

RESEARCH ABSTRACT

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**Study Title:** Arthropod recolonization of Mount St. Helens.

**Key Words:** terrestrial animal invertebrate insects scavengers  
predators recolonization arthropod blowdown zone ashfall zone archives

**Abstract:** Ashfall and blast zone sites have been sampled in order to monitor the recovery of insect and spider populations reduced by the May 1980 eruption. There were many survivors of the eruption in ashfall sites, especially of sedentary species and others that were protected in micro-refugia. Mortality in arthropod populations was correlated with the depth of the ashfall. Using ant colonies as an index, areas with 15 cm or less of ash deposited had species numbers similar to sites outside the devastated area. However in all areas arthropod populations have remained low compared to arthropod population recovery following clearcutting.

At the blast zone sites where all living organisms were killed by the eruption, recolonization began with arthropods. The first arthropod colonists there were predators and scavengers. Several carabid beetle species in the genus *Bembidion* established reproducing populations throughout the Pumice Plain by 1983, long before significant recolonization by plants. These first colonists subsisted on the large amounts of insect prey transported there by wind but unable themselves to survive. The primary colonists of the blast zone include many species that inhabit commonly disturbed locations such as avalanche chutes and river edges. In common with other organisms of unstable habitats, these primary colonists all have a well-developed dispersal capacity. By 1986 several spiders as well as perhaps 25 beetle species, mostly carabids, had established populations on the barren grounds of the Pumice Plain. Also by this time, pedestrian species (ones that cannot disperse by flight or on air currents) which had survived in the blowdown area, e.g. camel crickets, grylloblattids and phalangids, were found at Pumice Plain sites nearest the blowdown.

As denuded sites become vegetated the arthropod community becomes more complex and trophically varied with different classes of herbivorous species colonizing the vegetation. The early community of predators and scavengers does not persist in the presence of much vegetation but gives way to species more characteristic of field habitats.

**Type of Measurement(s):** Species sorted of select arthropod groups, e.g. spiders, the insect families Carabidae, Formicidae; biomass; numbers of individuals. Sampling by pitfall traps, window traps, arthropod fallout collectors and hand collecting.

**Frequency of Measurement(s):** Spring to fall 1980-1986, sampling traps 2-3 times each month throughout snow-free period. From 1987 on, one to several times per season as able.

**Data Storage:** Field notebooks and lab sorting data sheets; most data entered in IBM computer as Lotus 123 work sheet files. Insect specimens in collection of P.M. Sugg or stored at Burke Museum. Most groups wait on complete identification.

**Long-term plans:** Data available for collaborative efforts: This in an ongoing study. Edwards and Sugg hope to continue low-level monitoring; future work is dependent upon funding. Data is available for collaboration; insect samples will be available for loan.