

RESEARCH ABSTRACT

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**Study Title:** Patterns and mechanisms of early plant primary succession on the pumice plain.

**Key Words:** terrestrial plant vegetation succession recovery  
seeds seedlings pyroclastic flows pumice plain archives

**Abstract:** Primary colonists and mechanisms of their arrival to the pumice plain have been monitored since 1986. Measurements of seed rain have shown that the most common wind dispersed species arriving on the pumice plain are *Anaphalis margaritacea*, *Epilobium angustifolium*, and *E. watsonii*. Of the early colonists *A. margaritacea* is the most wide spread species, but *Lupinus lepidus* is the most abundant species. In addition the *L. lepidus* population is increasing dramatically.

*L. lepidus* patches have positive and negative effects on other colonists. Positive effects include nitrogen fixation and seed catching growth form. Negative effects include inhibition of other colonists by thriving patches of *L. lepidus* due to competition; this is reduced when patches die off.

The most important conditions affecting overall seedling survival on the pumice plain are moisture and physical structure of the substrate. Seedlings are more successful when moisture is plentiful and in areas of coarse soil surface rather than smooth, even soil surface.

Experiments have shown that *A. margaritacea* seedlings are more hardy than those of *E. angustifolium* possibly partially explaining higher abundance of the former species.

Please see Research Abstract from Roger del Moral for relevant study contributed to by David Wood.

**Type of Measurement(s):** Species identification and % cover were measured in 10 x 10 m plots; experimental plot sizes vary and were sampled for number of individuals surviving and appearing each year and growth rate of individuals (cm/year). Seed rain was measured using 0.1 meter square golf ball traps; species identified and number of seeds per species counted.

**Frequency of Measurement(s):** 1600 10 x 10 m plots were established and sampled in 1986, and will be sampled again in 1991. 400 of these are measured annually. Seed traps were placed in June and collected in October of each year.

**Data Storage:** Floppy disks in Macintosh software in personal possession.

**Long-term plans:** Data available for collaborative efforts: Project ongoing until 1993 at least. Investigator is available for future collaborative efforts.