AN ABSTRACT OF THE THESIS OF

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Title: Revegetation-Microhabitat Relations in the Blast Zone of Mount St. Helens

Abstract approved: Frederick J. Swanson

The Mount St. Helens eruption of May 18, 1980, offered an excellent setting for evaluating early response of ecosystems to disturbance. Prior to the eruption, the area was densely forested with fir, hemlock, and Douglas-fir, and various understory species. During the course of the eruption, hillslopes within a 180 degree arc to the north of the mountain were affected by strong impact forces, heat (100 to >300 degrees C) and burial (centimeters to meters), killing above ground plant parts as far as 28 kilometers from the mountain.

Vegetation recovery on hillslopes in the blast zone was greatest in areas of exposed pre-eruption soil. Exposed soil comprised 12% of the total area sampled for this study in 1981, yet accommodated over 45% of the returning vegetation cover. Pre-eruption soil was made available by direct eruption influences (e.g., on upturned rootwads), slopes sufficiently steep to limit deposition, and secondary modifications of eruption effects by erosion. No clear relationship between vegetation recovery and other microhabitat features such as shade or shelter from physical elements was observed.

Rates of vegetation recovery were higher on clearcut than downed forest slopes. This can be explained by differences in pre-eruption plant communities: clearcuts were comprised mainly of disturbance-related herb and shrub species, while pre-eruption forested slopes were mainly of coniferous species and forest understory shrubs. Following the eruption, higher rates of erosion on clearcut sites, as well as the composition of the pre-eruption plant community, contributed to higher rates of plant reestablishment.

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