

Understanding Wildfire Impacts on the Santa Rosa Plateau

A Spatial Analysis Study



Photograph from Santa Rosa Plateau Foundation

The Santa Rosa Plateau Ecological Reserve is one of Southern California's most biologically rich protected landscapes. However, rising temperatures, prolonged drought, and expanding urban boundaries around Murrieta and Temecula have increased wildfire frequency and intensity.



These fires do not affect all habitats equally: chaparral, coastal sage scrub, oak woodlands, and native grasslands each respond differently to repeated burns. This study seeks to understand where vegetation communities are most at risk and how wildfire patterns shape long-term ecological resilience.

Environmental geography helps us trace the connections between climate conditions, vegetation distribution, fire management practices, and human development. By mapping the spatial relationships between fire history and ecosystem types, we can better understand how environmental stressors overlap, where ecological vulnerabilities are emerging, and how land managers can prioritize restoration or fuel reduction.

Goals of the Analysis



- Identify vegetation communities with the largest burned area
- Examine how overlapping fire events affect ecosystem diversity
- Support restoration and fire-management decision-making
- Provide wildfire-risk awareness for the surrounding Murrieta community

Spatial Datasets Used

- **Fire History Polygons:** CAL FIRE Fire Resource Assessment Program (FRAP)
- **Vegetation Classification:** California Department of Fish & Wildlife – VegCAMP WHR dataset
- **Boundary & Terrain Data:** USGS National Map & ESRI basemaps
- **Projected Coordinate System:** NAD 1983 California (Teale) Albers

These datasets allow for precise calculations of area burned by vegetation class and reveal spatial patterns that shape habitat vulnerability.



