

VARNER SPOKE AT DECEMBER 2004 PROGRAM

Ally Vanren, an archaeologist who will be receiving a masters in geography from the University of Kansas in May of 2005, used PowenPoint to explain her research into the soil signatures of Santa Fe Trail ruts. Vanren completed her research at the Ivan Boyd Prairie Preserve in Douglas County, Kansas and at the Cimarron National Grassland in Morton County, Kansas.

Vanren just had started her research last spring when she talked to the annual meeting of the Kansas Anthropological Association (KAA). After months of looking at data, she presented the oral defense of his thesis toward the end of 2004. She will be graduated in May of this year.

Vanren's research compares the soil processes in the trail ruts from two different locales, i. e. one in eastern Kansas and the other in the southwestern corner of the state. Backhoed trenches could have clearly revealed the soil signatures, but such would have been quite destructive. Thus Vanren pulled soil cores moving across the ruts to note any differences in soil processes within large ruts.

This graduate student sought the assistance of appropriate laboratories. UMKC machinery created detailed analyses of soil particles. Both K-State and UMKC produced carbonate analyses. Also a geophysical analysis measured magnetic susceptibility to determine the extent of disturbances.

Vanren delicately had selected ruts in different soil types for comparison. She found similarities and differences between the ruts in Douglas and Morton counties. Although the Douglas County ruts are continuing to erode, she thinks the ruts are relatively well preserved, Vanren thinks the Morton County swales are quite stable now due to the present heavy vegetation.

At the Morton County site, Vanren found strong evidence pointing to the development of the top 20 centimeters of soil after the abandonment of the Santa Fe Trail. This would mean the trail wagons would have been running on top of bedrock at that location. This would not have been the case at the Douglas County site. Vanren found soil mixing at the northeastern Kansas site, but not at the southwestern Kansas site. This likely means the wagon wheels at the Douglas County site sunk down into the soil and thus soil mixing occurred.

While Vanren did not find duplicate processes happening at both sites, she concluded the two sites are affected by both erosion and deposition.

This archaeologist interested in the geophysics of soils says this is the first soil signature study on trail ruts of which she is aware. If more and more such studies would be executed, a database regarding the circumstances occurring in ruts in different kinds of soils could be developed. Then geologists, geomorphologists, and geoarchaeologists could help trail managers predict what is going on in particular places with particular soil types.

Vanren says her data will go into a geomorphological database at the University of Arkansas. This database needs the results of many, many trail rut studies before it will be a viable tool for trail managers looking at many different soil situations.