



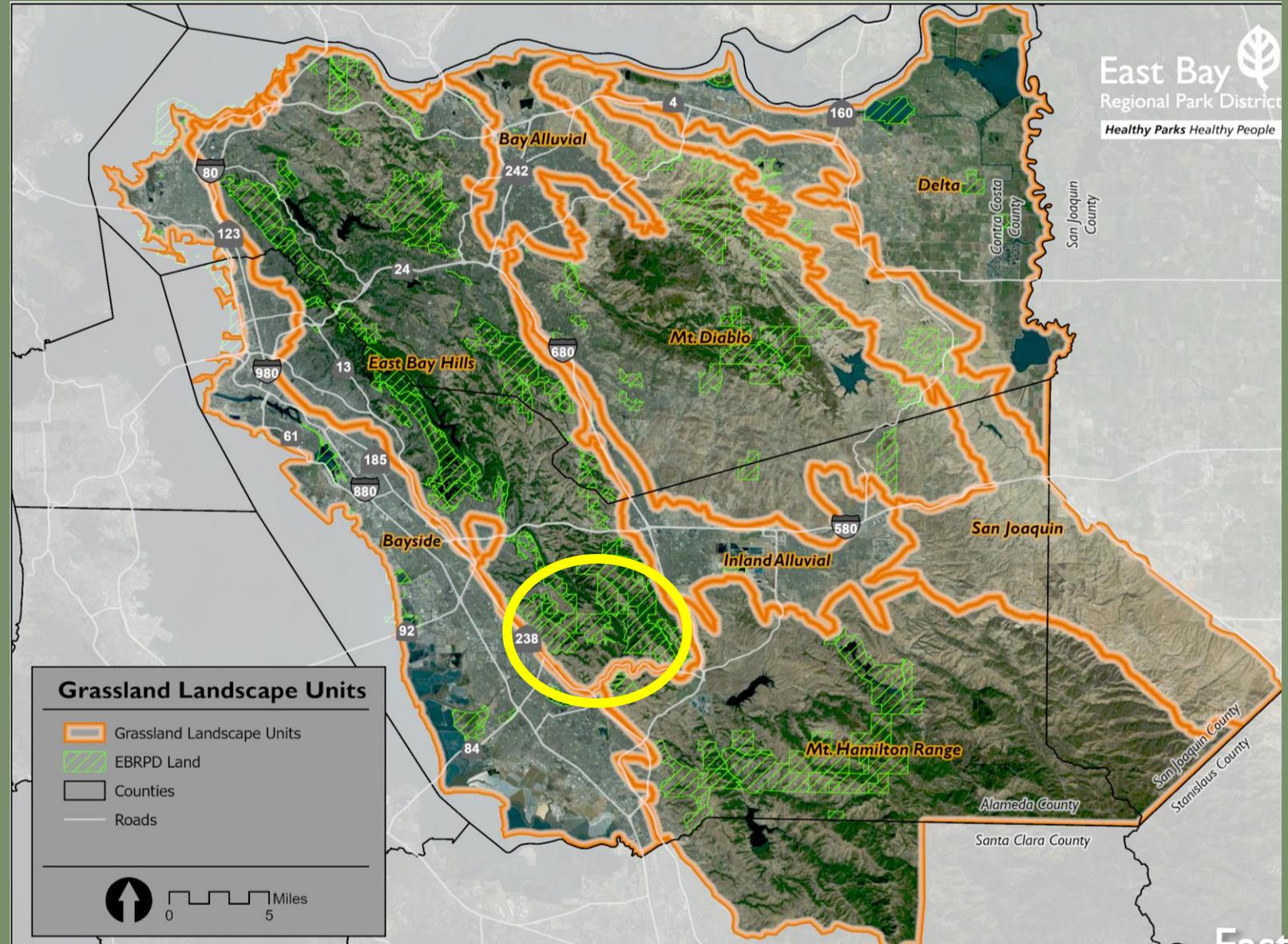
Using Fine-Scale Grassland Mapping for Conservation and Management

State of the Alameda Creek Watershed
Conference
May 2023

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East Bay Regional Park District

- 125K acres
- ~70K acres of grasslands in the Park District
- 8 grassland landscape units



Grasslands have a “PR problem”

- Dismissed and generalized “non-native annual grassland”
- Under-sampled
- Undescribed types
- Coarse scale mapping
- Rare grassland types



Native grasslands persist!



Nassella pulchra Association, Pleasanton Ride Regional Park
Some plants/stands over 100 years old

Native grasslands persist!



Eschscholzia californica Association, Pleasanton Ridge Regional Park

EBRPD grassland mapping

- Fill the knowledge gap
- Inform conservation of grassland biodiversity
- Inform management, avoid impacts
- Get people excited about grasslands!



Vegetation Classification

A Manual of California Vegetation (MCV)

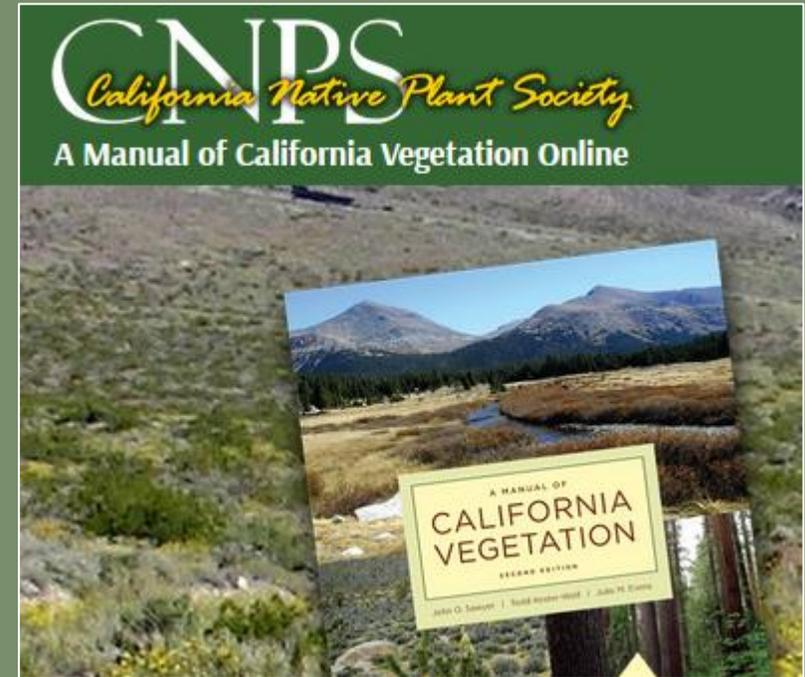
Vegetation Classification System:

Broad



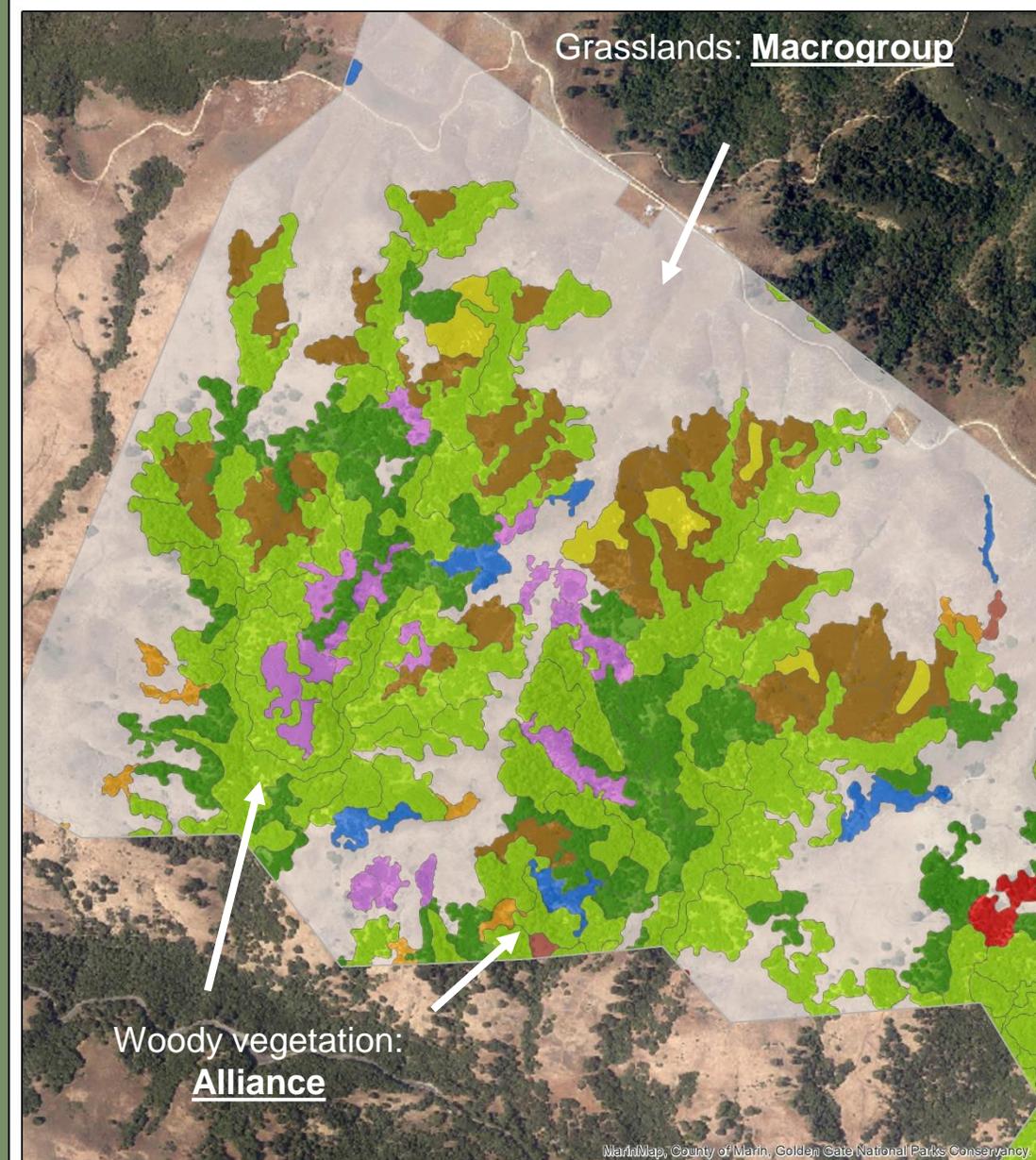
Detailed

1. Formation Class
 2. Formation Subclass
 3. Formation
 4. Division
 5. Macrogroup
 6. Group
 7. Alliance
 8. Association
- Coarse scale
- Fine scale



Grassland PR Problem: Coarse Scale Mapping

- New countywide fine scale maps
- *Spoiler Alert:* grasslands only mapped to Macrogroup
 - Limitations in remote sensing



Lucas Valley Preserve, Marin County Parks and Open Space District

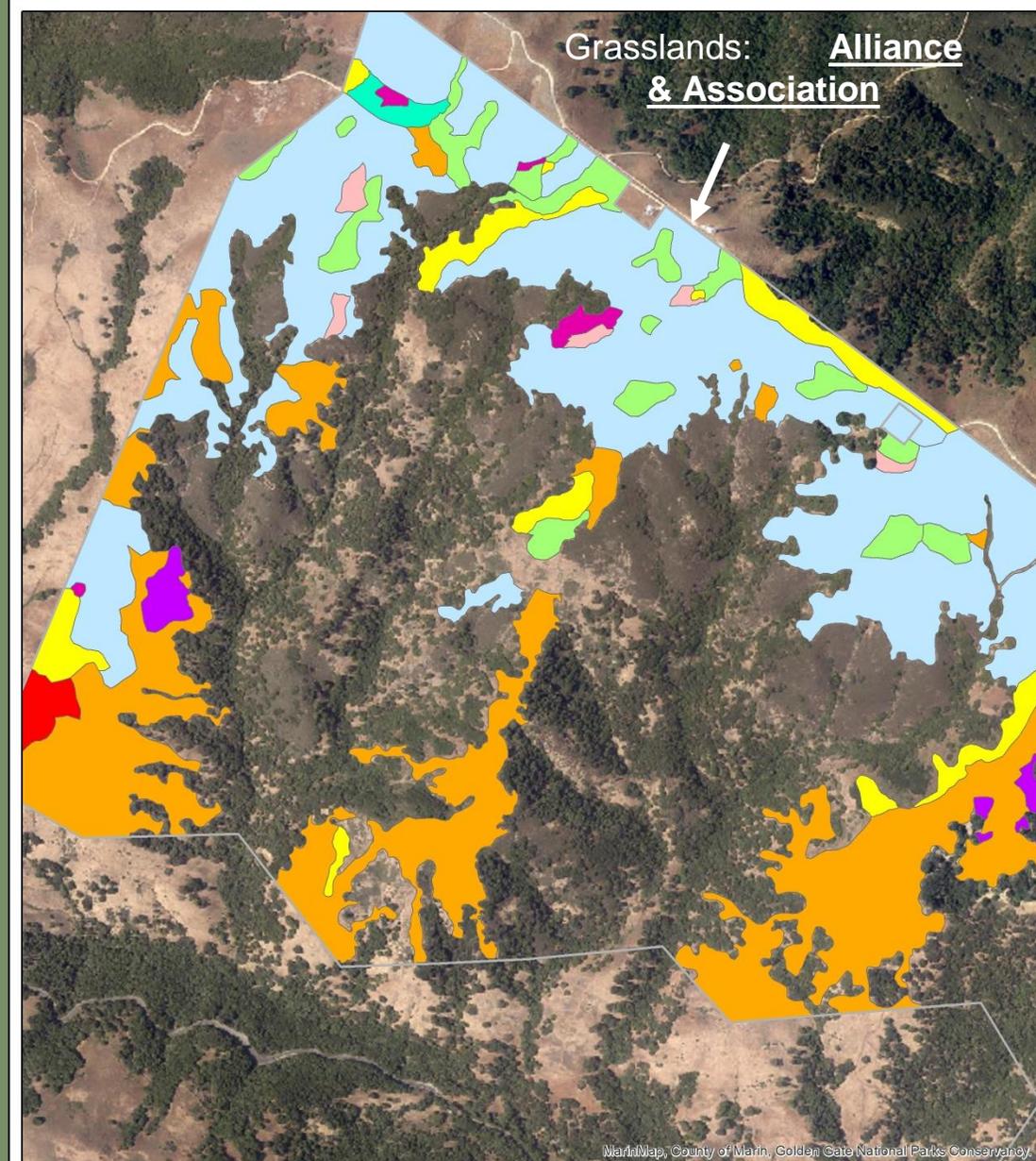
2018 Marin Countywide Fine Scale Veg Map

(Map created by Shelly Benson of Benson Biological Consulting)

0 0.125 0.25 Miles

Grassland PR Problem: Coarse Scale Mapping

- New countywide fine scale maps
- *Spoiler Alert:* grasslands mapped to macrogroup
 - Limitations in remote sensing
- Uncover grassland diversity using ground-based mapping



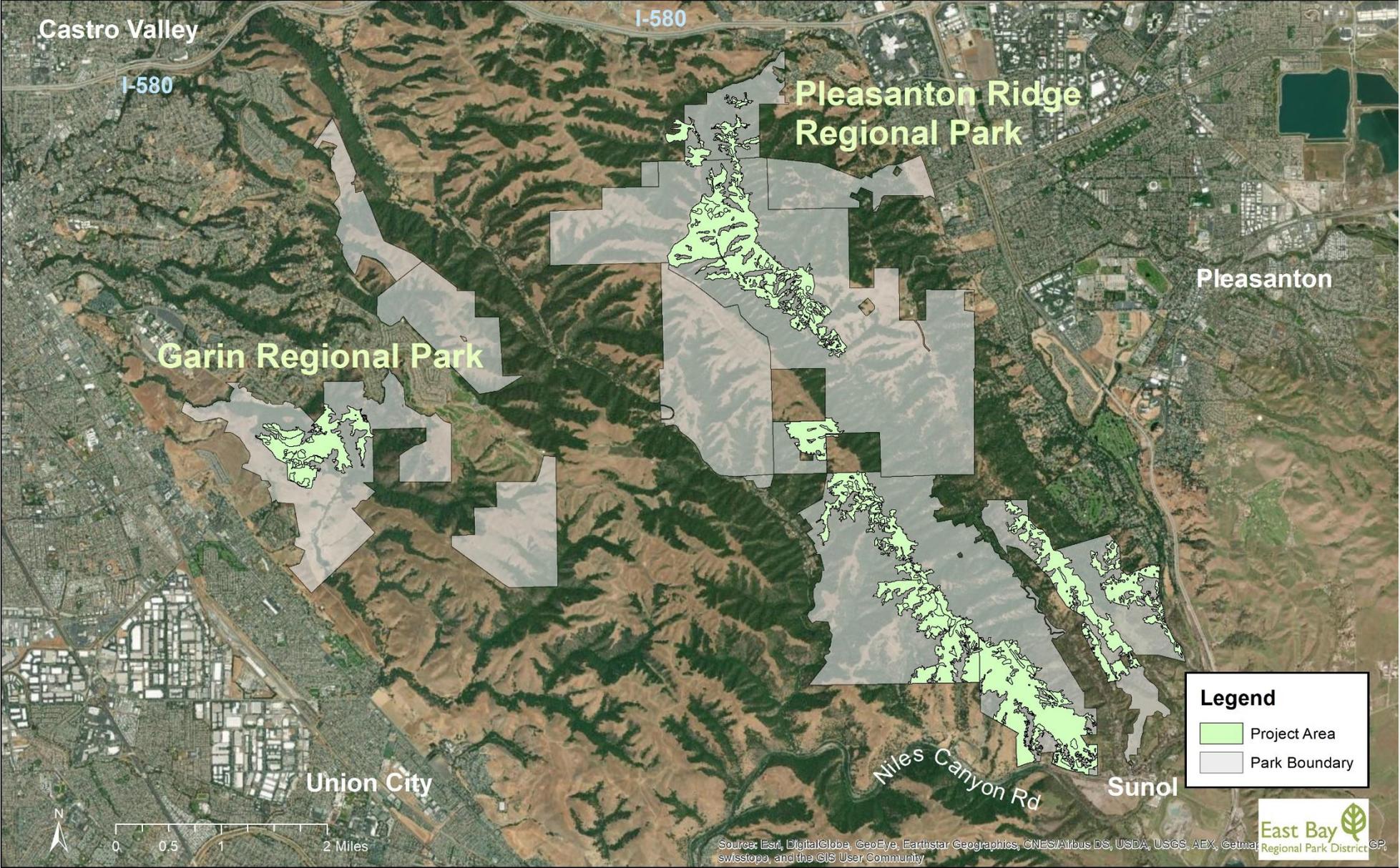
Lucas Valley Preserve, Marin County Parks and Open Space District

2016 Lucas Valley Preserve Fine Scale Grassland Map

(Map created by Shelly Benson of Benson Biological Consulting)



2021-2022 Grassland Map Area



- Field Mapping: Spring 2021 & 2022
- Area: 2,043 ac

Native Grassland



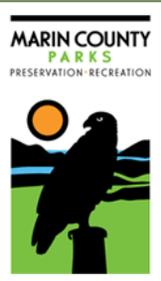
Map area = 2,043 ac

% Native = 13% (266 ac)

Pt. Pinole

Map area = 255 ac

% Native = 28%



Map area* = 1,900 ac

% Native = 53%

*Shelly Benson, Benson Biological Consulting

Bromus carinatus Association



Grassland Communities

- 19 Types
- 18 Native Types
- 11 Sensitive Natural Communities (S1-S3)
- 4 Undescribed

Vegetation Type

Avena spp.-Bromus spp. Semi-Natural Alliance

Bromus carinatus-Elymus glaucus Alliance

Bromus carinatus Association

Elymus glaucus Association

Pteridium aquilinum-Grass Association

Corethrogyne filaginifolia-Eriogonum (elongatum, nudum) Alliance

Eriogonum nudum Provisional Association

Viola pedunculata – (Eschscholzia californica – Nassella pulchra) Provisional Association

Viola pedunculata-Erodium botrys Provisional Association

Eschscholzia (californica)-Lupinus (nanus) Alliance

Eschscholzia californica Association

Lupinus bicolor Provisional Association

Festuca idahoensis-Danthonia californica Alliance

Festuca idahoensis-Nassella pulchra Provisional Association

Leymus cinereus-Leymus triticoides Alliance

Leymus triticoides Association

Lotus scoparius-Lupinus albifrons-Eriodictyon spp. Alliance

Lupinus albifrons Association

Nassella spp.-Melica spp. Alliance

Melica californica Association

Nassella lepida Provisional Association

Nassella pulchra Association

Nassella pulchra-Avena spp.-Bromus spp. Association

Nassella pulchra-Hemizonia congesta Association

Nassella pulchra-Sisyrinchium bellum Provisional Association

Native Perennial Forbs and Grasses Provisional Alliance

New Types

Viola pedunculata-(*Eschscholzia californica*-*Nassella pulchra*) Provisional Association

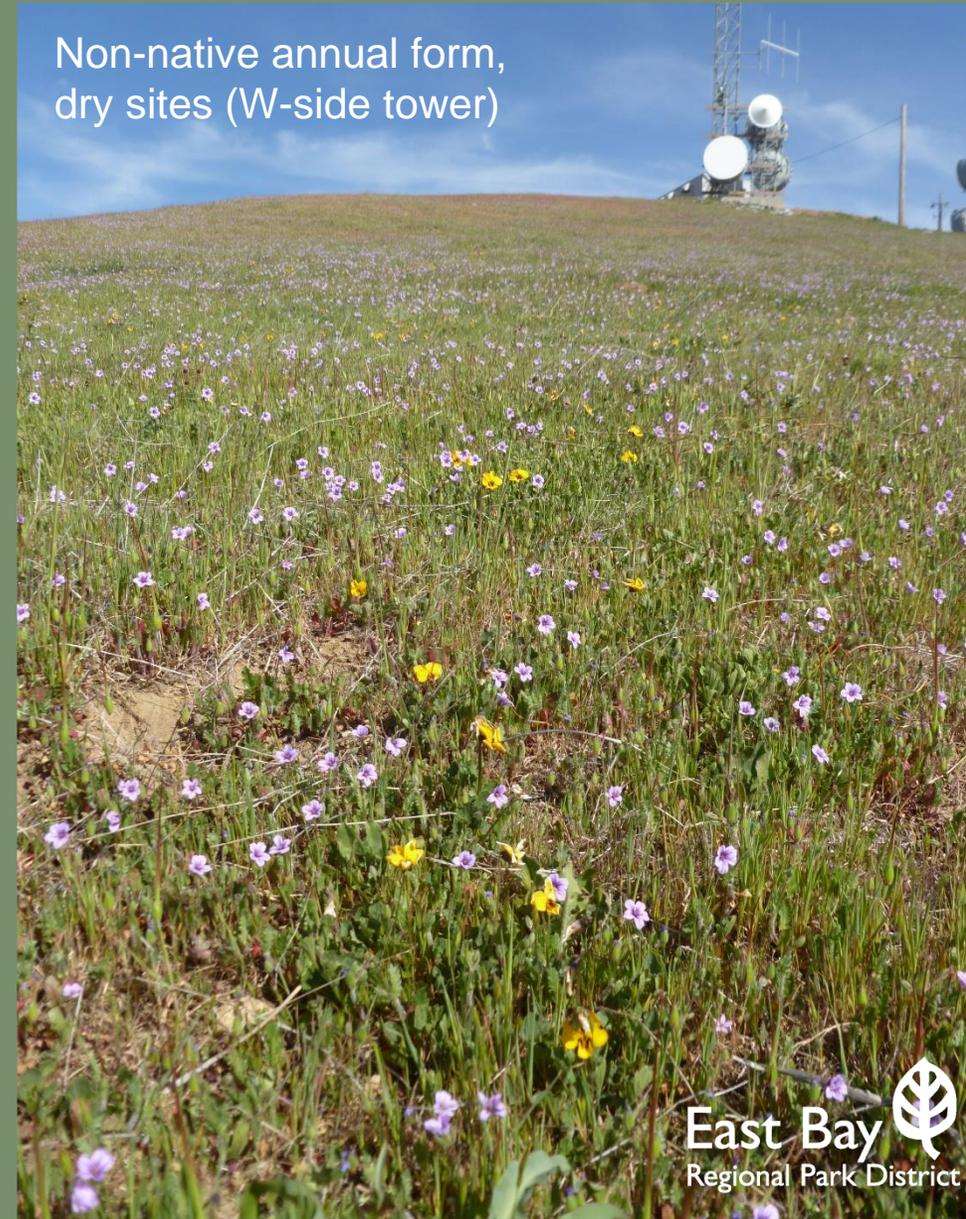


Native perennial form,
mesic sites (N-side
tower)



Viola pedunculata-*Erodium botrys* Provisional Association

Non-native annual form,
dry sites (W-side tower)

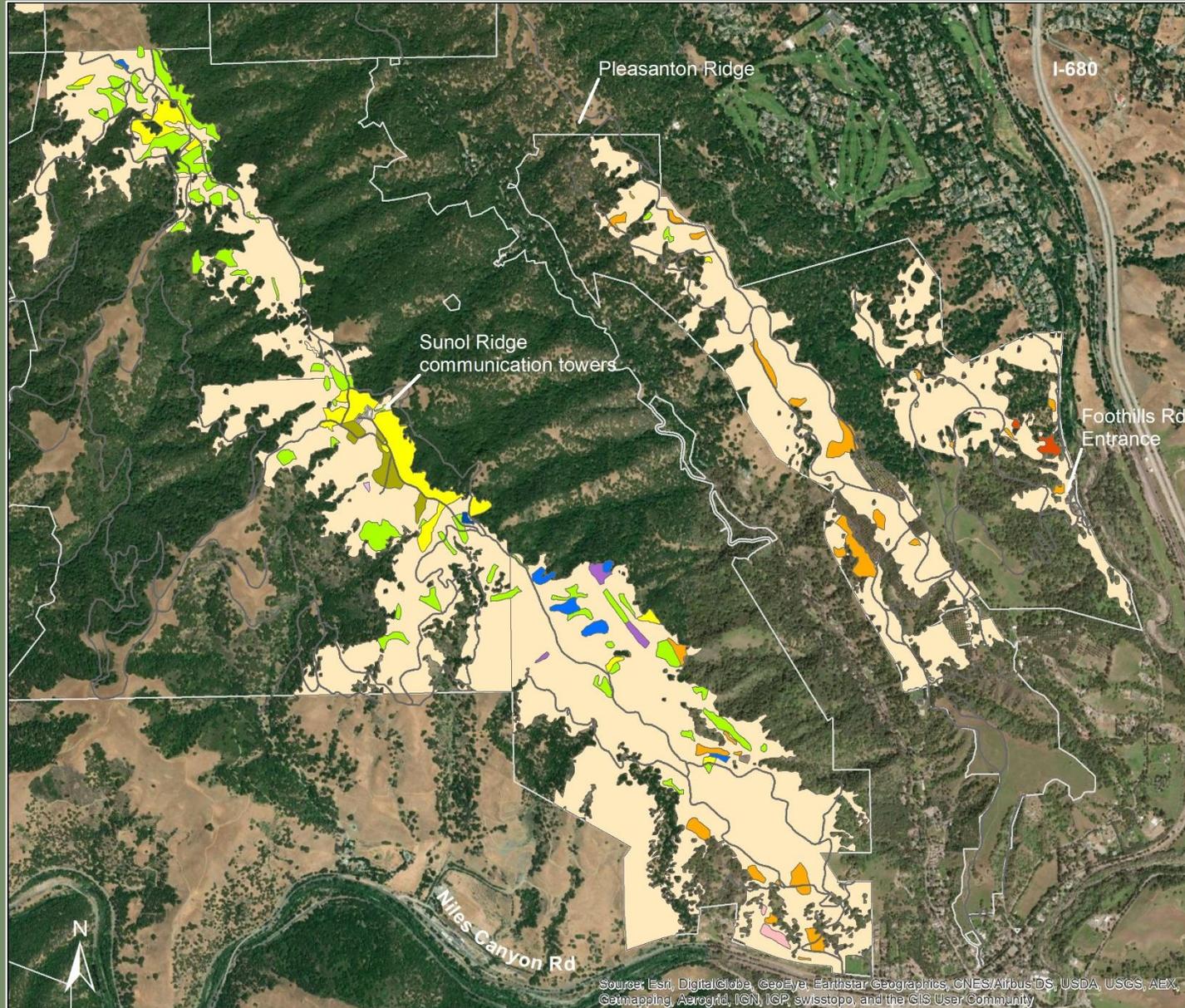


New Types

Nassella pulchra-
Sisyrinchium bellum
Provisional Association



Pleasanton Ridge Regional Park Grassland Map



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Pleasanton Ridge Regional Park Fine-Scale Grassland Map SOUTH MAP AREA

Vegetation Type

- Avena spp.-Bromus spp.
- Bromus carinatus
- Elymus glaucus
- Eriogonum nudum
- Eschscholzia californica
- Leymus triticoides
- Lupinus albifrons
- Lupinus bicolor
- Nassella pulchra
- Nassella pulchra-Avena spp.-Bromus spp.
- Viola pedunculata – (Eschscholzia californica-Nassella pulchra)
- Viola pedunculata-Erodium botrys

- Park Boundary
- Roads & Trails

Forb community

0 0.25 0.5 1 Miles



- MMU: ~1/6 ac
- Area: 1,800 ac
- Non-native annual grass matrix
- High diversity of native types
- Native stands average 1 ac

Garin Regional Park Grassland Map



- Area: 220 ac
- Non-native annual grass matrix
- Map complexity = environmental complexity

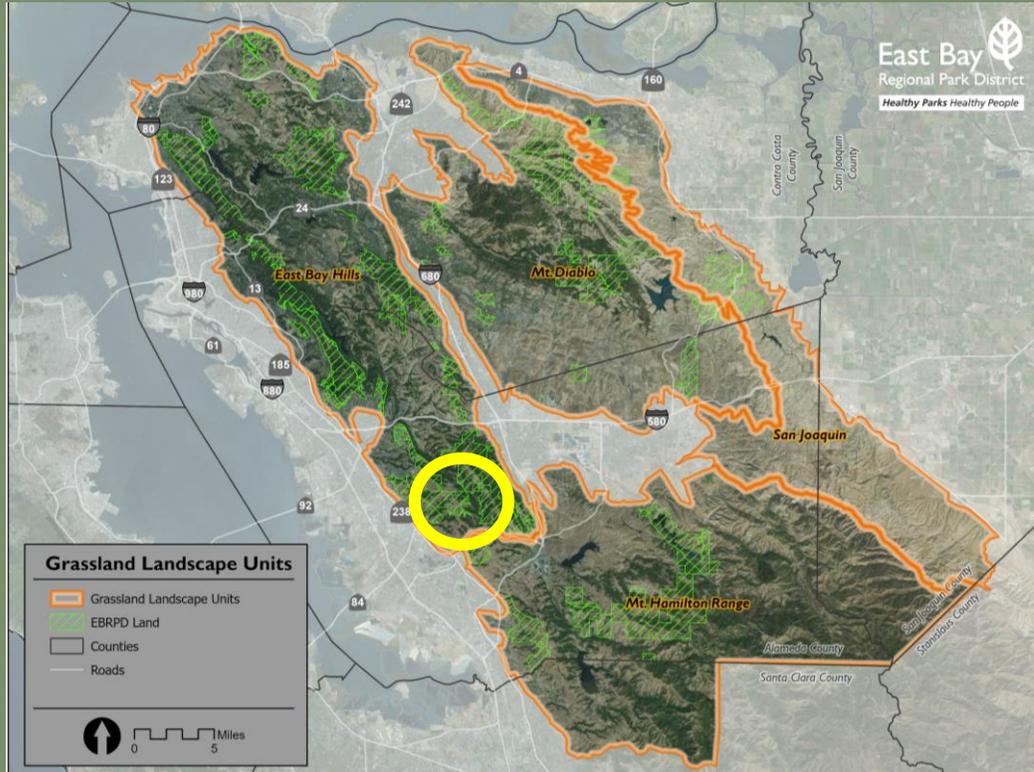
What's next?

- Application of data
- Demonstrate the rarity
- Monitoring
- Research
- Outreach!

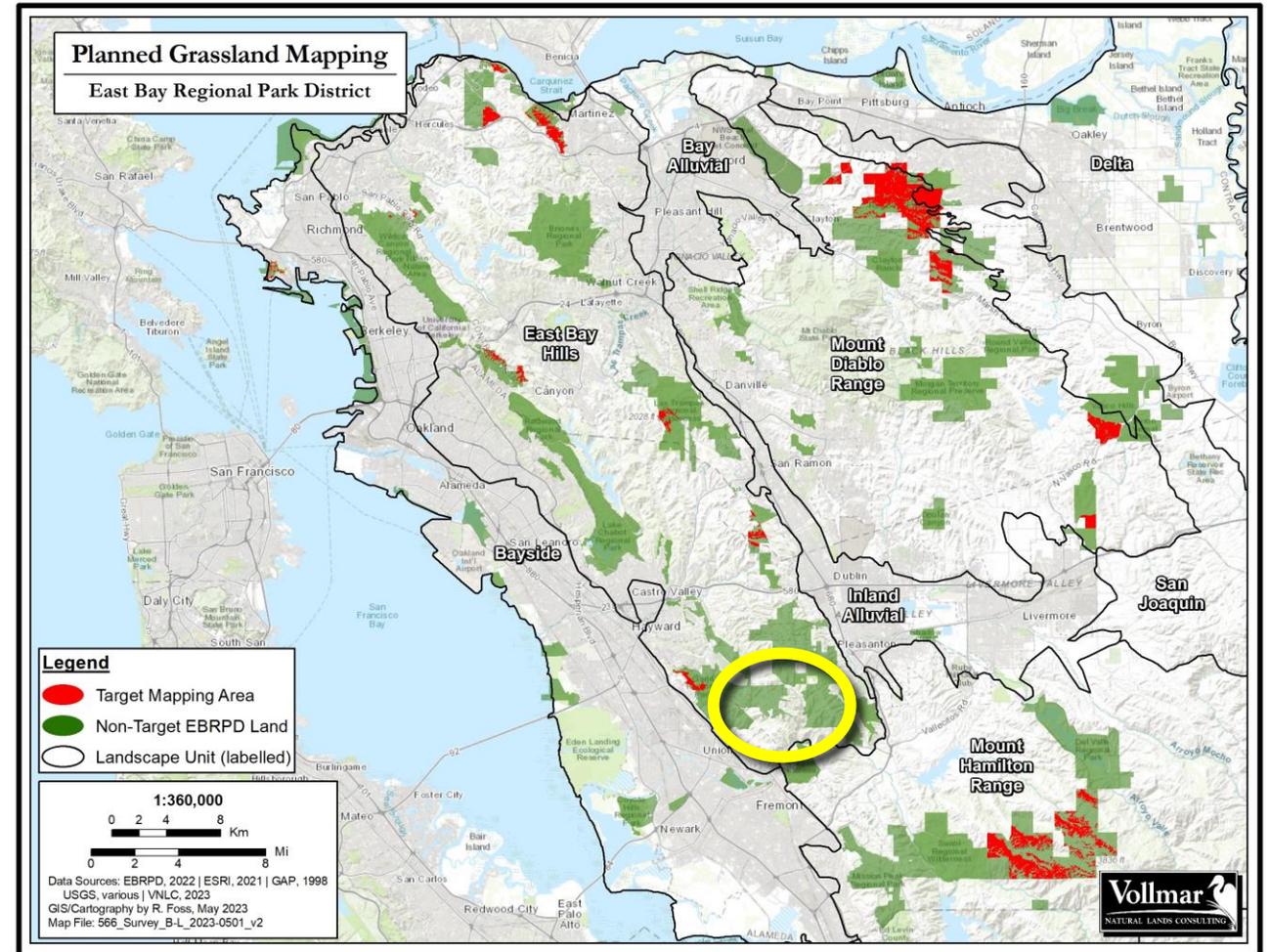


Grassland monitoring in *Fetuca idahoensis* Association, Pleasanton Ridge Regional Park

Expanded Mapping



- 2021-2022: 2,000 acres mapped, 2 parks



- 2023-2024, 10,000 acres more, 10 parks (CDFW grant funded)

Expanded Mapping



2023 Grassland Mapping: *Plagiobothrys nothofulvus*-*Castilleja exserta*-*Lupinus nanus* Provisional Association, Black Diamond Mines regional Preserve



2023 Grassland mapping: *Lasthenia californica* Alliance, Ohlone Regional Wilderness



Lupinus albifrons Association



Nassella pulchra Association



Viola-(Eschscholzia-Nassella) Association

Dina Robertson: drobertson@ebrpd.org (www.ebparks.org)



Festuca idahoensis Association



Eschscholzia californica Association



Bromus carinatus Association