Chapter 1

PISMO WIND STUDY (WORKING TITLE)

1.1 Abstract

1.2 Introduction

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1.3 Materials and Methods

1.3.1 Study Site

Pismo State Beach Monarch Butterfly Grove (hereafter "Pismo") is located in San Luis Obispo County, California (35.12940$° N, 120.628° W). The site encompasses approximately 10 hectares (24.7 acres) and is characterized by a mature grove of blue gum eucalyptus (*Eucalyptus globulus*). The grove is situated approximately 0.5 km from the Pacific Ocean, which lies directly to the west.

Pismo was selected as the primary study site for several key characteristics. The site consistently supports one of the largest aggregations of overwintering monarch butterflies (*Danaus plexippus*) in California, routinely ranking among the top ten overwintering sites by population size MonarchCount2023. Even during years of low monarch abundance, such as 2024, Pismo maintains a presence of butterflies while many other sites remain vacant.

The site's physical characteristics make it particularly suitable for wind analysis. The western exposure to the Pacific Ocean provides an unobstructed wind corridor, minimizing confounding topographical effects. The surrounding terrain is predominantly flat, and nearby anthropogenic structures do not exceed two stories in height, representing less than 20% of the canopy height of the grove's mature eucalyptus trees.

Additionally, Pismo's extensive history of monarch butterfly research and consistent population monitoring provides valuable historical context for this study. The site's well-documented population counts, conducted at regular intervals, offer opportunities for correlating wind patterns with butterfly abundance and distribution patterns.

1.4 Results

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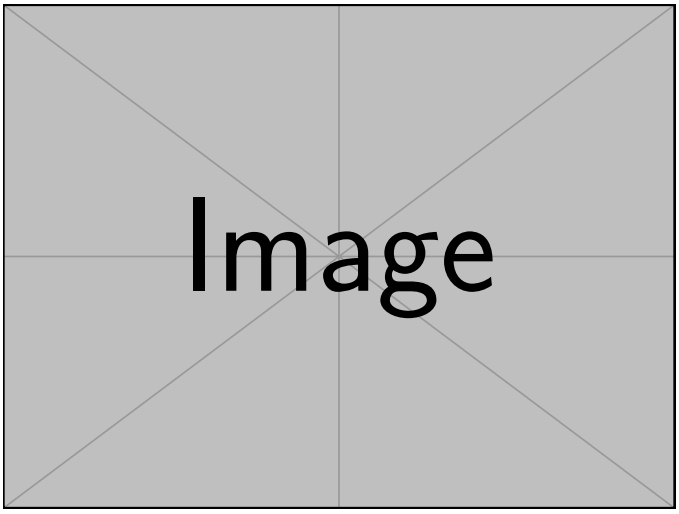

Figure 1.1. Clear, descriptive caption explaining what the figure shows and its significance.

1.5 Discussion

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1.6 References