

# PINNACLES

## National Monument

*California*



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The last remnants of an ancient volcano, carved into rugged scenery by nature's weathering agents—wind, rain, heat, frost, and chemical action—are here displayed as spectacular pinnacles and spires silhouetted against the sky.

An interesting association of plants and animals, known as the *chaparral community*, has developed on these rugged slopes, which are bathed by cold winter rains and blistered by the hot summer sun. Chaparral is the dominant plant cover in this monument, and this stand ranks with the finest examples in the National Park System.

Pinnacles National Monument is open all year and can be enjoyed at any season. One of the most pleasant times to visit the area is spring, when the hills are covered with new, green vegetation dotted with a multitude of colorful wildflowers. In summer the grassy slopes turn golden brown under daytime temperatures that usually reach at least 100°.

Pinnacles National Monument was made a part of the National Park System to preserve the eroded slopes of the pinnacles formation and their chaparral community.

### *Hiking*

Hiking is a popular activity in the monument, and you are invited to make use of the more than 15 miles of trails that criss-cross the area. Many scenic features not accessible or visible by road can be reached by trail. Longer hikes include *High Peaks Trail* through the pinnacles, and *Chalone Peak Trail* to North Chalone Peak, at 3,305 feet the highest point in the monument. There are shorter hikes in the Bear Gulch area, through the lighted caves and through the Old Pinnacles caves, where a flashlight is needed. There is no water along the trails.

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.

### *Picnicking and Camping*

Picnicking and camping are permitted in designated areas. House trailers can be accommodated in the regular campgrounds; no utility connections are available. Bring your own fuel. There are no stores or service stations within or near the monument.

*Organized groups must make advance camping arrangements.*

### *Naturalist Services*

A park naturalist is on duty to interpret the geological and other natural features of the monument. *The Caves and Moses Spring Trail*, in the Bear Gulch area, is a self-guiding nature trail. Leaflets can be obtained at the start of the trail. Evening talks are presented by the naturalist on summer weekends, and there is a small museum in the headquarters building.

### *Geological Story*

The pinnacle rocks dominating the scenery of this area contrast greatly with the smoothly contoured terrain of the surrounding country. They represent the remains of a gigantic volcano, which was active here some 30 million years ago.

Tons of viscous, hot, molten rock, or lava, poured forth from fissures, some 5 miles in length, that opened on the ground surface. These lava flows formed a domelike mountain that geologists believe reached about 8,000 feet in elevation, nearly 3 times the height of the pinnacles today. Continued breaking away of large fragments and slabs of the cooling outer layers of this lava mountain resulted in talus slopes of huge blocks of rock, which were later to take part in the formation of the caves.

This relatively quiet outpouring of molten rock alternated with periods of violent eruption. Often the lava became so thick it plugged the throat of the volcano, causing hot gases and steam to build up pressures within the mountain. This

*The High Peaks area.*



process culminated in tremendous explosions; blocks of rock 10 feet or more thick were broken into fragments only a few inches in diameter, liquid lava was sprayed into the air and fell as volcanic dust or ash, in which the broken fragments became imbedded. This mixture—*volcanic breccia* when consolidated—is a common rock along the trails today.

As periods of active volcanism gradually subsided, faulting and cracking of the earth and the forces of water erosion began to play a more important role in shaping the landscape. Today, only remnants of the volcano can be seen.

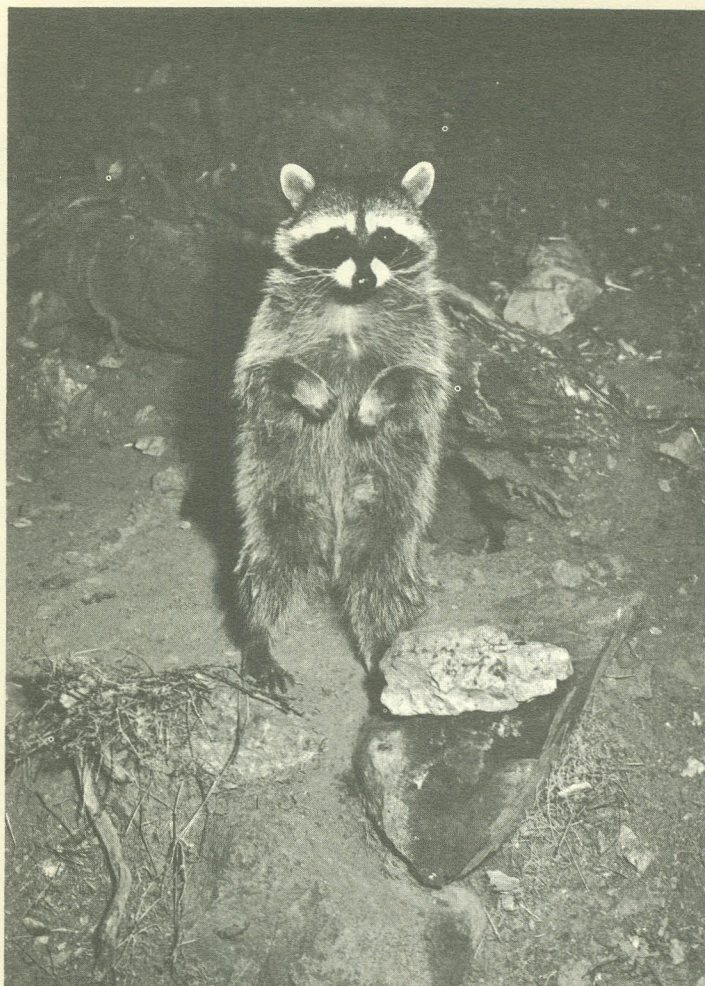
Faulting has protected the old west slope of the former mountain. A north-south belt, 2 to 3 miles wide, has sunk down between the Pinnacles Fault to the west and the Chalone Fault to the east (displacements paralleling the great San Andreas Fault). This fault trough now holds all that is left of the earlier volcanic materials. The volcanic materials have been completely swept away from the areas of granite bedrock on either side of the monument, leaving exposed granite bulwarks, which delay erosion and thus protect and preserve the sunken area between.

This block of earth, bounded by the faults, sank more to the west than it did to the east, so the layers of fragmental materials are tilted more steeply to the west now than they were originally. These tilted rocks are particularly prominent along the switchback trail that leads up from the tunnel to the summit of the High Peaks.

Tilting has aided the downward-cutting action of the waters of Bear Gulch canyon. As the softer rock was eroded away, large, more resistant blocks from the talus slope, formed during the time of active lava flow, gradually slid down to form the covered canyon known today as Bear Gulch Caves. Similar events took place in the Old Pinnacles area and formed the caves there.

On the west, a well developed system of vertical joints and cracks has formed across the layers of volcanic material. These are due to stresses in the firm rock beds set up by warping and uneven movements that accompanied the faulting and tilting of the earth block between the two faults. These joints have largely controlled the weathering and erosion that shaped the pinnacles. Unequal hardness of the beds has produced some strange rock forms, especially where soft layers have crumbled, leaving balanced rocks perched on slender pedestals.

Water is important as a chemical weathering agent that dissolves the cementing materials of the rock and leaves the remaining fragments to disintegrate. Sometimes these dissolved cementing materials solidify again and, after the water in which they are dissolved has evaporated, remain on the rock's surface, forming a hard casing that makes the rock more resistant to erosion.



*Your campground neighbor.*

The geologic story of the pinnacles has not ended. Volcanic activity ceased millions of years ago, but earth movement is still an active force in the area, as is shown by the frequency of earthquakes. The combination of erosional processes that through the years has shaped and sculptured the landscape continues today to work slowly and persistently at the rocks of Pinnacles National Monument.

#### *Plants and Animals*

**THE CHAPARRAL COMMUNITY.** The hillsides of Pinnacles National Monument are mantled with a brushy growth called chaparral (a term of Mexican origin). Here it is composed chiefly of greasewood chamise, mixed with smaller amounts of manzanita, buckbrush, and hollyleaf cherry. This plant association is determined in part by the climate of this area, characterized by very light summer rainfall, comparatively heavy winter rains, and relatively high winter temperatures. Another important controlling

factor is wildfire, which through the ages has repeatedly swept over the hills. Only plants that can tolerate frequent burning have been able to survive here.

The tough, leather-leaved evergreen plants that make up chaparral are adapted to these conditions. They either sprout from their large root crown after burning, or have seeds that are stimulated by heat to germinate more readily.

The suppression of wildfire by man in this century has allowed some of the less resistant plants to become established. The Digger pine, the monument's only pine tree, is one of these. Stands of this tree are gradually spreading and may someday replace the chaparral.

Chaparral is important because the plant roots hold the soil on the steep hillsides and the foliage is an important source of food and shelter for wildlife. Many animals make their homes in this plant community.

Of the larger mammals, black-tailed deer are often seen, whereas the gray fox and bobcat, also quite common, are nocturnal and secretive in their habits. Brush rabbits and rodents of several types are common and provide food for some of the larger predators.

The more frequently seen birds include the California thrasher, the ash-throated flycatcher, and the wren-tit.

**THE OAK-WOODLAND COMMUNITY.** Though chaparral is the dominant plant cover in the monument, embracing about four-fifths of the area, there are other communities, less significant in size, where different plants and an important part of the monument's wildlife are found. The oak-woodland community is an example. It is characterized by certain trees such as live oak, blue oak, hollyleaf cherry, buckeye, and Digger pine.

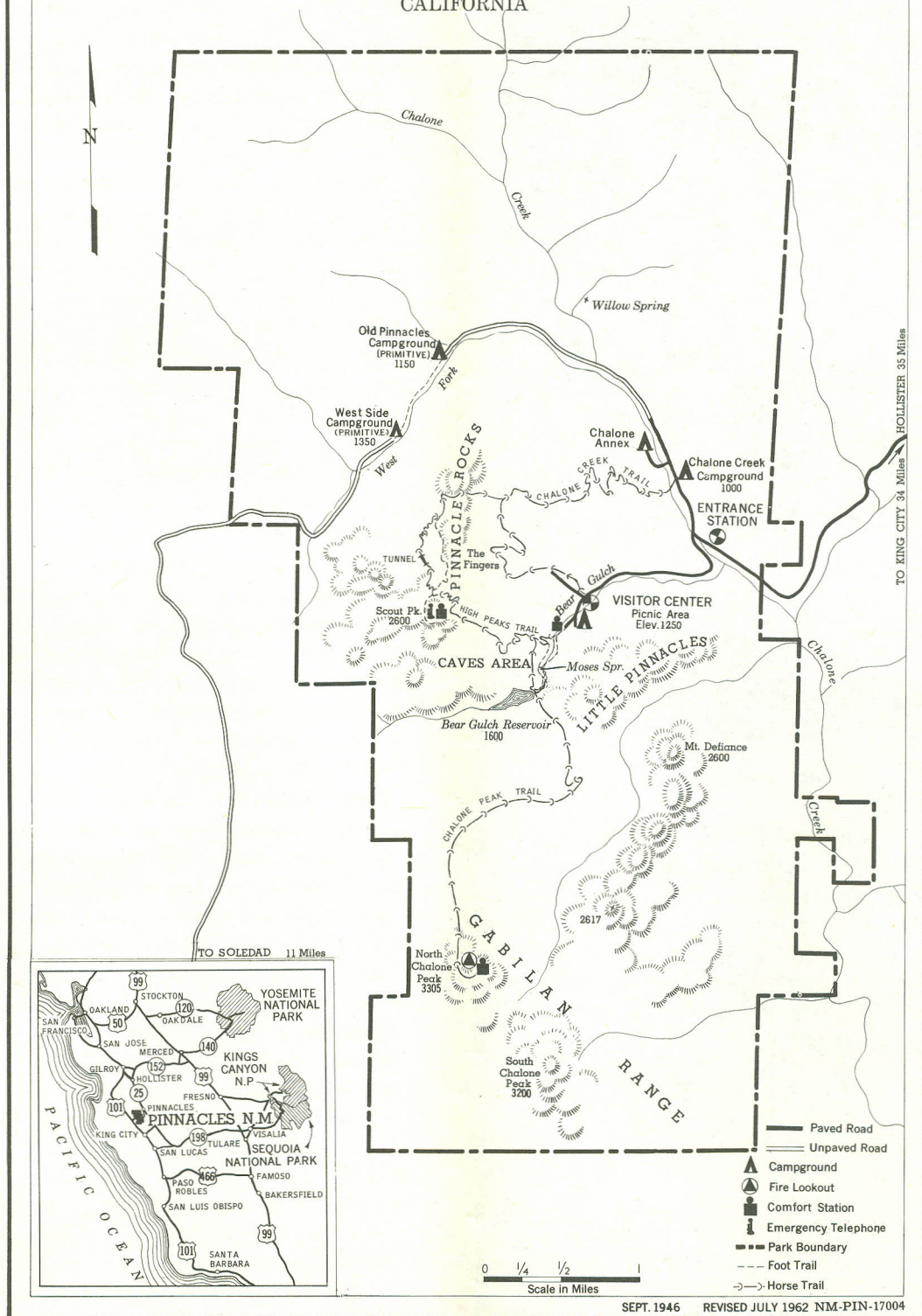
Under the shade of these trees the temperature is lower and more constant than in the chaparral, and here many animals find cover, nesting sites, and food. Acorns, abundant in autumn, are an especially important food, sought after by acorn woodpeckers, scrub jays, and black-tailed deer.

This is a popular habitat for birds. Some of the more common species include the red-tailed hawk, California quail, Nuttall's woodpecker, and house finch.

**THE RIPARIAN COMMUNITY.** Along the creek-bottoms and watercourses live many animals and plants that are dependent on a nearby supply of water. This riparian community is dominated by trees that shed their leaves, such as sycamores, cottonwoods, and willows. They provide food, nesting sites, and protection for many birds. Black phoebes and western flycatchers are common. Song sparrows and rufous-sided towhees stay close to the vegetation along the water's edge. The trees above the water are attractive to several kinds of warblers and vireos that glean insects from the foliage.

# PINNACLES NATIONAL MONUMENT

## CALIFORNIA



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Animals living in or on the water include certain insects and vertebrates. Red-legged frogs are relished by the raccoons that make nightly forays along the streams.

In this community, as in the others, bats of several varieties patrol the evening skies in search of insects. Bats are more often seen in the riparian community because of the presence of drinking water, which they seek at the start of the evening flight.

**THE HIGH PEAKS AREA.** Lichen-covered pinnacles and rocky spires, open and exposed as they are to the weather, represent another community. Here turkey vultures circle effortlessly overhead, often sharing the sky with violet-green swallows and white-throated swifts. Here also the rare peregrine falcon is occasionally seen, and, more commonly, its close relative, the prairie falcon.

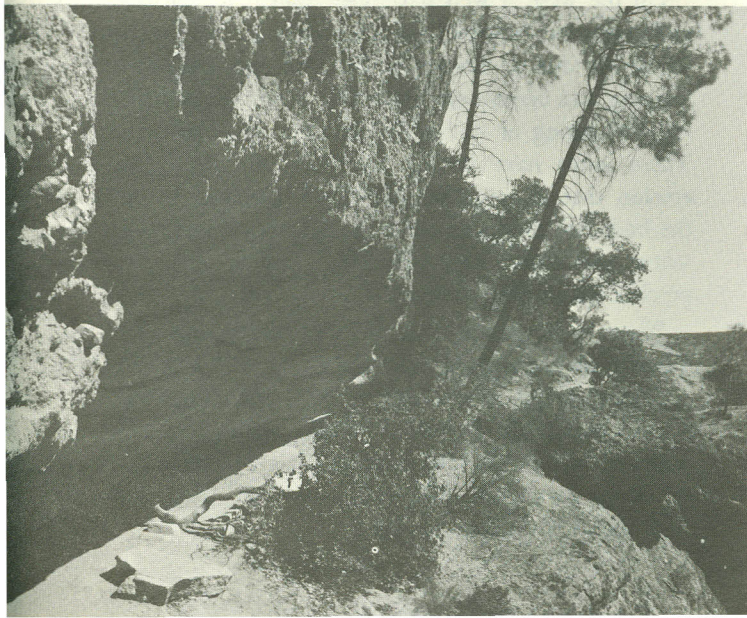
The National Park Service endeavors to protect the plant-and-wildlife communities of the monument. Only by preserving each natural community and allowing it to function normally under such preservation, can we insure that the area will remain unspoiled for future generations.

### *About Your Visit*

The monument is about 35 miles south of Hollister, a short distance off of Calif. 25. It can be reached from the south through King City.

Regulations have been authorized for the protection of the natural features of the monument and for your safety and convenience. Park rangers are here to assist you and to enforce regulations. If you need information or help, ask them.

### *Moses Spring Trail.*



*Use extreme care with smokes and matches.  
Camp and build fires only in campgrounds.  
Use trash cans—don't be a litterbug.  
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.  
It is unlawful to deface or mutilate any manmade or natural feature.  
Enjoy the wild animals, but do not molest them.  
Leave wildflowers, rocks and other natural features as you found them; gathering specimens or collecting souvenirs is prohibited by law.  
Keep motor vehicles of all kinds off the trails.*

## MISSION 66

Mission 66 is a program designed to be completed by 1966 which will assure the maximum protection of the scenic, scientific, wilderness, and historic resources of the National Park System in such ways as will make them available for the use and enjoyment of present and future generations.

The Mission 66 program has provided improvements at Pinnacles National Monument. Campground facilities have been expanded and improved; paved parking areas have been added; and the monument staff has been increased.

### *Administration*

Pinnacles National Monument is administered by the National Park Service, U.S. Department of the Interior.

Created in 1849, the Department of the Interior—America's Department of Natural Resources—is concerned with the management, conservation, and development of the Nation's water, wildlife, mineral, forest, and park and recreational resources. It also has major responsibilities for Indian and Territorial affairs.

As the Nation's principal conservation agency, the Department works to assure that nonrenewable resources are developed and used wisely, that park and recreational resources are conserved for the future, and that renewable resources make their full contribution to the progress, prosperity, and security of the United States—now and in the future.

A superintendent is in immediate charge of Pinnacles National Monument. Address all comments and inquiries to him at Paicines, Calif.

*Cover: The Old Pinnacles area on Chalone Creek.*



UNITED STATES  
DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE



