Wupatki
Sunset Crater Volcano
Official Map and Guide

Wupatki and Sunset Crater Volcano
National Monuments
Arizona

National Park Service
U.S. Department of the Interior

Sinagua Indians occupied the pueblo now called Wupatki—Hopi for "tall house"—from about 1100-1225 AD. Kathleen Norris Cook

A vivid rim of oxidized minerals capping the 1,000-foot volcano distinguishes Sunset Crater from neighboring cones. Laurence Parent

The prehistoric Sinaguan and Anasazi dwellings at Wupatki were long abandoned when Capt. Lorenzo Sitgreaves arrived in 1851. Sitgreaves was looking for an overland transportation route through the recently acquired New Mexico territory, a mission that brought him to the Colorado Plateau with its ancient treasures. His was the first European-American documentation of these ruins, built by the ancestors of the modern Pueblo Indians of the Southwest. Others followed Sitgreaves, notably John Wesley Powell. The Civil War soldier-turned-geologist in 1869 became the first in historical times to navigate his way down the Colorado River through the Grand Canyon. In 1885, as head of the U.S. Geological Survey, Powell explored the San Francisco volcanic field. One bright-rimmed cone particularly impressed him. "The contrast in the colors is so great," he wrote in his journal, "that on viewing the mountain from a distance the red cinders seem to be on fire. From this circumstance the cone has been named Sunset Peak."

As the era of exploration drew to a close and the era of scientific advancement took hold, both sites enjoyed scrutiny by a number of interested people. Around the turn of the century archeologist Jesse W. Fewkes carefully mapped and photographed the Wupatki area, using appropriate Hopi terms to label geographical and cultural phenomena. But no one offered substantial evidence that Wupatki might be in any way connected with Powell's "Sunset Peak" until archeologists began excavations. Twentieth century scientists did not have to guess the age of the artifacts they unearthed; modern techniques allowed them to accurately place their material findings within the time frame of the Southwest. A major breakthrough for archeologists and geologists alike came in the 1930s with the refinement of dendrochronology, or tree-ring dating. This process matches the pattern of growth rings from a tree of an unknown date with patterns from a cross-section of a tree of the same species whose age has been established. Because new rings are produced annually, this method can date timbers to the year they were cut. Many of the ruins—the ash-covered pithouses near Sunset Crater as well as the Wupatki pueblos—had timbers as roof beams or structural supports. Researchers noted the ring patterns. They compared pottery sherds found in pueblo rooms and prehistoric trash dumps with known types of earthenware. In the 1960s, through paleomagnetic dating, geologists determined the directional alignment of iron particles in the solidified lava flows, then precisely measured the deviation from today's magnetic north to yield the number of years since the particles were set in their present configuration. Piece by piece like a jigsaw puzzle, they constructed a picture of an ancient farming people who fled when a volcanic cone emerged from their cornfields, and who returned to the area along with other Indian groups to build settlements, and exchange goods and ideas.

Research continues. An archeological site survey completed in 1987 answered some questions and raised many more. We know, for example, that the prehistoric people left the area permanently within 200 years of the eruption of Sunset Crater, but why did they leave? Perhaps it was because of drought, disease, overpopulation, or a combination of all these things. Perhaps it was something entirely different. And where did they go? We know the date of the most recent volcanic explosion, but when and where will be the next birth of a volcano?

Wupatki: A Mosaic of Southwestern Cultures

Masonry ballcourts such as this are usually found much farther south.

At least 125 different types of pottery have been found within the monument, suggesting a rich culture during Wupatki's heyday. Kathleen Norris Cook

The yucca plant provided food, soap, and material for making shoes and woven mats.

The amphitheater, about 50 feet in diameter, most likely served as a ceremonial gathering place for the Sinagua of the Wupatki pueblo.

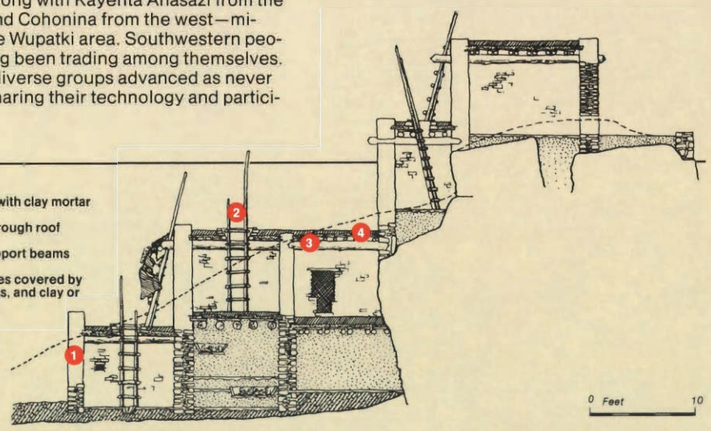
The people living northeast of what is now Flagstaff, Arizona, in the winter of AD 1064-65 must have been warned by rumbling and shaking earth before debris exploded out of the ground and rained down on their pithouses in much the same manner that the cinder cone Paricutín burst into existence in a Mexican cornfield nine centuries later. These Indians, now called the Sinagua (Spanish for "without water"), were forced to vacate the rocky land they had cultivated for 400 years.

Lava flows and several feet of cinders and rock obliterated their old farmland in the immediate vicinity of Sunset Crater. But just a few decades after the eruption, the Sinagua discovered that they could grow crops in previously uncultivated terrain. Not far north of the cone, a combination of forces was at work: a thin ash layer from the volcano absorbed precious moisture, helped prevent evaporation, and conserved heat, slightly lengthening the growing season. And, evidence suggests, a change in climate made water more plentiful. Some of the Sinagua—along with Kayenta Anasazi from the northeast and Cohonina from the west—migrated to the Wupatki area. Southwestern peoples had long been trading among themselves. Now three diverse groups advanced as never before by sharing their technology and participating in social activities. Whether it was because of disease, dispersal of the life-producing ash cover, depletion of natural resources, or an extensive drought beginning in 1150, Wupatki's mosaic of cultures had disbanded by about 1225. Small groups of Sinagua and Anasazi scattered in different directions. And the Wupatki pueblos would never again shelter permanent residents.

Wupatki Pueblo

Sinagua homes at Wupatki ranged in size from single-story, single-family houses to a multi-level "high-rise" pueblo (right), the largest dwelling in the area, which probably contained more than a hundred rooms.

When the Sinagua moved to the Wupatki basin in the early 12th century, they found the native materials ideal for construction of freestanding masonry dwellings. Slabs of sandstone, limestone, and basalt with a clay-based mortar yielded sturdy buildings that, despite weathering and vandalism, remain partially intact more than 700 years after their owners departed.



Sunset Crater: A Colorful Volcanic Cone

Viscous molten rock, whose surface cooled faster than the lava beneath, produced the rough-textured "aa" of the Bonito flow.

Ice is present most of the year in this cave, a dead-end tube from which lava drained.

This conelike formation, red-hued from oxidized iron particles, is a mound of solidified volcanic debris that slid down from the summit of the early Sunset Crater. Robert D. Casey

A chunk of limestone encased in solidified lava forms a xenolith.

The cones and lava flows of the San Francisco volcanic field, which covers about 2,000 square miles of the southwestern Colorado Plateau, result from several million years of volcanic activity. These powerful underground forces changed the landscape dramatically beginning in the winter of AD 1064-65.

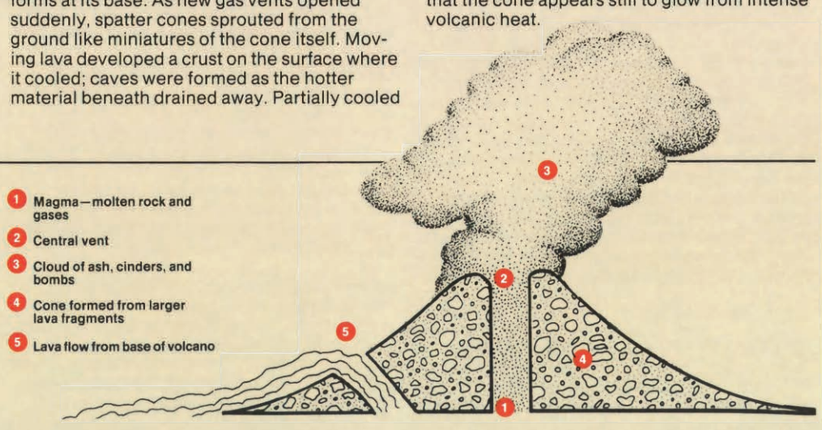
Sunset Crater appeared when molten rock sprayed out of a crack in the ground high into the air, solidified, then fell to earth as large bombs or smaller cinders. As periodic eruptions continued over the next 200 years, the heavier debris accumulated around the vent creating a 1,000-foot cone. The lightest, smallest particles blew the farthest, dusting 800 square miles of northern Arizona with ash. Perhaps as spectacular as the original pyrotechnics were two subsequent lava flows: the Kana-A flow in 1064 and the Bonito flow in 1180. They destroyed all living things in their paths.

The processes that created Sunset Crater also created a sculpture garden of extraordinary forms at its base. As new gas vents opened suddenly, spatter cones sprouted from the ground like miniatures of the cone itself. Moving lava developed a crust on the surface where it cooled; caves were formed as the hotter material beneath drained away. Partially cooled lava, pushing through cracks like toothpaste from a tube, solidified into wedge-shaped squeeze-ups, grooved from scraping against the harder rock.

In a final burst of activity, around 1250, lava containing iron and sulfur shot out of the vent. The red and yellow oxidized particles fell back onto the rim as a permanent "sunset" so bright that the cone appears still to glow from intense volcanic heat.

Formation of a Cinder Cone

Cinder cones, such as Sunset Crater, are formed by explosive eruptions. Magma, a mixture of molten rock and highly compressed gases, rises upward from its underground source. As the magma ascends, the extreme pressure drops and gases are released. The relatively thick magma and the high gas percentage causes an explosion out of the central vent. Solidified rock pieces—of various sizes—fall back down around the vent, creating a mound. Another kind of eruption, involving thinner magma with a lower gas content, produces lava flows that may issue from the side or base of the cone.



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Wukoki ruin—"big house" in Hopi—was built entirely from blocks of Moenkopi sandstone.

The Steller's jay, named after German naturalist Georg W. Steller, lives in the area year-round.

Bonito Park was once farmed by the Sinagua Indians. Now it is home to the mule deer, pronghorn antelope, and jackrabbits.

The pink penstemon grows exclusively in the San Francisco volcanic field surrounding Sunset Crater.

The largest ruin within the park boundary is the Wupatki pueblo, situated near the visitor center. A self-guiding tour highlights important features of the site; rangers are on duty in summer to answer questions.

Ponderosa pines, abundant in the Coconino National Forest, were often used in pueblo construction.

Standing on the edge of a 3/4-mile-long earth crack is the ruin known as Lomaki, or "pretty house." Earth cracks, resembling canyons, are fractures in the Kaibab limestone usually associated with earthquakes or volcanoes.

The volcanic field so crucial to the lives of southwestern Indians eight centuries ago is unchanged in many ways from the era when three cultures gathered for a time in the vicinity of the newly erupted Sunset Crater. Lava flows near the cone seem to have hardened to a rough surface only yesterday. And the ruined pueblos at Wupatki look from a distance as though they could still be home to an isolated people living, like the hardy Sinagua, practically "without water."

Today a paved road through these two protected areas provides easy access to Sunset Crater and some of the Wupatki ruins. Walking trails allow visitors close-up views. Equipped with a container of drinking water, thick-soled footwear, a hat, a map, and perhaps binoculars, explorers on foot will encounter the stunning artistry of nature and ancient man.

A short trail alongside the Wupatki Pueblo passes within touching range of what was once a multi-story residential complex, as well as the nearby amphitheater and ballcourt. The geological features along the trail are also worth inspecting. A monocline—a one-sided fold in the underlying sedimentary layers where the land rises slightly—acts as a backdrop for the ruins. The youngest rock layer, the reddish Moenkopi sandstone which provided the principal building material for the pueblo, is visible in several spots. Near the ballcourt is a good example of a blowhole, an opening in the Kaibab limestone layer that "inhales" and "exhales" air moving through interconnected underground cavities. Earthquake activity created fissures in the limestone called earth cracks, which can be found in the western half of the monument. Spatter cones rise like small pyramids throughout the San Francisco volcanic field.

At the base of Sunset Crater, a 1-mile foot trail loops through the dramatic volcanic landscape. The brittle *aa* (pronounced ah-ah), similar to the lava from Hawaiian volcanoes, and the deep, loose cinders at Sunset Crater do not seem a hospitable environment for plants and animals, yet many species thrive here.

The drive along the Wupatki-Sunset Crater Volcano loop road takes the traveler through a variety of scenic landscapes within a relatively small area. Because of the changes in elevation and rainfall along the drive, many distinct ecological zones are represented. In the higher elevations, among the ponderosa pine, Abert's squirrels and vivid blue Steller's jays are common. Middle elevations support pinyon pine, one-seed juniper, and grasslands along with jackrabbits and pronghorn antelope. In the lower lands, the more sparsely vegetated high desert community is home to lizards, snakes, coyotes, and bobcats. A careful observer will be able to catalogue a variety of wildlife.

Just as plant and animal populations have responded to geologic and environmental upheavals throughout the history of the Wupatki and Sunset Crater region, so have the human inhabitants. Not only was there a significant community of prehistoric pueblo dwellers who managed to farm the desert, but there is ample evidence in the Wupatki area of Navajo occupation dating from the mid-1800s. The Navajo and Hopi people today are an integral part of the cultural landscape in Northern Arizona, holding onto tradition while adapting to change around them.

About Your Visit

PARK ACTIVITIES

Wupatki National Monument, established by President Calvin Coolidge in 1924, occupies 56 square miles of dry, rugged land on the southwestern Colorado Plateau directly west of the Little Colorado River. A paved loop road connects at both ends with U.S. 89. The Wupatki visitor center is 14 miles from the northern end of the road, 24 miles from the southern end, and 22 miles from Sunset Crater Volcano visitor center. The Wupatki visitor center is open year-round except December 25, from 8 a.m. to 5 p.m. Park rangers are available to provide information and answer questions. Exhibits in the visitor center depict the daily lives of the inhabitants of the Wupatki dwellings in the 12th and 13th centuries.

A short self-guided walking tour of the main Wupatki Pueblo, the largest ruin within monument boundaries, begins behind the visitor center. Other ruins within the monument are also accessible by trails. Lomaki Ruin stands ½-mile off the main loop road. Citadel and Nalakihu Ruins are situated beside a roadside pullout. A 3-mile road beginning ¼-mile south of the visitor center leads to Wukoki Ruin. Another foot trail ascends from the Doney Mountain picnic area to the top of the mountain.

Sunset Crater Volcano National Monument became part of the National Park system in 1930 by proclamation of President Herbert Hoover. The prominent features are a 1,000-foot volcanic cone and its subsidiary formations. The visitor center, 2 miles from the southern entrance to the loop road off U.S. 89, has a brief film, exhibits, and a seismograph station. It is open from 8 a.m. to 5 p.m. year-round except December 25. A 1-mile self-guiding loop trail at the base of the volcano allows visitors to examine the volcanic features. The Sunset Crater cinder cone is closed to hikers and climbers; there are other cinder cones in the area, such as Lenox Crater nearby and Doney Mountain at Wupatki, that visitors are welcome to explore. Inquire at the visitor center for hiking information.

VISITOR FACILITIES

Services No gasoline, restaurants, or overnight accommodations are available in either park. Travelers' services are available along U.S. 89 north of the Sunset Crater Volcano entrance. Full services and medical facilities are available in Flagstaff.

There are picnic areas in natural settings along the loop road. Open fires are allowed only where fire grates are provided. Wood collecting is not permitted.

Camping Backcountry camping is prohibited. The U.S. Forest Service operates a small campground across from the visitor center at Sunset Crater Volcano NM. Facilities include running water and restrooms; there are no showers or trailer hookups. The campground is open from late spring through early fall. During the summer Forest Service and Park Service staff present programs at the amphitheater in the campground. For camping information write: Coconino National Forest, Peaks Ranger Station, 5010 N. Hwy. 89, Flagstaff, AZ 86004.

Disabled Access Accessible restroom facilities are located at the Lava Flow Nature Trail, Doney Mountain picnic area, and Lomaki Ruin parking area. Both the Sunset Crater Volcano and Wupatki visitor centers are accessible to the disabled. Portions of the Wupatki Ruins Trail and Lava Flow Nature Trails are accessible to the mobility impaired.

FOR YOUR SAFETY

Hiking Hiking and climbing on Sunset Crater are prohibited. Backcountry hiking at Wupatki is allowed by permit only. Permits are available free of charge at the Wupatki visitor center.

Stay on trails and do not allow children to explore unsupervised. Make sure to carry adequate water on hikes since dehydration can occur quickly in the arid climate. At Sunset Crater sharp lava can puncture shoes and cause scrapes and cuts. Do not approach wild animals; though most animals are shy and run from humans, they may charge or bite when threatened. Rattlesnakes, though not often seen by visitors, inhabit both monuments.

Driving Park rangers enforce state and federal traffic laws in the parks and within the loop road right-of-way. Vehicles, including bicycles, are permitted only on established roads. The loop road through the monument is narrow and winding, with soft shoulders. Stop only at designated pullouts. In congested areas speed limits are reduced for the safety of pedestrians. Be on the lookout for wildlife; animals often cross the roads unexpectedly. Both parks are at a high elevation and roads can freeze quickly in winter.

Climate Both parks are subject to weather extremes. Summer temperatures at Wupatki often exceed 100°F. Winter storms and freezing temperatures may occur at either park. Be prepared for abrupt weather changes in any season.

Pets Pets must be on a kept leash (no longer than 6 feet) at all times. Pets are not allowed in buildings, on trails, or tied to fixed objects. High summer temperatures can be fatal to pets in closed vehicles.

GENERAL INFORMATION

The Archeological Resources Protection Act of 1979 and subsequent legislation provide for fines of up to $250,000 and two years in jail *for first-time violators* who engage in the removal, alteration, selling, or receiving of artifacts from public lands. Please help protect the remnants of these prehistoric peoples.

Administration Wupatki, Sunset Crater Volcano, and Walnut Canyon National Monuments are administered by the National Park Service, U.S. Department of the Interior. For more information contact: Superintendent, Wupatki, Sunset Crater Volcano, and Walnut Canyon National Monuments, 2717 N. Steves Blvd., Suite 3, Flagstaff, AZ 86004.

Related Sites This section of the Colorado Plateau contains several other noteworthy prehistoric Indian sites, all within a day's drive of Flagstaff. Sinagua ruins are located at Tuzigoot and Montezuma Castle National Monuments, south of Flagstaff. Walnut Canyon National Monument, east of Flagstaff, has prehistoric Sinagua ruins along the cliffs of the canyon. The Anasazi, some of whom inhabited Wupatki during the time of the ash cover, also built cliff dwellings at Canyon de Chelly and Navajo National Monuments in northeastern Arizona.

The Museum of Northern Arizona in Flagstaff has extensive exhibits and information on the natural and cultural history of this region.