

BLM

Socorro Nature Area Trail Guide

**“Learn from
yesterday,
live for
today,
hope for
tomorrow.”**

Albert Einstein

New Mexico • Socorro Field Office



Welcome to Your Bosque Explore & Enjoy!

**To conserve costs and resources
please return this guide to the box**

Thank you.

Welcome to a unique ecosystem in the United States, the cottonwood-willow bosque ("bosque" is Spanish for "river forest"). In New Mexico, the bosque consists of a narrow ribbon of green, nearly continuous for over 150 miles along the Rio Grande, from Cochiti Reservoir near Santa Fe to Elephant Butte Reservoir near Truth or Consequences.

Historically, the Rio Grande bosque was a commons for the people of the valley. It provided residents with water, food, and wood for cooking, heating, and construction. In the early 1930s, the entire stretch of riparian habitat was deeded in trust to the Middle Rio Grande Conservancy District.

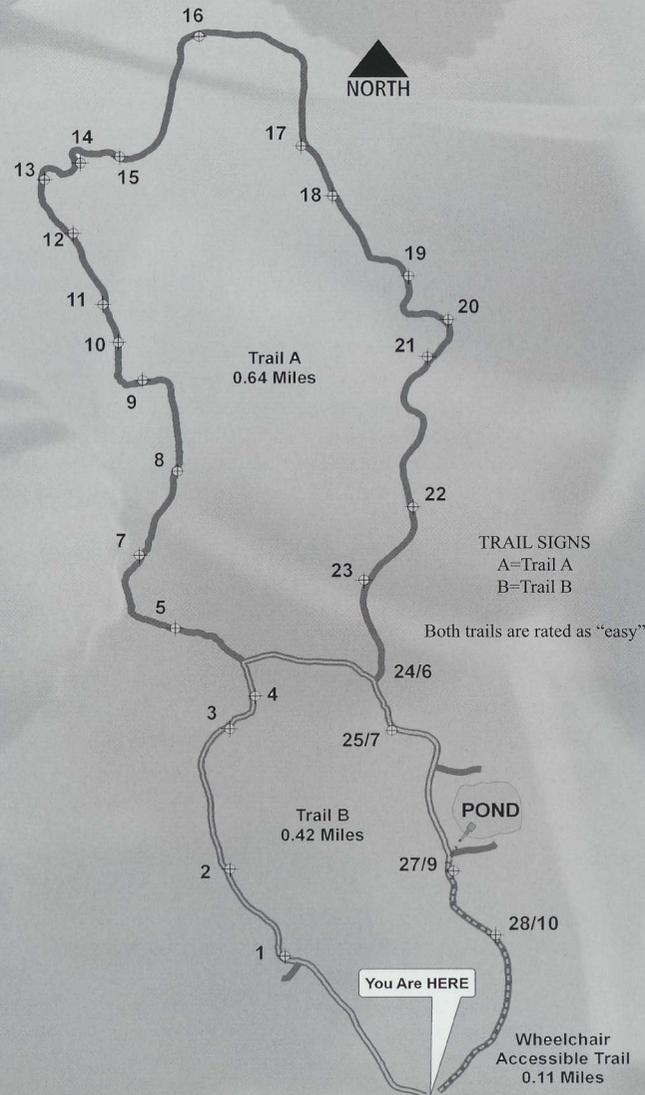
In the early 1900s, the bosque was naturally in a state of constant change. As the river changed course, wet areas dried out and dry areas became waterlogged. Most of this waterlogging was a result of permanent human settlement activities, such as providing shelter and raising food, along the river. Small dams and diversions slowed the river, resulting in deposits of sediment along the riverbed.

In the Middle Rio Grande basin, as the riverbed deposited silt, its channel was raised higher above the valley floor. Ground water levels rose along with the river, and percolation from irrigation ditches raised the water levels even more. By 1920, the average depth to the water table in this area was 2.5 feet. Orchards and alfalfa fields were abandoned. It wasn't until the 1930s, when the Conservancy drained the marshland along the river, that the bosque became established as a continuous ecosystem.

The Bureau of Land Management has worked cooperatively with a variety of Federal, state, county, and private agencies to achieve long-term protection of this area and enhance its unique values.

RULES:

- Because of fragile soils, it is easy to disturb the balance of nature - **please stay on designated trails.**
- Smoke only in your vehicle. Smoldering tobacco products can start fires.
- Collecting is not allowed. Please leave flowers, rocks, and other materials undisturbed for others to enjoy.
- Pets are allowed only on a leash. Please clean up after your pet.



TRAIL:

The Socorro Nature Area allows you to enjoy the ever-changing environment of the bosque. By the end of your journey, you will discover why this area plays such an important role in our ecosystem.

Along the trail, take a moment to stop, listen and smell. Do you smell the sweet fragrance of alfalfa growing in the adjacent field or the warm scent of the mesquite bush that grows along this bosque? Maybe you hear the sounds of lizards rustling underneath the dry leaves. How many different bird melodies do you hear? In the bosque area, bird-watching can be very productive depending on the season. Pay close attention to your surroundings and you may be surprised at what you see!

STATIONS:

B-1. Here at the amphitheater we are standing on the historic floodplain of the Rio Grande. Before dams were built upstream along with the series of drains, canals, and diversions that parallel the river; the river would flood in the spring. Often, this area would be under water for weeks at a time. During such times, nutrient-rich sediment, cottonwood, and willow seeds were deposited on the floodplain. The flooding river would carve new channels, although these channels are now long abandoned and filled. In this area, cottonwood and willow groves became established alongside the channels. Notice the straight line of cottonwoods beyond the site marker - this marks the edge of such an old channel.

B-2. The bush to your right is four-wing saltbush (*Atriplex canescens*), a shrubby member of the goosefoot family (spinach and beets are cultivated members of the same family). Saltbush is a native dry plains species that commonly grows in disturbed areas. At the end of the summer, the tiny yellow flowers produce distinctive, light green, four-winged seed capsules. Deer, antelope, and rabbits browse on the shrub, while birds and other small animals eat the seeds.



The shrub to the left is a New Mexico olive (*Forestiera pubescens*), also known as New Mexico forestiera or desert olive. In New Mexico, the olive is commonly found along streams and in river valleys, where it can grow up to 10 feet high. Grayish-green oval leaves appear after the tiny yellowish flowers bloom in April and May.

B-3. Salt cedar or Tamarisk (*Tamarix spp.*) is native to deserts of the Middle East. It was imported to this area in the 1940s as a shade tree, mainly for erosion control but also as an ornamental. In New Mexico, salt cedar successfully naturalized along water sources. It forms impenetrable thickets that consume more water than native species.



Efforts to eradicate this non-native species are expensive but ongoing. Treatment includes cutting every limb and applying herbicide.

Although salt cedar typically grows only 15-20 feet tall, under ideal conditions they can grow to over 40 feet. In spring and summer, salt cedar produces large clusters of attractive, tiny, pinkish-purple flowers. Birds and some small animals have adapted to the salt cedar, while honeybees have found the flowers to be a source of nectar.

B-4. The tree behind you is a Russian olive (*Elaeagnus angustifolia*), a species native to southern Europe and western Asia. Similar to the tamarisk, this non-native species was introduced as an ornamental shade tree and a windbreak. In New Mexico, the Russian olive is found in moist ground along streams and roadsides. Abundant yellow flowers create a spicy aroma in the spring. The silvery-colored small fruits remain on the tree well after all the leaves have dropped, providing bird food throughout the winter and early spring.



♣ ♣ Continuing on the A Trail... ♣ ♣

A-5. The pale wolfberry (*Lycium pallidum*) is a native member of the nightshade family, which includes tomatoes, potatoes, eggplants, peppers, and tobacco. This species is one of the most valuable shrubs in this area. Although the shrub can reach 6 feet in height, 3 feet is more common. The leaves are shiny and the flowers are trumpet-shaped, yellowish-green to lavender in color. Some of the wolfberry plants have thorns. Livestock, birds, and many other animals eat the small tomato-like fruits. Some ani-



A-9. Ahead is a grove of native honey mesquite (*Prosopis glandulosa*), a small tree that is greatly appreciated by many desert dwellers. The long, straight, non-splitting seeds are a desirable food for wildlife and livestock. Even though they look shrubby, mesquites can grow 30 feet tall. Taproots up to 150 feet deep allow them to thrive in many areas of the Desert Southwest. Because the water table is very shallow here, the trees don't grow such long taproots.

To your left on the other side of the trail, is another native tree. A type of black willow known as Goodding's willow (*Salix gooddingii*). This shade tree ranges over most of the western United States, generally growing in moist areas. Its leaves are long and taper to a point, and are easily visible in May and early June. Mule deer and cattle favor the willow twigs and leaves.

A-10. As you relax on the bench made of recycled plastic, look at the cottonwoods in this area. Why do you think they have grown so bent and twisted?

A-11. This fallen cottonwood tree is now the home of many organisms, including bacteria, fungi, and insects. These organisms decompose the deadfall and release nutrients from the log into the soil, nourish microscopic organisms and insects.

The large grass clump is giant sacaton (*Sporobolus wrightii*), a drop-seed bunchgrass that inhabits arid and semi-arid regions.

A-12. You are now in an old growth stand of a variety of the valley cottonwood often known as the "Rio Grande cottonwood" (ssp. *wislizenii*). The larger trees here are about 80 years old and have nearly reached their mature height of about 50-60 feet. These cottonwoods produce male and female flowers on separate trees. Mature female seeds are covered with white cotton that gives the trees their name and permits wide dispersal by the wind.



The brown objects sticking out of the dead tree are called bracket fungi, "conks," or in Spanish, "hongos." The fungi feed on decaying matter. These shelf or bracket fungi grow very slowly. Please leave the remaining hongos for all to observe and learn about.

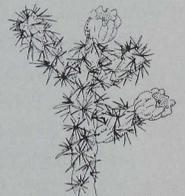
A-13. Notice the dead tree trunk beyond the grass clump. This is an excellent example of nutrient recycling. As bacteria, fungi, and insects combine to slowly break down the

A-19. Look at the variety of trees in this one clump: cottonwood, Russian olive, New Mexico olive, and salt cedar. This clump typifies the diversity of native and non-native trees in the Nature Area.

A-20. This is the low-flow conveyance channel, built by the Middle Rio Grande Conservancy District in the 1930s and 1940s. This large canal has several functions. It can carry a considerable amount of floodwater, its water is diverted for irrigation, and it conveys water to the Elephant Butte Reservoir when the Rio Grande is low. Also, notice the high levee on the far side of the channel. It was built from the sand and gravel taken out of the channel and is designed to prevent future floods from damaging farmlands to the west.

A-21. Broom dalea (*Psoralea scoparius*), a.k.a. purple sage, is a common, drought-resistant native shrub that is often found on sandy hillsides along the Rio Grande. This plant has roots that efficiently bind the soil, which makes it good for erosion control.

A-22. The cactus here is the common desert plant tree cholla (*Cylindropuntia imbricata*). It can grow up to 15 feet tall with a trunk diameter of 10 inches. In early summer, the cholla produces large red to purple flowers. Yellow fruits that develop from the flowers remain on the plant through the winter.



A-23. The Nature Area is home to a great number of birds, including large birds of prey, such as hawks and eagles. During the winter, you may see cranes and geese. Smaller birds include sparrows, wrens, nuthatches, warblers, and hummingbirds.



♣ ♣ Re-Joining the B Trail... ♣ ♣

mals also use the foliage for cover and roosting

A-6. From here, you have a view of one of the irrigated farms that share the floodplain with the cottonwood-willow bosque ecosystem. Although farmland has been cultivated along the Rio Grande for centuries, these commercial farms were not possible until after the Middle Rio Grande Conservancy District was formed in 1925. At that time, the Conservancy undertook an engineering plan for an enormous area from Cochiti Lake near Santa Fe to Elephant Butte Lake near Truth or Consequences. Goals were to drain the swamplands along the river, provide flood control in the Rio Grande Valley, and provide irrigation water to farmers.

Most farms could not survive without irrigation water from the river. The water is transported from the river to the farms by a system of canals and ditches in Spanish, "acequias." By 1936, the Conservancy had dug 342 miles of drainage canal and 475 miles of irrigation canal.

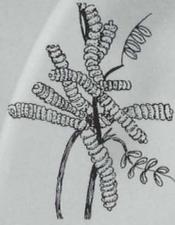
The major crops in this part of the valley are alfalfa and other kinds of hay as well as chile peppers. Permanent grass pastures are also maintained for feeding horses, cattle, and sheep. In 2007 the total value of agricultural production on Conservancy-irrigated acreage was over \$40 million.

A-7. TRASH! Illegally dumped trash is an example of one of the ways in which humans have damaged the bosque. Human-made materials biodegrade very slowly in this dry climate.

A-8. Look at the line of small valley cottonwood trees (*Populus deltoides*) in front of you. Part of the willow family, these trees are considered to be "new growth" because they are relatively young.

Now notice the difference between the area of young cottonwoods and the scrub area to the right that has only a few scattered cottonwoods. The cottonwood zone is located on ground that is a couple of feet higher than the scrubby zone. The scrubby zone is a relatively young part of the river channel, whereas the cottonwood zone is an older, more stable area.

interior of the trunk, the tree's nutrients are recycled back into the soil.

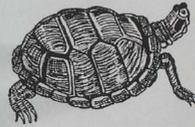


A-14. Screwbean mesquite (*Prosopis pubescens*) reaches the northern limit of its New Mexico distribution in this part of the Rio Grande Valley. The long, skinny flower heads look like caterpillars and appear in late spring. The tightly wound beans (which resemble screws, "tornillos" in Spanish) mature in the fall.

A-15. We are again at the edge of the old river channel. If you are here in the summer, you will surely experience a noticeable temperature change as you follow the trail. Just ahead, the trail leaves the protective canopy of the cottonwoods and crosses shrub land.

A-16. During the summer, the temperature here is noticeably warmer than in the cottonwood grove. The animals and vegetation are also different here, as the result of the absence of shade.

In natural ecosystems, certain species of plants replace one another over time. Eventually, a stable group of species will occupy the area until it's disturbed by an act of nature such as wildfire, flooding, or drought. This change in plant species is called a "habitat succession."



Canals, ditches, and drains in the river floodplain are important habitat for birds, turtles, muskrats, fish, gophers, beavers, and other animals. The maintained roads along the ditches are also important recreational pathways for local people who choose to walk, bicycle, or ride horses.

A-17. The black substance in front of you is known as a "cryptobiotic crust." Take care not to step on this area or damage it in any way. The crust was formed by "cyanobacteria" (blue-green algae), which swell when wet and bind soil particles together.

A-18. Notice the sand bar in front of you that is several feet higher than the trail. This sand bar illustrates the effect that vegetation has on erosion. Roots of trees have stabilized the soil, protecting it from the erosive effects of wind and water.

B-24. Notice the lone soap tree yucca (*Yucca elata*) to the west. The yuccas are members of the lily family and are pollinated only by the yucca moth. The yucca and the moth need one another to survive. This relationship is called interdependence.

B-25. The valley cottonwoods here are about 30 years old. All cottonwoods are welcome sights for humans and animals in the southwest because they grow where there is water. They provide shade from the summer sun and also serve as habitat for birds and wildlife.

B-26. Pond. This human-made feature creates a balance between water, plants and animals found at the Nature Area. Originally just a sand bar, with the aid of water, it has been transformed into a place to study nature's best.

B-27. Fire has always played an important role in the Socorro Nature Area ecosystem. Non-native species such as salt cedar and Russian olive are being aggressively treated and burned to reduce their infestation and to allow the cottonwoods and willows to thrive.

B-28. Meadows are also an important part of the natural ecosystem. After spring floods scoured the riverbed and sometimes caused it to change its course, grasses and forbs would establish in the meadows. Slowly, over time, the shrubs, cottonwoods, and willows have become established, resulting in the mature bosque that is home to a diversity of insects, amphibians, reptiles, mammals, and birds.



We hope you have enjoyed your day at the Socorro Nature Area!

HISTORY OF THE "SAVE OUR BOSQUE" TASK FORCE

This Task Force is a nonprofit corporation, formed in 1994 by citizens of Socorro County, concerned about degradation of the Rio Grande bosque. Threats to the bosque include illegal dumping, off-road vehicle use, illegal fuelwood cutting, and wildfires. The goal of the Task Force is to enhance the riparian habitat and increase environmental awareness, while continuing to support recreational uses of the river and woodlands.

Here at the Socorro Nature Area, the Task Force has pledged to protect and restore a small piece of the bosque ecosystem. This project is a cooperative effort among the Task Force, U.S. Bureau of Land Management, U.S. Bureau of Reclamation, U.S. Fish & Wildlife Service, NM State Forestry, Middle Rio Grande Conservancy District, County of Socorro, City of Socorro, Socorro Soil & Water Conservation District, and Socorro Chamber of Commerce.

How Can You be Involved?

The Save Our Bosque Task Force (SOBTF) sponsors periodic clean-ups along the bosque in Socorro County. If you would like to be notified of clean-up times and places, call the New Mexico State Forestry at 575-835-9359. Further information about the SOBTF, its members, and its activities can be found on the website, www.sobtf.org.

To download this guide, visit us at:
www.blm.gov/nm/socorro_field_office

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