

Sustainability of Horseback Riding in Shawnee National Forest

Rebecca Calliss, Adam Jones, Travis Millsap

Southern Illinois University - Department of Geography & Environmental Resources

Introduction

Shawnee National Forest protects at least seven federally listed threatened and endangered species, 33 or more species are listed as regionally sensitive, and over 114 species of plants and animals. The sustainability of this important natural resource rests in the responsible use of the land. With 338 miles of trails, humans access the forest by foot and on horseback. Horses are allowed anywhere on National Forest land with the exception of developed recreational areas, natural areas, and 30 miles of designated hiking trails.

As appreciation for outdoor recreation activities provided by Shawnee National Forest increases, balancing these activities with the natural environment is an increasing concern.

Every year money is spent on maintaining and rebuilding damaged trails. It has been found that horse use has led to more pronounced increases in trail width and trail depth. Conservationists argue that horseback riding is detrimental to the local ecosystem of the Forest. Equestrians claim that it is a safe, harmless recreational activity similar to hiking or bird watching. Our goal is to examine possible degradation of trails due to horse traffic in the Shawnee National Forest (Figure 1).



Figure 1

Purpose

Policy makers and managers of public parks and recreation areas need to be presented with an unbiased analysis of the effects of horseback riding. The purpose of this study is to examine the effects of horseback riding on the local ecosystem of the Shawnee National Forest. Specifically, we will observe a segment of a major horse trail to record the degree of soil compaction after horseback riding events over a thirty day time period. To what extent does horseback riding compact and lead to the erosion of soil along the River to River Trail in Shawnee National Forest?

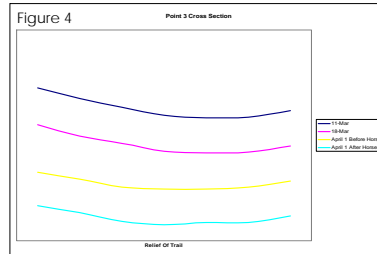
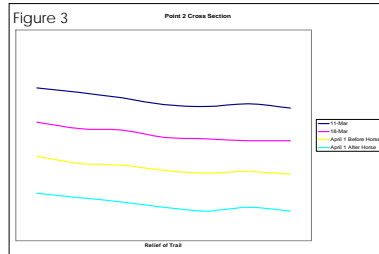
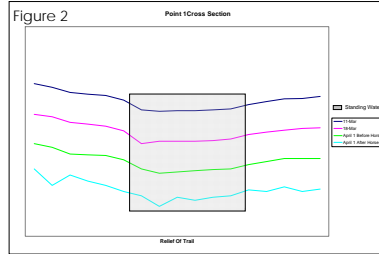
Methods

In order to provide an accurate analysis, two trails were observed over a thirty-day time period during the month of March, 2007. The first trail, located near the Little Grand Canyon in Shawnee National Forest, is a restricted trail only open to hikers to create a baseline for the study. The other trail, located on the River to River Trail near the Cedar Lake trailhead, is open to hikers and equestrians.

During the thirty-day time frame, measurements were taken at the beginning of the study, two weeks later, and at the conclusion of the study. To obtain the measurements, fixed anchors were attached to trees on either side of the trails, and rope was tightly tied to the anchors. A level was used to ensure the ropes were parallel with the trail surface. These cross sections were created at the beginning of each trail section, halfway through, and at the end of the trail section to make a total of six cross sections. We measured the depth from the rope to the trail surface at one foot intervals across each cross section. In addition to the measurements, photographs were also taken to visually document the trail conditions.

At the conclusion of the thirty-day observation, a controlled experiment was performed to obtain a higher level of results. Two horses, weighing approximately 1,000 pounds each, and accompanying riders traveled up and down the equestrian trail three times.

Results



After the thirty-day observation period, we analyzed all of the collected data. Measurements obtained from the hiking trail indicated no change in trail height. As seen in Figures 3 and 4, points two and three on the equestrian trail showed only a minimal change even after the controlled experiment with the horses. Point one, however, was the most impacted area of the trail with an average change of 0.958 inches over six horse passes in a thirty minute time period. Point one showed the most change due to the low-lying area where water would collect (See Figure 6). Throughout the duration of our study, point one continuously contained standing water.

In Figure 2, the gray box represents the area of the trail with standing water. The damage to the trail outside the box after the controlled horse study was due to the horses avoiding the standing water even though the riders tried to force them through the water. Figure 5 shows the horse avoiding the standing water by venturing off the trail.



Limitations

The foremost limitation present in the project was the short 30-day time period for observing impacts on the trails. In addition, the time frame only allowed for the observation of one equestrian trail and one hiking trail. Only one controlled experiment was performed in the spring weather of Southern Illinois, but we would have liked to perform multiple studies in varying seasons. Finally, the time of year in which the study was performed (the month of March) may have limited equine traffic on the trails due to cold, rainy weather.

Conclusions

From our research, we have concluded that after a considerable rain, horseback riding does in fact have a negative impact upon sustainability and impacts upon possible soil erosion along equestrian trails in Shawnee National Forest. We have found that after rainfall events, these impacts will be more significant when trail conditions are wet and muddy. However, the equestrians that we spoke to say that in general, they refrain from horseback riding after rainfall to prevent trail damage. In addition, the hiking trail restricted to horses had more humanistic damage to the peripheral area surrounding the trails. This damage included trash and litter along the trail as well as carvings in trees and wooden benches along the trail.



Acknowledgements

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From Left: Travis, Adam, Rebecca - Taking Measurements - Equestrian Trail - Measuring the Trail - Little Grand Canyon Trail - Destruction by Hikers - Sunny & Angel - Katy & Kelly - Rebecca