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Maintaining Historical Rates Of Wildfire Within The Historical Range Of Variation

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Maintaining ecological integrity in protected areas requires that natural disturbances must continue to occur. Over the last century, in the Canadian Rockies in Alberta, effective wildfire suppression removed wildfire disturbance from many fire dependent ecosystems. Prescribed burning is one means of restoring fire. In order to mimic historical patterns of burning, prescribed fire should be done in as natural a way as possible and within the historical range of variation.

We determined the historical wildfire frequency and range of variation for subalpine forests in the Spray and Kananaskis watersheds. We examined how fire frequency varied spatially due to topography and how rates of burning changed over the last several centuries. Maximum-likelihood estimation (MLE) was used to estimate rates of burning from time-since-fire map data.

We demonstrate how this research can be applied to determine the amount of burning required to restore wildfire to within historical range of variation as measured at various spatial and temporal scales. We further describe how this research can be used for long-term monitoring and assessment of fire restoration activities as well as to address other park management objectives.