

FIRE HISTORY OF THE PONDEROSA PINE STAND IN SOUTHWESTERN
NORTH DAKOTA

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ABSTRACT

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A study on the fire history of the ponderosa pine (*Pinus ponderosa* P. & C. Lawson) forest in northern Slope County, North Dakota, was completed. The objectives of this study were to determine the pre- and post-settlement fire history of this location and to relate that fire history to topography. Samples were collected in 2005-2007 and analyzed using standard dendrochronological techniques.

Three data-reduction methods and three calculation techniques were used to determine fire intervals (FIs). Method 1 assumed that all scars were created by fire; Method 2 required 10% or 20% of samples to have scars in a given year; Method 3 attempted to use visual cues to separate fire-caused scars from those created by other agents. The calculation techniques determined the FI for each tree individually, 1) utilizing or 2) not utilizing the origin-to-scar (OS) interval, followed by averaging all samples, or 3) compositing all samples before calculating the FI. Results of this study varied, depending on data-reduction method and calculation technique. The most realistic results were obtained with Method 2 utilizing the 10% criterion. With this method, the pre- and post-settlement FIs are 28.5 and 52 years, respectively. Composite calculations in Methods 1 and 3 showed low FIs; utilizing individual FIs with the OS interval showed overly large estimates of the FI. When conservative Method 2 was utilized, the average age of a ponderosa pine when the first fire scar was recorded is 58 years. Fires in 1882 and 1893 traveled the farthest distances, 2893 and 3276 meters, respectively.