The impact of restoration treatments on the germination of *Quercus pacifica* on Santa Rosa Island

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### Introduction

Santa Rosa Island (SRI) is part of Channel Islands National Park off the coast of Santa Barbara County. SRI has an extensive ranching history. The island was grazed until 1998 and a deer and elk hunting business was run until 2011. These activities led to extensive ecological degradation. In December of 2015, the Cloud Forest Restoration Project began with the goal of restoring the island ecosystem on Soledad Ridge. Part of the restoration project involves the planting of *Quercus pacifica* (island scrub oak) acorns. This research project involved surveying the survivorship and germination success of island scrub oaks in an effort to understand the impact of active restoration on germination.

### Methods

Island scrub oak acorns were hand-collected in October of 2016 & an estimated 3000 were planted in December of 2016 at four sites located on Soledad Ridge.

- Acorns were planted along irrigation lines with emitters under each of the restoration treatments.
- Four oak acorns were planted at each emitter, and four more were planted at 12" west of each emitter.
- The number of oak seedlings at each emitter and 12" west of each emitter were counted and recorded in July 2017.

### Results

The control treatment is composed of an irrigation line with emitters spaced at one meter intervals. The purpose of the emitter is to provide supplemental water to seedlings.

The wattle treatment is composed of an irrigation line with emitters spaced at one meter intervals and a wattle for erosion control and sediment retention.

The fog fence treatment is composed of an irrigation line with emitters spaced at one meter intervals, a wattle for erosion control, and a fence designed to harvest fog for extra moisture.

### Discussion

The island scrub oak is an important species to the island plant community and overall plant ecosystem on the island. The unique leaf morphology of the island scrub oak allows for this plant species to harvest water from fog dripp during episodes of dense fog. Due to the potential of fog harvesting from the scrub oaks, it is important to understand how we can better insure germination success of the island scrub oak and how germination rates are being impacted by active restoration. Success of the island scrub oak would aid in the long term success of sustainable vegetation. The next step of the study will focus on measuring and monitoring the growth and continued survivorship of the island scrub oak seedlings.

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