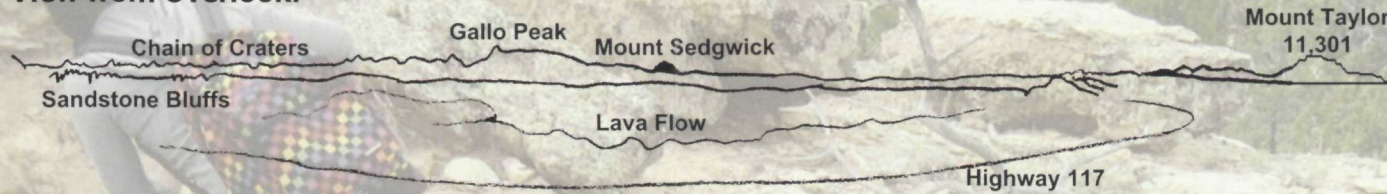


## View from Overlook:



## Wildlife

By now you have probably seen or at least heard a few birds. They are abundant in this upland desert. Approximately 210 species have been observed at El Malpais. Many of the more common species can be seen around the Ranger Station. You might not think there is enough around here to eat if you were a bird. But take a closer look; Piñon has large nutritious seeds, Juniper has moist berries, and there are many grasses and other hearty plants to munch on. Insects, reptiles, rodents, and even other birds provide plenty of food for the entire ecosystem.

Some common birds you might see in the Winter include: Pinyon Jay, Western Bluebird and Raven.

Summer. Red-tailed Hawk, Northern Mockingbird, Black-chinned Hummingbird.

Even if you didn't see or hear a single animal or bird on your hike today, you can still find evidence that they are around. Look for tracks in the loose sand on and around the trail. You can also watch for scat. Identifying an animal by what it leaves behind is an important tool for biologists. Elk and Mule Deer have small pellets as droppings. Coyote and fox tend to leave their scat in the center of the trail as a way of marking their territory. It's not unheard of to see these tracks along the trail:



Rabbit  
4"



Coyote  
2.5"



Elk  
4.5"-5.5"



Bear  
7"-9"



Leave No Trace: Plan ahead and prepare - Travel and camp on durable surfaces - Dispose of waste properly - Leave what you find - Minimize campfire impacts - Respect wildlife - Be considerate of other visitors.

*What started as a one-mile-loop walk to stretch the legs has hopefully given you much more. To learn more about the geology of this area, see samples of the fossils and formations, or identify birds and tracks you may have seen, please come in to the Ranger Station where the helpful staff can assist you in furthering your knowledge of El Malpais National Conservation Area.*

Bureau of Land Management  
Rio Puerco Field Office  
100 Sun Ave. NE  
Pan American Bldg., Suite 330  
Albuquerque, New Mexico 87109  
505/761-8700  
or  
El Malpais Ranger Station  
505/280-2918  
or  
[www.blm.gov/new-mexico](http://www.blm.gov/new-mexico)

BLM/NM/GI-11-04-8000



NATIONAL  
CONSERVATION  
LANDS

# Ranger Station Nature Trail Guide

El Malpais  
National Conservation Area





The Ranger Station Nature Trail guides the visitor through a unique landscape. Follow the 1-mile loop trail to the right at the trailhead and look for the plants, animals, and rock features described in this brochure.

### Arroyo

An "arroyo" is the Spanish word for brook or wash. It is usually a dry river, creek or stream bed/gulch that temporarily or seasonally fills and flows after sufficient rain.

The first thing you might notice as you walk along the wooden steps is a dip in the trail. Although there is rarely water visible along this sandy, dusty landscape, this area shows the effects of water on the land. El Malpais has a semi-arid climate, getting between zero to 15 inches of precipitation per year. Some of that moisture occurs in annual snowfall. However, in the summer it is common to get thunderstorms that produce large amounts of water very quickly. The dry, baked land around you has no time to absorb such rain, and deep "arroyos" are formed.

The edges of an arroyo can be quite steep when plant roots hold down the soil. Look around and see if you can find plants holding down the soil or debris that looks like it was washed to where it is now.



Piñon Pine

### PJ Uplands

As you start up the switchbacks of the trail, stop and take a look at the plants around you. Most of the trees found here

are Pinón Pine (*Pinus edulis*) and One-seed Juniper (*Juniperus monosperma*). You can readily tell them apart by their leaf structure. These trees have adapted leaves with small surface areas to avoid having broad leaves that would be difficult to sustain in the baking sun and dry winds.

The Pinón Pine has adapted short needles (about an inch long) in bundles of two.

Junipers have evolved leaf scales—neither a needle nor a flat leaf, thus allowing them to survive the elements.



One-seed Juniper

The colors vary from yellowish-grey to tan. On top of this layer is a "white zone," known as a geologic unconformity. Unconformities are gaps in the geologic rock record. They are surfaces of contact between older rocks and younger sedimentary rocks, formed due to erosion or lack of sediment deposition over extended periods of time. Most of the rock layers that were once here are now missing. Where did they go? The Dakota Sandstone above that is from the Cretaceous period (about 80 million years ago). This rock was once sand deposited by a vast inland sea. The sandstone here is usually a dark to light grey color.

### Trail split

Here you have an option. You can continue in the counter clockwise direction to the next interesting geologic feature, or head south out to the overlook. Adding the overlook to the journey will make it a 1.25 mile hike. Look further in the brochure for identification of features seen in the view.

### Slickensides

Now that we are walking along the top of this mesa edge, we are reminded again of how this rock got here.

If you look closely you might find ripple marks. They are a little darker than the rest of the rock here and some good examples are seen five feet to the right of the trail. Ripple marks are made by waves when this rock was still sand. In some places you can see currents flowing in at least two directions, leading one to believe that this was probably a tidal flat. More geologic forces have been at work out here since 80

million years ago. Explore around and see if you can find some smoothly polished surfaces. These are called Slickensides and are produced by heating as two rocks move past each other along a fault. There is a rock with slickensides in the center of the trail.

### Contact Zone

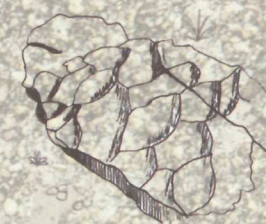
You are standing on a geologic timeline. Here, the Zuni sandstone is from the Jurassic period—about 160 million years ago. It was deposited in a desert made from windblown sand.



Slickensides



Ripple Marks



Tidal Flat Ripple Marks

### Fossils

If you found the ripple marks and slickensides, and want another challenge, start looking for fossils! Remember this rock was once under an inland sea. Oysters and other bivalves can be found fossilized and imbedded in rock of the mesa. You also might find rock that looks like dried mud cracks. This is called "septarian." Calcite has filled in the spaces between the mud cracks. Remember to leave everything you find for the next visitor to discover. If you have no luck finding fossils, there are some excellent examples in the Ranger Station.

### Overlook

Before you start to head down the trail, stop and take a look out across the valley. To the southwest are black, jagged lava flows. The lava is much younger than the rock you are standing on. The closest flow, which is approximately 3000 years old, is the youngest in the area. You can pick it out from the other flows because it is darker and tends to have a little less vegetation growing on it. Keep looking across and you can see the Chain of Craters, which is a distant row of cinder cones to the southwest. These provide further proof of the volcanic activity in this area. To the northeast is Mount Taylor a 11,301 foot composite volcano. Have a good long look; depending on conditions some of these features might not be visible. See the sketch on the back of this brochure to familiarize yourself with the area. Watch your footing on your way down!