

GREAT SAND DUNES

NATIONAL
MONUMENT

Colorado

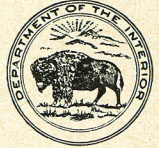
Great Sand Dunes

NATIONAL MONUMENT

UNITED STATES DEPARTMENT OF THE INTERIOR

J. A. KRUG, *Secretary*

NATIONAL PARK SERVICE, NEWTON B. DRURY, *Director*



Shifting sand dunes entrapped by the great hook of the Sangre de Cristo Mountains; among the largest and highest dunes in the United States.

AT the eastern edge of the famous San Luis Valley of south-central Colorado lies a great expanse of the highest piled inland sand dunes in the United States. Paralleling for almost 10 miles the base of the heavily forested, snow-capped Sangre de Cristo Range, whose peaks reach elevations over 14,000 feet above sea level, these spectacular dunes rise from the flat valley floor in striking contrast to the towering mountain background. This unique spectacle, together with the many interesting natural phenomena resulting from the presence of the Gargantuan sand pile, makes the area well qualified to hold a place as one of the units of the far-flung National Park System.

Ancient Earth Movements Laid Basis for Sand Accumulation

The floor of the present San Luis Valley, 7,500 to 8,000 feet above sea level and three times the area of the State of Delaware, was once the bottom of an extensive lake. But eons before that period of its geological history, it was the eastern shore of a great land mass. Skirting this shore line, there developed a zone of weakness in the earth's crust along which a great uplift later took place, forming the Sangre de Cristo Mountain Range. Sand and gravel, together with lava

and ashes thrown out by volcanoes, were deposited in the wide valley lying to the southwest of these mountains.

As the result of continued crustal movements, the floor of the San Luis Valley was further depressed and a fault developed along the northwest side of the San Luis Hills, about 20 miles south of the present city of Alamosa. Lava flows, which accompanied or followed the fault-making movements, blocked the southern end of the valley, impounding all waters flowing into it to form a huge lake. Eventually the lake water rose high enough to overflow this lava dam. Through the centuries, this overflow stream cut downward through the lava dam, draining the lake and cutting an ever-deepening channel, the present Upper Rio Grande Canyon of northern New Mexico.

Sand Dunes Are Result of Wind and Other Natural Factors

The light sandy soil of the San Luis Valley, material deposited as silt in the bed of the ancient lake, is easily transported by the prevailing wind which sweeps across the broad valley from the southwest. On reaching the formidable barrier presented by the lofty Sangre de Cristos, these prevailing winds sweep upward and funnel through the lowest

gaps in the range—Mosca, Medano, and Music Passes. In rising to reach these passes, the wind loses much of its velocity, hence its ability to carry earth particles is markedly decreased and its burden of sand is dropped at the foot of the mountains. Here, where the ancient lake bed and the great mountain escarpment meet, these wind-dropped particles have continued to accumulate through the centuries. They have been continuously shifted, sorted, and piled by the wind into the great dunes whose ever-changing crests rise 800 or more feet along the valley floor. Dune topography is never stable, but is ever changing and shifting, due to the action of the capricious winds.

Although the water table beneath the San Luis Valley of today is still relatively close to the surface of the former lake bottom, the climate of the valley is semiarid. Streams entering the valley are few in number, and the principal flow follows the spring melting of snow among the mountain peaks. Medano Creek, which rises in the mountains immediately east of the national monument, has been diverted from its original channel by the main sand-dune mass. The flush of the creek's spring flow skirts the eastern foot of the dune area for several miles before disappearing in the sand. It is quite possible

that the sizable pond accumulating from the substantial flow of Indian Springs, near the southwestern extremity of the dune area, represents the emerging waters of Medano Creek that have percolated through its deeply sand-covered original channel for a distance of several miles.

Plants and Animals

This huge dune mass, located at the meeting place of valley floor and mountain range, provides, with the waters of Medano Creek, a variety of elevational, climatic, and moisture conditions. In addition to the plant and animal communities normally found on the valley floor, the foothill slopes, and the forested highlands, there is the peculiar and distinctive, although very sparse, vegetation of the sand dunes themselves. Lack of moisture, together with the continually moving surface of the sand, prevents plants from obtaining a foothold except in protected depressions where small patches of grass, a low legume, and sunflowers find suitable conditions. In certain locations where sand sifts into these pockets, the plants develop extremely long stems as they attempt to keep from being buried.

Encroachment of sand upon the ponderosa pine lands northeast of the main dune area

has killed a number of the trees by burying them. As the dunes have moved on under the impetus of the wind, the naked trunks appear, mute evidence of the trees' inability to meet this kind of invasion.

There are many other examples of plant reaction to this weird environment which may be seen by the careful observer. Very little has been done in the way of scientific studies of the effect of the sand environment on local plant life, so that the monument offers many opportunities for interesting and revealing studies.

Aside from the dune area itself, the monument contains plant and animal communities like those found on the valley floor to the westward and on the foothill slopes to the north and east. Rabbits, ground squirrels, coyotes, magpies, and other small mammals and birds characteristic of the rabbit-brush and grassland of the valley floor abound along the southwestern edge of the dune area; whereas chipmunks, mule deer, jays of several species, and other creatures typical of the pinyon-juniper-ponderosa pine belt of the foothill region are at home on the eastern and northern portions of the monument. Because of the many small lakes and marshy depressions found in the San Luis Valley with its water table so close to the surface, wild

ducks are numerous in the general vicinity. The waters of Medano Creek contain trout, although the stream does not attract many fishermen because of its inaccessibility.

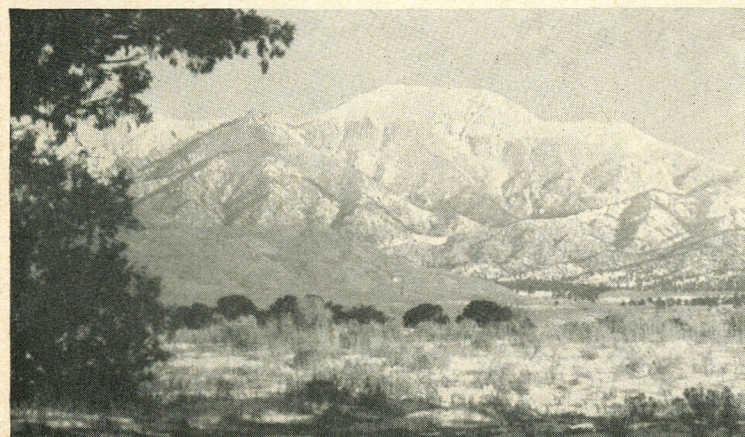
Historical Background

Numbers of arrowpoints and other native artifacts found in the vicinity of the dunes, especially near Medano and Indian Springs, indicate that the dune land was used by early-day occupants of the San Luis Valley. The few Folsom-type points that have been found are evidence of the presence of prehistoric man here many centuries ago.

Although it is known that the Spaniards, continuing on northward from New Mexico along the Rio Grande, reached San Luis Valley, the activities of these first European explorers are obscure for the most part. The only well-known such expedition is that of Juan Bautista de Anza in 1779, striking the Comanches in the rear by way of the San Luis Valley to the Arkansas.

In the winter of 1806-07, Lt. Zebulon Pike's expedition, exploring the territory acquired through the Louisiana Purchase, entered the San Luis Valley by way of Mosca Pass and raised the United States flag at a temporary fort on the Conejos River. Pike included in his journal a description of the

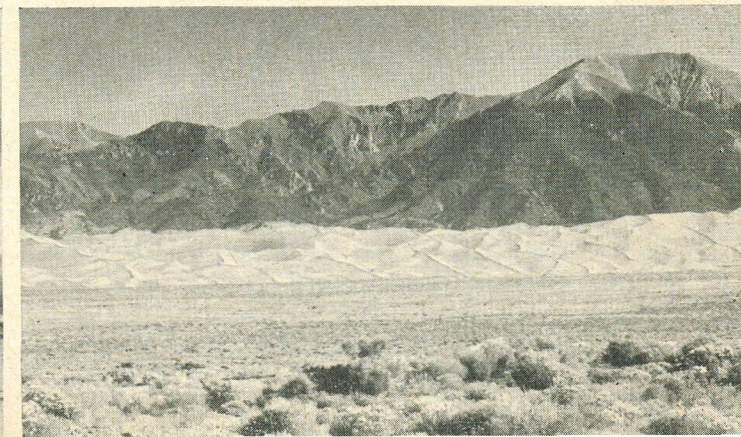
Cleveland Peak and the Sangre de Cristos in Winter



Smothered by a moving dune, skeletons of pine trees emerge to windward after the dune has passed along



In rising to pass over the Sangre de Cristo Mountains, sand-laden winds drop their burden at the foot of the range



dune land. Later, other explorers, including Fremont, in December 1848 and December 1853, and Gunnison, in the summer of 1853, viewed the dunes. Permanent settlement in the San Luis Valley began early in the 1850's.

F. V. Hayden, of the United States Geological Survey, is credited with naming the area by reference to it in his report, "The Hayden Atlas," which was published in 1878.

In the early 1870's, a toll road was constructed across the Sangre de Cristos through Mosca Pass, making the valley accessible to pioneers and settlers. This road passed through the eastern portion of what is now Great Sand Dunes National Monument. With the construction of a railroad, the toll road fell into disuse and, with the resulting isolation, the dune land was practically forgotten. As the San Luis Valley became settled, the size and spectacular features of the dunes aroused public attention and, in 1932, the Great Sand Dunes National Monument was established by Presidential proclamation. Only 35,908 acres within the boundaries are actually under Federal ownership.

Accessibility and Facilities

There are no stores, lodges, or other accommodations for visitors at Great Sand Dunes National Monument, other than a free camp ground among the pines with wood, water, and picnic tables. Provisions and supplies must be obtained in nearby communities, including Hooper and Mosca, on State Highway 17 which is 23 miles west of the monument; and Alamosa, junction point of the principal highways of the San Luis Valley, 38 miles southwest of the monument. Major approach road to the monument is State Highway 150 which leaves State Highway 17 one mile north of Mosca.

Administration

As one of the units of the National Park System, Great Sand Dunes National Monument is owned by the people of the United States and is administered for them by the National Park Service, a bureau of the Department of the Interior. In all of these units, the scenery and the objects of historic, prehistoric, and scientific interest and significance are carefully preserved, protected, and interpreted for public enjoyment.

A superintendent is in immediate charge of the monument, with residence and administrative office near the entrance. Inquiries and communications should be addressed to The Superintendent, Great Sand Dunes National Monument, Mosca, Colo.

The following observations are made for the protection of the natural beauties of the monument, as well as for the comfort and convenience of visitors:

Be careful with fire! Campfires may be built only within designated areas.

All plants and animals within the monument are protected, and must not be disturbed or harmed. For this reason, dogs and cats brought into the monument must be kept on leash or otherwise under physical restrictive control at all times.

Hunting or shooting on the monument is strictly prohibited.

Please help in keeping the premises clean and tidy by using the fireplaces and refuse containers.

UNDER NO CIRCUMSTANCES ATTEMPT TO DRIVE AUTOMOBILES OVER THE SANDS TO THE DUNES. Be careful lest you get stuck in the loose sand near the parking areas and picnic grounds.

