ABSTRACT

TITLE:	Examining the Roles Of Environmental Factors on the Prevalence of Sin Nombre Virus: Sudden Aspen Decline to Ambient Ground Temperature
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ABSTRACT: Human infection with animal-borne diseases continually rises from year to year, and because of this growing threat to human health, there is considerable interest in factors that could be responsible. Human disturbance of wildlife habitat has been cited as one of the primary mechanisms the has led to the increased prevalence of these animal-borne diseases, as animals that are displaced from their native habitats are more likely to come into contact with humans, thereby increasing the probability of human infection (Markelprang et al. 2005). Deer mice (Peromyscus maniculatus) are the primary reservoir and vector for SNV, a recently discovered Hantavirus known to be highly virulent in humans (Mills et al. 1997). Prevalence of Sin Nombre virus in deer mice have experienced differing levels of habitat disturbance by Sudden Aspen Decline (SAD). The highest prevalence of SAD in the United States is in Southwestern Colorado, where an estimated 140,000 acres of aspen forests have been affected. SAD affects understory vegetation, and changes in sun exposure are also likely to cause changes in the ground surface temperature. Both changes in understory vegetation and ground temperature are likely to affect small mammals who reside in the understory. These factors will result in a higher density of deer mice in high SAD sites, as well as a higher prevalence of SNV compared to low SAD sites. To establish a gradient of SAD (low= 20% stand mortality; moderate= 20-60% stand mortality; high= >60% stand mortality) we will sample at 12 sites. Field studies for this study will be in the Turkey Creek allotment in the National Forest administered by the Mancos District. In this research I will compare if high SAD sites have both increased ground temperatures and greater forage availability across the spring and summer months compared to low SAD sites. This information will be used to determine if different SAD gradients increase SNV prevalence and examine if temperature and timing phenology play a role in increased deer mice contact.