



Southwest Florida Archaeological Society (SWFAS)

OUR 41st YEAR

October 2021 Newsletter

<https://swflarchaeology.org/>

PRESIDENT'S CORNER *By John F. Furey M.A., RPA*



While we at SWFAS tend to provide articles on archaeology, anthropology and scientific articles that affect archaeology such as advancements in DNA and genetics, this month we present a SWFAS Newsletter on history and archaeology! Can warfare increase an awareness and appreciation of foreign cultures? Can warfare develop an appreciation for extinct language? Can warfare lead to archaeological excavations? Can warfare stimulate the growth of museums? The answer to these questions is yes if you look at the French Napoleonic invasion of Egypt. How does this relate to archaeology? The failure of the Napoleon's military expedition into Egypt was a military failure but it was a scientific success and started the scientific discipline of Egyptology.

The Bureau of Land Management has reported that several Native American petroglyphs have been vandalized in Utah and that it appears to be a spree. Utah has hundreds of these sites and some have 'white power' scribbled over them. How do we protect these treasures? See the article.

Lately there have been many articles on Neanderthals and DNA. It appears that DNA can now be extracted from cave dirt. See the article.

This month, I have added a section on some of the new books available, see below.

SWFAS DUES FOR 2022

Again, as we have for the last two years, SWFAS is not requiring that annual dues be paid. However, we are asking for donations to assist with our fixed costs. You can donate on our website at <https://swflarchaeology.org/> or mail a check to our SWFAS Treasurer, Charlie Strader, with the SWFAS Membership form below.

SWFAS 2021 NEWSLETTER and ZOOM SCHEDULE

October SWFAS ZOOM Newsletter
SWFAS October Newsletter

November SWFAS ZOOM Newsletter
SWFAS November Newsletter

December SWFAS ZOOM Newsletter
SWFAS Newsletter

ARTICLES

Napoleon landed his army near Alexandria, Egypt in early July 1798 and, after defeating the Egyptian army at the Battle of the Pyramids, took Cairo on July 21st. After searching and pursuing the French fleet, English Rear-Admiral Nelson finally caught up with them on August 1, 1798 and the battle of the Nile began. It was a complete defeat for the French fleet and effectively bottled up the French army in Egypt, ending any hope of resupply or escape.

ADMIRAL NELSON'S DECISIVE VICTORY OVER THE FRENCH AT ALEXANDRIA

By Jack Beckett

November 2, 2017

From War History Online at <https://www.warhistoryonline.com/history/admiral-nelsons-decisive-victory-french-alexandria-mm.html>



Rear-Admiral Horatio Nelson, the rising star of the British Royal Navy, had been pursuing the fleet of the French Republic around the Mediterranean for two months. The French objective was to land an invasion force on the Egyptian coast, and it had been achieved. The French land army, led by Napoleon himself, had taken the city of Alexandria by force and then proceeded inland. The French fleet, under the command of Admiral d'Aigalliers, anchored in the broad, sheltered coastal waters of Abuqir Bay, near Alexandria.

It was 1798. In the five preceding years, numerous attacks by an alliance of European powers had failed to defeat revolutionary France. The coalition of states which had opposed the new Republic had collapsed, and the only country left still at open war with France was Great Britain. At that time, Britain's navy was her most powerful weapon, and the French were working hard to build their sea-going strength to a level where they could challenge the Royal Navy for control of the waves. The key to the continued success of the British war effort was the vast wealth generated by her colonies in the Indian subcontinent. Napoleon's plan at the time was to secure a power base in Egypt, from where the flow of communications and money between Britain and India could be disrupted.

Nelson, at last, caught up with his enemy on August 1, 1798. The only thing on his mind was the prize, and he immediately gave the order to prepare to attack. Admiral d'Aigalliers had deployed his fleet in a line of battle stretching the length of the bay. There had been some disagreement among the captains about what course of action they should take, but the Admiral's opinion had prevailed. When Nelson found them, they were deployed like an entrenched army, with the tremendous 120-gun flagship *Orient* in the middle of the line. The two fleets first spotted one another at two in the afternoon, but maneuvering a fleet takes time, and the battle did not begin for another four hours. The French Admiral called his captains to a council of war on the flagship. Nelson gave the orders to prepare his ships for night-fighting, fitting each with four lights on the mizzen-mast to reduce the risk of his own vessels firing on one another in the confusion of battle.

Nelson and d'Aigalliers' forces were fairly evenly matched. Both had thirteen ships of the line at their command, plus a handful of smaller vessels, but Nelson had the advantage of numbers when it came to men. The French Admiral had been forced to send foraging parties ashore under heavy guard, as Napoleon had stripped the boats of most of their food and water when he had disembarked with his army. When Nelson's fleet had been sighted, d'Aigalliers had given orders that the foragers and their guards should return with all haste, but by the time the battle began most of those men had not managed to rejoin the fleet.

Nelson's fleet attacked in two lines. The first, with Nelson's flagship fourth in line, struck the seaward side of the French vanguard. The second line crossed right in front of the nose of the leading French ship, then swung to the left. In that way, the first four French ships were caught in a devastating crossfire. The first shots were fired at six o'clock. It had taken Nelson two months to find them, and four hours to bring his ships to bear, but by nine o'clock that evening the French fleet's vanguard was in pieces. Two boats suffered incredible damage

and loss of life before at last surrendering to boarding parties. One had drifted near to land where it was sinking. A fourth had given determined resistance, but the captain could not challenge the weight of fire that was laid on his vessel. His ship's masts were gone, and he was severely wounded when at last he ordered his ship's surrender.

The British fleet was now approaching the center of the French line, where the heaviest guns were grouped around the flagship. As they approached, Nelson's ship took one raking broadside which killed more than a hundred men. The Admiral himself was wounded, but the ship which had landed the blow was quickly subdued by the combined fire of the British advance.

The lead British ship was a three-masted 74-gunner named Bellerophon. She had gone forward from the main battle and engaged the French flagship, and for hours, they had dueled at close range. The French Admiral d'Aigalliers was killed on board, hit in the belly by a speeding cannonball, but his ship fought on. Eventually, the Bellerophon could fight no longer, so the injured captain ordered the anchor cut and she drifted away.

On board the French flagship Orient, a fire had broken out below decks. The ship was heavily damaged but still far from surrender, and the crew scrambled to quench the flames. Five British ships, including Nelson's flagship, were now in the range of the Orient. Broadside after broadside rocked the massive vessel, and the flames began to spread. The Orient became a towering inferno under the bright moon, and the British began to withdraw with gun ports closed. The sparks and flames licked high into the night, roaring and crackling. All around, the surface of the water was choked with the bodies of the dead, wooden debris, men swimming and little boats full of people rowing desperately away from the blazing ship. The sudden explosion of the Orient's powder magazine was deafening, and the shockwave rocked the attacking vessels and knocked their crews flat. When the British sailors recovered and gazed across the water, they saw only a few pieces of burning shrapnel. The Orient was no more.

The fighting continued right through the night. During the hours of darkness, fresh British ships arrived to reinforce the attack. After the destruction of the Orient the remaining French ships were thrown into chaos, and one by one they surrendered or were destroyed. By late morning of the next day, it was all over. Two ships of the line and two small frigates managed to escape the destruction, led away by Villeneuve, the French second in command. The British had captured nine ships and destroyed four, and they had taken almost a thousand prisoners. It was a resounding victory for Nelson, and his fame, his wealth and his reputation were secured.

NAPOLEON'S MILITARY DEFEAT IN EGYPT YIELDED A VICTORY FOR HISTORY

By Migul Angel Molinero

January 18, 2021

From National Geographic at <https://www.nationalgeographic.co.uk/history-and-civilisation/2021/01/napoleons-military-defeat-in-egypt-yielded-a-victory-for-history>



photograph by AKG/ALBUM

By the end of the 18th century, France wanted to conquer Egypt. At war with Britain, France sought to disrupt its enemy's dominance of the seas and its trade routes with India; taking control of Egypt would give France a foothold from which to expand in the Mediterranean. An ambitious Corsican general, Napoleon Bonaparte was given command of the mission. Already renowned for his campaigns in Italy, Napoleon led French forces to Egypt in 1798 to fight against the local rulers. Known as the Mamluks, they controlled the North African territory, which was then part of the Ottoman Empire.

While the expedition's chief aim was martial, it had a secondary purpose: to collect scientific and historical information about Egypt, which many in France believed was an ancient civilisation equivalent to classical Greece and Rome. Along with 35,000 soldiers, more than 160 scholars and artists traveled to Egypt in 1798. Officially known as the Commission of the Sciences and Arts of Egypt, this group would end up making a greater contribution to history than the French fighting forces. Their careful

work, carried out over many years, would give birth to the field of Egyptology in Europe and reveal to the world the history of the grand civilization that had ruled along the Nile for millennia.

Soldiers and scholars

In early July 1798, the French fleet landed near Alexandria and easily captured it. French troops advanced on Cairo and took the city on July 21, after winning the Battle of the Pyramids, also called the Battle of Embabeh. Despite these initial victories, the military mission began to flag. France did not have enough men to establish sufficient garrisons, which limited its military presence to the capital city and certain areas of the Nile Delta. British naval forces were lurking offshore in the Mediterranean and succeeded in sinking the French fleet stationed off the coast of Egypt in August. Napoleon and his forces were effectively stranded. The land campaigns continued with some success, but Napoleon also had to suppress local revolts and losses of men not only to battle but also disease. In 1799 Bonaparte decided that Egypt held nothing more for him and returned to France, leaving his men under the command of General Jean-Baptiste Kléber. Kléber scored a few victories before his death in June 1800. His successor, General Jacques-François de Menou, faced insurrections in Cairo and attacks from the British that ultimately forced him to sign a capitulation in Alexandria in September 1801. All French troops were allowed to evacuate to Europe.

Scientific successes

In stark contrast to the failure of the military mission, the scientific expedition was enjoying tremendous success. Led by two veteran scholars—mathematician Gaspard Monge and chemist Claude-Louis Berthollet (who both served with Napoleon in Italy)—its many participants were at the beginning of their careers. In August 1798 the Institute of Egypt was formally organised in Cairo; Monge was elected its president, and Napoleon, vice president. The institute was organised into four sections: mathematics, literature and fine arts, natural history and physics, and political economics. The institute's founding act stated it was not only to research the nature, economics, and history of Egypt, but also to contribute to advancing the principles of the Enlightenment in Egypt and to assist its government.

At first, French scholars were posted to the institute's Cairo headquarters, but others began to travel around the country to fulfill their duties. One member, Dominique-Vivant Denon, was an aristocrat and diplomat as well as a writer of libertine novels and an accomplished visual artist. While in France, he had been a regular at the parlors of Joséphine de Beauharnais, the woman who would become Napoleon's first wife. After Napoleon convinced him to join the Egyptian expedition, Denon accompanied General Desaix to Upper Egypt where he sketched and collected data on numerous pharaonic monuments in the region. When Napoleon slipped back to Paris in 1799, Denon went back with him and began to work on a book of his Egyptian adventures.

In 1802 Denon published *Travels in Lower and Upper Egypt*, which became a runaway success. His lively prose mixed the narrative of a military campaign with descriptions of mysterious ancient sites in a faraway land. Denon's illustrations were remarkable for their time. *Travels in Lower and Upper Egypt* contained more illustrations than any other book before it. While there was no precedent for the number, size, and quality of his works, there was also no precedent in terms of the subject matter. The Egyptian monuments he drew—the Colossi of Memnon, the Temple of Hathor, and the Sphinx of Giza—had never been seen in such detail. Their beauty and distinction captivated France, and audiences were hungry for more.

Denon dedicated his work to Napoleon, and the book transformed local opinion. Napoleon went from being associated with the failure of a military campaign to the leader who exposed the might and grandeur of ancient Egypt, a civilisation as influential as classical Greece and Rome. Denon became director of the Central Museum of the Arts (the future Louvre Museum) and had all manner of luxury objects designed from the drawings he had brought from Egypt. Tableware, furniture, wallpaper, and other items were decorated with sphinxes, obelisks or palms, exotic images that served as propaganda for Napoleon.

British wins, French losses

After Denon's return from Upper Egypt in 1799, Napoleon sent more scholars to the region for more investigation of Egyptian antiquities. Despite the military turmoil, the French scholars were able to work in

relative safety because they were escorted to each monument and guarded during their examinations. The researchers took numerous notes, collected various artifacts, and made careful observations and detailed measurements. After returning to Cairo, they had hoped to embark immediately for France with their collection, as Napoleon had ordered before leaving the country. But the French surrender to the British changed circumstances: British commanders demanded that the French hand over all the antiquities the commission had collected, including an inscribed black stone stela found by French soldiers in Rashid in June 1799. Although it looked rather unassuming, the appearance of hieroglyphic, demotic, and Greek inscriptions on it were intriguing. The French were forced to give it up (along with everything else), and that is how the famous Rosetta Stone and other Egyptian treasures ended up in British hands.

The commission successfully fought to keep their documentation. French naturalist Étienne Geoffroy Saint-Hilaire threatened to burn everything before giving it to the British. As part of his threat, he compared the potential conflagration to be the equal of the loss of the great Library of Alexandria. His gambit worked: The British relented and allowed the French to keep their notes.

A colossal publication

A few months after the return of the expeditionaries to France, Napoleon ordered that the investigations of the commission of scholars in Egypt be published in a large printed work. It was a massive undertaking, one that would take years to complete. The resulting multivolume work would feed the French appetite for ancient Egypt, begun by Denon's book. By 1809 there were 36 people involved in writing the work and as many as one hundred engravers involved in creating illustrations. The plan called for nearly 900 copper plates containing more than 3,000 figures. Geographer Edme-François Jomard was one of the project managers of the massive work and led the committee in charge of assigning topics, receiving drafts, and editing them. The committee also made sure that the text coordinated with the images being created specially for the volume. The system did not differ all that much from today's academic journals.

The publishers had hoped the work would be published all at the same time, but Napoleon, already crowned emperor, was growing impatient. To appease him, they decided to start serially publishing in separate volumes in 1809. The *Description of Egypt, or a Collection of Observations and Research That Was Made in Egypt During the Expedition of the French Army, Published by Orders of His Majesty the Emperor Napoleon the Great* comprises 22 volumes: nine books of text and 13 of plates, illustrations, and maps. Volumes began publishing and continued even after Napoleon was out of power. After the reinstatement of the monarchy in 1814, King Louis XVIII decided to continue work on the publication because it was an obvious badge of French national pride. The team would finish the entire set of works in 1828, after the publication of the maps, which were last to be published because they had once been considered top secret by the government.

Joseph Fourier's preface framed ancient Egypt as a cradle of civilisation (a fairly new concept, conceived at the end of the 18th century) where the pyramids rose, the great Greek thinkers had studied, and the great Alexander had ruled. But he also wrote: "This country, which has transmitted its knowledge to so many nations, is currently mired in barbarism," hence the supposed need for the French conquest that was intended—so it was affirmed—to return to Egypt the benefits of a civilisation that it had itself created.

Strengths and weaknesses

The contents of the *Description of Egypt* are divided into three major sections: antiquities, natural history, and the modern state, with volumes of text and images for each. More than half the work is devoted to the past and shows how the untold history of the pharaohs had captured the imagination of the scholars. Their fledgling historical interpretations were hindered by the inability to understand hieroglyphs, which prevented the creation of a chronological presentation. The first two volumes were organised geographically, from south to north, from the island of Philae in Upper Egypt to the Nile Delta. In the third and fourth volumes, articles were organised by theme. Scholars attempted to compare the narratives of classical authors with the remains of Egypt's still visible monuments.

For many modern scholars, the most enduring value of this work lies in the illustrations, for their fidelity and aesthetic dimension, accentuated by their enormous size. They mark the start of academic archaeology in the Nile Valley. The topographical plans are exceptional. There are plans, elevations, sections, and precise measurements of monuments. The aim was to facilitate their study without the need to travel to Egypt. About 20 of the buildings depicted have since disappeared and all that remains of their appearance are the figures and explanations in the Description.

Napoleon's French expedition marked the turning point when the European public and academic imaginations became obsessed with exploration of ancient Egypt. The 1799 discovery of the Rosetta Stone led to Jean-François Champollion's deciphering of hieroglyphics in the 1820s. His work was the key to a new understanding of ancient Egyptian civilisation, as scholars could better interpret monuments and antiquities, leading to a more detailed rendering of this colossal ancient power and its people.

CAN ANYBODY SOLVE THE SPREE OF PETROGLYPH DESTRUCTION?

By Daniel Modin

May 11, 2021

From MSN at <https://www.msn.com/en-us/news/us/can-anybody-solve-the-spree-of-petroglyph-destruction/ar-BB1gB6Kk>



*Provided by The Daily Beast
Federica Grassi/Getty*

In early April, Richard Gilbert, a 36-year-old climber, was climbing an easy route in Utah when he bolted into a well-known petroglyph called the “Sunshine Wall” created by the Fremont people who lived in the region roughly a millennium ago. In a since-deleted post, he said it was an accident and mistook the petroglyph for graffiti, writing, “honestly, to me, it looked like a group of high school kids got high AF and chiseled the rock.” A couple days after, Climbing magazine debunked his claim to ignorance, citing the fact that he captioned a photo of him on the route two weeks earlier as “Petroglyph of a man holding a spear!”

It was only a few weeks later that another petroglyph in Utah was defaced. The “Birthing Rock,” alternatively known as the “Birthing Scene Petroglyph,” near Moab involves images inscribed on the rock from over 1,000 years ago, including anthropomorphic figures, a woman giving birth (hence the name), bear tracks, bighorn sheep, and more. Over all of this, vandals etched an ejaculating penis, and the words “white power”—once crossed out because they spelled “white” incorrectly on their first attempt. In a statement, the Bureau of Land Management (BLM) responded to the Birthing Rock vandalism, writing they “strongly condemn vandalism of cultural resources and [are] working with professional conservators to remove the offensive graffiti.” They have also offered a \$10,000 reward “for information leading to the arrest and conviction of the individual(s) responsible for the vandalism.”

While both events sent ripples through the climbing community, archaeologists, as well as the Indigenous communities in Utah, perhaps more shocking is the fact that they are in no way isolated incidents. In November, vandals defaced pictographs west of Bend, Oregon, and in April, vandals painted and scratched petroglyphs in Georgia beyond recognition. According to Utah State Historic Preservation Office Public Archaeologist Elizabeth Hora, she's had four projects like these come across her desk in the last four weeks alone. Intentional or not, the one thing these events all have in common is this: they all took place on public lands. Tribes and archaeologists both agree that these lands need to be managed better, but the question remains: how best to do it?

On the internet, people were quick to chime in with potential solutions. Comments littering local news articles suggest positioning cameras above the sites, while others ideate reducing the size and scope of National Monuments in the region in the hopes of decreasing the amount of visitors—and thereby the likelihood of this happening. Others argued they should expand the National Monuments further in order to protect more land.

But none of these suggestions truly get at the core of the issue, and none come without their own set of issues, drawbacks, and problems. For example, Hora helped explain that extending the reach of National Monuments wouldn't necessarily protect these petroglyphs further. "Even with a National Monument designation, it would still be BLM-managed, public land," she said. This isn't a problem per se, instead, it just alludes to the fact that changing the status of the land wouldn't lead to an increase in funding or opportunities to better manage the land. She added that there are thousands of these sites spread out across Utah, making designation challenging as well. As for trail cameras, they've tried it—but they were often and easily damaged.

The old way of protecting and preserving these sites, according to Hora, was largely avoidance. "We knew where the sites were, but we just didn't tell people," she told *The Daily Beast*. "Before COVID, we were ringing our hands about Instagram, because people were going further and further into the backcountry to try to get pictures further out from civilization." In efforts to direct travelers away from these sites, archaeologists had worked to "harden" these areas, making them increasingly difficult to access by putting trails that led near the sites, but not to the sites.

With avoidance becoming less and less of a possibility as outdoor usage on public lands continues to grow, Hora is placing future bets on education. "We haven't told people what to do when they go out and find these resources or even how to identify them for over a generation," she told *The Daily Beast*. In an effort to counteract the recent bouts of vandalism, Hora has launched the Stop Archaeological Vandalism campaign, which aims to educate people on how to behave in these sites, and to promote awareness of the importance of these cultural resources. However, while tribes recognize that education around how to behave in these places is important, many argue that this type of vandalism and disregard for the lands is a symptom of a larger issue that they'd like to address.

Patrick Gonzalez-Rogers, the executive director of the Bears Ears Intertribal Coalition, which represents the Hopi, Navajo, Ute, Ute Mountain, and Zuni tribes, told the *Daily Beast*, "If this was Notre Dame, there would be an incredible outcry, and so we should have the same sense of urgency, and the deference and profundity to protecting this." "This conversation is way deeper than someone damaging a rock panel," Angelo Baca, the cultural resources coordinator for Dine Bikeyah, a Native American-led grassroots nonprofit working to promote healing of people and the earth through conservation of cultural lands, told the *Daily Beast*. "If even in the remotest of places, people are writing things like 'white power,' there is clearly a larger problem going on," he points out. While he argues he's not surprised, after growing up in San Juan, which he referred to as "one of the most racist counties in the U.S.," he hopes "these events can lead to addressing the actual, systemic issue, and not just the symptoms."

While it may feel easy or perhaps intuitive to look upon these petroglyphs as historical artifacts, remnants of the past in need of preservation, Baca explained that they are in fact, the opposite. Instead, he argues the recent events and the conversations we have around them can perhaps help us rethink and shift paradigms about how we think about lands and the indigenous communities who inhabit them. "When we talk about these places, these [rock] panels, we're not talking about a cultural, historical resource—we're talking about a relative, a living relative, someone we still have a connection to," he said. "We see it as a part of us. When you destroy that rock panel, you do that to us. You destroy us." This was especially prevalent for the Birthing Rock, which Baca says is another "direct attack on Indigenous women." He says, "They don't see them or us, as full human beings. They see [Indigenous women] as someone who can be lost, damaged, objectified."

For Baca, then, the damaging of the petroglyph isn't simply an erasure of history, but instead, a disrespect for his past, present, and future culture and sense of self. This is why Baca wouldn't like to see these places solely preserved, and he wouldn't like to see the focus lie solely on education in regards to how to behave in these places either. Instead, Baca and Gonzalez-Rogers both insist the conversation needs to shift towards a deeper understanding of their peoples and their lands, with their people at the forefront, leading those conversations. "It's not just about preserving or maintaining, it's about living and growing" he said, suggesting that denoting this land as historical or ancient doesn't do it justice, since tribes still derive meaning and use from it today. In

fact, by believing these are “ancient relics,” he argues, we are continuing to colonize and effectively erase the people who currently live in the region.

Ultimately, Baca hopes that “the preservation aspect of these histories and living cultures comes as a natural byproduct of people wanting to do what is actually good for the Indigenous community so it can thrive and continue to exist.” “That, at the end of the day, is the answer to the riddle. It’s not about forcing anyone to do anything.”

HOW NEANDERTHAL DNA FROM CAVE DIRT IS REVEALING DETAILS ABOUT HOW EARLY HUMANS LIVED

By Katie Hunt

May 3, 2021

From CNN at <https://www.cnn.com/2021/05/03/europe/cave-dirt-human-neanderthal-dna-scn/index.html>



For centuries, archaeologists have searched caves for teeth and bones entombed in sun-starved dirt in the hope of piecing together how our ancestors lived and what they looked like. Now, new techniques to capture DNA preserved in cave sediment are allowing researchers to detect the presence of Neanderthals and other extinct humans. These ancestors roamed the Earth before and, in some cases, alongside Homo sapiens. The latest techniques allow scientists to learn about our early relatives without ever having to find their bones -- just the dirt from the caves where they hung out.

Humans and animals constantly shed genetic material when they pee, poop and bleed -- and from shedding hair and dead skin cells. This genetic material leaches into the soil, where it can remain for tens, if not hundreds, of thousands of years if the conditions are right -- such as in dark, cold caves.

Researchers have, for the first time, retrieved detailed Neanderthal genetic material from DNA preserved in dirt in three different caves in Europe and Siberia, according to a study published in the journal *Science* in April. "These are ancient caves where Neanderthals lived. You don't know if people are pooping where they lived and worked. I'd like to think not. But they are making tools, you can imagine they cut themselves. If they had children, the children maybe pooped -- they definitely didn't have Pampers," said lead author Benjamin Vernot, a population geneticist at Germany's Max Planck Institute for Evolutionary Anthropology. Vernot helped develop the new technique to capture and analyze the DNA from cave sediments.

Unraveling mysteries

The first human DNA gleaned from cave dirt came from Denisova Cave in Siberia in 2017. Last year, scientists were able to extract the DNA of Denisovans -- a little-known human population for which we only have five definitive bone fragments -- from dirt in a cave on the Tibetan plateau. That cave is where the first Denisovan fossil remains outside the eponymous Siberian cave had been found. The discovery provided more definitive evidence for their presence in Asia. Those findings, however, were of mitochondrial DNA, which is more abundant but less informative than nuclear DNA. Vernot and his team are the first to glean human nuclear DNA from cave dirt. "Mitochondrial DNA is only inherited from the mother, it's only one tiny thread of your ancestry and you lose a lot of complexity. If you look at the nuclear genomes of humans, Neanderthals or Denisovans, you can calculate how they were related and how many there were at a given time," Vernot said.

Extracting and decoding this DNA isn't easy, but it's beginning to reshape our understanding of prehistory and may allow scientists to untangle some of human evolution's biggest mysteries: how our ancestors spread around the world and how they interacted with other ancient humans -- including the enigmatic Denisovans. "I think the *Science* paper is a remarkable technical achievement and opens up many possibilities for future work in Eurasia on caves with no Neanderthal (or Denisovan) fossils," said Chris Stringer, research leader in human origins and professor at the Natural History Museum in London. He wasn't involved in this latest study.

"Many temperate areas that currently have little or no archaic fossil human record may now be able to contribute to building a population history of Neanderthals, Denisovans and - who knows? - yet other human lineages," Stringer said via email. Until recently, the only way to study the genes of ancient humans was to recover DNA from scarce fossil bones and teeth. To date, DNA has only been extracted from 18 Neanderthal bones, four Denisovans and the child of a Neanderthal and Denisovan. This breakthrough means that many, many more DNA sequences can potentially be obtained, even without skeletal remains, to build up a more complete picture of ancient humans.

Where does the DNA come from?

Vernot and his colleagues took around 75 samples from sediment layers in three caves where ancient humans long have been known to have lived: the Denisova and Chagyrskaya caves in southern Siberia and the Galería de las Estatuas in the Atapuerca Mountains in northern Spain. About three-quarters of the samples the research team took had ancient human DNA. "In the caves we sampled, archaeologists had already dug deep and exposed the different layers so we were able to access 40,000 years of history. We took tiny plastic tubes and jammed them into the cave sediments and twisted them a bit." Detecting the Neanderthal DNA fragments in the cave sediment wasn't easy, Vernot said. The caves were inhabited by other animals that have similar stretches of DNA to humans. And these caves also could have been contaminated by DNA from archaeologists who have worked in the cave. The team compared the known genomes of Neanderthal fossils with those of 15 other mammals and designed chemical methods to target the uniquely Neanderthal part of the genome that would be most informative. "Humans weren't the only things in that cave. We are related to all living things on Earth, and there are parts of our genome that are similar to bears or pigs. You really have to fish for the human DNA. Human DNA fragments are one in a million."

Ultimately, the scientists were able to tell when the Neanderthals lived in the cave, the genetic identity of the cave dwellers, and, in some cases, their sex. The oldest DNA the researchers managed to find was Denisovan and dated back 200,000 years. The information the team gleaned from the Spanish cave was particularly intriguing, Vernot said. While it had been a hangout for ancient humans for more than 40,000 years, with many stone tools found in the sediment, the only Neanderthal fossil found there was a toe bone that was too small to sample for DNA. However, the DNA Vernot found and sequenced showed that two separate lineages of Neanderthals had lived in the cave, with the later group evolving much bigger brains. Using similar techniques, scientists announced last month that they had sequenced the genome of a prehistoric bear that lived more than 10,000 years ago using DNA fragments found in dirt in a cave in Mexico. The technique has wide applications to study the evolution of animals, plants and microorganisms, the researchers said.

Rolling the dice

In particular, Vernot wants to apply these techniques to cave dirt at sites that might have been occupied by both *Homo sapiens* and *Homo neanderthalensis* around 40,000 years ago. This is when early modern humans first arrived in Europe and encountered Neanderthals, who had lived in the region for tens of thousands of years. It could shed light on how the two groups interacted. "We know that early humans and Neanderthals interbred. But we don't really know about that interaction. Did they live together or run into each other and have a one night stand?" Vernot said. "Early humans brought with them a new technology for making stone tools -- more nuanced, with material from new places. We have sites with the old tools that we associate with Neanderthals and new tools we know (early modern) humans made but we don't have bones associated with those tools. It's entirely possible we met them and taught them how to do this."

It could also help build up a more complete picture of ancient humans in southeast Asia -- an exciting locale for paleoanthropology. It's where some of the world's oldest cave art has been found and the remains of puzzling archaic humans such as the Hobbits of Flores in Indonesia have been discovered. DNA degrades more easily in warmer climates, but these new techniques mean more DNA sequences potentially can be found. "It's not like DNA preserves better in cave dirt but it allows you to roll the dice more times -- there's a lot more dirt than bones. There's a lot more needles in your haystack."

NEW BOOKS AVAILABLE

THE NINE LIVES OF FLORIDA'S FAMOUS MARCO CAT

by Austin Bell

University of Florida Press

Note: Austin is a SWFAS member and Curator at the Marco Island Historical Museum

METHODS, MOUNDS, AND MISSIONS: NEW CONTRIBUTIONS TO FLORIDA ARCHAEOLOGY

By Ann Cordell and Jeffery Mitchcum

University of Florida Press

UNEARTHING THE MISSIONS OF SPANISH FLORIDA

By Tanya M. Perez (editor) and Rochelle A. Marrinan (editor)

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Find us on Facebook at Southwest Florida Archaeological Society!

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SWFAS AND FAS MEMBERSHIP APPLICATIONS

We encourage those interested in Florida archaeology to become members of The Florida Anthropological Society (FAS) and The Southwest Florida Archaeological Society (SWFAS). Annual dues are due in January and membership applications to both organizations are attached. Membership in the FAS provides you with four annual volumes of *The Florida Anthropologist* and occasional newsletters on anthropological events in Florida in addition to the annual statewide meeting. More information on FAS can be found online at: www.fasweb.org. Membership in SWFAS offers you a local series of talks on archaeological and anthropological subjects that you can attend. The SWFAS monthly newsletter keeps you up to date on local events as well as other important archaeological topics. We urge you to support both with your membership. All of the SWFAS Lecture Series are open to the public at no charge.



JOIN US!

The Southwest Florida Archaeological Society

<http://swflarchaeology.org/>

The Southwest Florida Archaeological Society (SWFAS) was founded in 1980 as a not-for profit corporation to provide a meeting place for people interested in the area's past.

Our goals are to:

- Learn more of the area's history
- Create a place for sharing of this information
- Advocate for preservation of cultural resources

Its members include professional and amateur archaeologists and interested members of the general public. Members come from all walks of life and age groups. They share a lively curiosity, a respect for the people who preceded them here, and a feeling of responsibility for the conservation of the places and objects they left behind.

The Society holds monthly meetings between October and April, attracting speakers who are in the forefront of archaeological and historical research. Occasionally members join in trips to historical and archaeological sites.

A monthly newsletter, Facebook page, and website keep members abreast of our events and happenings.

The organization is a chapter of the Florida Anthropological Society, a statewide organization that publishes quarterly newsletters and a journal, *The Florida Anthropologist*, and holds an annual conference.

I want to help The Southwest Florida Archaeology Society preserve and interpret Florida's heritage!

Name (please print) _____

Address _____

City/Town _____ **State** _____ **ZIP** _____

Phone _____ **Email** _____

Check One:

Individual (\$20) _____ **Sustaining Individual (\$50)** _____ **Family (\$35)** _____

Student (\$5) _____ **Life (\$500)** _____

Donation to Support SWFAS Speakers and Programs _____

Skills, training, interests: _____

I hereby agree to abide by the rules and bylaws of the Southwest Archaeological Society. I further release from any and all liability due to accident and injury to myself, dependents and any property owners cooperating with the society.

Signature: _____ **Date** _____

Please make your check out to SWFAS and mail to:

**Charlie Strader
SWFAS Treasurer
27655 Kent Road
Bonita Springs, FL 34135**

REV. 12052017

FAS Membership Categories

Membership in the Society is open to all interested individuals who are willing to abide by the Florida Anthropological Society Statement of Ethical Responsibilities, which can be found on our website fasweb.org. *Membership is for one year.*

Student *	\$15	Sustaining	\$100
Regular	\$30	Patron	\$1,000
Family	\$35	Benefactor	\$2,500
Institutional	\$30		

*Student membership is open to graduate, undergraduate and high school students. A photocopy of your student ID must accompany payment. **Add \$25 for foreign addresses.

Send Membership Form and Dues Payment to:

Florida Anthropological Society, P O Box 1561 Boynton Beach, FL 33425

You can join online or pay Membership dues renewals via PayPal on our website fasweb.org.

THE FLORIDA ANTHROPOLOGICAL SOCIETY, INC. IS A TAX-EXEMPT 501C3 ORGANIZATION. TAX ID#59-1084419.

Name: _____

Membership Category: _____

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City: _____ State: _____ ZIP: _____

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Signature

Date