

Clark Cranfill  
*Thicker Phloem = Funeral Home*

As I look at many areas of Colorado and the Rocky Mountains, I cannot help but notice a cycle of nature taking place. The Spruce Bark Beetle, *Dendroctonus rufipennis*, has infested many Engelmann spruce trees, specifically in the Rio Grande National Forest. The beetles create their gallery, lay eggs, and eat a tree's phloem layer. I hypothesized that an Engelmann spruce tree with thin phloem would be more resistant to the Spruce Bark Beetle due to its lack of room and food.

To test this hypothesis, I went directly to the forest. At three different sites, I used an increment corer to determine an Engelmann spruce tree's phloem thickness. I recorded phloem thicknesses from three diameter ranges (13cm-29cm, 30cm-41cm,  $\geq 42$ cm). In each diameter range, I recorded phloem thicknesses of five infested trees and five non infested trees; making a total of thirty trees sampled.

I discovered that the data showed three trends emerging. For the largest diameter trees, there was no correlation between infestation and phloem thickness. The data did not prove or disprove my hypothesis. However, in the medium and small diameter ranges, the data did not support my hypothesis. The data showed that trees with thinnest phloem were more likely to be infested. Based upon this data and research, I determined that in a large scale attack (such as the Rio Grande National Forest), stressed Engelmann spruce trees were more susceptible to *Dendroctonus rufipennis*. The thin phloem was due to the unhealthiness of the tree.