

RESEARCH ABSTRACT

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Study Title: Small mammal recolonization on the Mount St. Helens volcano

Key Words: terrestrial animal mammal rodent habitat
recovery ecosystem long-term studies ashfall zone blowdown zone
debris avalanche pyroclastic flow

Abstract: The purpose of this study was to systematically document the initial survival and the subsequent recolonization of small mammal species into disturbed regions of Mount St. Helens, and to ascertain differences in early successional patterns among various habitat types and levels of disturbance. Trapping efforts have documented the recolonization of small mammals {Rodentia, Insectivora, Lagomorpha and Carnivora (Mustelidae)} into representative sites of four broadly defined montane habitats (forests, clearcuts, subalpine meadows and riparian ravines) that were subjected to increasing degrees of volcanic disturbance (undisturbed, ashfall, mud flow, tree blowdown, and pyroclastic/debris flow).

Small mammals were live-trapped on 19 sites (with extensive population studies on 12 sites) from 1980-1991. By 1991, of a hypothetical list of 32 resident small mammal species, eight species were captured or observed in the pyroclastic/debris flow zone, 15 species in the tree blowdown zone, and 22 species in the ashfall zone. Small mammal communities in forest and clear-cut habitats, and across different disturbance zones, exhibited little species similarity among sites, even after 11 years of post-eruption recovery. Pre-eruption conditions, such as the patchiness of habitats and small mammal populations, and stochastic events, such as (1) the initial survival of "small islands" of vegetation and resident mammals, (2) localized habitat alteration by post-eruption erosional processes, and (3) an unusually wet summer (1983) followed by three years of summer drought (1984-86), had a major influence on small mammal recolonization in this complex mosaic of habitats. The observed differences in species recolonization and establishment success were more attributable to the availability of requisite food and shelter resources than to differences in species-specific dispersal capabilities.

Type of Measurement(s): Mark and recapture techniques were employed using Sherman live-traps. Traps were baited with rolled oats and cotton batting was provided for warmth. Mammals were identified to species, marked, weighed, their gender and reproductive condition noted and released at the place of capture. The presence of ectoparasites was also recorded.

Frequency of Measurement(s): Small mammal trapping was conducted at some subset of the 19 sites

between the months of June and September from 1980-1991. Sites were typically trapped for 3-5 consecutive nights during mid-summer.

Data Storage: Original data sheets, summary forms and ASCII files are housed at Utah State University and at Mount St Helens National Volcanic Monument Headquarters.

Long-term plans: Data available for collaborative efforts: This is an on-going study which depending on funding sources and technical support will last into the next century. Collaborative efforts will be considered on a case specific basis.