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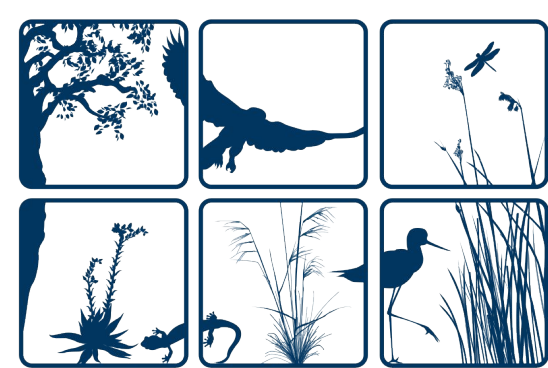
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Exploring Connections Between Soil and Sage Scrub Health in a Restored Ecosystem

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Introduction

- Past observations indicate that scrubs such as California Sagebrush (*Artemisia Californica*) are more successful in certain parts of UCSB North Campus Open Space.
- Hypothesized that persistent soil saturation in human-transported soil at the NCOS Mesa reduced plant vigor.
- Conducted a comparison of vegetation and soil moisture to evaluate the effects of soil alteration and guide restoration efforts.

Methods

- Mapped plants on the North Mesa Slope (human transported) and South Parcel (non-transported) using ESRI Field Maps, noting their vigor, for comparison with map of what was originally planted.
- Collected volumetric moisture data by installing two sets of soil probes in the ground, one near the top of the slope and one lower down, at 6 and 18 inch depths for each (results pending)
- Collected gravimetric moisture data at three pairs of points, highlighting different microhabitats.

Results



Figure 1: Spatial position of 2925 individual plants on the Mesa North Slope and their relative vigor.

Credit: Claire Wilhelm-Safian

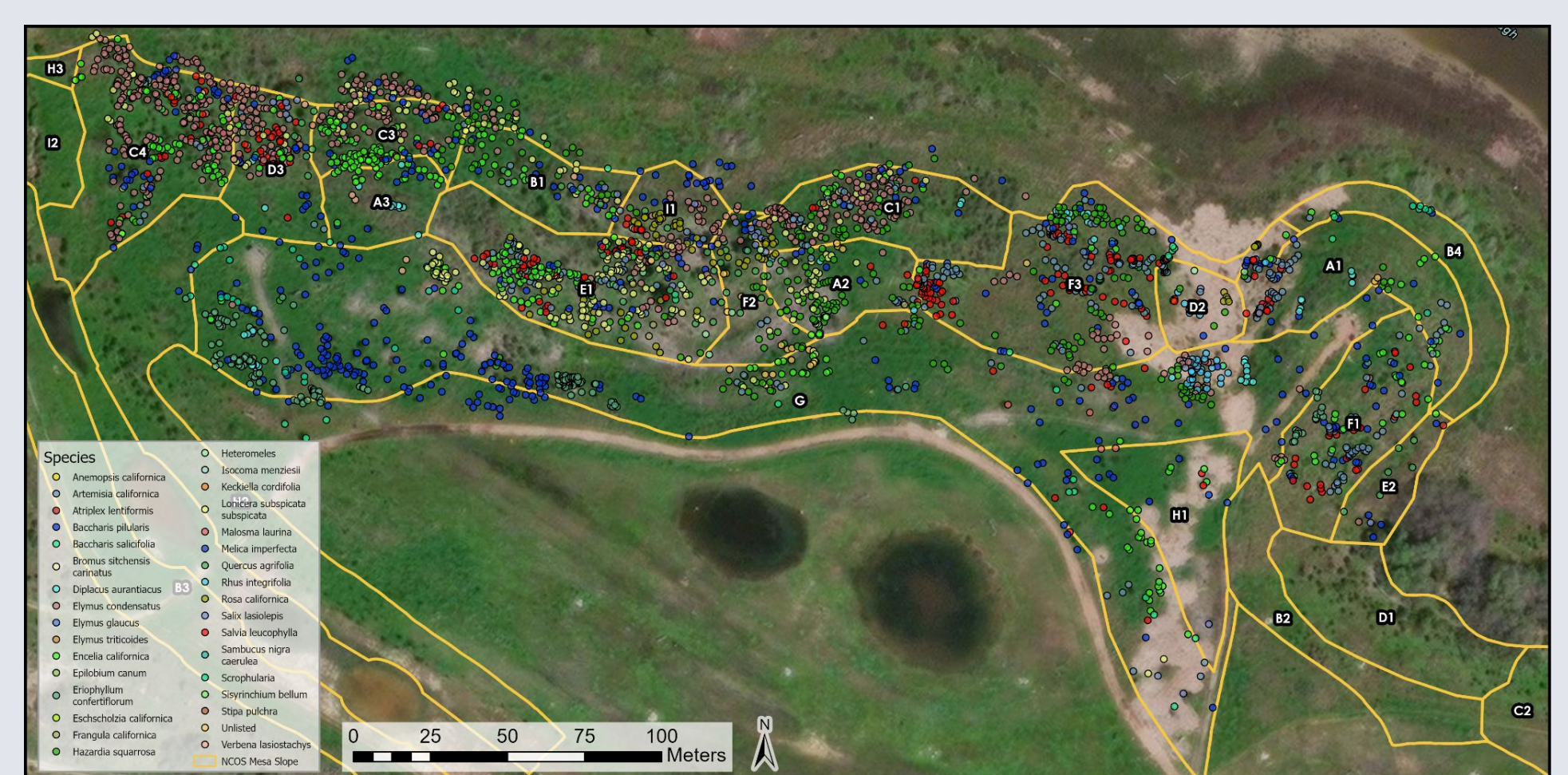


Figure 2: Spatial position of individuals mapped on the Mesa North Slope, with colors indicating unique species.

Credit: Claire Wilhelm-Safian

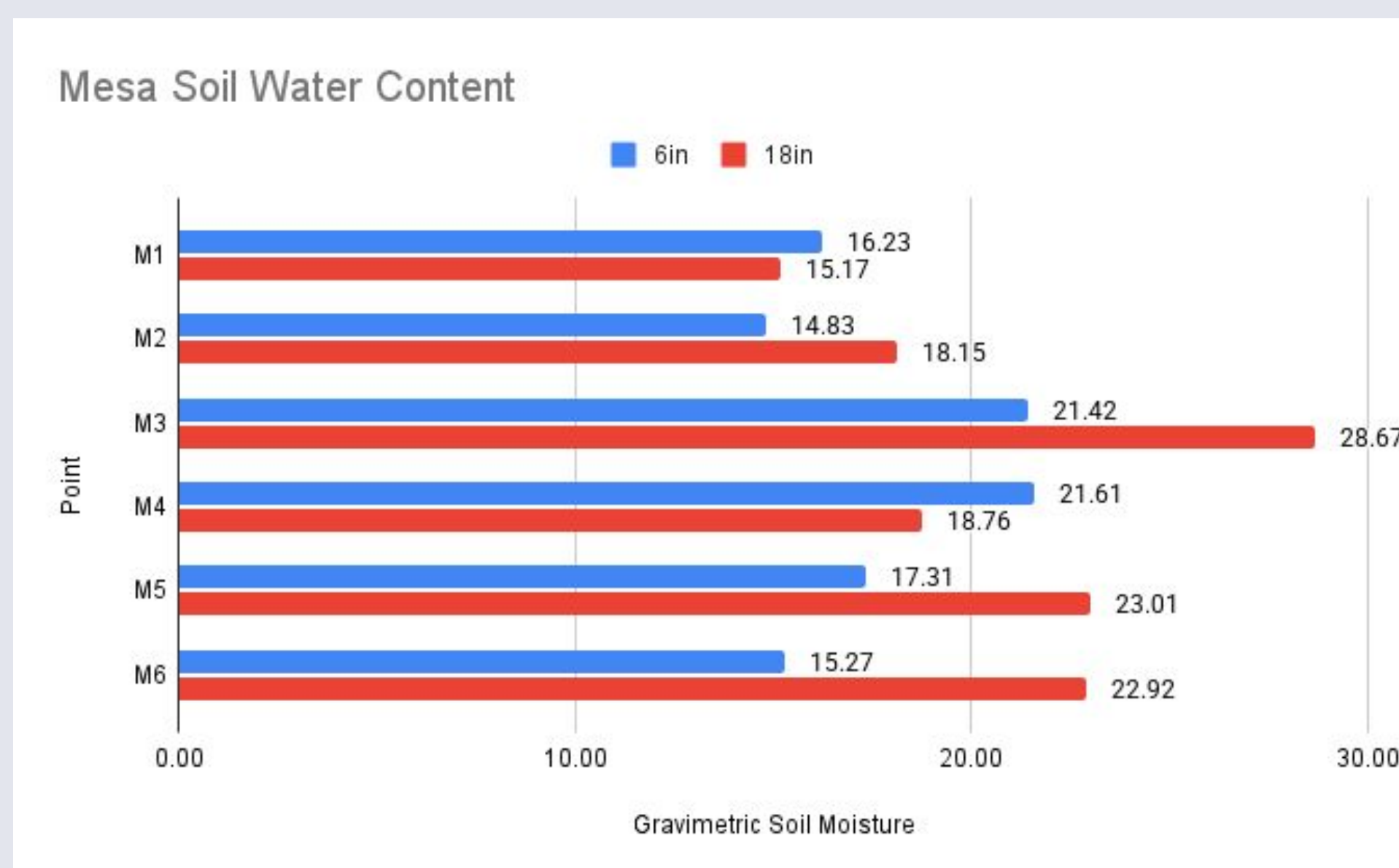


Figure 4: Averaged gravimetric soil moisture values for our 6 sampled slope positions, displaying the difference in moisture at depths of 6 and 18 inches to better understand water flow. The already clay-ey soil had clay content rise at depth, and high saturation **limited soil aeration necessary for plants.**

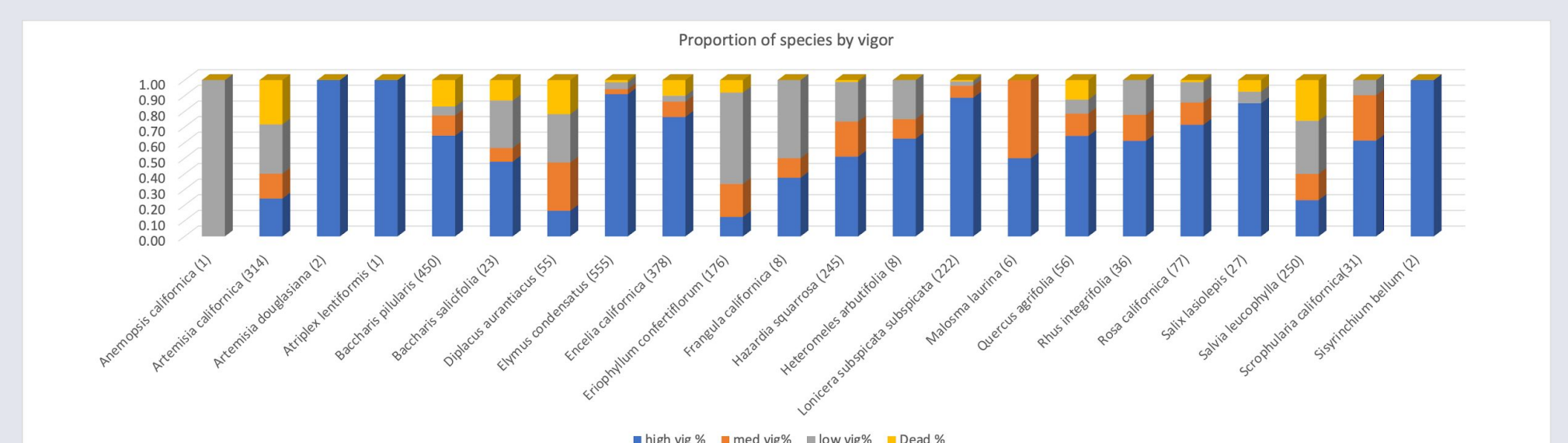


Figure 3: Vigor of each plant species as a proportion of the total number of individuals of that species.

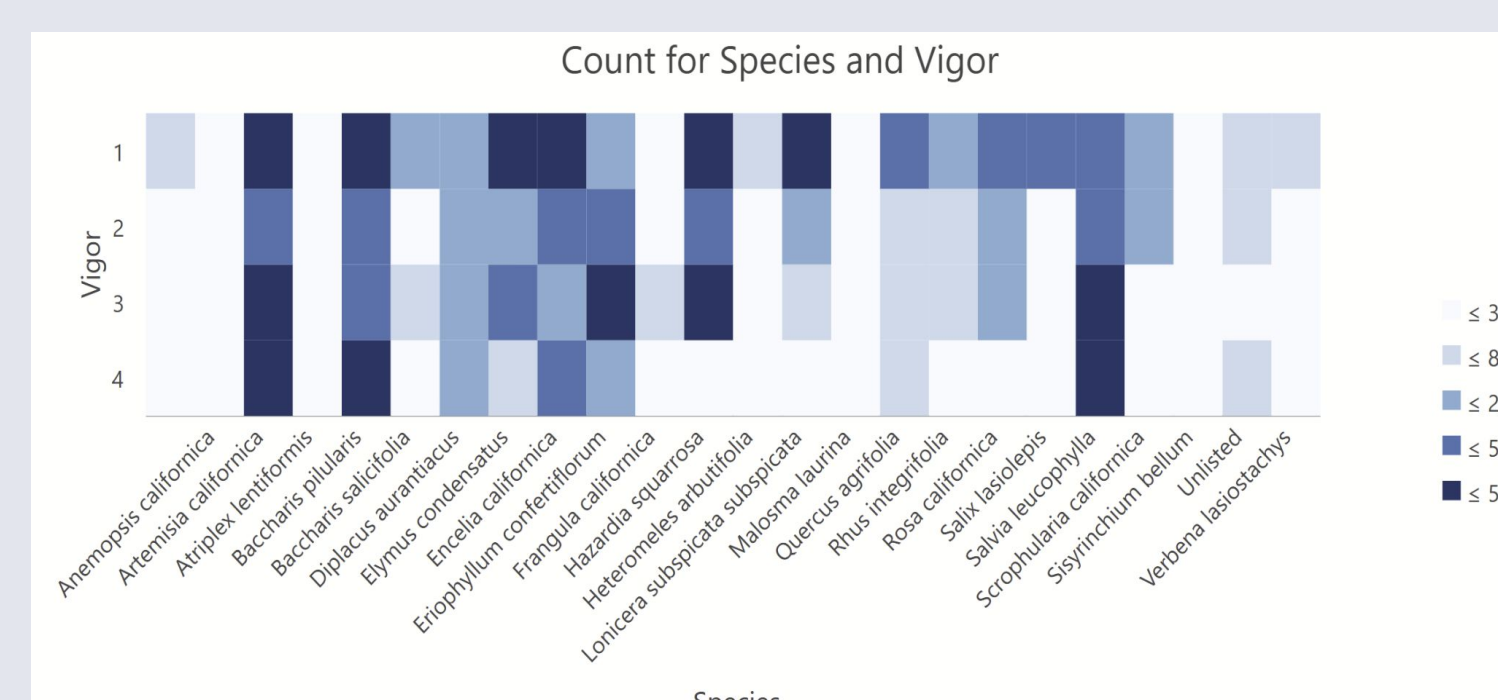


Figure 5: Heat map visualizing relative species vigor (plant health): 1 = Good, 2 = Fair, 3 = Poor, 4 = Dead.

Discussion

- These initial findings suggest that though soil moisture conditions must be considered for future wetland restoration, there is not a definite trend between moisture and plant health.
- Micro-features on the landscape provide suitable habitat for different species, limiting success of native plant communities.
- As an observation, valleys on the landscape that pooled water showed decreased plant health likely due to high moisture levels that limited plant function, while ridges that had lower saturation actually exhibited healthier vegetation.
- Our in-progress findings indicate there is more to understand about species and their tolerances for high soil moisture.

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