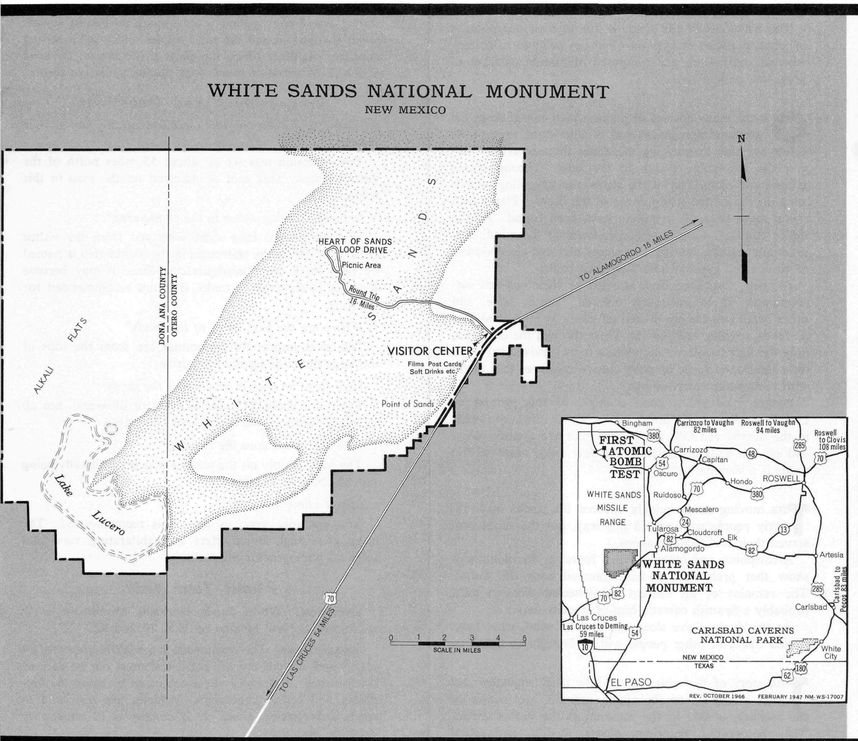

GUIDE TO THE DRIVE

Watch for the numbered posts along the right-hand side of the road. They refer you to the following paragraphs, which explain some of the things you will see.

Post No. 1. The dunes to your left have become stabilized by vegetation. As the plant roots grow, they anchor the grains of gypsum, retarding the movement of these marginal dunes. Only a few species of plants are able to survive on the bare gypsum dunes, but enough of them have become established among these fringe dunes to hold them in place. *Please remain on the road; there are many more spectacular dunes ahead where turnouts enable you to park your car and climb the dunes.*

Post No. 2. The low grayish shrub so abundant here is fourwing saltbush and should not be confused with sagebrush, which is found in the colder, higher Great Basin desert much farther north. Leaves of saltbush have a salty taste and are palatable to wildlife. Saltbush grows in the sands only among the more stable marginal dunes like those to your left.

Post No. 3. The white sands are located in the wide valley known as the Tularosa Basin. Ahead of you are the San Andres Mountains, which border this basin on the west. The high mountain in the distance to your right is Sierra Blanca. Its crest is just over 12,000 feet above sea level, and evidence of former glacial activity has been found there. Behind you, forming the eastern border of the basin, are the Sacramento Mountains. You are now about 4,000 feet above sea level. The largest nearby dunes are about 30 feet high.

Post No. 4. The dunes at your left have not yet become stabilized. One of the dramatic battles of nature is being waged in front of these shifting dunes. Here the plants are struggling to gain a foothold and to keep their crowns from being buried by the sand, which is steadily moving toward the northeast before the prevailing winds.

The dark-green shrub in the area to your right is iodine-bush. The name is derived from the color and appearance of the dried sap from crushed stems of the plant.

A small playa, or dry lake, may be seen on the right as you approach the first sand dunes.

Post No. 5. You are now entering the dune area. The large dune ahead and to your left is quite active and would soon bury the road if the sand were not frequently cleared away. All the active dunes are slowly moving toward the northeast, pushed by the prevailing southwest wind. Constant clearing is necessary to keep the road open, but occasionally a dune wins the battle and the road must be rerouted.

It is much more difficult for vegetation to survive in moving sands than in stationary sand. Among the few species of plants that can get a precarious foothold on the dunes are skunkbush sumac (squawbush), soaptree yucca, shrubby pennyroyal, rubber rabbitbrush, fourwing saltbush, and cottonwood.

Post No. 6. To your right are several gypsum pedestals. Plants were once growing on top of the dune, and their roots, penetrating deep into the sand, bound the grains together. The dune, being still active, moved on slowly, leaving behind the columns of gypsum held together by the tangled mass of fibrous roots.

Post No. 7. Note the level depressions between the dunes. You may be surprised to learn that the water table is high here and in some of these depressions you may reach water by digging down only a few feet. This water contains much gypsum in solution, but it provides moisture that many species of plants can use, which explains the growth of vegetation. On your left is a small cottonwood, and to your right other cottonwoods are visible.

A section of the black-topped road on your left has been covered by the shifting sands.

Post No. 8. *You are now entering the section of the drive that takes you into the heart of the dunes.* The road from here on is pure, hard-packed gypsum.

After completing the drive, you should see the exhibits at the visitor center, which explain the many features of the area. A park ranger is on duty to answer questions.

Facilities. Neither meals nor sleeping accommodations are available; facilities may be found in Las Cruces (54 miles) and Alamogordo (15 miles). A picnic area, with tables and fire grills, is provided for those who bring lunches. A concessioner at headquarters sells souvenirs and refreshments. Overnight camping facilities are not available within the monument.

Administration

White Sands National Monument, established on January 18, 1933, and comprising nearly 230 square miles, is administered by the National Park Service, U. S. Department of the Interior.

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.

A superintendent, whose address is Box 458, Alamogordo, N. Mex. 88310, is in immediate charge of the monument.

America's Natural Resources

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.

UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

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WHITE SANDS NATIONAL MONUMENT NEW MEXICO

About 5 miles beyond the visitor center, the monument road enters the dune area. To learn about some of the many interesting features along the way, follow the self-guide section on the back of this folder.

THE most spectacular part of the world's largest gypsum desert is included in White Sands National Monument, in the Tularosa Basin of south-central New Mexico. The glistening sea of sand has been drifted by the wind into huge wavelike dunes that are almost bare of vegetation except along the fringes. A few species of plants, remarkably adapted to their peculiar surroundings, have been able to resist burial under the constantly shifting dunes. Several species of animals have developed a bleached coloration, which makes it difficult for enemies to see them.

This area is unique in the United States not only because of its unusual combination of natural processes but also because of the outstanding beauty of these dazzling white dunes and their intriguing patterns of light and shadow. These patterns are especially impressive and photogenic during late afternoon, when the sun is low. And perhaps equally moving is moonlight upon the dunes.

THE Tularosa Basin stretches for more than 100 miles between two north-south mountain ranges. All sides of the valley slope gently inward to form the basin, with Lake Lucero, its lowest point, at the southwest extremity of the monument. This valley was formed hundreds of centuries ago, when a great section of the earth's crust settled to form the type of basin known as a graben. This phenomenon is effectively illustrated by an exhibit in the visitor center.

High above the basin floor, beds of gypsum are found in the mountain ranges flanking the valley. Similar gypsum beds lie beneath the floor of the basin. This is evidence that before it sank the basin was a part of the high plateau.

Runoff water from seasonal rains and melting snow carries tons of gypsum, in solution, from the mountains into Lake Lucero. During much of the year, cloudless skies and warm, dry winds evaporate Lake Lucero, and it shrinks to a crystal-encrusted marsh. Capillarity draws the gypsum-laden underground water to the surface, and it, too, evaporates, depositing gypsum throughout the extensive "alkali flats." The persistent southwest wind breaks up the crystals in Lake Lucero and whirls the smaller particles away, adding them to the snow-white dunes—the accumulation of centuries. Thus the dunes are ever growing, ever changing.

The dunes are also ever moving. Like active sand dunes everywhere, these of gypsum are literally marching across the countryside. Prevailing winds blow the grains of gypsum, often in a visible cloud, up the gentle windward slopes. Upon reaching the dune crest, these grains fall onto the steep leeward side, adding to it at the expense of the windward side. Thus the dune continues sporadically to inch forward in a northeasterly direction. The ripples that decorate the flatter dune surfaces are miniature examples of the same process.

The whiteness of the sands is due to their composition of small particles of gypsum (hydrous calcium sulphate), whereas most sands are composed of minute particles of gray, tan, or buff rock.

OF the many species of plants which can grow in the gypsum-impregnated soil of inter-dune areas, only a few are able to grow on the dunes themselves and survive the irresistible march of the sand. Through rapid growth and elongation of the stems, the struggling crowns keep on top of the rising crests of the dunes. Plants with stems more than 40 feet long have been found. As the dunes continue onward under pressure of the wind, they gradually recede, leaving the plants elevated on pedestals of compacted gypsum bound by their roots.

Animals, too, have been affected by their unusual surroundings. If conspicuously colored, lizards, mice, and other small animals are picked off easily by such predators as foxes, coyotes, and hawks. Thus, through the centuries, only the lighter-colored individuals have survived here and have developed races of pale, elusive creatures that blend with their white surroundings.

Pocket mice are a good example of this process of evolution. Among the dunes, white pocket mice are found; in the nearby red hills the pocket mice are a rusty color; and on the beds of black lava a few miles north of the sands is a very dark race.

THE moving sands quickly covered the tracks made by early people who passed this way, but the sands preserved their tools and weapons.

Arrowpoints and other artifacts found in the monument show that prehistoric Indians camped near the dunes. The remains of an ancient two-wheeled wooden cart, probably a Spanish carreta, hint of tragedy here.

As the dunes move slowly before the wind, what long-buried traces of other people will be brought to light?

THE story of the white sands, how they originated and their influences on the plants, animals, and people of the vicinity, is told in the museum at the visitor center. The photographs, paintings, charts, models, and actual specimens will help you appreciate the natural processes and human events that occurred here.

MANY beautiful and striking photographs, both black-and-white and color, have been taken of the sand dunes. Almost without exception, these have been made during the 2-hour period after sunrise or before sunset, when shadows accent the sand ripples and provide strong contrast. At other times, the glare of the sun on the sand and lack of shadows cause poor photographic conditions.

Frequently Asked Questions

Where is the site of the explosion of the first atomic bomb?

The explosion was set off about 55 miles north of the visitor center. This spot is indicated on the map in this folder.

Is there drinking water in the picnic area?

No, you should take some with you from the visitor center. Water in the restrooms in the picnic area is hauled by tank truck from headquarters. Since it may become stagnant in the storage tanks, it is not recommended for drinking.

Where are the best views of the sands?

The most impressive panoramas are from the tops of the large dunes along the loop drive.

How large an area is covered by the sands?

There are about 275 square miles of duneland, not all of which is within the monument boundaries.

How far down does the sand go?

The sand is only on the surface and is continually being moved about by the wind.

May I climb the dunes?

You certainly may; in fact, it is recommended. The crest of a high dune offers an exhilarating view and splendid photographic possibilities.

About Your Visit

Location. White Sands National Monument is in south-central New Mexico on U.S. 70 and 82.

Regulations. The monument is a wildlife preserve; all plants and animals are protected and must not be harmed or disturbed. *Help keep the sands clean* by using the fireplaces and refuse containers. Vehicles are restricted to roads and parking areas. *It is dangerous to attempt to drive on the dunes.*