

ADMINISTRATION

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U. S. DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE



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GREAT

SAND

DUNES

GREAT SAND DUNES NATIONAL MONUMENT, COLORADO

The San Luis Valley is a desert: it receives less than 8 inches of moisture a year. Three times the size of the State of Delaware, and with a floor more than 7,500 feet above sea level, it was shaped millions of years ago by great movements in the earth's crust.

To the east and northeast of the valley is the abrupt wall of the Sangre de Cristo Mountains; to the west lie the volcanic San Juan Mountains; and to the south, the San Juan Hills. At the eastern edge of this broad valley are some of the world's tallest sand dunes, piled to heights of over 700 feet.

Why did the dunes form? Generally, three conditions are necessary for the formation of sand dunes wherever they may be: sand, wind, and a natural trap. Here these conditions exist. Fed by melting snow, streams have carried sand, silt, and gravel into this mountain-ringed basin for thousands of years. Most of these streams, particularly from the Sangre de Cristos, drop their loads and sink into the valley floor a short distance from the mountains. Studies of the minerals of the sand reveal a large amount of volcanic material, indicating that much of the sand came from the San Juan Mountains across the valley.

The desert floor of the San Luis Valley is covered only sparsely with vegetation that does little to hold the light sandy soil. Therefore, once in the valley, the sand and silt are exposed to the prevailing southwesterly winds, which for countless centuries have blown and bounced dust and sand grains toward the Sangre de Cristos. Here, on reaching the lofty mountain barrier, the winds sweep upward and funnel through Mosca, Medano, and Music Passes—low gaps in the range. The dust may continue, but sand is too heavy to be carried on. Thus it is piled at the foot of the mountain passes, caught in the curvature of the range—a natural trap.

The ceaseless winds change and shape the dunes, particularly when storms sweep down from the northeast. These shift the ridgetops of the dunes until they seem at times to lean backwards. After the storms have passed, the southwest winds again take over, restoring the ridge contours to their former shapes. Day-to-day changes can be seen in the lacelike patterns of ripples that stretch across every ridge and trough, but the dunes themselves change very little through the years. Photographs taken in 1927 show that the main dune mass appeared then very much as it does today.

Medano Creek forms the eastern boundary of the dune mass for several miles before it disappears into the sand. East of the creek is an area of small dunes, formed from sand that blows across the streambed when it is dry.

The dunes and Medano Creek, at the meeting place of valley floor and mountain range, provide a variety of living conditions. In addition to plant and animal communities normally found on the valley floor, foothill slopes, and forested highlands, there is the peculiar and distinctive, though sparse, vegetation of the dunes themselves. Lack of moisture and the continually moving surface of the sand prevent plants from obtaining a foothold, except in protected depressions where small patches of grass, a species of low pea plant, and sunflowers find suitable conditions and stabilize the sands.

Rabbits, ground squirrels, coyotes, magpies, and other small mammals and birds abound along the southwest edge of the dune area—characteristic of the rabbitbrush and grassland of the valley floor. Chipmunks, mule deer, jays of several species, and other creatures that are typical of the pinyon-juniper-ponderosa pine belt of the foothill region are at home in the eastern and northern parts of the monument. Observers have counted more than 150 species of birds in the vicinity.

PREHISTORY AND HISTORY

Archeological research in the San Luis Valley, although limited, indicates that this region was occupied about 10,000 years ago by nomadic hunters. Two of their campsites, which have been excavated, yielded spear points—called Folsom points—in association with bones of what appears to be an extinct species of bison. From about 10,000 years ago to the historic period, various other groups of Indians came here.

During much of relatively recent times, Ute Indians largely controlled the valley. Certain Puebloan groups, the Apache from the south, and the Comanche, Cheyenne, and Arapaho from the east and north periodically visited here. Only the Ute Indians made the valley their permanent home.

Spanish explorers, moving northward from New Mexico along the Rio Grande, are known to have reached the San Luis Valley. Juan Bautista de Anza, in 1779, traversed the west side of the valley on the outgoing leg of his expedition against the Comanches and returned to Santa Fe via Sangre de Cristo Pass south of the dunes.

In the winter of 1806-7, Lt. Zebulon Pike, exploring the territory acquired through the Louisiana Purchase, entered the San Luis Valley by way of Medano Pass and raised the United States flag at a temporary fort on the Conejos River. Pike included in his journal a description of the dune area. Later, other explorers, including John W. Gunnison (1853), viewed the dunes. Permanent settlement in the San Luis Valley began early in the 1850's.

ABOUT YOUR VISIT Approach roads to the monument are Colo. 150, which leaves Colo. 17 one mile north of Mosca, and a graded dirt road which leaves U.S. 160 five miles west of Blanca.

The visitor center—your first stop—contains a series of exhibits that explain the natural history, prehistory, and history of the Great Sand Dunes area. Your understanding and your enjoyment of the things you see in the monument will be greatly increased by what you can learn here.

Accommodations within the monument are limited to a campground and a picnic area with wood, water, and tables. Provisions, snacks, and gasoline are available during the season at the Dunes Outpost, 1 mile south of the monument.

Hiking on the dunes. Most visitors begin their walks at the picnic area, choosing their routes because there are no trails on the dunes. A walk to the top and return takes about 3 hours. Early morning and late afternoon are more pleasant; at midday in summer, the sand may be hot.

Naturalist activities. Each evening in summer, park naturalists give campfire programs on the natural history of the monument. Each morning they conduct nature walks to the dunes, explaining features of special interest.

A leaflet is available at the visitor center for the self-guiding Montville Trail. Features on the Picture Point Nature Trail, also self-guiding, are explained by labels. The following observations

are made for your comfort and convenience as well as for the protection of the beauty of the monument.

Be careful with fire! Campfires may be built only in constructed fireplaces.

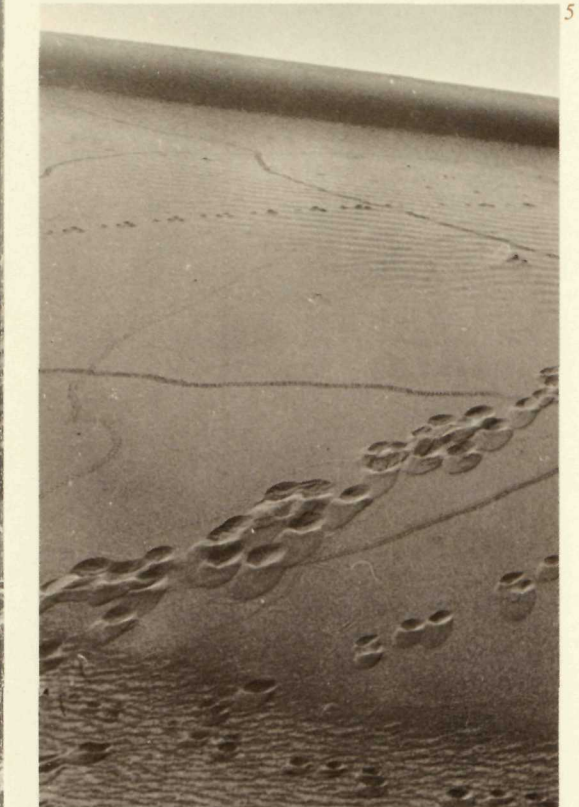
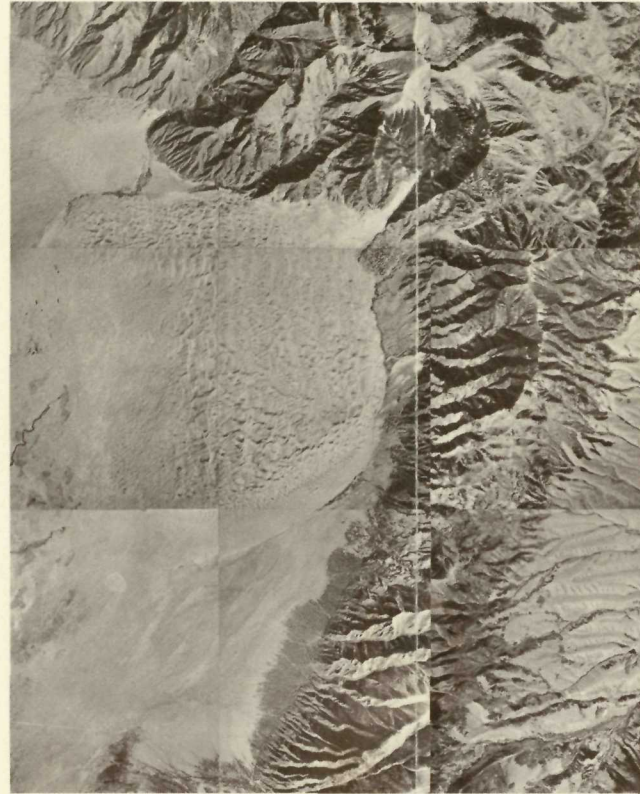
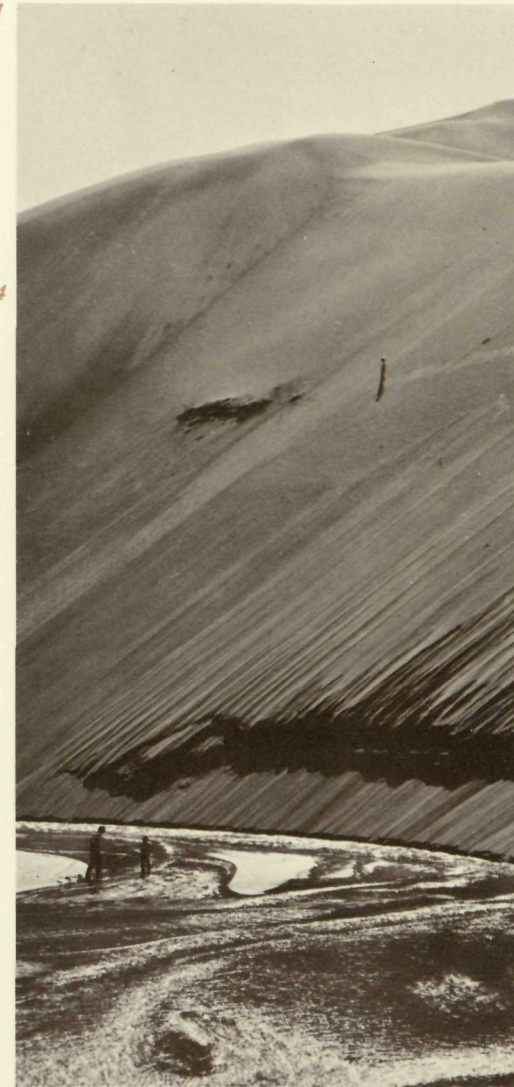
All plants and animals are protected; they must be left undisturbed and unharmed. For this reason, pets must be kept under physical control at all times.

Hunting or shooting in the monument is strictly prohibited.

Keep the premises clean by placing your trash in refuse containers.

Under no circumstances attempt to drive automobiles over the sands to the dunes. Be careful not to get your car stuck in the loose sand near the parking and picnic areas.

1—A forest buried by the sand is revealed as the dunes move on. 2—Medano Creek cuts at the face of the oncoming dunes. 3—Winter, as drifts of sand are covered with snow.



4—The dunes and the mountain barrier. 5—Early morning records in the sand of a night's activity. 6—A natural trap where the wind funnels through low passes. 7—The massive dunes are delicately sculptured by the wind.

Figure 3 by Elliot Porter; figure 6 from Geology Illustrated by John S. Shelton, W. H. Freeman and Co., 1966.