

ASSESSMENT OF RESIDUAL STAND DAMAGE AND TREE DECAY IN PARTIAL HARVESTS

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Abstract—Partial harvesting subjects residual trees to potential stem and crown damage from felling and machinery. Stem wounds increase the potential for decay and future value loss. This study will examine the correlation between different types of logging wounds and their effects upon tree decay. Both conventional and cable logging systems will be sampled on National Forest partial harvests. Harvest types will be stratified by season of harvest, time since harvest and pre- and post-harvest stocking. Data such as tree species, dbh, merchantable height, dimensions/type of logging wounds, and individual wood samples will be gathered using 0.04 ha circular plots. All residual plot trees > 11.4 cm dbh will be assessed for damage. The dimensions of all logging wounds in the root collar and butt log (4.8m) will be measured. Each wound will be classified into three categories of increasing severity: scuff, scrape, and gouge, caused by either felling or machinery. Individual wood samples from damaged and healthy trees will be collected and specific gravity determined by the water immersion method. Volume loss due to decay will then be estimated. Relationships will be examined between 1) damage severity and harvest

intensity and 2) between size and type of logging wound and potential volume loss due to decay.

Another objective of this study is to test the accuracy of three electronic decay detection devices on damaged trees. The Shigometer, Pilodyn, and an ultrasound device will be used on each logging wound to monitor the presence of decay and/or discoloration. Undamaged trees of similar size and species, will be paired with each damaged tree as a control. For the Shigometer, five 3/32 inch diameter holes will be drilled for testing. One hole will be drilled in the center of the wound, and four other holes will be drilled at right angles, 7.6 cm away from the wound's edge. The Pilodyn will be tested 2.5 cm above or below each drilled hole to evaluate its effectiveness. The ultrasound device will be tested as close to the center of the wound as possible. For the control trees, one hole will be drilled at the same height as the center hole on the damaged tree. Each device will then be tested in a similar manner as on the damaged tree. Increment cores will also be taken from each test tree to verify the presence of decay, discoloration, or sound wood.

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