Youth Forum

Forage Productivity of Rangeland Along the Santa Fe Trail in 1846

By Ginger Goodan

Introduction

Are the many accusations of land mismanagement against the common rancher true? This question is the basis of many conversations concerning the status of our rangelands. Union County, New Mexico, located in the extreme northeast corner of the state, is predominantly rangeland, commonly known as the “llano estacado” (high plains). This is a part of the vast short-grass prairies. Grass production is the economic mainstay of the area, with economic gains arriving from livestock and wildlife production. The major forages are blue grama grass and western wheatgrass, with a scattering of other forages, ie, small bluestem, fescues, and various forbs.

A topic of major concern in the area is rangeland health. With the presence of the Kiowa National Grassland and the new awareness of rangeland health by environmental groups, the topic of improved rangeland is often an item of concern and conflict.

According to the rhetoric of some environmentalist groups, this rangeland is in extremely degraded condition compared to the time when large herds of buffalo roamed freely and settlers were arriving to live in the area.

Are the ranchers abusing the land or improving it? I believe that the range conditions along the Santa Fe Trail have improved since the pre-settler period (1830–1850).

I wanted to find out if there has been a change in the condition of the rangeland from the time when settlers traveled through the area along the Santa Fe Trail in search of a new life. To show this point I had to first document the range conditions along the trail at the time of the pioneers. There is very little scientific information on the plant life at that time. We must depend upon the few written records that have survived. This information is very limited.

Plant life was of great importance to the settlers. They were directly dependent on the plant life and water for their survival. Not only did they use plants to nourish their livestock, but plants were also used for many of their material needs. Some of the plants were not well known. The settlers were not familiar with the area and they were unsure if the types of plant life were edible or poisonous.

The vegetation was vital to determining where the settlers would settle. Agriculture was the main enterprise of the people who traveled along the trail. Very seldom did you find any other type of person. Ambition surged throughout the wagon trains, and there was a fierce sense of competition among the settlers in the race to find the best grassland and water. As you see, this factor determined who succeeded and who failed on this life-altering embarkment. Good plants meant survival. So, not to my surprise in reading the documentation of the trip along the trail, the terms “good grass, good water” were the most common descriptions of the vegetation.

Santa Fe Trail

The Santa Fe Trail was started in 1821. Its primary use was for the merchants in Missouri to trade with the Indians in Santa Fe; in exchange for their goods, the merchants received furs. In 1846, the Mexican-American War began and the armies and cavalry began to use the trail on a regular basis. In 1848, the Treaty of Guadalupe Hidalgo was signed and the war came to an end. When this treaty was signed, the United States acquired more territory, and this territory included the Santa Fe Trail.

After this, the trail became a tool for western expansion, and many people traveled the trail in search of gold in California or Colorado. Trading still continued to take place. When traveling along the trail the wagons were heavily packed, with all the goods their wheels could support, and many of the wagons had livestock tied to the end. The settlers had a rough time along the trail, traveling from dawn until dark. The trail was treacherous and long. It stretched over 900 miles, and the wagon trains faced inclement weather and flash floods, and the settlers themselves faced disease. Many settlers died of hunger and disease. The only signs of human life on the trail were forts, and even those were few and far between. Many settlers were informed about where and when to stop, and landmarks such as the Point of Rocks were well-known sites among the settlers.

There are two branches of the Santa Fe Trail; the Mountain Route and the Cimarron Route. The Mountain Route ran along the Arkansas River and went through Colorado before dropping down to the Raton Pass; from there it traveled through many other sites and then went to Watrous, New Mexico. The Cimarron Route was shorter, and cut the travel time by roughly 75 days. This route traveled through Kansas and entered New Mexico at McNees Crossing, proceeded through Union County, and on to Watrous, where the trails met. Where the trails meet at Watrous New Mexico, the ruts of the wagon wheels are deep. The trail was a huge part of western expansion for over 60 years. In 1987, Congress declared the Santa Fe Trail a National Historic Trail.

Excerpts from Doniphan's Journey Records¹

June 18—In the afternoon we passed to the right of the rabbit-ear mounds, whose resemblance to rabbit-ears, with some stretch of the imagination, one may discover very easily, and arrived on Rabbit-ear creek, a camp with good grass and water, and cotton-trees and willows along the creek.

June 19—On the top of the mountains grow cedars. TE rocks composing it appear to be basaltic, in a state of decomposition; they look brown, and are sometimes very compact-sometimes more granular and friable. On Rock creek I saw the amygdaloidal basalt again in situ, with its underlying sandstone.

June 20—In the morning we made but five miles, to Whetstone creek and halted, with good grass and water. The sandstone here contains some lime, and may be used for coarse whetstones. The amygdaloidal basalt which I found near our noon camp, is intermixed with silicious particles, glittering with like mica. In going to our night camp we passed extensive strata of yellow quartzose sandstone, dipping gently towards the northeast.

June 21—The Rio Colorado is a clear mountain stream, with fine grass and good soil; cedars grow on the neighboring hills, and further down the creek.

quite a challenge, until Dr Kelly Allred of New Mexico State University found a book written by A. Wislizenus, MD.¹ The book was written from a diary of Colonel Doniphan, who traveled along the trail in 1846 and 1847.

Dr Allred mailed me all the information that he could find. When reviewing this information, I found it to be very precise for that time period, and among the information was a map with Doniphan's campsites plotted on it. The map proved to be very helpful, but to find the exact steps that Doniphan took on his trip, I needed more detailed maps. To do this, I contacted people who were experts in the field. I proceeded to call the Santa Fe Trail Association, in Santa Fe, New Mexico; Capulin Volcano National Monument; and numerous other organizations. I did acquire maps after a few weeks. I laminated them and set them up in the Ag room. I also met with my mentor, David Graham, for a few hours. Once I had acquired the maps I began to attempt to plot Doniphan's campsites on the more detailed maps for a more precise location. I then contacted Harry Myers, who is associated with the Santa Fe Trail Association. He helped me on my journey to plot these points precisely. He did this by sending me maps that have county roads on them, and that access the Santa Fe Trail.

I began to visit the sites and identify the forage both on and off the trail. I gathered samples of the vegetation for protein content analysis. The samples were dried, crushed, and ground. The nitrogen content in each sample was determined using a LaMotte Soil and Plant Tissue Testing Kit. Some typical mapped locations and views are shown in the figures.

Procedure

First and foremost, I had to acquire some sort of documentation of range condition along the Santa Fe Trail back in the 1800s. Acquiring the documentation proved to be

Findings

The results of the vegetation sampling at selected points along the Trail are presented in Table 1. These data represent

Table 1. Forage quantity and quality at selected points along the Santa Fe Trail

Site	Quantity (pounds per acre)		Quality (% protein)	
	On the trail	Off the trail	On the trail	Off the trail
McNees Crossing	1,050	630	16–20	10–16
Cottonwood	770	750	< 10	10–16
Rabbit Ears	250	435	< 10	< 10
Rock Crossing	90	250	10–16	16–20
Whetstone Crossing	60	70	10–16	16–20
Point of Rocks	30	40	< 10	10–16

a point in time at each location. Still, I found that the forage quantity was high, with high protein content. According to the experts I interviewed, what Doniphan was accounting for was the ability to use grass for livestock or other production reasons. Even then the grass was not very good, it was just good enough.

What does this mean? Based on the comparison of Doniphan's report and my findings, I would consider the rangelands to be in a better condition now than when Colonel Doniphan was in the area.

References

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Additional Reading

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