

## Living Desert State Park - New Mexico State Park series

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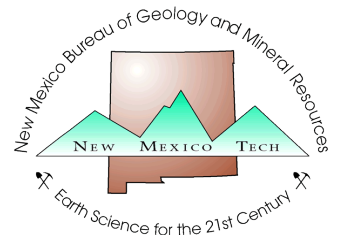
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Living Desert State Park, opened in June 1971, has been developed as an indoor-outdoor museum of native plants and animals. Well-marked trails take you on a self-guided tour among extensive desert gardens, an arboretum, and a zoo containing birds, reptiles, hooved animals, bears, and other species. Some rarer specimens of the more than 2,000 varieties of cactus are displayed in the Succulents of the World and the Entry buildings. A display of unique and beautiful minerals from all over the world is also housed in the Entry building. The 360-acre park is provided with gift shop and restaurant.

An adjacent tracts, developed by the City of Carlsbad, offers recreational and picnicking facilities. Motel-hotel accommodations, city shops, and scheduled bus and airline services are available in nearby Carlsbad, 4 mi by road from the park.

### Plants

Although irrigated bottomlands along the Pecos River permitted the introduction of agricultural crops characteristic of more humid regions, native semidesert shrubs and grassland are of the Lower Sonoran zone of the Chihuahuan Desert region. Typical indicator plants are cacti, creosote bush, mesquite, acacias, and ocotillo. The Upper Sonoran zone begins in the foothills to the west and extends upward into the Guadalupe Mountains where juniper, piñon, oak, yucca, agave, and beargrass are characteristic.

### Geology

The park is in the Ocotillo Hills, a low rounded ridge running north from the western outskirts of Carlsbad. This ridge and other hills around Carlsbad are formed by anticlines. Happy Valley to the southwest of the Ocotillo Hills and the valley of the Pecos River just east of the hills are synclines.

Principal surface rocks of these anticlines are the Tansill and Yates Formations (Per-

mian). These rocks were deposited as sand and limy mud along the edge of the sea some 230 m.y. (million years) ago. The deep part of the ocean lay to the south, and the margin between the sea and the bank was a growing barrier reef similar to the Bahama Islands of the Caribbean or others in the South Pacific today. Carlsbad Caverns, approximately 25 mi southwest of the park, is in these same formations, and the great escarpment there is similar to the oceanward side of the reef as it existed in Permian time.

On the east side of the Pecos River east of Carlsbad, the Tansill and Yates Formations and similar rock units are overlain by younger Permian beds which contain rich potash ores. On a clear day, headframes of the underground potash mines are visible to the east, northeast, and southeast. Beyond on the northeast horizon is the southernmost part of the High Plains, called Llano Estacado or Staked Plains. Northward the Pecos River valley is the green swath leading to Artesia and Roswell. Seven Rivers Hills and Azotea Mesa to the west are capped by rocks similar to those in the park. The bold limestone cliffs of the Guadalupe Mountains to the southwest are formed mainly by slightly older reef rocks, although in many places they are also capped by the Tansill and Yates Formations.

The type location for the Tansill Formation is on the east flank of the Ocotillo Hills, approximately 1 mi north of Park headquarters. The name Tansill, taken from Tansill Dam,

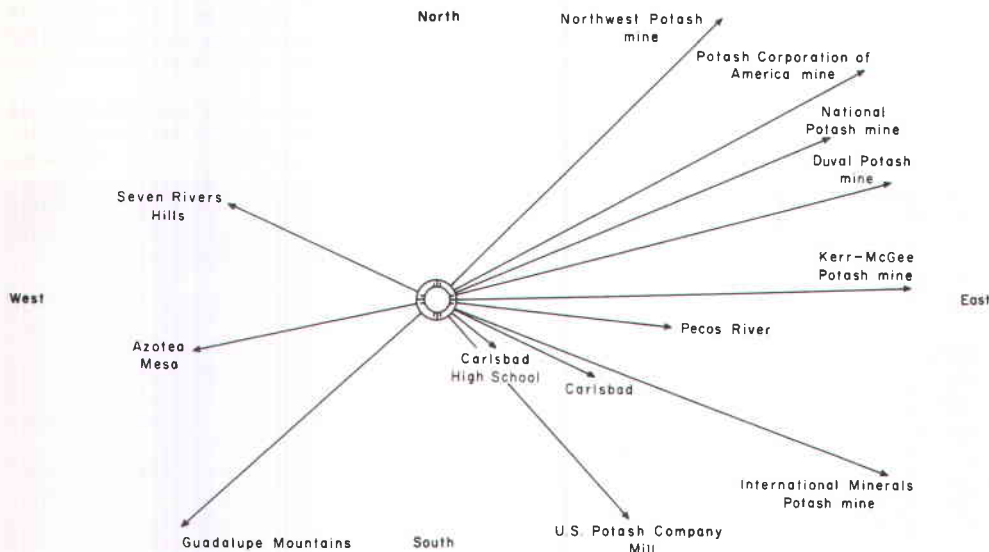
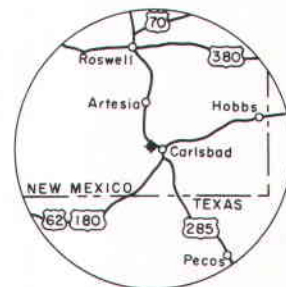
was also the family name of an early Carlsbad settler. Tansill Dam impounds the Pecos River for 2 mi north of Carlsbad, creating the beautiful recreational lake visible from the park center.

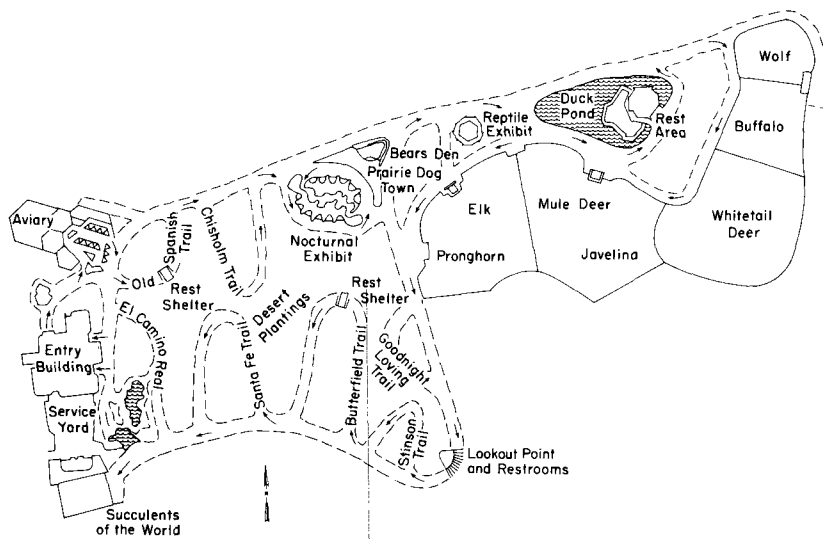
Park facilities are on gray limestone beds of the Tansill and the rock is used in some walls and gardens along the paths. The Yates Formation lies beneath the Tansill and is exposed only in the small canyons which have eroded through the Tansill. The contact between beds of these formations is clearly exposed in a road cut along the eastern access to the park. This exposure is 0.5 mi from US-285. The Yates Formation is mostly fine rusty-yellow sandstone that contrasts markedly in color with the cement-gray limestone.

### History

Man has increasingly left his imprint upon this region since the end of the Pleistocene Ice Age, when a succession of glacial ice sheets covered the northern tier of states. Although the earliest record is dimly perceived in the park vicinity, more than 11,000 yrs ago hunters in the plains east of the Pecos Valley tracked now-extinct mammoth, bison, and other large herbivorous mammals; undoubtedly, hunters also stalked their quarry in the park area. More abundant evidence of foraging activities by succeeding cultures of the Archaic Stage is manifested by stone midden circles, milling stones, dart points, basketry, bone and vegetal refuse, and burials found in numerous open sites and shelter caves. These people, referred to as Carlsbad Basketmakers, depended upon the varied resources of native plants and modern species of large nand small animals that abounded. The span of Archaic occupation is unknown but probably extended from several thousand years B.C. to approximately 1,000 yrs A.D. Ancestors of modern Apache Indians, who may have entered the region during their southward migration roughly 500 yrs ago, later were to become the scourge of travelers and settlers in the area.

The first white visitors were with Don Antonio de Espejo's expedition that returned to Mexico in 1583 through the Pecos Valley. In 1590, Gaspar Castaño de Sosa led 170 men, women, and children along the Pecos into northern New Mexico in an unsuccessful attempt to found a colony. The country, fav-





ored haunt of the Mescalero Apache, was on the western fringe of Comanche territory by the middle 1700's; hence, it was the 1850's before American military expeditions and patrols began to report, with little favor, on the physical features and resources of the area. These reports, together with the constant threat of Apache raiding parties, discouraged both travelers and settlers until the 1860's. The demand for beef at military posts and Indian reservations following the Civil War provided a market for Texas cattle and eventually led to

the establishment of ranches along the Pecos Valley.

Introduction of irrigated agriculture signaled a period of accelerated settlement of the valley. Carlsbad, originally named Eddy after one of the principal developers, owes its origin to this industry. The discovery of potash minerals in Permian salt beds east of Carlsbad in 1925 led to a new industrial boom centered on mining potash salts for use as fertilizers. Carlsbad mines are now the leading potash producers in the United States. □

## Aeromagnetic and aeroradiometric maps and profiles

published or open-filed by the U.S. Geological Survey

The accompanying index maps show the location of aeromagnetic and aeroradiometric surveys for which results are available to the public. A supplemental list of publications and open-file reports is keyed to each index map. Also included are aeromagnetic and aeroradiometric maps published or open-filed by various states and *available only from the states*. Not included are airborne maps and profiles by other government agencies and private industry except when incorporated in USGS or individual state publications.

Many of the publications listed are Geophysical Investigations Maps (GP). These and other Survey maps can be purchased from the Branch of Distribution, U.S. Geological Survey, Bldg. 41, Box 25286, Federal Center, Denver, CO 80225, for areas west of the Mississippi River, including Alaska and Louisiana.

Professional papers and bulletins that are not out of print can be purchased by mail from Eastern Distribution Branch, Text Products Section, U.S. Geological Survey, 604 S. Pickett Street, Alexandria, VA 22304 and over the counter from the U.S. Geological Survey Public Inquiries Offices (P.I.O.'s) located in Anchorage, Dallas, Denver, Los Angeles, Menlo Park, Reston, Salt Lake City, San Francisco, Spokane, and Washington, D.C.

Most all open-file reports are available in

microfiche or paper duplicate copies from Open-File Services Section, U.S. Geological Survey, Box 25425, Federal Center, Denver, CO 80225. (Telephone: 303-234-5888)

Prices for the above publications are published in the monthly listing "New Publications of the Geological Survey." Current price and availability information for older publications can be obtained by calling or writing the appropriate location listed above. Prepayment is required when ordering. Order by series and number (GP-233, OF77-123, etc.) and title. Do not mix orders for maps, professional papers and bulletins, and open-files. Each must be ordered from a separate location.

Some of the maps and profiles appear as illustrations in professional journals, technical books, and out-of-print government publications. These may be viewed at USGS libraries and many universities and public libraries. Open-file releases may be examined at libraries and certain offices of the USGS, state surveys, and universities. These locations are noted in the state index.

The U.S. Department of Energy has completed an aerial radiometric and magnetic reconnaissance survey program over the conterminous United States and part of Alaska in support of the National Uranium Resource Evaluation (NURE) program. Information on these surveys can be obtained from: Bendix

Field Engineering Corporation, Technical Library, P.O. Box 1569, Grand Junction, CO 81501. (Telephone: 303-242-8621, ext. 278).

### Map references

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- A Aeromagnetic and gravity studies of the Precambrian in northeastern New Mexico, by G. E. Andreasen, M. F. Kane, and Isidore Zietz, Geophysics, v. 27, no. 3, p. 343-358, 1962, (fig. 3 is an aeromagnetic map)
- B The Rio Grande trough near Albuquerque, New Mexico, by H. R. Joesting, J. E. Case, and L. E. Cordell, in Prof. Paper 424-D, p. 282-286, 1961, (fig. 392.4 shows magnetic profiles; reprinted in New Mexico Geological Society, Guidebook 12th field conference, 1961)
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- E Bull. 1261-E—Mineral resources of the Blue Range Primitive Area, Greenlee County, Arizona, and Catron County, New Mexico, by J. C. Ratté and others, with a section on aeromagnetic interpretation by G. P. Eaton, 91 p., 1969, (pl. 1 is a geologic-aeromagnetic map, scale 1:62,500)
- F Bull. 1319-E—Mineral resources of the Black Range Primitive Area, Grant, Sierra, and Catron Counties, New Mexico, by G. E. Ericksen and others, 162 p., 1970, (pl. 1 is a geologic-aeromagnetic map, scale 1:63,360)
- G Aeromagnetic map of part of south-central New Mexico, scale 1:62,500, (OF Rept. 71-288), 1971, (copies on file at 1, 2, 3, 4, 7, 8, 9, 10)
- H Aeromagnetic map of the Jemez area, New Mexico, scale 1:250,000, (OF Rept. 72-391), 1972, (copies on file at 1, 2, 3, 4, 7, 8, 9, 10)
- I Aeromagnetic map of an area northeast of Santa Fe, New Mexico, scale 1:62,500, (OF Rept. 73-290), 1973, (copies on file at 1, 2, 3, 4, 7, 8, 10)
- I Mineral resources of the Pecos Wilderness and adjacent areas, Santa Fe, San Miguel, Mora, Rio Arriba, and Taos Counties, New Mexico, by U.S. Geological Survey, U.S. Bureau of Mines, and New Mexico Bureau of Mines and Mineral Resources, 117 p., aeromagnetic map scale 1:62,500, (OF Rept. 80-382), 1980, (copies on file at 1, 2, 3, 7, 8, 9, 10)
- J Aeromagnetic map of parts of the Silver City and Las Cruces 1° by 2° quadrangles, southwestern New Mexico, scale 1:250,000, (OF Rept. 74-1107), 1974, (copies on file at 1, 2, 3, 4, 7, 8, 10; copies of the 1:62,500 maps from which the 1:250,000 map was prepared may be ordered from 10)
- K Aeromagnetic map of parts of the Socorro and Tularosa 1° by 2° quadrangles, southwestern New Mexico, scale 1:250,000, (OF Rept. 74-1108), 1974, (copies on file at 1, 2, 3, 4, 7, 8,