

RESEARCH ABSTRACT

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**Study Title:** Ant-plant interactions at Mount St. Helens

**Key Words:** terrestrial plant animal upland herbs  
succession survival invertebrate insect ant archives  
blowdown zone

**Abstract:** Within the blowdown zone of Mount St. Helens, *Formica pacifica* is the most common ant species. From studies during the summer of 1991 patterns were observed in the spatial dispersion of *F. pacifica* nests and also in the plant species present on the middens of these nests. *Formica pacifica* is less active within species rich vegetation patches than in exposed areas. Studies in 1992 will investigate whether *F. pacifica* nests are more common along the edges of vegetation patches. Other studies will investigate the presence of *Hypochaeris radicata* (false dandelion) on the middens of these nests. The wind born seeds of *H. radicata* may have difficulty establishing on the nutrient poor tephra. Ant middens may provide suitable sites for these plants to establish. Soil brought to the surface during nest excavation and the collection of plant and insect parts may add nutrients to the substrate of ant middens. Once established above an ant nest, plants would begin to cause shading of the nest. The resulting decrease in temperature may cause the ants to move their nest location. By moving out away from the shade of a vegetation patch and creating more sites for plant establishment, ants of *F. pacifica* may be effecting the expansion of vegetation patches. Since primary succession at Mount St. Helens is a slow process, the seemingly insignificant effect of ants on this process may be relatively important.

**Type of Measurement(s):**

Ant activity: # of ants per bait per hour  
Plants on ant mounds: frequency of plants on mounds  
Colony movement: # of ant colonies abandoned in three weeks  
Shading: temperature (average) under shade and in sunlight  
Germination: # of seedlings within two weeks  
Wind dispersed seeds: # of seeds per site

**Frequency of Measurement(s):**

Ant activity: once per transect  
Plants: several measurements during growing season  
Colony, shading, and germination: daily for three weeks  
Wind: weekly for four weeks

**Data Storage:** Data are stored on 3.5 inch, DS HD diskettes in Microsoft Excel software for IBM compatible computers.

**Long-term plans:** Data available for collaborative efforts: This study is in partial fulfillment of Muscari's Masters degree. He may extend the research to a PhD project in the future. Muscari is willing to collaborate and share any and all data he has collected at Mount St. Helens. Muscari has a good deal of information on the growth of fireweed stems containing aphid colonies that may be useful to an appropriate study.