

FIGURE 1—Location of Coyote Creek State Park.

Introduction

Coyote Creek State Park is along NM-434, 18 mi north of Mora and 17 mi south of Angel Fire in the eastern Sangre de Cristo Mountains of northern New Mexico (Fig. 1). The park is at the bottom of Guadalupita Canyon, elevation 7,700 ft, where Coyote Creek runs through meadows surrounded by mountain forest before joining the Rio Mora and eventually the Canadian River to the southeast. La Mesa forms the eastern ridge and is 9,112 ft in elevation. Ocate is to the east on the eastern side of La Mesa. The Rincon Range forms the western skyline and is 9,100 ft in elevation.

History

The rich historical record of the eastern Sangre de Cristo Mountains began in the early 1800s during the Spanish and subsequently the Mexican occupation of the region. In 1816 a soldier named Antonio Olguin led some of the first settlers from Picuris into the area. The resulting settlement, located near Cleveland just north of Mora, was abandoned in 1832 (Kammer, 1992). A second group of farmers settled in the area after Col. Albino Perez, governor of the New Mexico Territory of Mexico, established the Mora Land Grant in 1835. The grant consisted of 827,889 acres divided among some 75 grantees. The town of Mora was settled soon after.



FIGURE 2—Entrance to Coyote Creek State Park. The gateway has been painted with murals.

Vicente Romero, one of the original grantees of the Mora Land Grant, built a ranch near Mora in 1835, which is now part of the Salman Ranch. In 1846 New Mexico Territory became part of the United States, and in 1847 residents in and near Mora revolted against the American occupation, following a similar but unsuccessful revolt in Taos. During the Mora revolt, a caravan was attacked near Mora, and eight Americans were killed. A battle ensued with hand-to-hand fighting, and the American forces retreated to Las Vegas. Soon after, a larger American force left Las Vegas and in retribution destroyed Mora with artillery, ending the rebellion (Simmons, 1986; Bryan, 1988; Kammer, 1992).

In 1851 Fort Union was established approximately 15 mi to the east of Mora and became a major stop on the Santa Fe Trail. Recurring Comanche, Ute, and Apache Indian raids into the area, from the time of first settlement until after the Civil War, ended. One branch of the Santa Fe Trail passed through Mora connecting it with Fort Union and Las Vegas (Simmons, 1986). The Mora area became an important supplier of food and grazing for the fort (Kammer, 1992). Building of acequias or irrigation channels enhanced food production. In 1851 Vincente Romero built a flour mill at La Cueva east of Mora that supplied grain and flour to Fort Union. The St. Vrain mill was built in Mora in about 1855, and it also supplied flour to the fort. More mills were built in the area that periodically supplied the fort with flour.

Peace settled upon the Mora Valley until about 1879 when the railroad was built through Las Vegas providing rail access to central and northern New Mexico. Traffic along the Santa Fe Trail dwindled, and in 1891 the U.S. Army abandoned Ft. Union. The railroad town of Las Vegas became the regional center of commerce and trade, and Mora was reduced to a farming and ranching community. In 1904 a catastrophic flood hit the Mora Valley devastating fields and crops and forcing many more people to leave the area. At the same time, the rapid growth of Las Vegas spawned gangs of outlaws who commonly found refuge from the law in and around the Mora and Coyote Creek areas (Young, 1984).

Minerals were discovered in the area, although none of these districts ever produced much. Copper was discovered south of Coyote Creek State Park in the Coyote Creek district east of Guadalupita in 1847, and gold was discovered near Mora in 1870 (McLemore, in press).

In the early 1930s, the area of Coyote Creek State Park was part of a working ranch owned by Eusebio Romero, the grandfather of the current park manager Joseph Griego. The ranch consisted of a steam timber mill and moonshine "mola" still; the ruins remain in the park. Eusebio Romero also built the current park residence as part of the original ranch. The ranch was donated to New Mexico and became a state park in 1969.

Facilities

Today, Coyote Creek State Park (Fig. 2) draws 20,000–30,000 fishermen, campers, hikers, bird watchers, and other visitors annually. Picnicking is also popular. The New Mexico State Game and Fish Department stocks Coyote Creek with rainbow trout. Small dams constructed of rocks and natural beaver ponds offer excellent sites for fishing (Fig. 3). RV hookups, restrooms, showers, a group shelter, a playground, and a dump station are available (Fig. 3). A horseshoe pit lies near the group shelter. Many of the camping sites have three-sided shelters that resemble log cabins. A 1-mi-long, maintained hiking trail begins near the group shelter and winds along the forested hillslope, ending in the southern end of the park. The creek is too shallow for swimming, but children still play in the water. The park hosts an annual fiesta on the second Sunday in August.

Coyote Creek State Park is famous for its variety of wildflowers, including geraniums, sunflowers, iris, and primrose (Fig. 4). Be

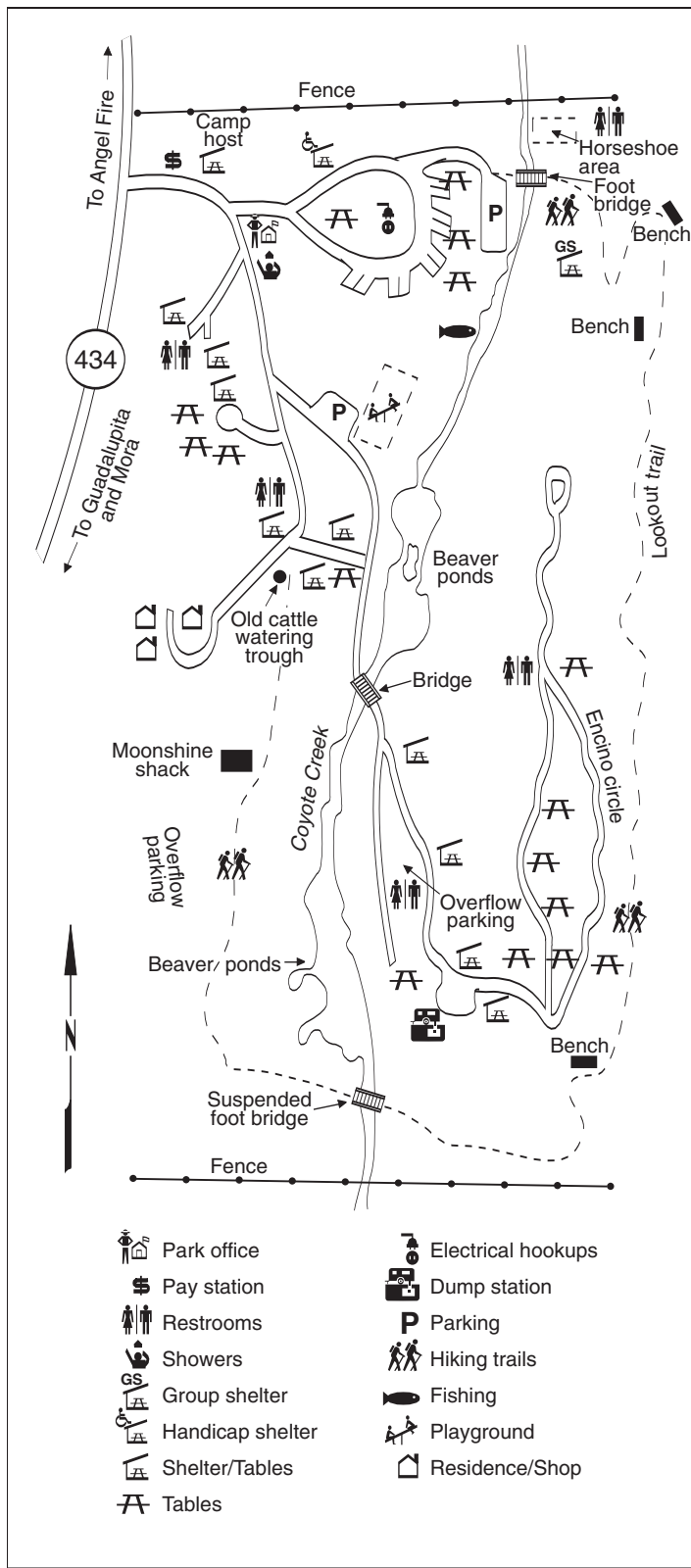


FIGURE 3—Facilities at Coyote Creek State Park. Reprinted by permission of Southeast Publications USA, Inc.



FIGURE 4—Wildflowers near a camp site.

careful of the poison ivy that also grows along the creek and hillslopes! Along the hills alpine fir, blue spruce, Douglas-fir, Engelmann spruce, Gambel oak, hairy mountain mahogany, one-seed juniper, piñon, ponderosa pine, quaking aspen, Rocky Mountain juniper, wavyleaf oak, and white fir grow. Chinouapin oak, chokecherry, narrowleaf cottonwood, and willow grow along Coyote Creek. Wildlife common in the area include deer, bear, elk, raccoon, squirrel, beaver, coyote, and many birds (Table 1).

Geology

The rugged mountain ridge to the west of the park, the Rincon Range, consists of Proterozoic metamorphic rocks of the Vadito and Hondo Groups. Lithologies are diverse and include quartzofeldspathic gneiss, amphibolite, metatuff, pelitic schist, and quartzite (Grambling, 1990). Rocks of the Vadito Group were deposited along a continental margin in a continental rift or back-

TABLE 1—Birds found in the Coyote Creek valley. How many can you find in Coyote Creek State Park?

Mallard	
Broad-tailed hummingbird	
Red-shafted flicker	
Western wood pewee	
Cordilleran flycatcher	
Steller's jay	
American crow	
Common raven	
Tree swallow	
Cliff swallow	
Barn swallow	
Mountain chickadee	
Hermit thrush	
American robin	
Yellow-rumped warbler	
Western tanager	
Chipping sparrow	
Savannah sparrow	
Dark-eyed junco	
Red-winged blackbird	
Western meadowlark	
Brewer's blackbird	
Pine siskin	
Turkey	
Evening grosbeak	

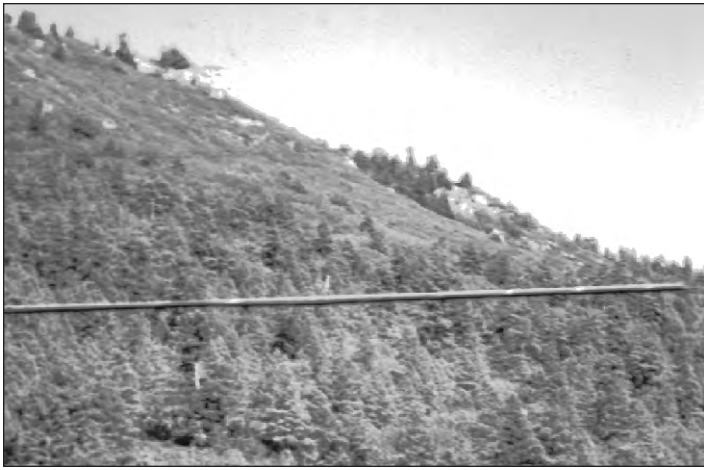


FIGURE 5—View to the east of basalt cliffs overlooking Coyote Creek State Park.

arc basin about 1720–1700 million years (m.y.) ago (Williams, 1990). Rocks of the younger Hondo Group were deposited on a shallow marine shelf about 1700–1690 m.y. ago (Williams, 1990). Deformation of the rocks probably occurred during several periods between 1650 and 1400 m.y. ago. Outcrops of these rocks are exposed sporadically along NM-434. Eroded boulders and pebbles of multicolored white to gray to brown gneiss, schist, and quartzite most likely from the Rincon Range are found in Coyote Creek and throughout the park.

The oldest outcrops in the park are Pennsylvanian to Permian strata (325–245 m.y. old) that are poorly exposed along the forested slopes of La Mesa. They consist of gray sandstone, gray to brown siltstone, and gray to black shale of the Sandia Formation, Madera Group, and Sangre de Cristo Formation. Locally, gray marine limestone beds are interbedded with the sandstone and shale. These rocks were deposited in an active marine geosyncline called the Rowe–Mora Basin (Bachman, 1953). A geosyncline is a deep basin in which thick deposits of sedimentary and volcanic rocks accumulate. In this area, most of the sediments were shed from the Uncompahgre uplift to the west. Both the basin and the uplift formed at the time of the formation of the Ancestral Rocky Mountains during the Pennsylvanian. The seas retreated and returned several times during Permian through Cretaceous (65 m.y. ago) time. Only the oldest marine rocks of Pennsylvanian–Permian age are exposed in Guadalupita Canyon; the younger rocks were eroded.

The sedimentary rocks exposed along the slopes of La Mesa dip 30°–70° to the east as a result of the formation of the Sangre de Cristo Mountains during Cretaceous–early Tertiary time (Bachman, 1953; Anonymous, 1983). This event is known as the Laramide orogeny. An orogeny refers to the process of forming mountains. About 70 m.y. ago the region was uplifted, faulted, folded, and tilted, forming the Sangre de Cristo Mountains as we see them today. Major periods of erosion followed uplift, forming alluvial fan deposits along the eastern foothills of the Sangre de Cristo Mountains. These rocks also have been eroded in the Coyote Creek area. About 8.3 m.y. ago, basaltic volcanoes began to erupt in the Ocate area east of Coyote Creek. Volcanism continued with major pulses at 8.3–5.7, 4.7–3.8, and 3.8–0.8 m.y. ago (O’Neill and Mehnert, 1988).

Most sedimentary and volcanic rocks are laid down sequentially, the oldest rocks at the base and the youngest at the top. However, in the Ocate volcanic field, the oldest basaltic flows form the highest mesas, and the youngest flows form surfaces lower in elevation (Fig. 5; O’Neill, 1988). This reverse stratigraphy occurred because after the older flows were erupted about 8.3–5.7 m.y. ago on a relatively flat, low-relief alluvial plain (O’Neill and Mehnert, 1988; Dolliver, 1990), the entire area was uplifted, and subsequent canyons were cut into the basalt flows. Younger basalt flows then



FIGURE 6—Basalt boulders in Coyote Creek near the group shelter.

filled the major stream canyons and lower broad valleys. When uplift ceased, the youngest basalt flows of the Ocate volcanic field flowed on top of intermediate-aged flows.

At Coyote Creek State Park, basalt flows cover La Mesa. Cliffs of basalt crop out along the mesa edge and can be seen from the park (Fig. 5). Similar basalt flows of about the same age form the canyon bottom in the northern part of the state park and northward along NM-434 (Bachman, 1953; O’Neill and Mehnert, 1988; Baltz and O’Neill, 1990). A concealed fault may separate the flows in the canyon from the mesa, or the basalt flowed across the mesa and into the valley. Boulders of basalt are common in Coyote Creek and throughout the park (Fig. 6). The group shelter is constructed partly of these boulders. The basalt is black, fine grained, vesicular, and consists of olivine, clinopyroxene, augite, plagioclase, magnetite, and rare biotite and quartz. Look closely at the basalt, and you will see visible laths and euhedral-shaped crystals; this texture is called porphyritic. The basalt flowed south from two vents south of Black Lake, which is north of Coyote Creek State Park. A sample of the basalt from north of the state park was radiometrically dated as 4.7 m.y. (O’Neill and Mehnert, 1988). The basalts forming La Mesa were dated as 4.2–4.6 m.y. and were in part erupted from three small vents at Cerro Montoso and from the central part of La Mesa. These basalts are similar to the flows exposed in Coyote Creek; vesicular scoria forms the upper crust of the lava flow. Boulders of gray to black to reddish-brown scoria and gray to black basalt are found along the trail.

After eruption of the older lava flows, the area continued to be uplifted. Coyote Creek was part of a complex river system that started high in the Sangre de Cristo Mountains to the west and north and that included present-day Moreno Valley in the Angel Fire area (O’Neill, 1988; Colpitts and Smith, 1990; Dolliver, 1990). About 4.5 m.y. ago, basalt flows blocked the Coyote Creek drainage near Black Lake, forming the Moreno Valley to the north. Outcrops of these basalts can be seen along NM-434 at the head of Guadalupita Canyon, south of Black Lake. Streams trapped in the Moreno Valley became sluggish and began to fill the closed basin. Swamps and lakes developed, and the valley slowly filled with sediment. Eventually, streams breached the Cimarron Range on the eastern edge of the Moreno Valley at a low spot and formed Cimarron Canyon (McLemore, 1990).

Coyote Creek, now cut off from the Moreno Valley, flowed from highlands formed by basalt flows and local, uplifted Paleozoic rocks and continued to erode, forming Guadalupita Canyon. The river tends to form a steep-walled canyon because the upper layer of basalt is hard and resistant to erosion. Coyote Creek now contains a variety of boulders and smaller rocks from the surrounding mountains.

The surrounding mesas form distinctive landforms. The mesa-capping basalt is hard and resistant to weathering, whereas the

underlying sandstone and shale are easily eroded. As the underlying rock is eroded, cliffs and overhangs of basalt are left forming the mesa top (Fig. 5). When the overhang becomes too large, pieces break off and roll downslope. This slope talus covers much of the older Pennsylvanian and Permian sedimentary rocks. Locally along Coyote Creek, small ponds have formed behind basalt boulders.

Summary

Coyote Creek State Park offers fishermen, campers, hikers, and other visitors an alpine setting in the Sangre de Cristo Mountains. Spectacular views are the result of complex geologic processes active since Proterozoic time (1700 m.y. ago): two major periods of mountain building (called orogenies), volcanic eruptions, and most recently erosion. The park offers a wealth of history, from the early visits by Native Americans and Spanish settlers to occupation by Americans traveling the Santa Fe Trail and later the railroad.

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