

# **Determining Senecio Elegans Population Size and Dispersion Patterns in order to Inform Volunteer Removal Efforts**

**Tanisha Gupta**

Stanford University Online High School  
Redwood City, CA 94063, USA  
tanishag@ohs.stanford.edu

## **Abstract**

Invasive species devastate ecosystems and understanding them is key to their eradication or management. The objective of this project is to use STEM methodology to research the population ecology of Senecio Elegans at Half Moon Bay State Beach (HMB) in California to inform volunteer removal efforts. Senecio Elegans is native to Africa, but threatens the biodiversity in California. The method of random sampling of two populations of Senecio Elegans was used to find their population sizes. The dispersion of Senecio Elegans at both populations was determined separately to generalize the dispersion pattern for the species. The research was repeated for Cakile Maritima, a non-invasive plant similar to Senecio Elegans, to benchmark its growth in relation to native plants. Chi-square test for Dispersion yielded a contagious dispersion pattern for both beaches and plants. Beach 1 had an estimated population size of 55 Senecio Elegans and Beach 2 had an estimated population size of 240 Senecio Elegans. Beach 1 had an estimated population size of 185 Cakile Maritima and Beach 2 had an estimated population size of 6 Cakile Maritima. Comparing the population sizes on both beaches to determine which beach was in greater need of weeding yielded a statistically insignificant result.

## **Keywords**

Population Ecology, Senecio Elegans, Cakile Maritima.