

Theodore Roosevelt

National Park
National Park Service
U.S. Department of the Interior

Ridgeline Nature Trail

*"The joy of living is his who has the heart to demand it.
The beauty and charm of the wilderness are his for
the asking, for the edges of the wilderness
lie close beside the beaten roads..."*

... Theodore Roosevelt



THE RIDGELINE TRAIL

Geologic forces have shaped the stark and spectacular land forms of the North Dakota badlands for millions of years. On this trail, you will discover how wind, water and fire worked together to shape the landscape. The trail is one kilometer (0.6 mile) long. The first section is a steep uphill climb; later you will descend steep steps along a cliff. Benches are located along the trail. Watch your step; but, look for signs of wildlife along the way.

1. JUNIPERS

The trees around you are Rocky Mountain juniper (*Juniperus scopulorum*), one of three kinds of junipers in the park. This slope faces north and therefore accumulates more snow during the winter and experiences somewhat cooler temperatures during the hot summer. This allows the soil to retain more water so these trees may grow. Native Americans steeped the fragrant berries in water to make a tea.

2. LAYERING

As far as you can see, the rugged badlands topography reaches out to meet the sky. Each colored layer tells us a story about the land. Volcanic ash carried to this area by wind and water from the Rocky Mountains during a period of volcanic activity created the bluish layers of clay called bentonite. Black layers of lignite coal indicate a wetter climate and changing past environments. Lightning and range fires have ignited coal beds that may burn for years. Heat generated by burning coal bakes the nearby sediments into reddish "scoria" or clinker.

3. GRASSLANDS

Prairie grasslands once extended across the heart of North America. The rangeland in the North Dakota badlands is classified as mixed-to-short grass prairie. Because of the relatively small amount of rainfall (an average of 14 inches a year) these plants do not grow as tall as those of the tall-grass prairie to the east.

4. SAGE

This large, silver, green-leaved plant is sage, one of eight species of sage in the park. It's called silver sage (*Artemisia cana*). Smell the strong-scented leaves of this plant. It was used by Native Americans as an incense during religious ceremonies.

5. CACTUS

Cactus this far north? Yes! This hardy plant can survive even the harsh winters of North Dakota. The prickly pear cactus (*Opuntia polyacantha*) is also well adapted for the hot, dry summers because it stores water in its stems. The sharp spines limit the plant as forage for animals and reduces water loss from the stem. Native Americans used the juice of the prickly pear for glue and the fruit for food.

6. FIRE

Both man-caused fires and fires resulting from lightning periodically burn portions of the badlands, stimulating the growth of new plants and enhancing plant and animal diversity. Wind and the shape of the land can affect the rate and direction in which a fire may spread. Strong, localized winds may be generated by the fire's heat.

7. YUCCA

The plants in front of you are narrowleaf yucca (*Yucca glauca*). Native Americans used yucca as a source of needles and thread (note the sharp needle at the end of the leaf and the threadlike veins within the leaves). They also used the deep root to make soap. Yucca, like prickly pear cactus, prefers to grow in dry areas, although yucca is not a cactus.

8. MAKO SHIKA

The Sioux Indian word for badlands is "mako shika," literally, "land of no good." You can imagine how people accustomed to flat prairies would have difficulty traveling in this rugged terrain. Ridgelines, remnants of hills formed centuries ago and eroded by streams like the Little Missouri River, served as vantage points for lookouts and as traverses for the seemingly endless maze of buttes and canyons.

9. LICHENS

The gray-green growths on the juniper branches are lichens. This organism consists of both an alga and a fungus. They live together in a mutualistic relationship, or one that benefits both alga and fungus. The alga produces the food while the fungus provides the environment.

10. FIRE AFTERMATH

From this point, you can view the charred remains of juniper trees destroyed by fire. Fire has scorched the hillside twice--once in 1958, again in 1974--since this land was set aside as a park by the National Park Service. Due to the dry climate, the trees are slow to decompose. Both fires were caused by man . . .

11. SMELL A SKUNK?

This plant is called skunkbush sumac (*Rhus trilobata*) because its leaves give off a skunklike aroma. In midsummer, skunkbush produces bright red berries. Birds love to eat the berries; pioneers used them to make a lemon-flavored drink.

12. FIRECRACKERS

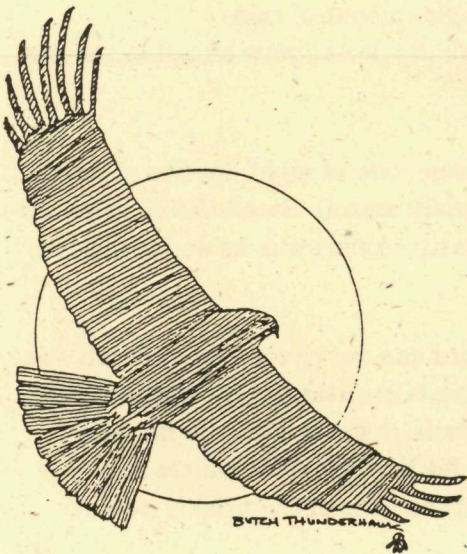
If you look carefully at the burned trees, you'll notice a deeply-scorched area at the base of the trunks. Since the fire traveled uphill, pockets of air rich in oxygen were able to accumulate on the uphill side of the trees. When the flames reached these pockets, small explosions occurred. The evidence is the triangular scars at the base of the tree trunks.

13. BISON

Notice how polished some of the branches and tree trunks are. This portion of the trail is often used by bison. They rub up against the trees to rid themselves of loose hair and insects. Do you see any more evidence that the bison visited here?

14. SLUMPING

Look back down the trail at the side of the hill. The block of earth that slid away from the hillside is called a slump. Slumps occur when excess moisture collects in certain layers of the soil. When these layers become saturated, they get slippery and the overlying mass can slide downhill. This kind of erosion is dependent upon water interacting with fine-grained soils (clay) and is a major contributor to the characteristic shape of the badlands.



CONTINUE UP THE HILL, THEN FOLLOW THE TRAIL TO THE LEFT

Along the ridgeline trail, you saw how the natural habitats are formed by the interaction of wind, water and fire. As you continue to drive through Theodore Roosevelt National Park, you will see other ways natural forces helped to shape the landforms, and how plants and animals adapted to these changes.