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### Abstract

#### Understorey responses to mechanical restoration and drought within montane forests of British Columbia

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Pre- and post-thinning relationships between forest overstorey and understorey characteristics at sites in both the Interior Douglas-fir (IDF) and Ponderosa Pine (PP) biogeoclimatic zones in the East Kootenay region of southeast British Columbia were investigated to quantify understorey responses to dry forest restoration thinning. Pre-thinning data consistently indicated that understorey shrub and herb abundance were positively associated with light intensity and inversely with tree density (i.e., ingrowth) at both locations. Immediately after thinning, greater reductions in tree density or increases in understorey light were generally associated with greater reductions in understorey species richness, diversity, and shrub and herb cover; however, the presence of drought conditions complicated this effect. Overall, the results indicate that while the effects of ingrowth appear detrimental to understorey vegetation, the disturbance caused by mechanical thinning, particularly when accompanied by drought, can reduce the abundance of many important understorey characteristics in the short term. These results have management implications for areas where forest restoration using commercial thinning is being considered.

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