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Abstract

Effects of post-harvest treatments on high-elevation forests in the North Cascade Range, Washington

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We studied the effects of post-harvest treatments on regeneration and forest composition 13–27 years following harvest in high-elevation forests of the North Cascade Range, Washington. Eighteen sites encompassing three common post-harvest treatments were examined at elevations ranging from 830 m to 1460 m. Treatments included: (1) sites broadcast burned and planted with *Abies amabilis* or *Abies procera*; (2) unburned sites seeded with *A. amabilis* or *A. procera*; and (3) unburned sites mostly planted with *A. amabilis*. Overstorey and understorey species composition was determined and compared to agency records of mature forest stands in the area. Burned-planted sites contained a smaller proportion of *A. amabilis* than unburned sites. Burned sites also contained less advance regeneration than unburned sites. Two understorey vegetation communities were segregated by elevation—an *Epilobium angustifolium*—*Rubus* spp. community dominated lower-elevation sites, and a *Vaccinium* spp. community dominated higher-elevation sites. To date, widespread planting and seeding of *A. amabilis* have not had significant effects on overstorey species composition, although future stand composition is difficult to predict. Comparison of understorey composition showed a contrast between shade-tolerant understorey species in mature stands and shade-intolerant pioneer species in clearcut sites. Advance regeneration in these systems may be enhanced by not using fire to treat slash.

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