

# Sitka Alder - Competitor or Benefactor? Re-evaluating Sitka Alder's Impact on Free Growing Declarations

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## ABSTRACT

Sitka alder (*Alnus viridus* (Chaix) DC. ssp. *sinuata* (Regel) A.& D. Love) can prevent free growing declarations on areas subject to the *Forest and Range Practices Act*. As a nitrogen-fixer however, alder may be able to ameliorate conifer growth. We compared the growth and vigour of young lodgepole pine (*Pinus contorta* Dougl. var. *latifolia* Engelm.) growing amid different, natural levels of Sitka alder, in order to examine the beneficial versus competitive effects of alder.

Pine were post-stratified into alder cover classes or overtopping quadrant classes, then compared to open growing or non-overtopped pine. Generally, pine had lower vigour, and smaller radial growth with increased alder cover. The alder cover at which height diameter ratio increased significantly, marked the alder threshold for that site. Alder thresholds varied by site, possibly influenced by site productivity and relative height between alder and pine. It was unclear whether the alder were providing any benefit to the well-established pine on our study sites.

Pine not overtopped by alder tended to be taller with larger diameters than pine overtopped by alder in one or more quadrants. If the objective is to optimize early pine growth, then the "Free From Brush" criteria (Establishment to Free Growing Guidebook, 2000) may be too lenient in allowing trees overtopped in one quadrant as free growing. Height diameter ratios may be used as an alternate method to measure competition during the free growing survey. Further research is needed on the dynamic relationship between pine and alder on promptly regenerated sites.

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Key words: Sitka alder, *Alnus viridus* ssp. *sinuata*, competition, lodgepole pine, *Pinus contorta* var. *latifolia*, height diameter ratio, growth, vigour, threshold, "Free From Brush", free growing

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