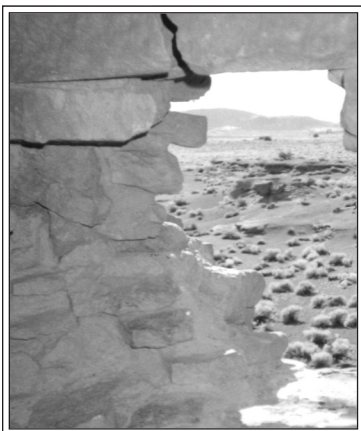


Wupatki and CO Bar Offer Window to the Past

Some 14,000 years ago, prehistoric people were chasing woolly mammoths with spears in what are now the open grasslands of northern Arizona. Today, scientists like Chris Downum are chasing the story of the *motisinom*, the first people, and the *hisat sinom*, the old people or Hopi ancestors, who inhabited the area.



At age 6, Downum discovered there was a whole world to explore right under his feet. While helping his dad build a duck blind in southeast Kansas, he found a large spear point. At the time, no one could tell him what it was, but that wonder about people of the past has haunted him ever since.

Downum's lifelong curiosity has been fueled by archaeological discoveries at Wupatki National Monument, including a fully intact Clovis or ancient spear point—dating back to the last ice age—one of only about a thousand known to exist today.

One National Park Service project that began in 1981 lasted seven years as Downum and a team surveyed 55 square miles of the monument on foot. What they found were 2,400 prehistoric sites, or clustered structures revealing an abundance of activity. Three of those sites date back before the eruption of Sunset Crater, believed to be around 1075 A.D.

"It was like a carpet of artifacts

in the monument," he said. "And there was no fence between the monument and the CO Bar Ranch, so while we were surveying, we'd look over wondering what was out there."

Among other ruins, rock art and artifacts, what was out there were lines of rocks marking ancient fields.

"The CO Bar was a farm before it was a ranch," said Downum. "Through the cooperation and conservation ethic of Babbitt Ranches, we have benefited so much. The information we've learned may have answered the question of how far people will walk to farm. Based on the distance from the pit houses to the fields the answer appears to be about a mile and a half."

Archaeologists believe that in the time of 1175 A.D., the area contained a bustling prehistoric culture of tribes, fairly densely packed with people scattered in small villages, hamlets and farmsteads.

As many as 8,000 people may have lived, farmed and traded in the area. They are known as the Sinagua and Cohonina, ancestors of native people living in northern Arizona today.

"There were more people living there than ever will be again," said Downum.

That "carpet" of artifacts included ornamental plugs that perforated the nose, cheek and lip made from the Chino Valley area's argillite, an unusual find in the Southwest.

Other discoveries were rare copper bells and macaw feathers from Mexico, and turquoise pendants likely from the Sleeping Beauty source near Kingman, the Cerrillos mines near Santa Fe,

NM, and several other places in southern Arizona and Nevada.

The centuries-old pottery in the area reflects different cultures found together and in some cases combined into one pot.

"The artifacts tell us how people think of themselves. Things were lying where they left them. They are well preserved, intact and dateable. We have wonderful tree ring evidence to date the pottery from the ponderosa pines, junipers and pinyons used in the houses. The

trees were sensitive to rain and snowfall so the rings also tell us about the climate back then."

During the 1100s, the dry, scorched land became a fertile landscape for crops such as many varieties of corn, beans, squash, cotton and gourds. Also cultivated were weedy plants including amaranth, chenopodium and perhaps beeweed.

Ash and cinders from Sunset Crater's eruption provided a blanket over the soil, holding in the moisture from winter snows. The *hisat sinom* learned how to structure their fields with wind breaks to shield against the harsh gusts. Their practices are used by Hopi farmers today.

Because of the rich trove of ancient relics, there have been discussions about how to expand the Wupatki boundary north into the CO Bar. "The edges of an ancient civilization often tell us more about the people than the heart of the activity," said Downum.

As a Northern Arizona University anthropology professor, Downum now shares his enthusiasm about prehistoric cultures and customs with his students.

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Geologists Look for Answers in Crystal Ball

It has long been food for water-cooler debate among colleagues at Northern Arizona University's Geology Department and the U.S. Geological Survey: SP Crater sure doesn't look 70,000 years old; in fact, some say not a day over 4,000!

Volcanologist Dr. Nancy Riggs is among those who have been suspicious of the 1970s technology that dated the cinder cone's eruption. The cone just hadn't aged, or eroded, much in 70,000 years. And the flow still is so dark black it can be seen from 300 miles or more in space.

Riggs challenged undergraduate student Laura Kennedy to do her thesis on this. Turns out the answer to the age-old question is not so crystal clear.

"Basalt cinder cones have a suite of minerals. Finding quartz crystals in basalt is weird because quartz is common in low-temperature rocks, not things like basalt that more-or-less come straight from the mantle," said Riggs.

To do her research, Kennedy collected large chunks of lava rock from the CO Bar Ranch, where SP Crater is located, and crushed them in a dark room to keep light from contaminating the xenocrysts, foreign crystals that don't belong there. Sunlight has the same effect on quartz as heat does when it interacts with the mineral. Electrons from radioactivity that are stored in the quartz crystals are reset when they see heat or light.

The quartz samples were carefully packaged and taken to a lab at Utah

State University where its dating technology was tested on rocks for the first time.

"The molten lava that surrounded the quartz granules set the clock. You can measure the amount of time since the crystals most recently interacted with light or heat," said Riggs.

The lab placed the date at 2,000 to 4,000 years old. "This is significant because people would have been living here and would have seen the eruption."

Not only did the new technology confirm geologists' suspicions, it also makes them wonder about other past volcanic activity in the San Francisco Volcanic Field.

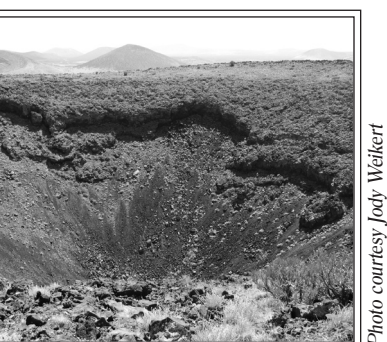


Photo courtesy Jody Weikert

In fact, the lava that created Grand Falls flowed over Moenkopi sandstone that was sealed off from light at the time of the eruption. It too has been re-dated.

"This means that our volcanic field has had much more recent activity than previously thought. It's possible that eruptions occur here every 1,000 to 2,000 years. Considering that Sunset Crater erupted in about 1075, there's a chance that within several generations we might see something happen here."

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Article VII Human Dimension and Science

Section 2.

Coordinate policy and activities with regard to the management of the Babbitt Ranch Natural Resources.

Article III Cowboy Essence

Section 7. Alertness

Observe constantly. Stay open minded. Be eager to learn and improve.