

Nikki Buhrdorf

Senior Division Plant Sciences

Aspens in a State of SADness: A Statistical Analysis of the Decline of Populus tremula

Sudden Aspen Decline (SAD) is an interesting phenomenon sweeping across the entire Rocky Mountain region, including Canada and North America. Neither the origin nor a cure has been found to date. Scientists have been conducting many studies and have not yet found trends tracing back to the crisis. With the recent drought, the aspens became further stressed, which allowed diseases, fungi, and insects to enter. The intent for this project was to record as many measurements as possible, providing a detailed descriptive statistical analysis while seeking trends in the cause of SAD. The measurements taken were elevation, maturity, re-growth, tree status, insects/fungi present, percentage of dead crown and bark, and observations of the whole tree. The statistical chi-square test was conducted on six hundred tables and graphs. This indicated a probability that the uniform distribution would occur again. All of these different trends could have something to do with the source of the decline of the *Populus tremula*, and they could be useful in determining a treatment. Several trends were found in the data. Re-growth is not occurring even if the trees are healthy. The declining trees are present more often at the lower elevations. Lastly, if the Poplar Borer and/or *Cytospora* Canker of aspen are present the tree is often dead or declining.