rio Grande and south of Pilabó, both attributes that apply to Plaza Montoya Pueblo. Although other evidence such as Plaza Montoya's size and date suggested it could have been Teipana, only excavations could provide further evidence for this assumption.

Since 2000, archaeologist Michael Bletzer of Southern Methodist University has led excavations at Plaza Montoya, assisted by Tom O'Laughlin of the Albuquerque Museum of Art and History and numerous volunteers. The results of their work support the idea that the site is the Teipana Pueblo of the Oñate period. Iron nails, spikes, and other metal objects found during the excavations indicate Spanish contact. Investigations in all four roomblocks surrounding the plaza showed the largest of them to be at least 13-rooms wide and four-to-six-rooms deep, with at least 12-second-story rooms. This amounted to 60 to 70 rooms in each roomblock for a total of more than 250. A magnetometer survey undertaken in 2003 helped uncover a large number of plaza features, though interestingly none of these features were kivas.

The research at Plaza Montoya shows that the site was occupied later, and was far larger, than neighboring sites. O'Laughlin and Bletzer think that could be due to the Spanish policy of *reducción* or *congregación*, whereby native settlements, generally those with smaller populations, were consolidated by the Spanish to make them easier to control. The mission pueblo of Pilabó/Socorro was just six miles away and could have been settled by the residents of Teipana in the late 1630s or early 1640s, perhaps after suffering significant losses in a smallpox epidemic. Notwithstanding this possibility, the excavations of Teipana/Plaza Montoya show a complete and orderly abandonment in which all usable materials were removed from the pueblo. This fits the scenario of Spanish relocation. "The Plaza Montoya study offers a key glimpse, otherwise unattainable, of the complexity of native population and settlement trends in early colonial New Mexico," Bletzer wrote.

The Bureau of Land Management brought the site to the attention of the Conservancy, which purchased 9.7 acres containing an estimated 40 percent of the pueblo from the estate of Chuck Headen. The Conservancy is in discussions with the adjacent landowners about acquiring the remainder of the site. Some of the artifacts recovered by Bletzer's team are on display at the new El Camino Real International Heritage Center south of Socorro.

—Tamara Stewart



The Protect Our Irreplaceable National Treasures (POINT) program was designed to save significant sites that are in immediate danger of destruction.

RICHARD YOUNG

A student works at Fingerhut. The researchers found evidence of a house basin at the site.

Excavations at the Fingerhut Tract

MIDWEST—The Conservancy's Fingerhut Tract Preserve is located at the western periphery of the Cahokia Mound Historic Site in western Illinois, the largest prehistoric habitation site north of Mexico and one on only two archaeological sites in the United States to be designated a World Heritage Site.

Eight students from Saint Louis University, led by archaeologist Mary Vermilion, excavated at the Fingerhut Tract in May and June of 2012. A soil resistivity survey in 2001 indicated the possible locations of a number of house basins, and the recent research was designed to test-excavate four of the basins, one of which was within Fingerhut.

Due to time constraints, only portions of the proposed units were excavated. The excavations did confirm the presence of a basin wall in the south and west excavation units but not in the north and east. Apparently the structure is not as large as the soil resistivity survey indicated. The excavations confirmed that the Conservancy's land contains significant archaeological deposits beneath the surface.

Previous research within the Fingerhut Tract has indicated considerable cultural activity. In particular, the area has yielded evidence of the manufacture of basalt celts as well as stone micro-drills used in fashioning ornaments from shell. This evidence for the manufacture of prestige items sets the Fingerhut tract apart from other purely residential areas.

Scott-McCall Preserve Expanded

SOUTHEAST—In 1994, the Conservancy accepted the donation of 300 acres adjacent to the Ocmulgee National Monument in Macon, Georgia, from the family of Margaret J. Scott. The tract, which had been in the Scott/McCall family since the 1800s, became known as the Conservancy's Scott-McCall preserve.

A recent addition to the preserve by family member Eleanor Lane of approximately 40 acres will help provide a protected corridor between Ocmulgee National Monument and the nearby Lamar Mounds. Both sites contain earthworks and were inhabited from approximately A.D. 90 to the 1600s. The Conservancy's Scott-McCall preserve is not only archaeologically and historically significant, it also protects wildlife and natural resources located in the wetlands within the preserve.

Upon Congressional approval, the Conservancy plans to convey title of the preserve to the Ocmulgee National Monument, where it will serve to better interpret the site and protect its boundaries. Ocmulgee National Monument was named one of the 10 most endangered national parks by the National Park Conservation Association in 2002 and 2003. The group stated that the park was in danger from development, lack of funding, and pollution.

The Conservancy's ownership of the Scott-McCall preserve has already helped block construction of a freeway that would have divided the monument's properties and damaged the natural environment. "Ms. Lane should be commended for her generosity and her concern for Georgia's cultural heritage," said Jessica Crawford, the Conservancy's Southeast Regional Director. "Her gift will ensure that many future generations will be able to learn from and enjoy resources that might not have been preserved, had it not been for her."

American Archaeology Article Wins National Prize

PETER DAWSON

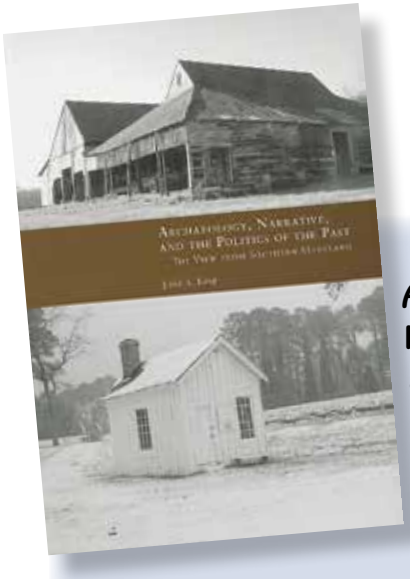
Inuit elders wearing 3-D glasses view computer reconstructions of a Thule whalebone house at a virtual reality theatre called a CAVE at the University of Calgary.

The article "Virtually Recreating the Past," which appeared in the Winter 2012-13 issue of *American Archaeology*, won the Society for American Archaeology's Gene S. Stuart Award.

The award, which is in memory of the late Gene S. Stuart, a writer and managing editor of National Geographic Society books, honors outstanding efforts to enhance public understanding of archaeology. The award is given to the most interesting and responsible original story or series about any archaeological topic published in a newspaper or magazine.

"Virtually Recreating the Past" is about the tremendous potential, as well as the problems, of virtual archaeology. The award carries a $2,000 prize, which will be given to the author, Julian Smith, a freelance writer and regular contributor to *American Archaeology*. This marks the third time in the last four years that an article appearing in *American Archaeology* has won the award.

Reviews



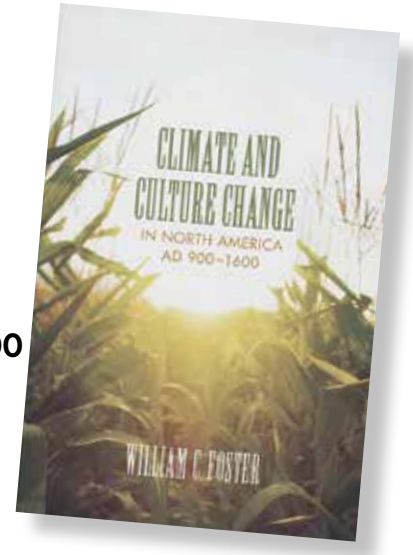
Archaeology, Narrative, and the Politics of the Past: The View from Southern Maryland

By Julia A. King

(University of Tennessee Press, 2012; 372 pgs., illus., $57 cloth; www.utpress.org)

In this innovative work, Julia King explores how historical narratives shape and often distort the archaeological and historical records. Focusing on Maryland's beautiful Chesapeake Bay region, King explores St. Mary's City, the colony's first capital, Point Lookout, a Civil War prison camp for Confederate soldiers, and Maryland's vanishing tobacco farms. She employs a multidiscipline approach that capitalizes on archaeological, historical, architectural, literary, and art history sources.

King is a historical archaeologist at St. Mary's College who has conducted extensive field research around the bay, where she is well aware of the influence of old narratives on current research. Drawing on this body of work, she makes a compelling case for using the discipline of historical archaeology to challenge established narratives that often distort reality to paint a romantic image of the past.



Climate and Culture Change in North America: A.D. 900-1600

By William C. Foster

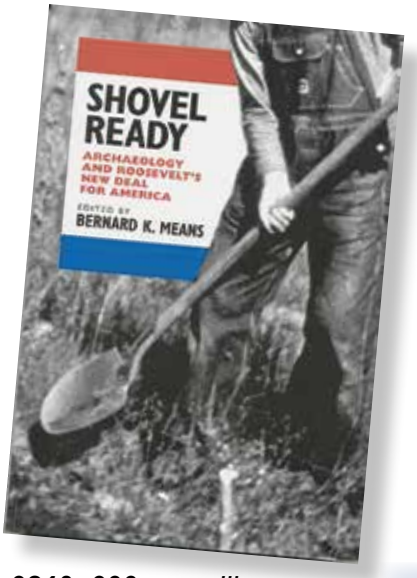
(University of Texas Press, 2012; 240 pgs., $55 cloth, $25 paper; utexaspress.com)

Modern climate change is a worldwide political issue and a constant topic of research and debate. But climatic cycles are well documented in Europe over the past 3,000 years, and archaeologists are using new technologies to study them in North America. In this volume historian William Foster assembles current research to examine the impact of climate cycles on the history of the American Southwest, Southern Plains, and Southeast.

A number of scholars make a strong case that the well-documented Medieval Warm Period (MWP) ca. A.D. 900 to 1300 and the Little Ice Age (LIA) ca. A.D. 1300-1600 had substantial impacts on economic and cultural life in Europe. Foster makes a similar case for North America. He follows the rise of three important cultural centers—Chaco Canyon in New Mexico, Cahokia near St. Louis, and Casas Grandes in northern Chihuahua—during the warm and moist years of the MWP. With the onset of the LIA around A.D. 1300, these centers faced a marked decline in population and agricultural production. The major centers collapsed, as did dozens of smaller towns. As in Europe, Foster argues, climate had a major impact on native cultures.

In 2006 the National Research Council (NRC), the research and operating arm of the National Academy of Science, published a report on surface temperatures over the past 2,000 years. This report is a primary source for Foster's study, as is the research of archaeologists who use modern techniques to reconstruct ancient climates, including tree ring and ice core data, glacial records, and marine and other sediment studies.

Climate changes, both big and small, are a growing area of investigation for archaeologists. If they can accurately reconstruct ancient climates, it may well lead to important revelations about prehistoric societies. Yet ecological determinists like Foster and Jarred Diamond may suffer the fate of most single cause theorists. Nonetheless, Foster makes a powerful case for more study of the role of climate in North America prehistory.



Shovel Ready: Archaeology and Roosevelt's New Deal for America

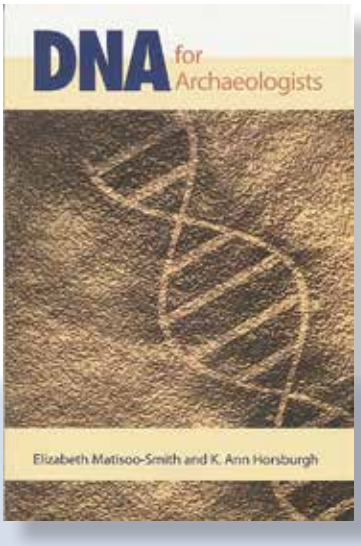
Edited by Bernard K. Means

(University of Alabama Press, 2013; 288 pgs., illus., $40 paper, $40 ebook; www.uapress.ua.edu)

During the darkest days of the Great Depression in 1932-33, more than one in five Americans was out of work. The economy had shrunk to a fraction of what it had been, and the very stability of the country was threatened. The inauguration of Franklin Delano Roosevelt in 1933 brought his New Deal to America and myriad programs to put Americans to work. By May, the Federal Emergency Relief Administration (FEMA) was employing dozens of out-of-work men and, more rarely, women, to excavate the Marksville site in Louisiana. For the next decade, thousands of ordinary citizens were employed in archaeological projects funded by the various work relief agencies. After all, what could be more shovel-ready than an excavation?

This fascinating book tells the story of New Deal archaeology from California to New Jersey. New Deal archaeological projects took place in at least 38 states and were often directed by noted scholars, including Gordon Willey, James Griffin, and Mark Harrington, to name only a few. Fourteen archaeologists contribute case studies from across the nations that include pioneering work in historical archaeology, comprehensive surveys, curatorial projects, as well as large-scale excavations. Because these archaeological projects were administered by five major New Deal agencies and often involved grants to local governments, there is no central record or repository to document this work. *Shovel Ready* is a giant step in assembling this very important part of America's archaeological history. By the time the New Deal came to an end during World War II, archaeology in America had been transformed. Major parts of the country had been surveyed and mountains of data collected. Volumes of reports were written. Tens of thousands of Americans were exposed to our ancient past for the first time. This very readable and engaging history is an important addition of our understanding of this crucial period.

—Mark Michel



DNA for Archaeologists

By Elizabeth Matisoo-Smith and K. Ann Horsburgh

(Left Coast Press, 2012; 200 pgs., illus., $74 cloth, $33 paper, $33 ebook; www.lcoastpress.com)

We all know that the study of ancient DNA can open up exciting new avenues of ancient research. We know it has the potential to tell us with certainty about the movements of people around the globe and much, much more. But what do we actually know about DNA research and how it works? In this compact volume, two New Zealand scholars explain everything archaeologists need to know in a clear, but not simplistic, discussion that ranges from the history of DNA studies to its revolutionary potential. Case studies illustrate how it can be used effectively in a number of archaeological contexts.

They also give advice to archaeologists on how to plan research that capitalizes on DNA analysis and how to use it to the greatest advantage. Many American archaeologists have been slow to embrace DNA research, and this volume makes the overwhelming case for its use. *DNA for Archaeologists* explains the issues in a clear and concise narrative and is a must read for the archaeological community.

The Archaeological Conservancy

Expeditions

Spaces Still Open! Colonial Chesapeake

When: April 21 – 28, 2013
Where: Maryland, Virginia
How Much: $2,795 ($375 single supplement)

From early European settlements to later colonial capitals, the Chesapeake Bay region has played an important role in the founding and development of our nation. Come join the Conservancy as we spend a week exploring the area's rich and diverse colonial history and archaeology.

Our exciting journey will begin in Baltimore, Maryland, and will take us from Historic St. Mary's City, Maryland's 17th-century capital, to its current capital in Annapolis. We will travel to Jamestown, Virginia, the first permanent English colony in North America, and then on to George Washington's estate at Mount Vernon. Along the way we'll spend three nights in Colonial Williamsburg, Virginia, and visit important 17th- and 18th-century sites in the area. During our adventure we will be joined by noted Chesapeake archaeologist Donald Linebaugh of the University of Maryland, as well as other local scholars who will share their expertise and explain how archaeology has assisted them in interpreting the region's past.

APVA PRESERVATION VIRGINIA/HISTORIC JAMESTOWNE

Jamestown attracts thousands of visitors each year. Archaeologists are excavating the original fort, which was rediscovered in 1996.

— UPCOMING FALL TOURS —

Cahokia and the Middle Mississippian Culture

When: September 5 – 8, 2013
Where: Missouri and Illinois

Join us on our exploration of the phenomenal earthworks of Cahokia and the central Mississippi and Illinois River Valleys. Inhabited around A.D. 700 to 1400, Cahokia was the premier Mississippian town and the center of the most sophisticated prehistoric Indian civilization north of Mexico. This ancient city, located across the Mississippi River from what is now St. Louis, covered nearly six square miles and was home to thousands of people. Monks Mound, the great platform mound in Cahokia's central ceremonial area, is the largest prehistoric earthen construction in the New World.

In addition to Cahokia, we'll visit Mastodon State Historic site, which has provided evidence of humans hunting Ice Age elephants, and Dickson Mounds, a Mississippian mound and village center that flourished 800 years ago and today boasts a state-of-the-art interactive museum. Midwest archaeological experts will join us on this fascinating trip.

MARK MICHEL

Cahokia was occupied by the Mississippians from approximately A.D. 700 to 1400. Thousands of people lived there.

Chaco Canyon in Depth

When: September 14 – 22, 2013
Where: New Mexico, Colorado

Explore the vast cultural system of Chaco Canyon and the extensive network of outlying communities that developed in northwestern New Mexico and southwestern Colorado from A.D. 800 to 1140. We'll visit Pueblo Bonito and other spectacular great houses in Chaco Canyon as well as the great kiva at Casa Rinconada. We'll hike to some of the most spectacular and remote sites in the canyon. We'll also have the unique opportunity to visit many of the most important outlying communities that are integral parts of the entire Chacoan complex still being uncovered by researchers. Scholars are still struggling to understand how this vast system developed and operated, and why it suddenly collapsed around A.D. 1140. To complete the experience, we'll spend two memorable nights camping in Chaco Canyon and we'll also tour the modern day Pueblo of Acoma. Some of the leading Chaco experts will join us.

TAC

Chaco Canyon boasts some of the most impressive ruins in the Southwest.

MICHAEL PALMER

Cliff Palace is one of Mesa Verde National Park's most spectacular attractions.

Cliff Dwellers

When: September 19 – 28, 2013
Where: Arizona, Colorado

This fall the Conservancy brings back one of its most popular Southwestern tours: an exciting look at the region's spectacular prehistoric cliff dwellings. Ancient Southwestern groups experimented with building their houses in cliff faces and rockshelters. These structures not only offered protection from the weather, but many of them also served as natural solar collectors during the winter.

From Phoenix you'll travel north through the Verde Valley, Sedona, Oak Creek Canyon, and Flagstaff to Monument Valley and Mesa Verde. You'll see the cliff dwellings of Montezuma Castle, Cliff Palace, and White House Ruin, just to name a few. The trip also includes a visit to Lorenzo Hubbell's historic trading post, a stop at Second Mesa at Hopi, a jeep tour of Canyon de Chelly, and walking tours of some of the Conservancy's most significant preserves, including Yellowjacket and Atkeson Pueblo at Oak Creek.

Oaxaca

When: October 25 – November 4, 2013
Where: Mexico

Join us in Oaxaca, Mexico, during one of the most unusual festivals anywhere—the Day of the Dead. On this day, people prepare home altars and cemeteries to welcome the dead, who are believed to return to enjoy the food and drink they indulged in during life. Rather than a morbid occasion, this is a celebratory event.

Our tour explores the Mixtecan and Zapotecan archaeological sites in the region, including Mitla, Monte Albán, San José Mogote, and Dainzú. You'll have the opportunity to explore Oaxaca's museums and markets as well as several crafts villages featuring weaving, pottery, carved animals, and other local art.

JIM WALKER

Monte Albán is one of the oldest cities in Mesoamerica, dating to approximately 500 B.C.

Patrons of Preservation

The Archaeological Conservancy would like to thank the following individuals, foundations, and corporations for their generous support during the period of November 2012 through January 2013. Their generosity, along with the generosity of the Conservancy's other members, makes our work possible.

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Making Tax Time Less Taxing

As tax time approaches, you might be wondering if there are ways you can reduce the amount you owe to the IRS and increase what you give to charitable causes. One vehicle that many Conservancy members choose is a charitable gift annuity.

A charitable gift annuity is an opportunity to support your favorite charity and provide personal and family security. From gifts of cash to appreciated securities to real estate, a donation to the Conservancy will not only provide for our organization, but also for your financial future. You will receive this fixed payment for life in exchange for your donation. Unused principal will be spent to preserve archaeological sites across the country.

Congress has continued to provide a series of tax benefits for those who donate through a charitable gift annuity. Donors will receive an immediate and substantial income tax deduction and some of your income may be tax-free.

Donna Cosulich set up her charitable gift annuity in 1998, and enthusiastically supported the Conservancy's work for 20 years. We are grateful for her help and were saddened when we were informed that she passed away.

Seven years ago, Barbara Fell started a charitable gift annuity with the Conservancy. She generously donated the remainder of her annuity to the Conservancy. We are appreciative of her significant contribution. These gifts will be used to acquire and preserve the Fort Parker archaeological site in Montana.

Congress has renewed the tax provision that allows you to donate an IRA to charity without being taxed. This can be a good method of supporting the Conservancy.

All donations to the Conservancy, including your basic membership, are tax-deductible as provided by law. Please contact Mark Michel at (505) 266-1540 for more information.

Sherwood Ranch Pueblo
Arizona
Began as a Conservancy Preserve in 2003

Make your mark in time.

Some Conservancy members think the only way to help save archaeological sites is through membership dues. While dues are a constant lifeline, there are many ways you can support the Conservancy's work, both today and well into the future. And by supporting the Conservancy, you not only safeguard our past for your children and grandchildren, you also may save some money.

Place stock in the Conservancy.

Evaluate your investments. Some members choose to make a difference by donating stock. Such gifts offer a charitable deduction for the full value instead of paying capital gains tax.

Give a charitable gift annuity.

Depending on your circumstances, you may be able to make a gift of cash and securities today that lets you receive extensive tax benefits as well as an income for as long as you live.

Leave a lasting legacy.

Many people consider protecting our cultural heritage by remembering the Conservancy in their will. While providing us with a dependable source of income, bequests may qualify you for an estate tax deduction.

Whatever kind of gift you give, you can be sure we'll use it to preserve places like Sherwood Ranch Pueblo and our other 450 sites across the United States.

Yes, I'm interested in making a planned-giving donation to The Archaeological Conservancy and saving money on my taxes. Please send more information on:

☐ Gifts of stock ☐ Bequests ☐ Charitable gift annuities

Name: _____

Street Address: _____

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The Archaeological Conservancy
Attn: Planned Giving
5301 Central Avenue NE
Suite 902
Albuquerque, NM 87108-1517

Or call:
(505) 266-1540