

## **Germination Experiment of *Lupinus bicolor* and *Lotus strigosus* at Bodega Bay Marine Reserve**

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### **ABSTRACT**

Mutualisms are reciprocally beneficial relationships between organisms that are common in biological communities. The composition of bacteria within the soil can effect plant performance and that plant performance can change depending on the bacteria and other organisms present in the soil. In this study I considered the symbiotic relationship in of *Lotus strigosus* and *Lupinus bicolor* with soil microbes in a field experiment by measuring their germination rates in different areas of the Bodega Marine Reserve and examined how plant germination varied across the three sites. I also considered the average dry shoot weight and average number of nodules from plants in a greenhouse experiment to determine how the growth of the two species varied in different soil types recovered from the reserve. *L. strigosus* plants at the Mussel Point site than at the other two sites and exhibited higher germination rates in the field and increased nodulation in the greenhouse which may indicate local adaptation. Further research scheduled through the summer may provide quantitative measurements of the effects of rhizobia and nutrient differences on germination across the three sites.

### **KEYWORDS**

Mutualism, symbiosis, rhizobium, plant performance, reciprocal transplant experiment

Note: Only the abstract is available for this thesis. Research is ongoing on this project. Please contact the author of this thesis directly for information.