

Wupatki Sunset Crater Volcano

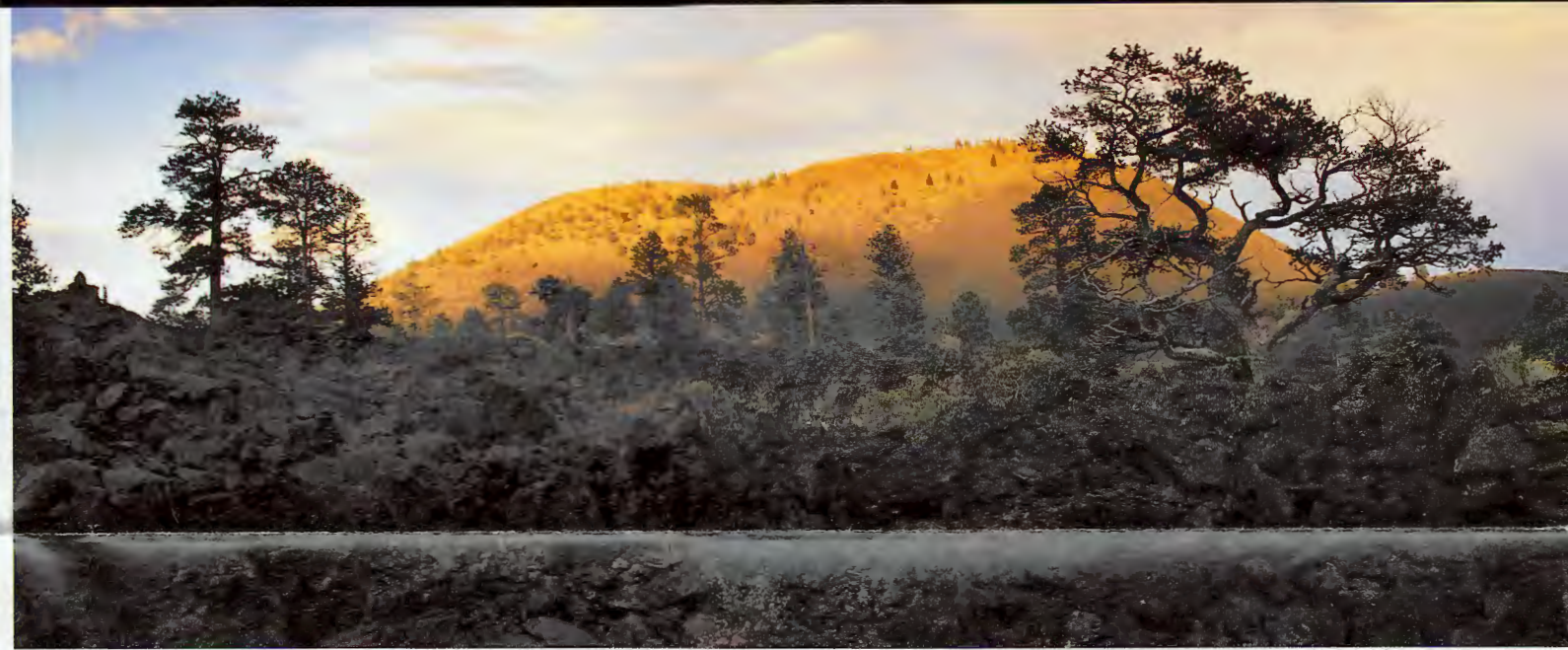
Wupatki and Sunset Crater Volcano
National Monuments
Arizona

National Park Service
U.S. Department of the Interior



Wupatki Pueblo was built and occupied during the 1100s. The high desert offered challenges and possibilities for these pueblo dwellers.

Laurence Parent



More than 700 years after the last eruption, vegetation is slowly returning to the landscape of Sunset Crater.

George H.H. Huey

Life in a Changing Landscape

In 1064 the people living just northeast of what is now Flagstaff, Ariz., must have been warned by tremors before debris exploded from the ground and rained down on their pithouses. The lava flows and erupting cinders that followed forced these farmers to vacate the rocky lands they had cultivated for 400 years. A few generations later, at Wupatki and nearby Walnut Canyon, families returned to grow crops for another 100 years in the shadow of the still active Sunset Crater. Slowly, plants and animals returned too, some specially adapted to living on the lava. By the late 1800s ranching and logging operations sustained the new populations settling Flagstaff, and the memory of the most recent eruption on the Colorado Plateau lived only in the stories of indigenous Southwest people. Today occasional earthquakes still remind local residents that they live in a geologically active area. At Wupatki and Sunset Crater Volcano national monuments, we contemplate how the environment and people change each other.

The remains of masonry pueblos, or villages, that dot the landscape of Wupatki are the most obvious evidence of the human endeavor in this expansive land. They tell of the 1100s, when ancestors of today's Hopi and Zuni Indians came together to build a vast farming community. Some of these villagers may have migrated from drought-stressed areas on the Colorado Plateau to join people already living here. With the first eruption of Sunset Crater, the agricultural potential improved because the thin ash layer absorbed precious moisture and helped prevent evaporation, and a climate change provided more rainfall during the growing season.

By 1180 thousands of people were farming on the Wupatki landscape. By 1250, when the volcano had quieted, pueblos stood empty. The people of Wupatki had moved on and estab-

lished new homes. Many people traversed the high deserts of the Colorado Plateau over time, but few stayed long. Those who did adapted to the region's challenging environment. Their descendants still live nearby, including Hopi, Zuni, and Navajo people.

Nineteenth-century explorers such as John Wesley Powell marveled at the well-preserved pueblos and the stark but strangely beautiful volcanic landscape. With the founding of Flagstaff, travelers sought out these local attractions. Early visitors explored the lava flows and took rocks for souvenirs. Others looted the archeological sites. In 1928 filmmakers wishing to create a landslide at Sunset Crater inadvertently created a national monument instead. Activists, fearing irreversible damage to the volcano, pushed for protection of the area; and, in 1930, Congress established Sunset Crater National Monument (later renamed Sunset Crater Volcano National Monument) as part of the National Park System. Years and thousands of volcano-climbing

visitors later, the scarred mountain was closed to climbers. Now this cinder cone is recovering. Nearby, other volcanoes, which are not in the park, are mined for pumice and cinders or used for off-road recreation.

Each time a volcano erupts, life begins anew. Like farming the high desert of Wupatki, establishing life in this environment may seem an impossible challenge. But a closer look reveals a pink penstemon radiant against the black rock, its species unique to this rugged terrain. Ponderosa pines, their growth stunted by harsh conditions, offer habitat for Abert's squirrels. Lichen adds a touch of color and slowly converts rock to soil. The volcanic landscape reminds us that only change is constant. It is mute testimony to the forces that will undoubtedly affect the land and its inhabitants again.

Wupatki: A Mosaic of Southwestern Cultures



Collared lizards, commonly seen in spring and fall, are easily photographed.

NPS



At least 125 different types of pottery have been found at Wupatki.



This suggests that a rich culture lived and traded here during the 1100s.

NPS



On Antelope Prairie, in the western part of the park, builders used both limestone and sandstone in their dwellings.

George H.H. Huey

The past peoples of Wupatki lived as beneficiaries of the land over which they made epic migrations. In a region of scarce water and climate extremes, they developed self-sustaining cultural and economic systems. The result is a complex story of people interacting with their environment and with each other to live successfully where many would not.

Imagine raising corn planted in nutrient-poor soils, in a land where tantalizing thunderstorms build—but often cheat crops of rain. Despite a beneficial ash fall from Sunset Crater, farming at Wupatki during the 1100s was decidedly marginal. Only the diligent succeeded, and

trade with others was vital. Archeologists coined the term Sinagua for the cultural tradition of this area, reflecting the people's ability to farm and live virtually "without water."

Life here involved sharing and trading. Located at the crossroads between Sinagua, Cohonina, and Kayenta Anasazi cultural traditions, Wupatki exhibits a unique cultural brew. We see the exchange of ideas in homes built the Anasazi way but furnished with Sinagua-style pottery, textiles, and tools. Archeologists still debate whether this represents different cultures interacting here, or if it is just the "many different ways to be Sinagua."

For a time, this land provided the necessities for life. It also imparted strength and humility. As the people resumed migrations and relocated east to the Hopi mesas or perhaps south to the Verde Valley, they took their way of life with them—a way of living that has enabled Pueblo people to survive on the Colorado Plateau for the past 2,000 years.

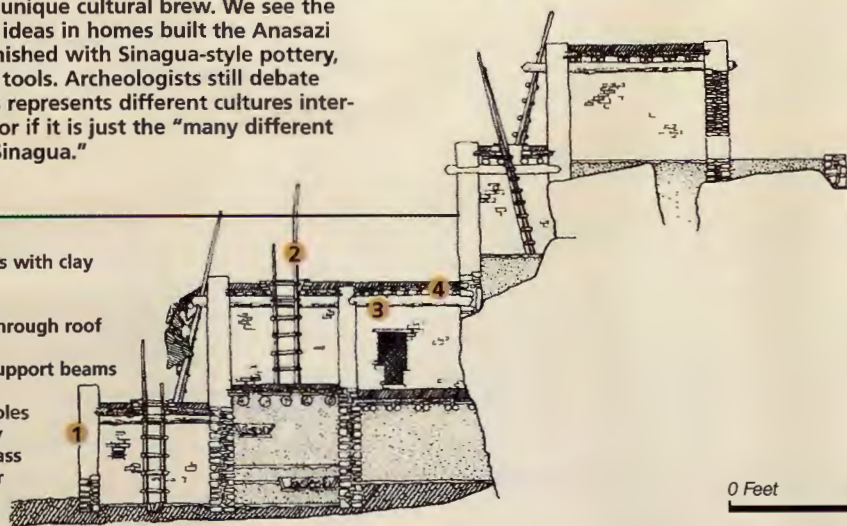
Wupatki Pueblo

Homes ranged from one-story, single-family structures to Wupatki Pueblo, a multi-level, high-rise (right). This largest dwelling in the area had about 100 rooms.

The environment provided materials ideal for the construction of freestanding masonry dwellings.

Sandstone slabs, limestone blocks, and chunks of basalt set with a clay-based mortar yielded sturdy buildings that, despite weathering and vandalism, remain partially intact more than 700 years after their owners departed.

- 1 Stone walls with clay mortar
- 2 Entrance through roof
- 3 Wooden support beams
- 4 Support poles covered by shakes, grass and clay or adobe



0 Feet 10

Sunset Crater: Birth of a Mountain



Snowfall, while heavy at times, melts quickly on the dark volcanic rocks.

George H.H. Huey



After an eruption, lichens begin breaking down rock into soil.

George H.H. Huey



As cinders erupted from Sunset Crater they blanketed older volcanoes, creating cinder dunes.

Kathleen Morris Cook

Erupting in the winter of 1064-65, Sunset Crater is the most recent in a six-million-year history of volcanic activity in the Flagstaff area. This cinder cone reminds us of the powerful forces that shape the Earth—forces that have created more than 600 hills and mountains in the San Francisco volcanic field. These mountains have in turn affected the climate and habitat for all things living in this region.

What is now a 1,000-foot-high volcano began to form when molten rock sprayed high into the air from a crack in the ground, 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. The lightest, smallest particles were carried the farthest by wind, dusting 800 square miles of northern Arizona with ash. Perhaps as spectacular as the original eruption were two lava flows: the Kana-a in 1064 and the Bonito in 1180. They destroyed all living things in their path.

The processes that created Sunset Crater also created a sculpture garden of extraordinary forms at its base. As new gas vents opened, spatter cones sprouted from the ground—like miniatures of the volcano itself. Partially cooled lava, pushing through cracks in the crust like toothpaste from a tube, solidified into wedge-

shaped squeeze-ups, grooved from scraping against harder rock.

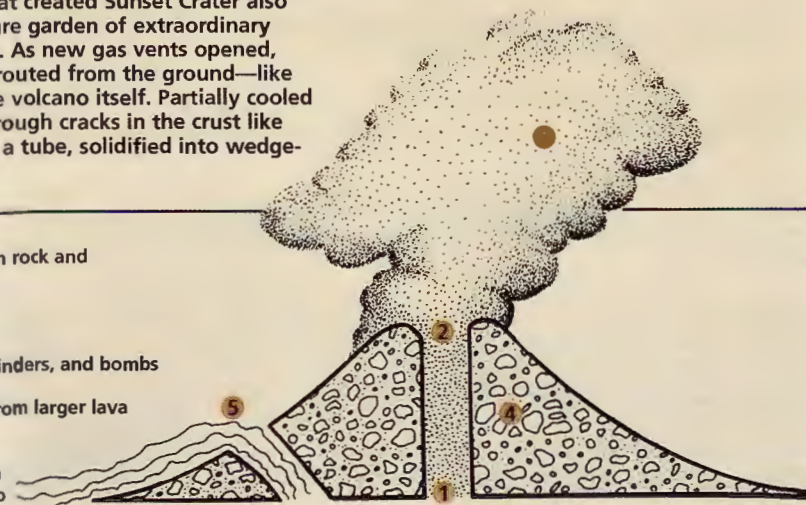
In a final burst of activity, around 1250, red and yellow oxidized cinders shot out of the vent and fell onto the rim. The colorful glow from these cinders reminded people of a sunset and led to the volcano's name.

Formation of a Cinder Cone

Cinder cones, such as Sunset Crater, are formed during early explosive stages of an eruption. 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 high percentage of gas in the magma causes an explosion out of the central vent. Solidified rock pieces of various sizes fall around the vent, creating a mound or cone. Magma with a lower gas content produces lava flows that may issue from the side or base of the cone.

- 1 Magma (molten rock and gases)
- 2 Central Vent
- 3 Cloud of ash, cinders, and bombs
- 4 Cone formed from larger lava fragments
- 5 Lava flow from base of volcano



Exploring Wupatki and Sunset Crater Volcano



This species of pink penstemon grows in the volcanic cinders at Sunset Crater.



Wupatki, with its community room and nearby ball court and blow hole, may have ultimately housed up to 100 people. Their water came from a local spring, which is now dry. Residents also captured and stored rainwater.



Cottontail rabbits and other wildlife are seen at dawn and dusk.



Ponderosa Pines, abundant in the Coconino National Forest, were used in pueblo construction as roof beams and as lintels over doors and windows. The beams helped date the eruption of Sunset Crater.



Scarlet gilia, or skyrocket, adds a splash of red to the black cinders in summer.



The top of O'Leary Peak provides a rare view of the volcano's crater. Sunset Crater is closed to climbing.

The landscape that shaped the lives of people 800 years ago appears unchanged in many ways since the eruptions. The lava flows near Sunset Crater seem to have hardened to a rough surface only yesterday. From a distance the pueblos at Wupatki National Monument look as though they could still be occupied. But many processes have been at work, reshaping the land into what we see today.

Volcanism, tectonics, and erosion have created dramatic geological formations and abrupt changes in elevation and climate. As you travel the loop road between Sunset Crater Volcano and Wupatki national monuments, the environments range from

desert to mountain. Ecosystem changes are distinct and frequent. These changes within a relatively short distance greatly increase the biological diversity of the area—a diversity that was indispensable to early residents.

Residents, in turn, transformed the land as they harvested the wood for homes and fuel, hunted and gathered wild foods, and introduced cultivated crops. Later, Navajo families settled the Wupatki area and brought sheep to the land. Beginning in the 19th century, newcomers introduced cattle, tapped ground water supplies and interrupted the natural processes of wildlife. As a result, juniper trees have invaded grasslands; ponderosa

forests are no longer open and spacious but dense with undergrowth; some seeps and springs no longer flow.

These habitat changes have affected some species and created new niches for others. In the higher elevations among the ponderosa pine, Abert's squirrels and vivid blue Steller 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.

As part of the National Park System, Wupatki and Sunset Crater Volcano national monuments are managed to perpetuate this geologic landscape that preserves increasingly rare habitat for native plants and animals and to protect past human developments and their relationships to the land.

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About Your Visit

Wupatki National Monument protects the ancient dwellings of puebloan peoples. It occupies 56 square miles of dry, rugged land on the southwestern Colorado Plateau directly west of the Little Colorado River. Sunset Crater Volcano National Monument features a 1,000-foot volcanic cone and its lava flows.

Both parks, along with Walnut Canyon National Monument, are administered by a central office and information center on U.S. 89 in Flagstaff, Ariz. The staff can provide advance or on-site information about the parks and help you with trip planning for northern Arizona. The information center's bookstore offers maps, guides, and free publications.

Location, Hours, and Facilities

Sunset Crater Volcano and Wupatki national monuments are reached via U.S. 89. Their entrances are located 12 miles and 26 miles north of Flagstaff, Ariz. The parks are connected by a 35-mile loop road.

Sunset Crater Volcano Visitor Center, two miles east of the park entrance off U.S. 89, has information, a film, exhibits, and a seismograph station. Wupatki Visitor Center, 14 miles southeast of the park entrance off U.S. 89, has exhibits and displays of artifacts. The visitor centers are open daily year-round; they are closed December 25. A single entrance fee covers both parks.

There are no gasoline stations, restaurants, or overnight accommodations in either park. Full services are available in Flagstaff and along U.S. 89. Several picnic areas are located along the loop road. Open fires are allowed only where fire grates are provided. Wood collecting is not permitted.

Camping

The U.S. Forest Service operates Bonito Campground near Sunset Crater. The facilities include running water and restrooms, but there are no showers or trailer hookups. The campground is open from late spring through early fall. For additional camping information write:

Coconino National Forest, Peaks Ranger Station, 5010 N. Hwy. 89, Flagstaff, AZ 86004.

What to See and Do

A driving tour of both parks takes one to two hours. To walk the trails and stop at the visitor centers, allow three to four hours. At Sunset Crater, the one-mile Lava Flow Trail at the volcano's base allows you to see a variety of features. Sunset Crater is closed to climbing to protect its fragile resources. You may climb on other cinder cones in the area, such as nearby Lenox Crater and Doney Mountain at Wupatki. Ask at the visitor center for hiking information. A short self-guiding tour of Wupatki Pueblo, the largest dwelling in that monument, begins behind the park visitor center. Other sites are also reached by trails: Lomaki Pueblo is a half-mile off the main loop road; Citadel and Nalaki-hu pueblos are next to the road. A 2½-mile spur road leads to Wukoki Pueblo. All other sites are closed to protect the fragile archeological resources.

For More Information
National Park Service, Flagstaff Areas
6400 N. Highway 89
Flagstaff, AZ 86004
928-526-1157
www.nps.gov/wupa (for Wupatki)
www.nps.gov/sucr (for Sunset Crater Volcano)

To learn more about parks and National Park Service programs in America's communities, visit www.nps.gov.

The slender gopher snake grows to a length of three to five feet. It is non-venomous and feeds on the rodents that live around the dwellings.
Photo: George H.H. Huey



Accessibility

Some features in both parks are accessible for visitors with disabilities. Ask at the visitor centers for more information.

For Your Safety and to Protect the Parks

- All plants, animals, and archeological objects in the parks are protected by federal laws; there are substantial fines for damage to or removal of these resources.
- Pets must be kept on a leash at all times; they are not allowed in buildings or on park trails. Nearby national forest lands offer an alternative for people traveling with pets; please inquire. The summer heat is intense; pets left in vehicles—even for a short time—can suffer heat stroke and die.
- The loop road through the parks is narrow and winding, with soft shoulders. Stop only at designated pullouts. The speed limits are reduced for the safety of pedestrians and wildlife. Both parks are at a high elevation and road surfaces can freeze quickly in winter.
- Stay on the trails to help prevent erosion and to protect the fragile resources, such as the plants and animals that live here. Off-trail travel is not permitted in either park. Lava is sharp, brittle, and unstable. A fall on cinder or lava is not a pleasant experience.

