

# FINE SCALE GRASSLAND MAPPING AND SAMPLING IN SELECT EAST BAY REGIONAL PARKS

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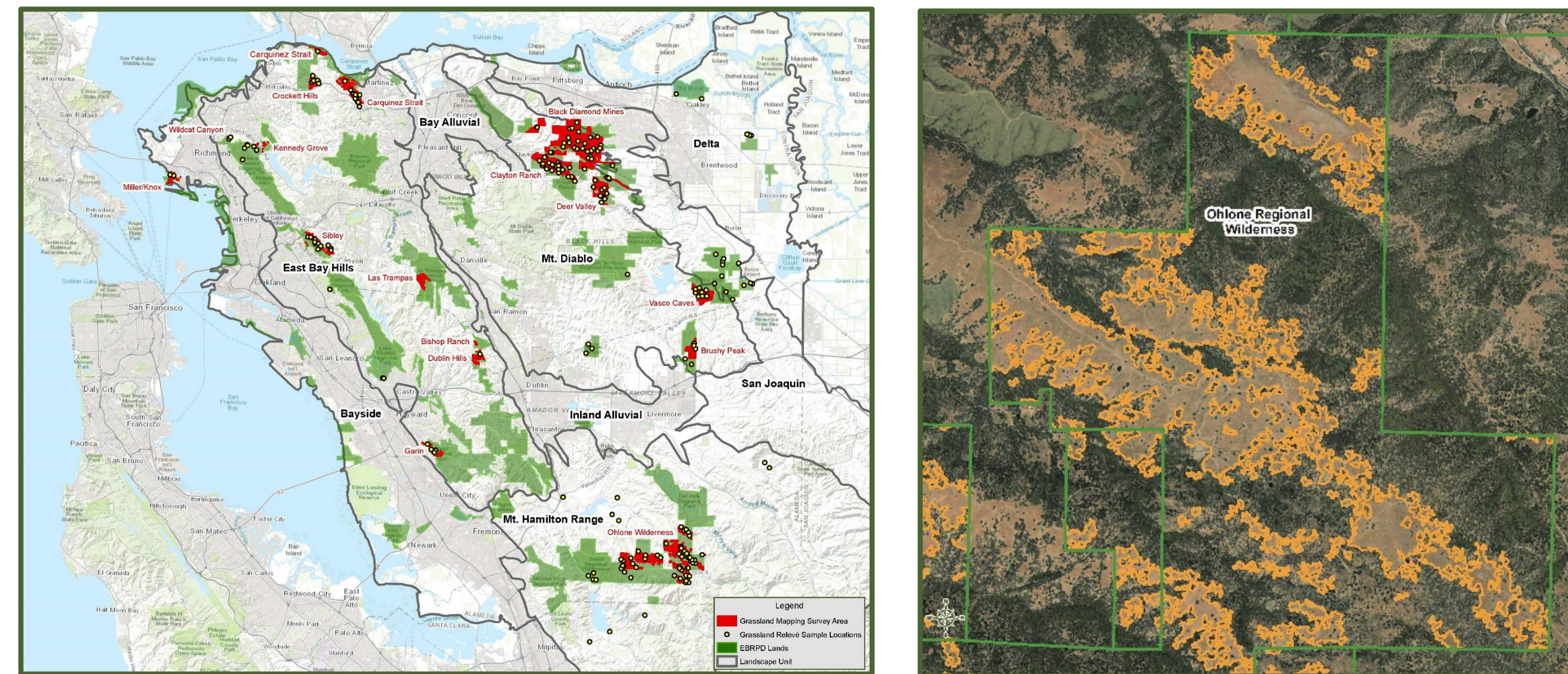
Benson Bio Consulting

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## Background

Nomad Ecology, Benson Bio Consulting, and Tukman Geospatial in partnership with East Bay Regional Parks District conducted a fine-scale grassland vegetation sampling and mapping project over 11,000 acres of grasslands in 16 parks in Alameda and Contra Costa counties.



## Project Purpose and Need

Mapping of native grasslands is needed for their management and protection. They cannot be mapped via remote sensing; field mapping is needed. The location and diversity of native herbaceous vegetation types are not well-understood. Grasslands are highly temporal and are often misidentified as non-native grasslands.

## Project Goals

- Complete a fine-scale vegetation map of native grasslands over 11,000 acres over 2 years, based on data collection and field-based mapping using CNPS and CDFW standards (CDFW 2024, CDFW-CNPS 2024).
- Collect 205 relevés in herbaceous vegetation types to inform mapping for this project, and to contribute to the Alameda and Contra Costa Counties Vegetation Classification (Sikes et al. 2024).
- Complete a pilot project for larger acreage field-based fine-scale grassland mapping by refining methodology used in prior smaller projects.
- Conduct mapping surveys in spring and summer to capture the diversity of native herbaceous vegetation types present.

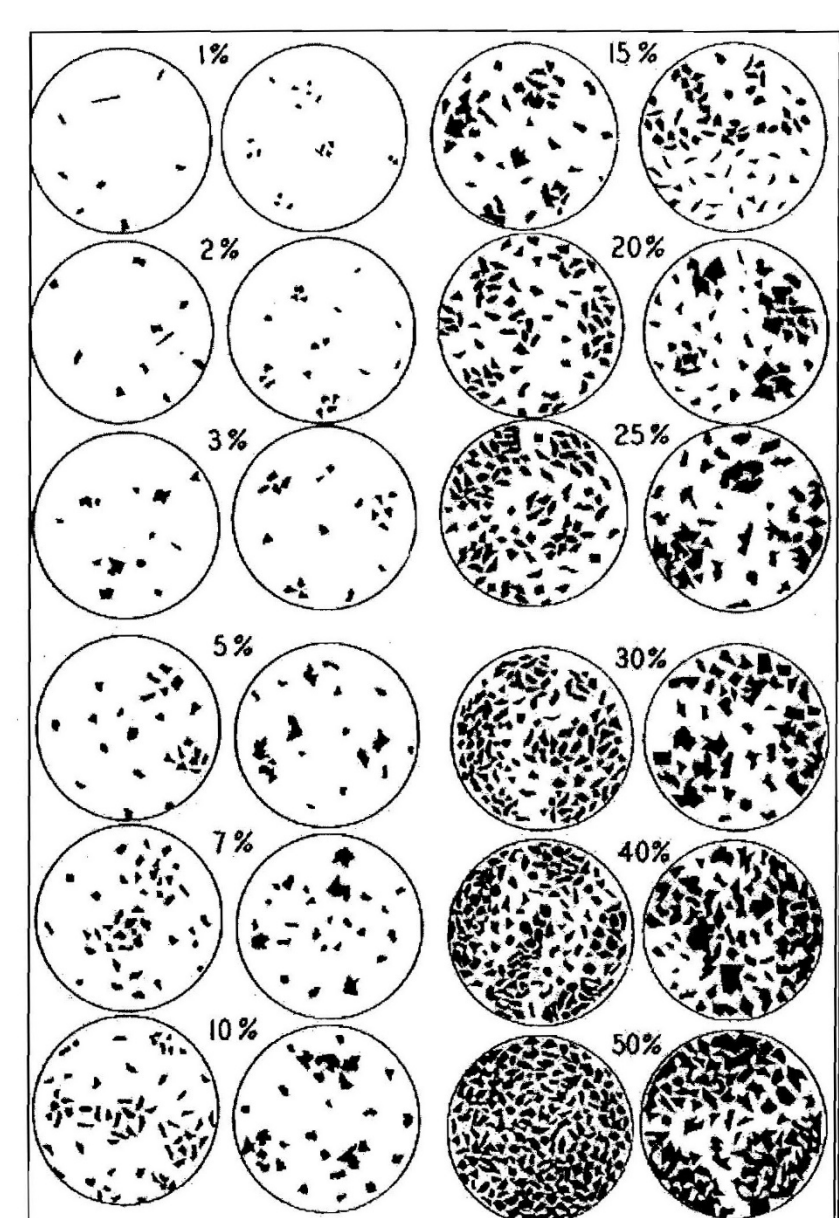


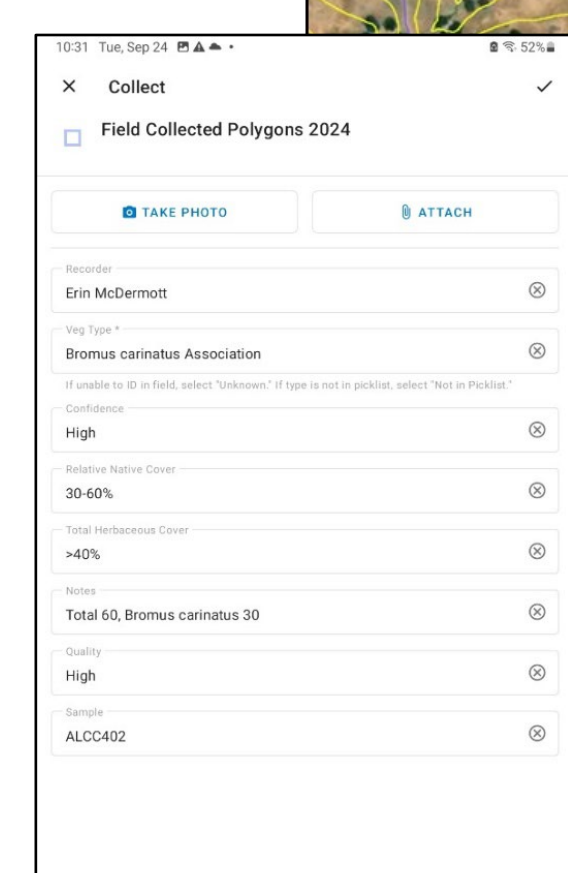
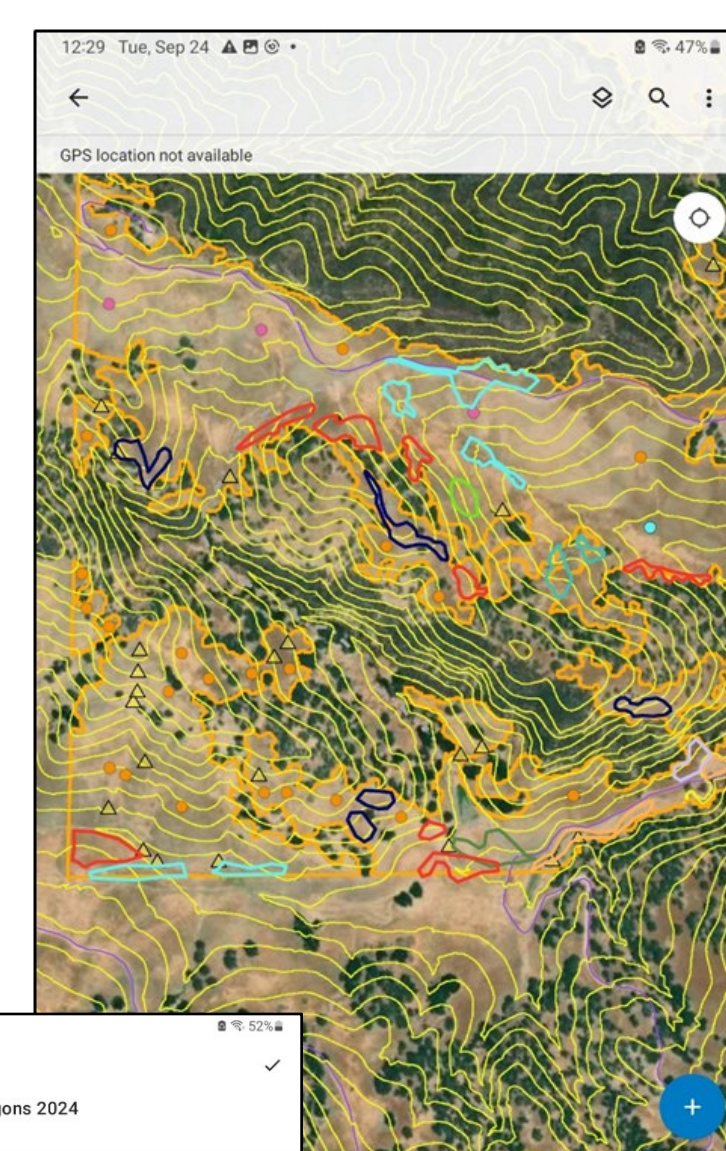
Figure 13-4. Reference plots for cover estimation.

## Mapping Methodology

- Native Grassland Definition is > 10% relative cover of native species
- Minimum Mapping Unit (MMU) of 0.20 acre (32 meters diameter circle).
- Sub MMU Native Plant Points for stands smaller than MMU.
- Reviewed CNPS vegetation reports and prepared a Draft Key to identify grassland types in the field since no key existed for Alameda/Contra Costa counties.

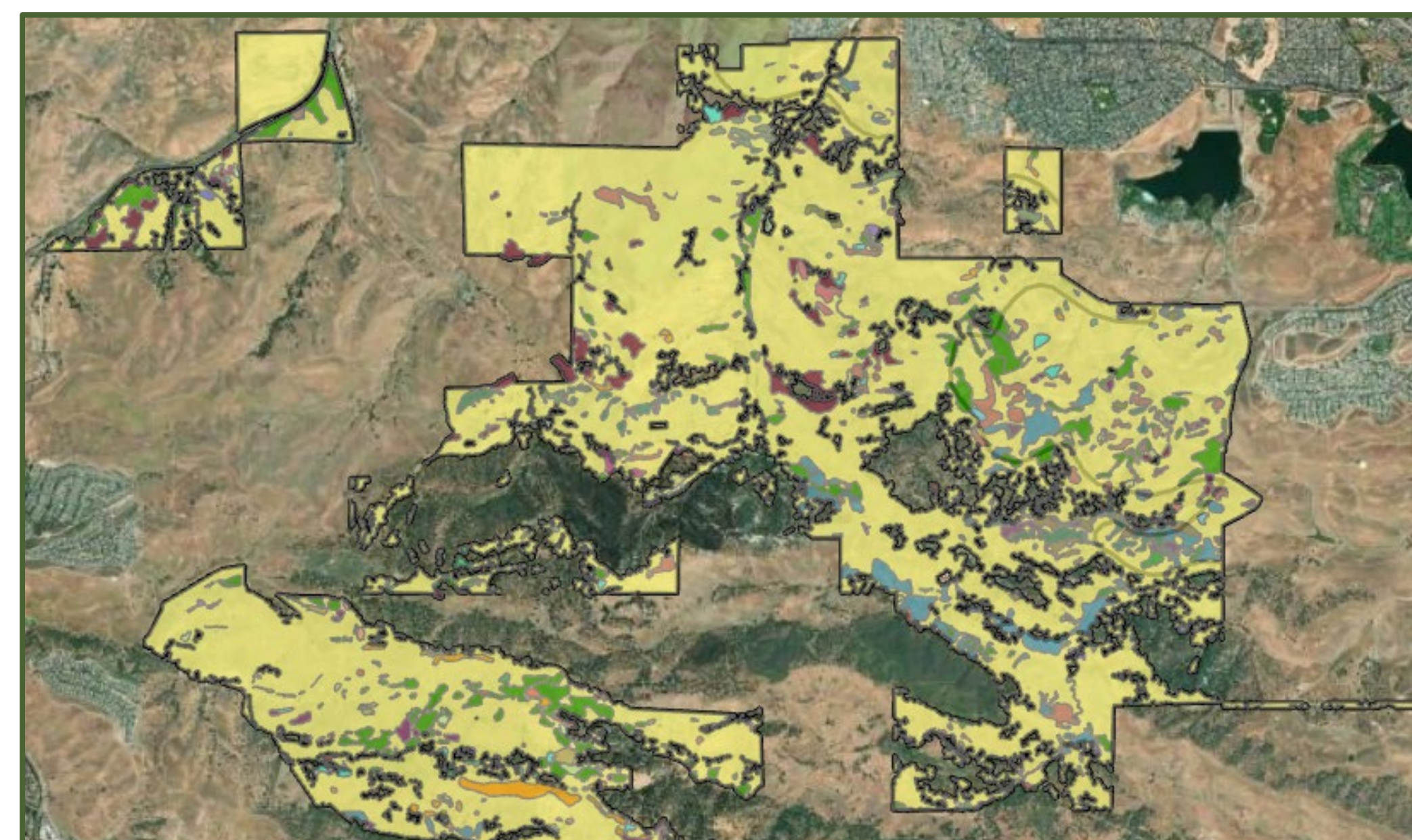
## Mapping Field Data Collection

- Conducted surveys in spring with a second visit to capture late season vegetation types.
- Data collected in ESRI Field Maps application on tablets. Native grassland polygons drawn in Field Maps.
- Background layers: high resolution imagery, plant and vegetation data, contours, roads, trails, substrate.
- Drop down menus for recorder, vegetation type, confidence, cover, quality, notes.
- Relevés were collected using CDFW-CNPS Protocols (CDFW-CNPS 2024).



## Results

- A total of 49 native herbaceous associations were mapped among the 16 parks. 30 of these are Sensitive Natural Communities.
- Native herbaceous vegetation composed an average of 23% of the grassland surveyed, and ranged from 0% to 58% among the parks.
- 9 new herbaceous associations were described.
- A total of 223 relevés were collected in grasslands as part of this project.
- The deliverable was a wall-to-wall fine-scale grassland vegetation map.

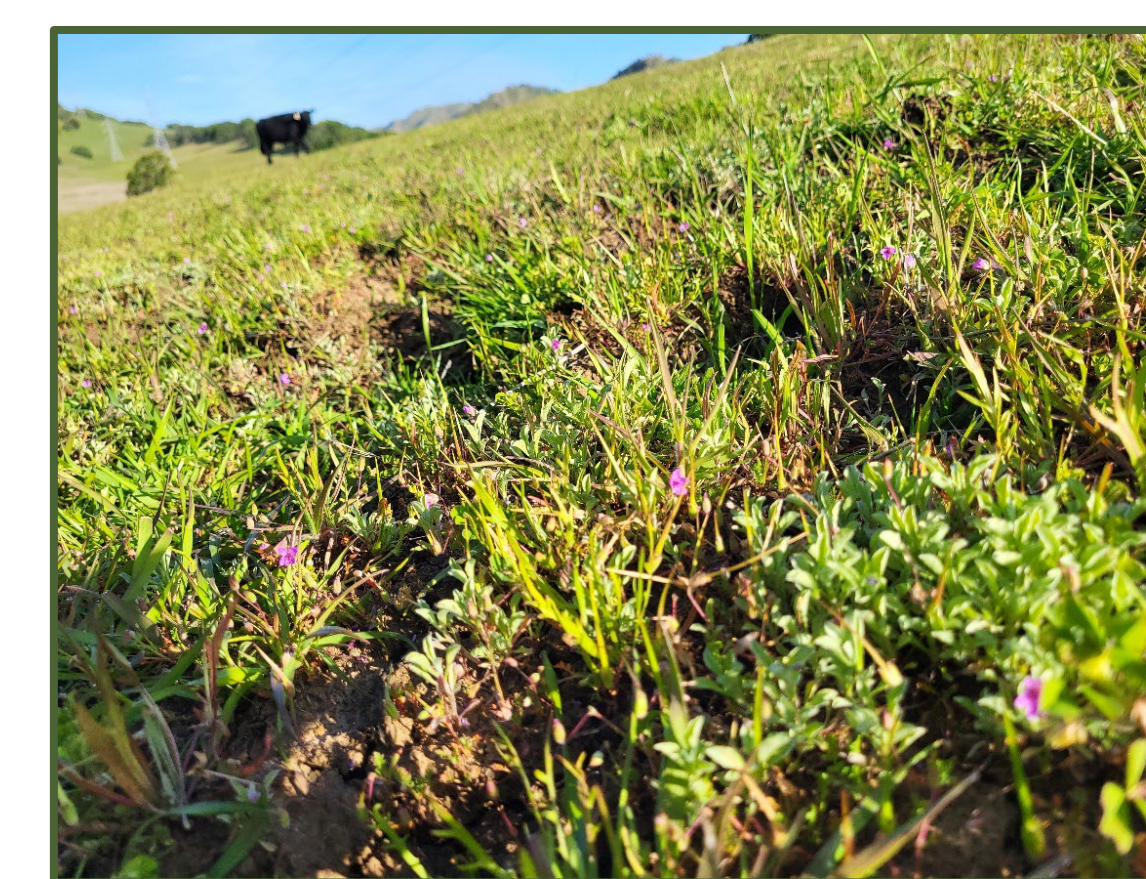


## New Vegetation Types

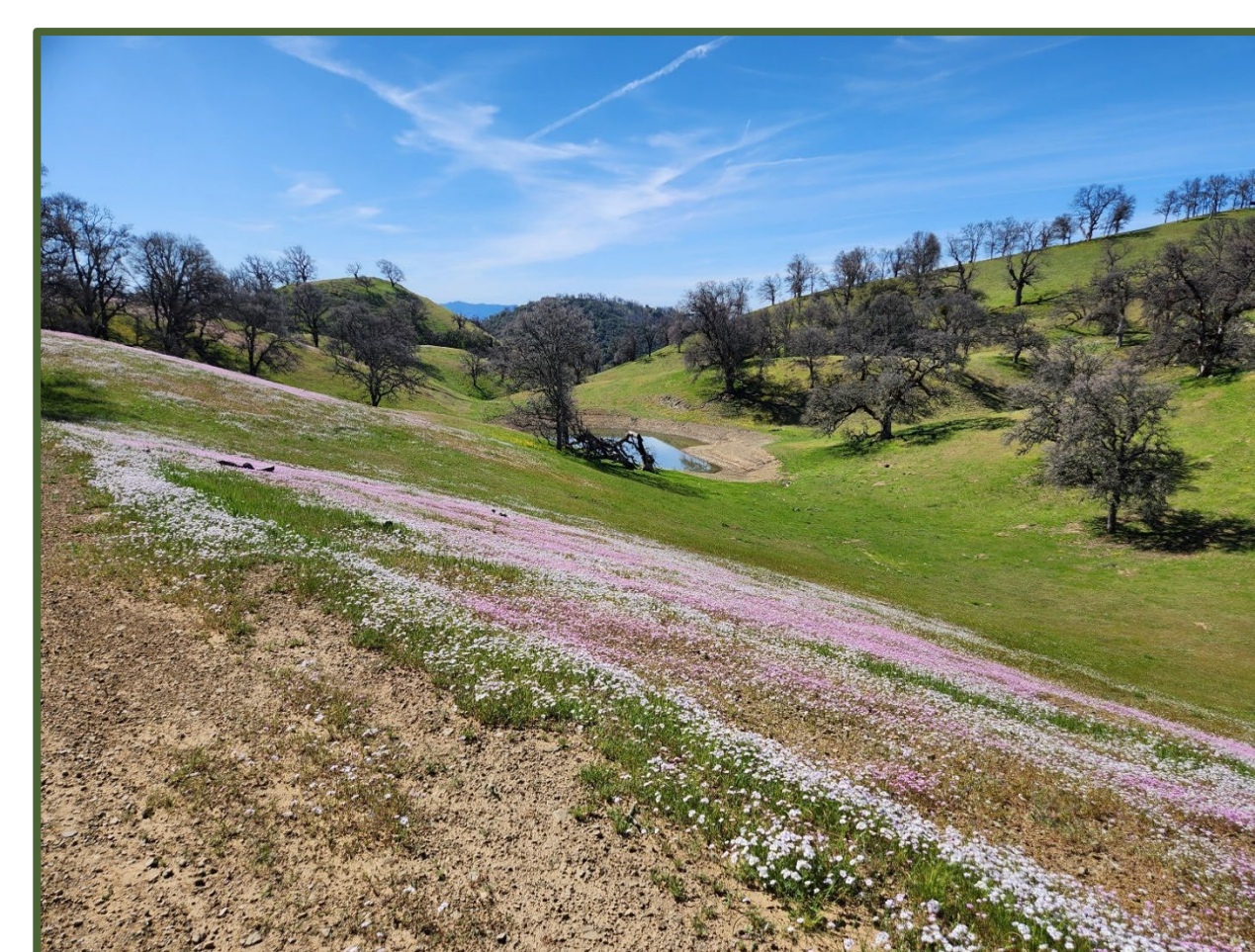
9 new native herbaceous types described



*Lupinus (microcarpus, succulentus)*  
 Provisional Association in Black Diamond Mines. May 1, 2024.



*Hesperivax sparsifolia* – (*Microseris douglasii* – *Plagiobothrys* spp.) Provisional Association at Deer Valley. April 5, 2023.



*Leptosiphon ambiguus* Provisional Association at Ohlone Wilderness. April 28, 2023.



*Grindelia camporum* – Annual Grass – Forb Provisional Association at Black Diamond Mines. May 1, 2024.



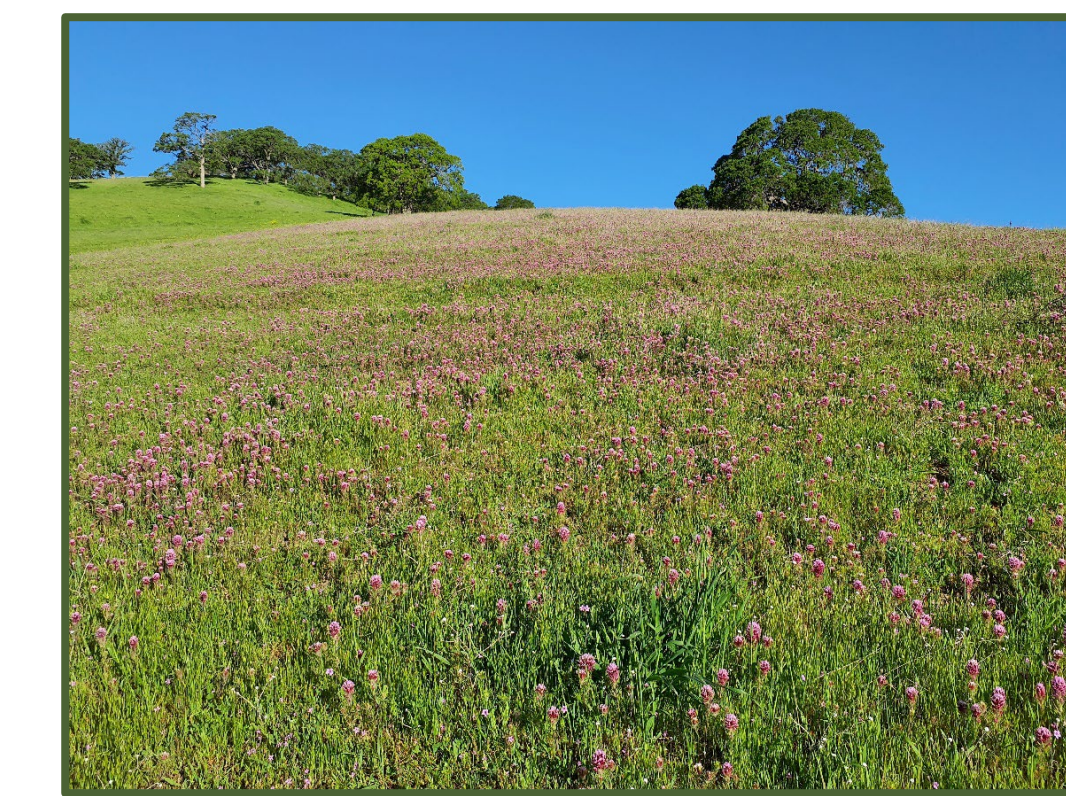
*Elymus multisetus* – (*Eschscholzia californica* – *Plantago erecta*) Association at Ohlone Wilderness. May 28, 2024.



*Viola pedunculata* – (*Eschscholzia californica* – *Nassella pulchra*) Provisional Association at Ohlone Wilderness. April 18, 2023.

## Diversity of Vegetation Types

49 native herbaceous associations mapped



*Plagiobothrys nothofulvus* – *Castilleja exserta* – (*Lupinus nanus*) Provisional Association at Deer Valley. April 10, 2023.



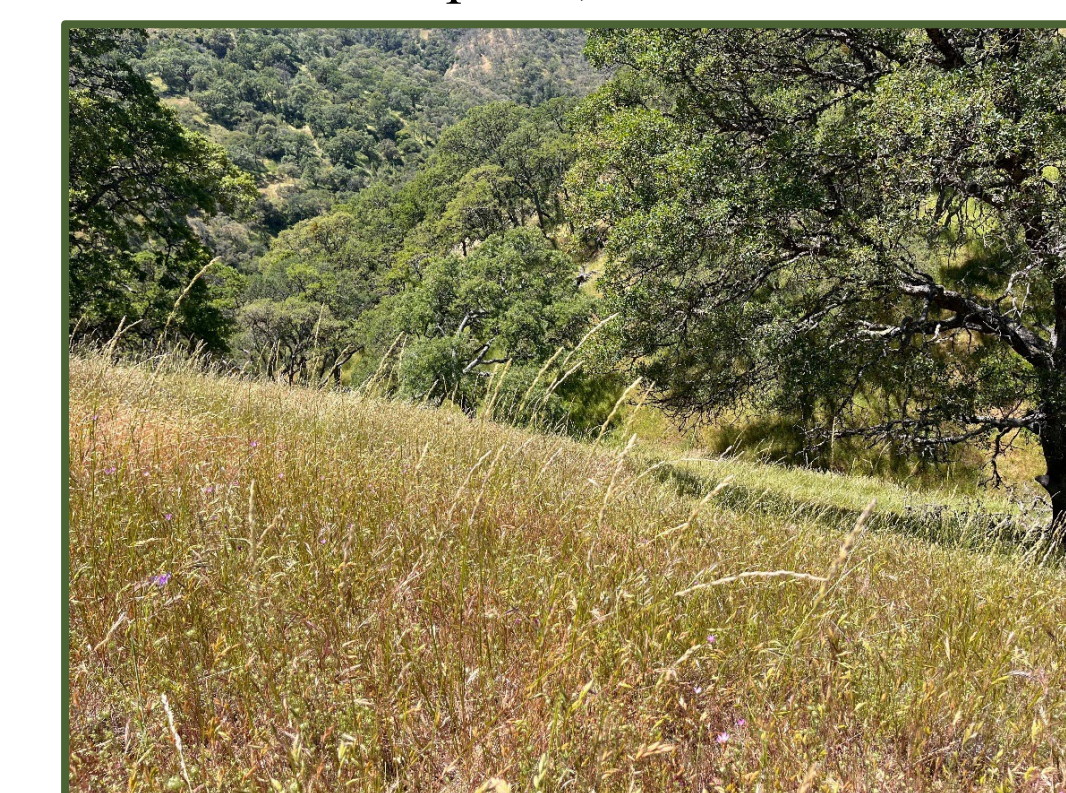
*Poa secunda* – (*Trifolium gracilentum, willdenovii*) Association at Ohlone Wilderness. May 15, 2024



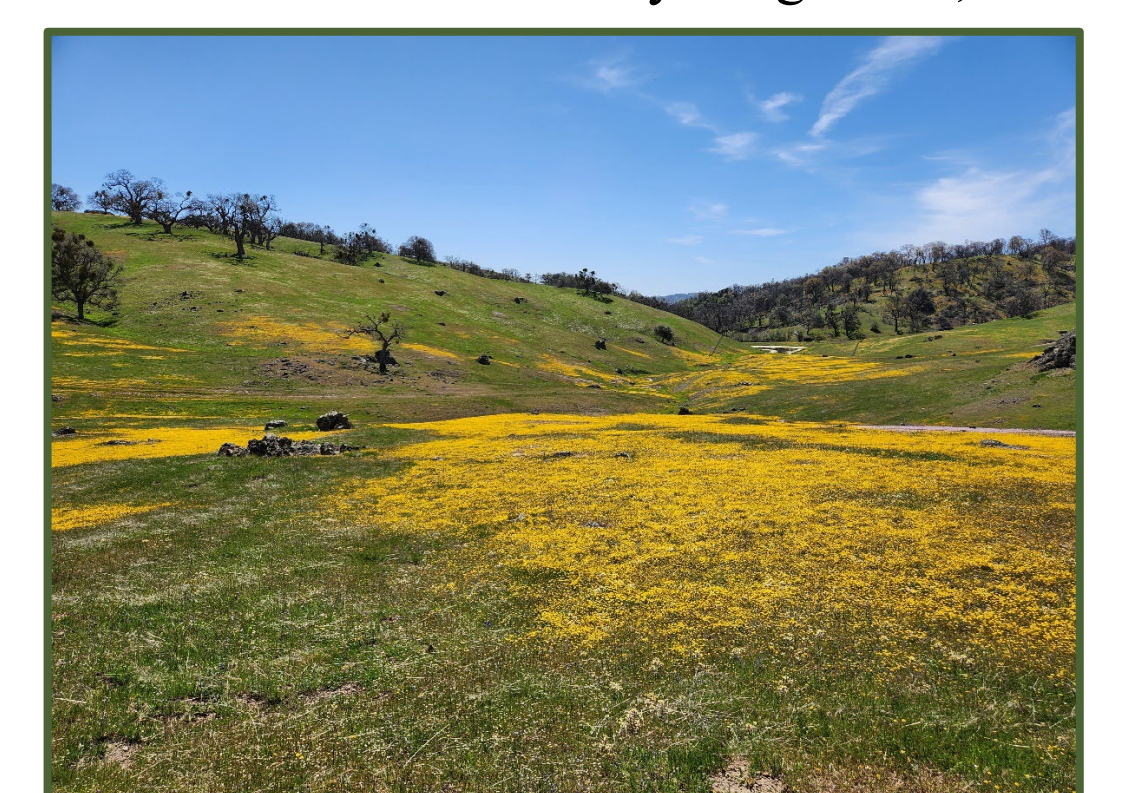
*Nassella lepida* Association at Sibley. April 6, 2023.



*Blepharizonia (laxa, plumosa)* Provisional Association at Deer Valley. August 28, 2023



*Melica californica* Association in Ohlone Wilderness. May 13, 2024.



*Lasthenia (californica, gracilis)* Association at Ohlone Wilderness. April 28, 2023.

## Discussion

- The scale of this project (11,000 acres) spanning 2 counties is important for understanding the diversity of grassland vegetation types, rarity, variation in community composition, and habitat distribution across the parks. This allows for more targeted management actions to protect these important habitats.
- The CNPS and CDFW guidance for mapping projects is to first sample vegetation and create a classification, and then begin mapping using the classification to inform the mapping. This project ran concurrently with the 2 county-wide vegetation sampling effort, and mapping was completed before the classification was finalized. Although it was challenging to map native grasslands without an existing classification, field-based mapping was helpful for observing and identifying grassland vegetation patterns and types, and identifying where to collect relevés to capture these patterns.
- This project spanned two years (2023-2024) and field mapping surveys were conducted throughout the spring months with additional mapping in summer. Late season vegetation types were captured.
- Annual variation was observed. In 2023, numerous stands of *Amsinckia (intermedia, menziesii)* Association and *Lupinus bicolor* Provisional Association were mapped. In 2024, very few polygons of these two vegetation types were observed or mapped.
- Additional sampling (relevés) is needed for all of the provisional associations mapped well as vegetation types that did not fit clearly into an association.

## References

- California Department of Fish and Wildlife (CDFW). 2024. Survey of California Vegetation Classification and Mapping Standards. Vegetation Classification and Mapping Program (VegCAMP). Biogeographic Data Branch. March 6.
- California Department of Fish and Wildlife (CDFW) and California Native Plant Society (CNPS). 2024. CDFW-CNPS Protocol for the Combined Vegetation Rapid Assessment and Relevé Field Form. April 16.
- Sikes, K., J. Buck-Diaz, S. Vu, M. Bibbo, and J. Evens. 2024. Vegetation Classification of Alameda and Contra Costa Counties. Report to the East Bay Regional Parks District. California Native Plant Society, Vegetation Program, Sacramento, CA



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