Effects of Habitat Restoration on Soil Retention on Santa Rosa Island

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Introduction

• The removal of the last deer and elk from Santa Rosa Island (SRI) in 2011 marked the end of large herbivores that placed grazing pressure on native plants and compromised substrate integrity, which contributed to the loss the top soil on parts of the island.
• In 2015, a restoration project began on the island’s interior Soledad Ridge to reestablish native plants and install erosion control structures to reverse sediment loss trends.

Questions

• Has sediment erosion or deposition occurred at the restoration site since 2016?
• Do erosion control structures effect sediment deposition upslope and downslope from their installation differently?

Methods

• We measured nail exposure along nine 60-m transects located within the restoration. In January 2016 twelve inch long nails were inserted with 15 cm height exposed. The nails were placed at 5 m intervals, allowing for vegetation growth and sediment deposition to occur. Several transects passed over erosion control structures: measurements were taken both upslope and downslope from the structure.
• Along the transect, we recorded nail exposure to the nearest half cm. This measurement was compared against initial nail height. A decrease in height implied sediment deposition, while an increase in height implied sediment erosion.

Results & Discussion

• All sites experienced sediment deposition. There is not a significant difference in the sediment deposition rates among the three sites where transects were placed on Soledad Ridge.
• Areas immediately upslope of soil erosion barriers have significantly greater sediment deposition with an average of 2.11 centimeters.

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