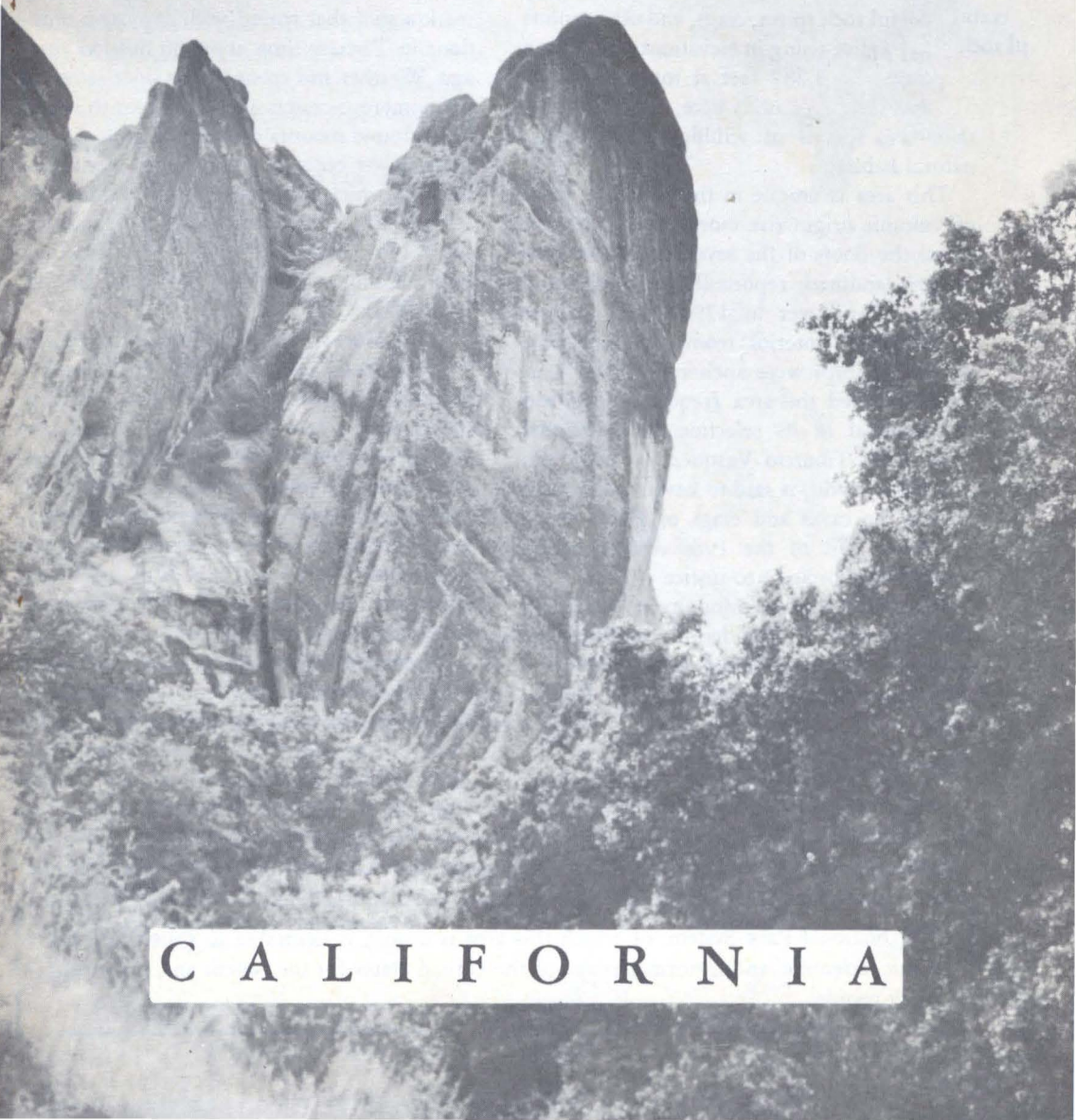


PINNACLES

National Monument



C A L I F O R N I A



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Remnants of an ancient volcano are carved into rugged scenery by Nature's weathering agents—wind and rain

Pinnacles National Monument is an area rich in colorful rock spires, crags, and other points of sharp relief rising in elevations of less than 1,000 feet to 3,287 feet at top of Chalone Peak. Wildlife abounds here, and here more than 200 species of wildflowers find their natural habitat.

This area is unique in that spirelike crags of volcanic origin rise more than 1,200 feet above the floors of the several canyons. This rugged landmark reportedly attracted Capt. George Vancouver in 1794 while he was exploring the interior from Monterey Bay, where his ships were anchored. David Starr Jordan visited the area frequently and was instrumental in its selection as a national monument. Tiburcio Vasquez, a daring and notorious bandit, is said to have taken refuge among the caves and crags of Pinnacles in the latter part of the 19th century before finally being brought to justice.

Pinnacles National Monument was established in 1908 by Presidential proclamation, and subsequently enlarged until it now contains approximately 12,818 acres of Federal lands.

The Geologic Story

This rugged area is wholly different from the surrounding country which has the smooth ridges and valleys of the coast ranges.

The pinnacles are volcanic rocks, and they mark a spot that roared with explosive eruptions in Tertiary time, some 30 million years ago. Weather and erosion have since removed the numerous craters and about two-thirds of the volcanic mountain they had built. In the worn-down base, five old vents are found through which explosive eruptions threw the viscous lava and broken stone high into the air and loaded the steep slopes of the volcano with accumulations many thousands of feet in thickness.

Stone blocks 10 feet in diameter were shot forth by the escaping steam and hot gases, but the violence broke most of them into fragments only a few inches thick. Liquid lava was sprayed into the air and fell as fine dust, the so-called volcanic ash, in which the broken fragments are embedded. The mixture is known as volcanic breccia. Among the fragmental layers are also beds of solid lava, showing that quiet flows sometimes alternated with the explosive eruptions.

These vast accumulations have been eroded from the summit area, and Chalone Creek has swept them all away from the eastern flank of the old volcano. Beds many thousands of feet in thickness that still remain from the old western slope have been carved into the scenic pinnacles, cliffs, caves, and canyons. The central core of the volcano be-

The National Park System, of which this area is a unit, is dedicated to conserving the scenic, scientific, and historic heritage of the United States for the benefit and enjoyment of its people.

neath this fragmental material is found to be solid lava, indicating the quiet nature of the earlier eruptions. The lava rose through north-south fissures some 5 miles long, but it was a stiff, viscous mass that did not flow freely. Consequently, it swelled up and, on cooling, formed a long domelike mountain. Afterward it was buried under the immense accumulations produced by the violent eruptions.

If a valley like that of Chalony Creek had been cut along the west side, the remaining fragmental accumulations would have been removed, and there would be no picturesque pinnacles. On the other hand, if the eroded materials could be replaced, the restored volcano would be an outstanding peak of the coast ranges, comparable with those of 8,000 feet and higher in the Ventura region today.

Several conditions have helped to preserve an important remnant of the volcanic mass. In the semiarid climate the rate of erosion is less rapid than it was during long humid periods in its earlier history. The climate helps also in another way. Moisture enters the pores of the rocks during the rains and later evaporates from the surface, where it deposits silica and other mineral matter which it dissolves from the volcanic ash and lava

fragments. This hardens the surface of the rock and protects the softer materials within. Where the crust breaks away the rock crumbles rapidly, and cavities several feet in diameter have been hollowed out, some of which may be seen along the trails.

Faulting likewise has protected the formation on the old west slope. A north-south belt 2 to 3 miles wide, which has sunk down along fissures at the east and west sides, now holds all that is left of the volcanic materials. They have been swept away completely from the areas of granite bedrock to the east and the west, but the granite bulwarks delay erosion and thus protect and preserve the sunken area between. This belt sank more at the west than at the east, so the layers of fragmental materials are steeper now than they were originally on the west slope of the volcano. The strong westerly dip appears at many places. It is particularly prominent along the switchback trail that leads up from the tunnel to the summit.

Vertical cracks that were formed by the movements also are prominent, and they have largely aided and guided the erosion that shaped and separated the pinnacles. Unequal hardness of the beds also has produced odd forms, especially where a soft layer has crum-

bled and left a great block like a head perched on a slender neck.

Both the lava core of the volcano and the fragmental materials that came up through the numerous craters are composed mainly of rhyolite, a lava that is closely related to granite. If it had cooled slowly beneath the surface it would have formed granite. Several other types of lava are found, including small amounts of basalt.

Flora and Fauna

The lower slopes of the monument are thickly covered with a dense mantle of brush, which is mostly chamise. Interspersed with this brush are scattered stands of digger pine, which is gradually spreading and some day may comprise an extensive forest cover. In the canyons and ravines are shady groves of live oaks. Chamise is important in furnishing food and protection for the monument's wildlife, and the digger pines afford safe roosting places for many of the larger birds.

Deer are common in the monument, as are also raccoons, gray foxes, ground squirrels, cottontails, and wood rats. Less frequently seen are coyotes and bobcats.

Pinnacles National Monument is notable for the variety and interest of its birdlife.

Approximately 95 species have been observed. Rarest and most spectacular is the duck hawk. Its close cousin, the prairie falcon, is more common. The golden eagle is also present, but of the monument's large birds, the turkey vulture is most in evidence. In the vicinity of the high cliffs, the white-throated swift and his companions in flight, the violet-green swallow, the tree swallow, and the cliff swallow may be seen. Other birds often seen are the raven, sparrow hawk, black phoebe, the California woodpecker, the California linnet, the mourning dove, the California jay, the rock wren, and the western bluebird. The white-crowned and the golden-crowned sparrow are commonly seen during the winter.

How To Reach the Monument

The monument is open all year. It is just off State Route 25, 35 miles south of Hollister, and about the same distance north of King City. In approaching the monument from the north, leave U. S. 101 about 2 miles south of Gilroy; from the south, at King City. Approaching from the San Joaquin Valley, the best route is over Pacheco Pass, State Route 152. All roads are paved.

There is an annual permit fee of \$1, and a 15-day fee of 50 cents, for each automobile, housetrailer, and motorcycle. Permits must be shown to leave or reenter the monument. During the valid period of all 15-day permits, the cost thereof may be applied toward the purchase of a similar annual permit. All fees are deposited in the United States Treasury and offset, in part, appropriations made for operating the monument.

Camping and Picnicking

You may camp and picnic in the headquarters area. Facilities, which are available without charge, include suitable tent or trailer space with table, fireplace, spring water, and comfort stations.

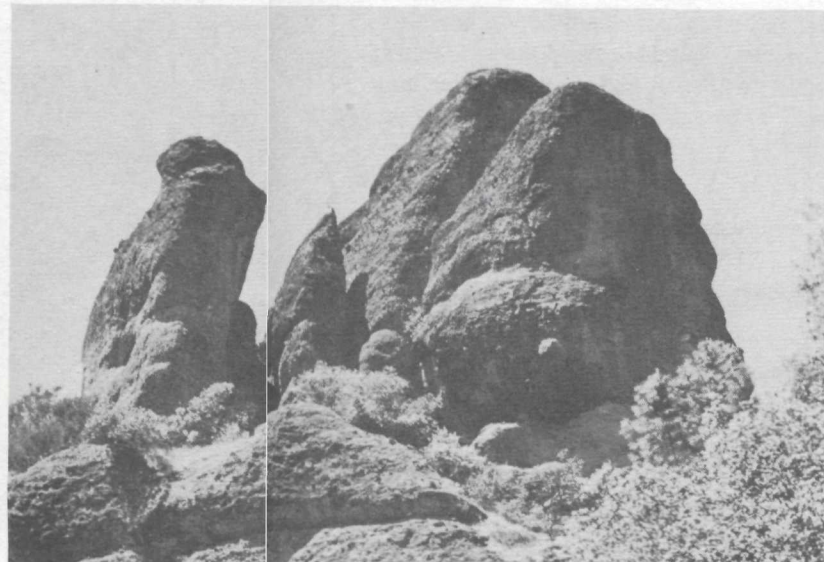
Hikes

Hiking is one of the principal activities in the monument. Many interesting places may

East entrance to monument



Camel Rock from Caves Trail



be reached by well-defined trails. They include the excellent, but somewhat strenuous, High Peaks Trail among the spectacular cliffs and pinnacles, and the Chalone Peak Trail to the highest point in the monument, 3,287 feet. For shorter, but equally interesting, hikes the trails in the caves area and Bear Gulch are available. Comfortable walking shoes should be worn for the fullest enjoyment of the trails.

Help Us Protect This Monument

Use extreme care with smokes and matches. Camp and build fires only in campgrounds. Use trash cans—don't be a litterbug. Please bring your own fuel—don't cut or gather firewood.

Keep dogs and other pets in car or on leash. Avoid shortcuts—stay on the trails. Do not deface or mutilate anything. Do not disturb the wild animals. Please don't collect wildflowers or other souvenirs.

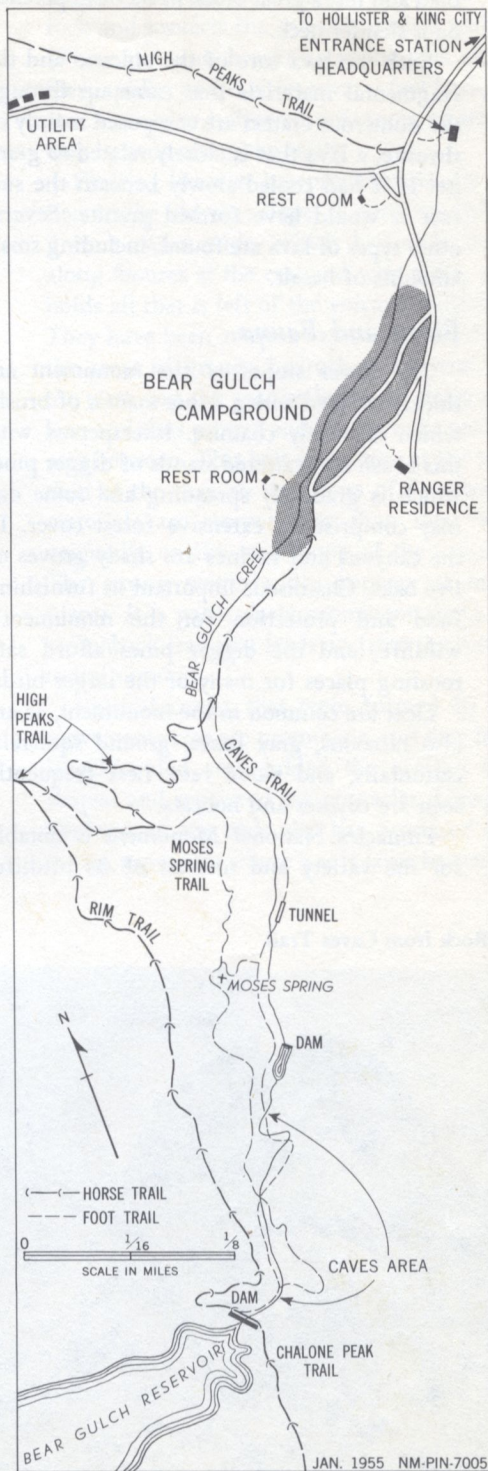
If you need information or help, ask a ranger.

Naturalist Service

During the summer, a park ranger naturalist interprets to groups the geology and other natural history features of the monument.

Administration

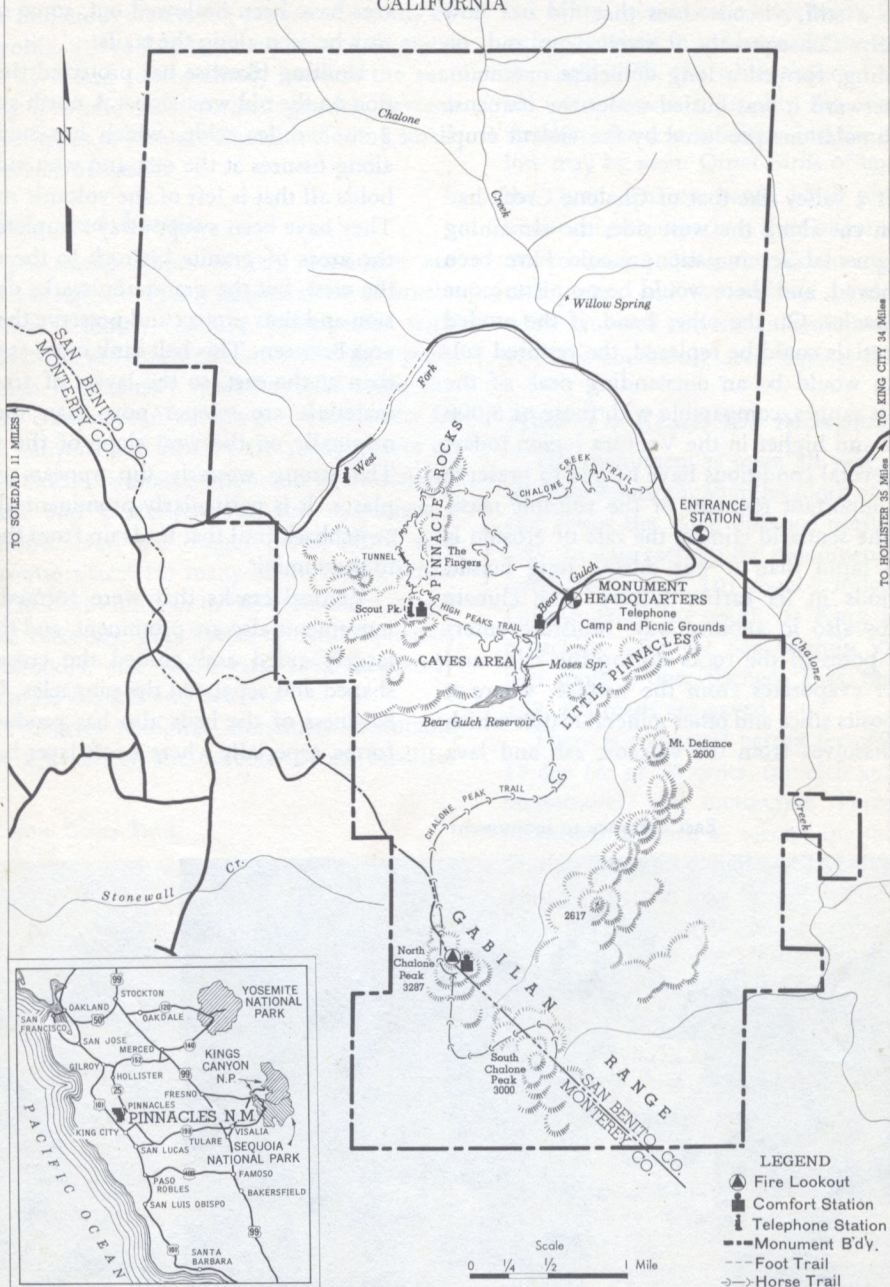
Pinnacles National Monument is administered by the National Park Service of the United States Department of the Interior. A superintendent, whose address is Paicines, Calif., is in immediate charge.



UNITED STATES
DEPARTMENT OF THE INTERIOR
Fred A. Seaton, *Secretary*
NATIONAL PARK SERVICE,
Conrad L. Wirth, *Director*

PINNACLES NATIONAL MONUMENT

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Cover: *The Old Pinnacles on Chalone Creek.*