The Effect of Salt Spray, Ungulate Fencing, and Soil Type on Coastal Plant Distribution and Abundance on the Kalaupapa Peninsula, Molokai

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On the Kalaupapa Peninsula, coastal salt spray vegetation transitions from shorter, predominantly native plants near the shoreline, to taller Christmas berry (Schinus terebinthifolius) further inland. This project examined the effect of feral animals, soil type, and salt on the distribution of coastal vegetation, using quadrant plant surveys and soil conductivity measurements, in two 100 hectare (250 acre) areas with, and without deer (Axis axis). Soil salt levels were determined to be similar across all soil types except for sand; lower readings for sand could be due to the prevailing wind patterns or soil drainage. Without deer, mineral and organic soil had larger percentages of plant cover, while the sand and mixed (sand and mineral) soil types had higher percentages of native species present. Comparing the impacts of deer on either sides of the fence, both native and non-native plant cover decreased when deer were present. In addition, the species richness for all plant life forms was lower. Four key plant species were selected in the grass, forb, or shrub life form categories. All experienced a decrease in average percent plant cover when deer were present. For example, Naupaka (Scaevola sericea) was not found when deer were present compared to 9.32% average cover without deer. Based on these results, it can be safely concluded that deer are negatively impacting the coastal salt spray vegetation and species richness regardless of soil type. Fencing appears to improve plant cover, especially for native species which seem to grow abundantly in the sand.

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