

Frank & Joan  
Randall  
Tehachapi  
Preserve

Zachary Principe

and

Neal Kramer

Northern California Botanist  
Symposium

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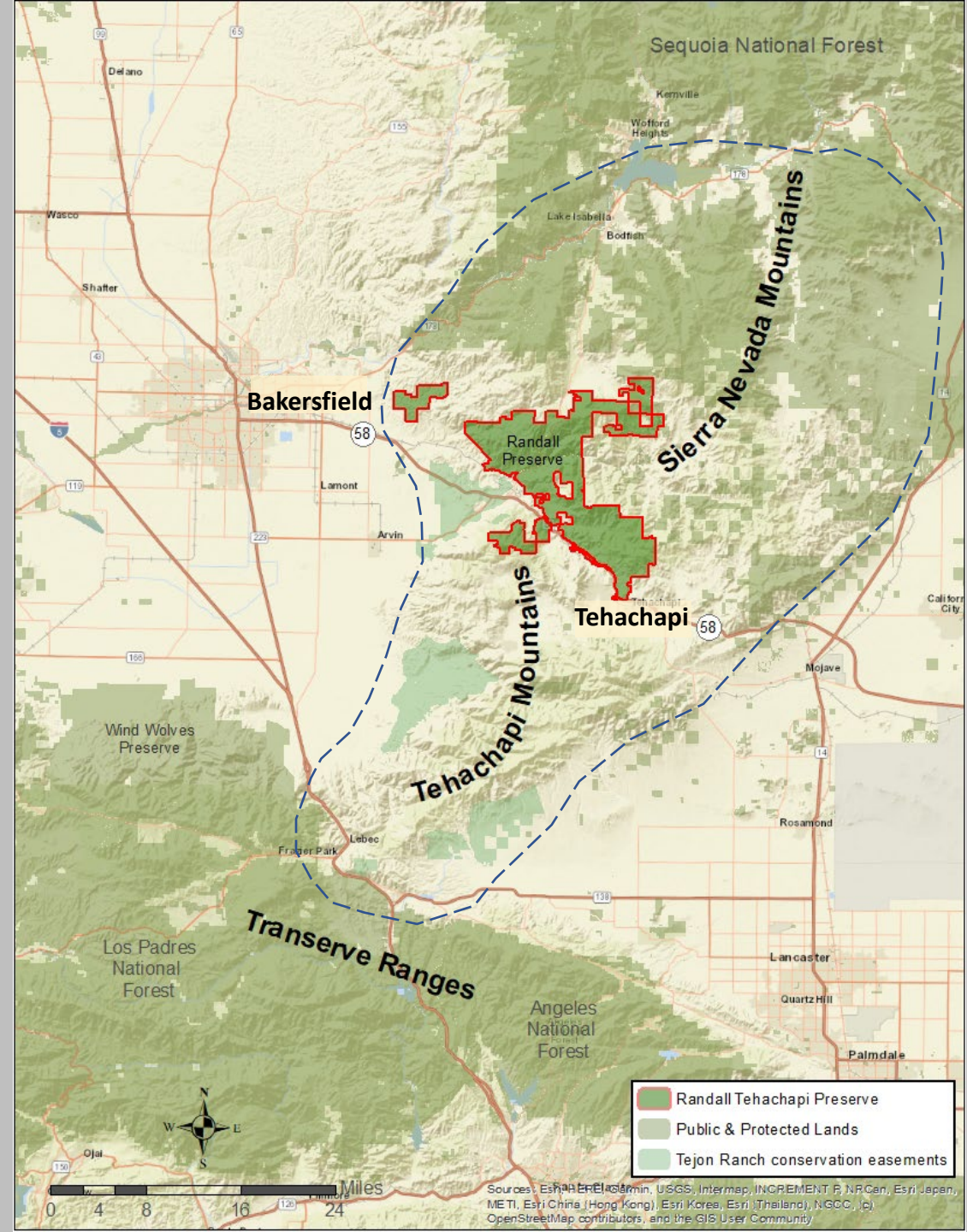


The Nature  
Conservancy



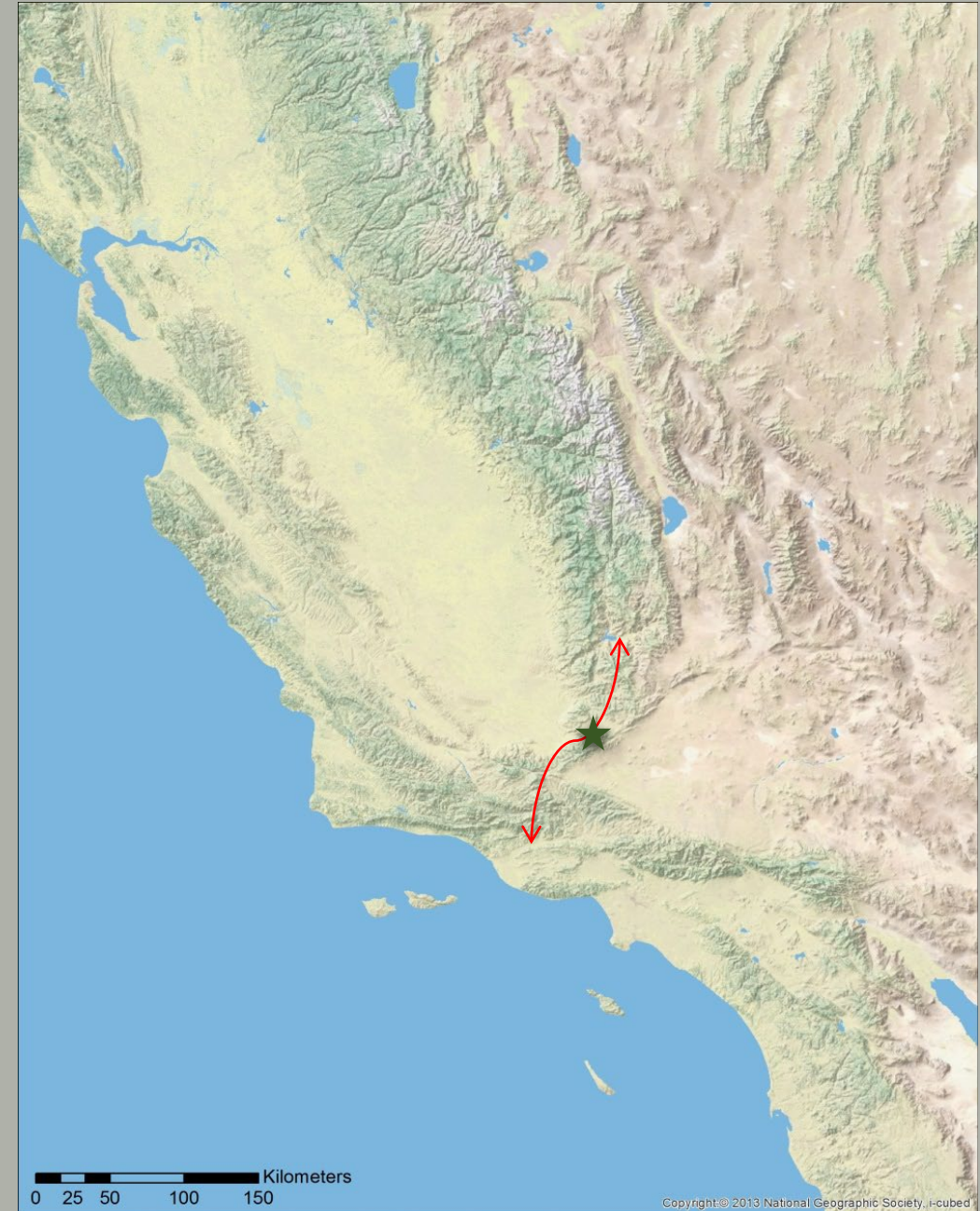
# Tehachapi Region Conservation Importance

- Wildlife & plants connectivity
- Convergence of ecoregions
- Intact elevational gradients important for climate response
- Ecological significance



# Tehachapi Region

- **Connectivity**
  - Primary factor driving TNC action
  - Connection between major mountain ranges: a linkage of continental importance
  - Mountain pass: San Joaquin Valley to Mohave desert connectivity



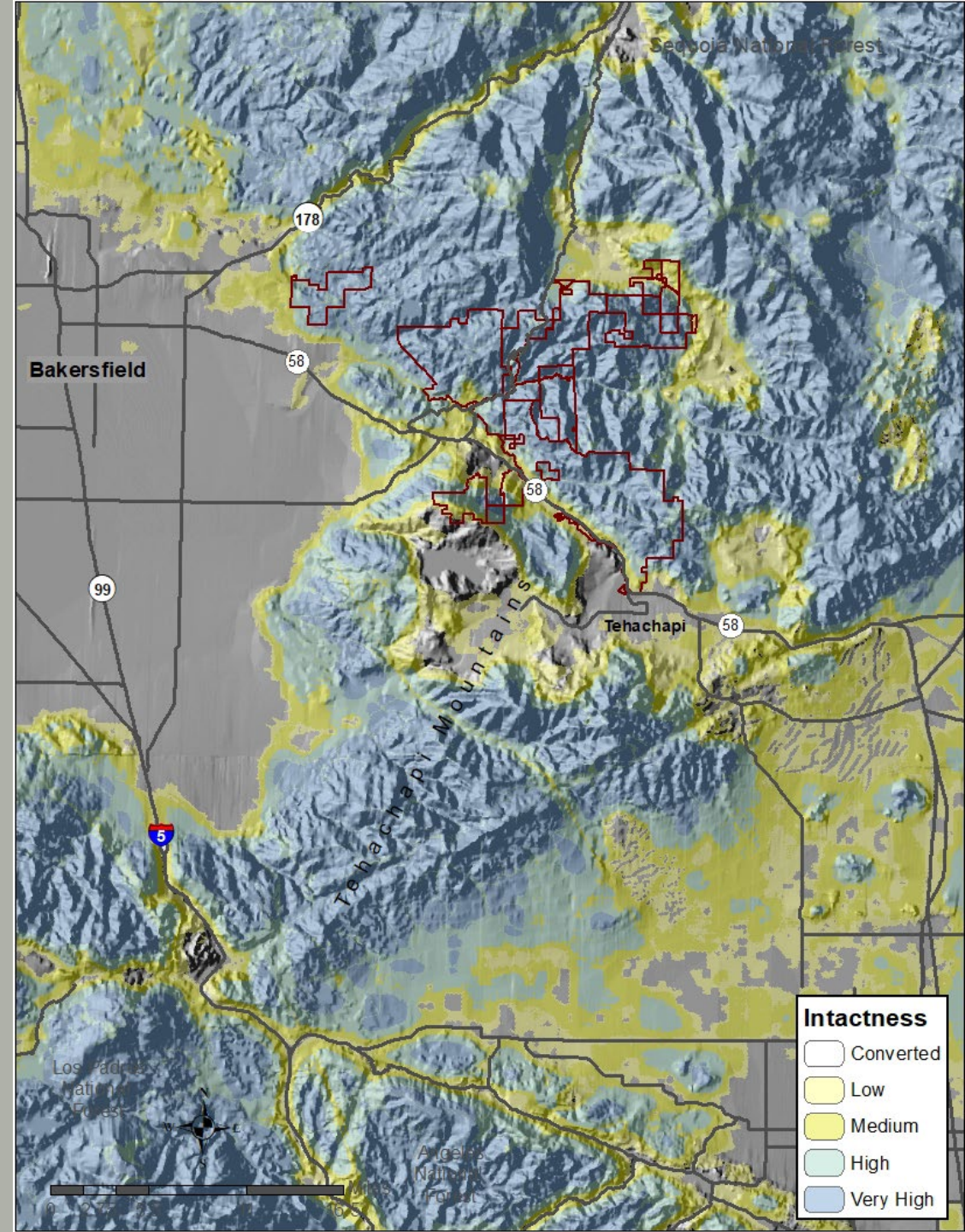
# Tehachapi Region

- **Convergence of Four Ecoregions**
  - **Sierra Nevada**
  - **Great Central (San Joaquin) Valley**
  - **Mojave Desert**
  - **South Coast**
- Species at edge of their ranges
- Diverse communities due to mixing of species from different ecoregions



# Tehachapi Region

- Climate Change Adaption Potential
- Steep elevation gradients
- Diverse and steep topography
  - Distinct microclimates and refugia
  - 500 ft to more than 8,400 ft
- Springs and riparian corridors
- High level of habitat intactness



# Tehachapi Region

- Ecological Significance & High Biodiversity

- Mediterranean climate
- Diverse and dramatic physiographic features & microclimates
- Unique assemblages of species
- Evolutionary divergence and speciation
- Endemic plants, amphibians, and reptiles
- Important for migratory and breeding birds



**Eight taxa of Clarkia**

# Tehachapi Region

## Slender Salamander Diversity



*Batrachoseps gregarius*



*Batrachoseps stebbinsi*



*Batrachoseps relictus*



*Batrachoseps simatus*



*Batrachoseps* sp. –  
Breckenridge Mt.



*Batrachoseps nigriventris*

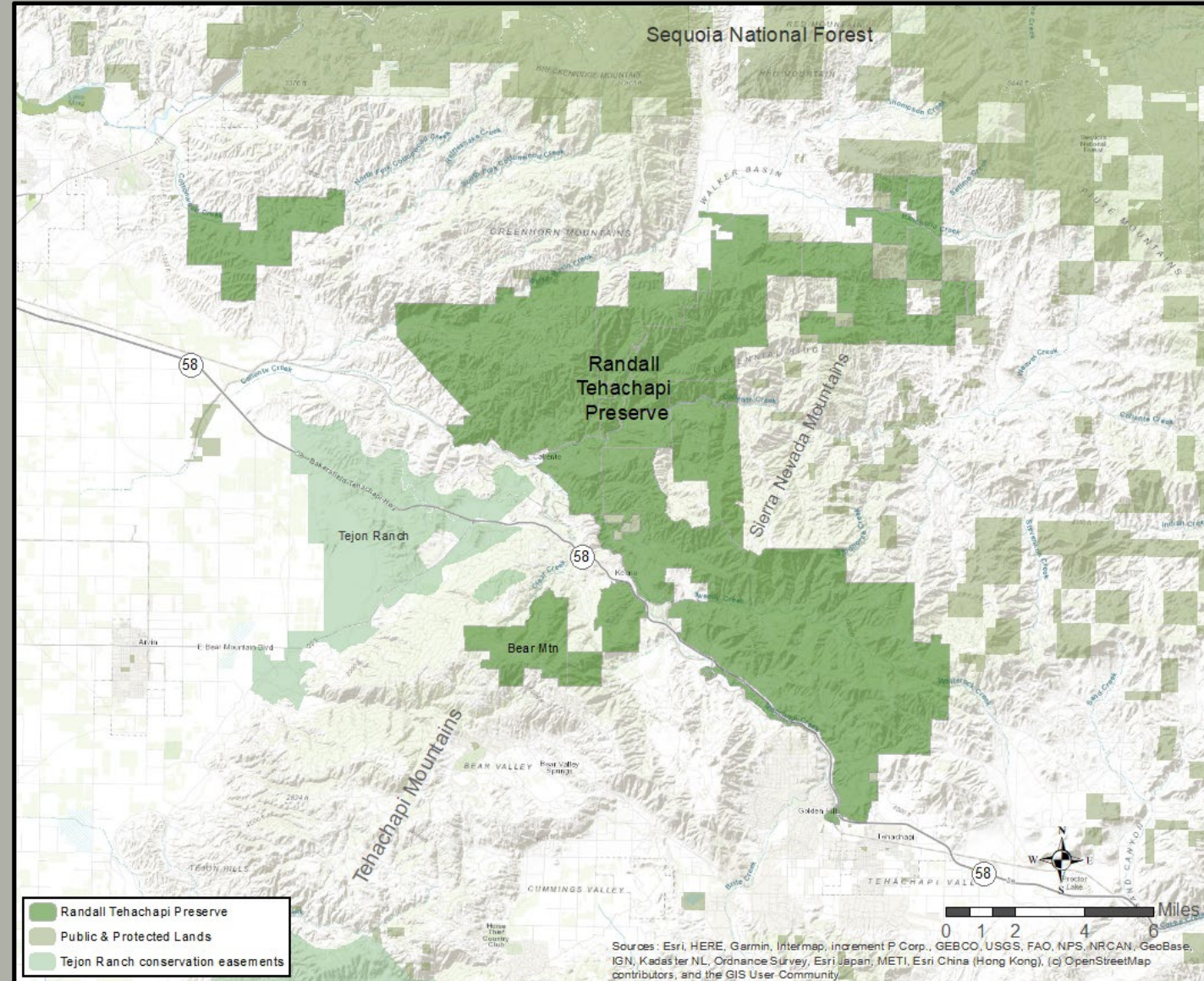
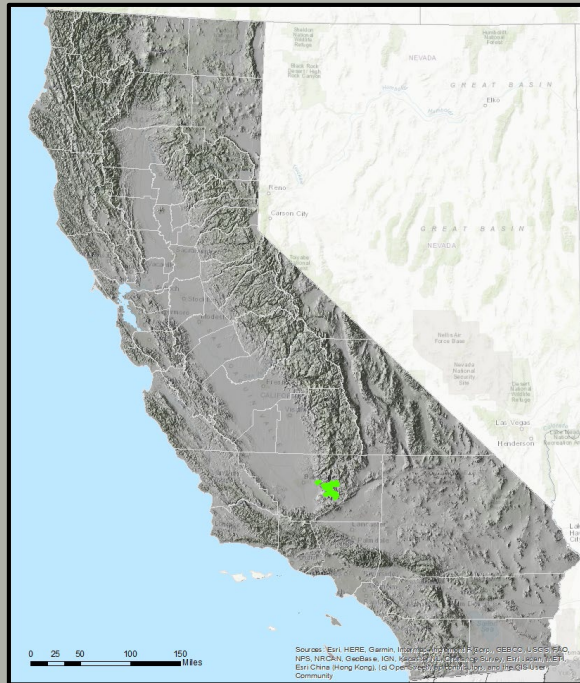


*Batrachoseps robustus*

Breckenridge conspecific w/ *B. relictus*; *B. altasierra* sp. nov. (southern Sierras previously *B. relictus*); *B. bramei* sp. nov. (Upper Kern River Canyon) Jockusch et al. 2012

# Preserve Overview

- 82,000 acres
  - 71,000 acres TNC owned
  - 11,000 acres private conservation easements

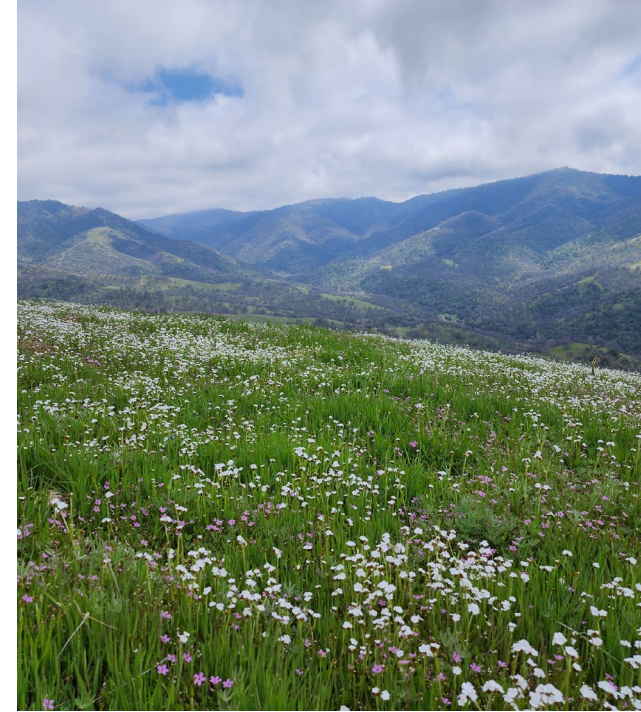






## Vegetation Communities

- **Blue oak woodlands**
- Annual grass – forb lands
- Mixed oak, juniper and pine woodlands
- Chaparral
- Rabbitbrush scrub & goldenbush scrub
- Coniferous forest
- Wet meadow
- Riparian



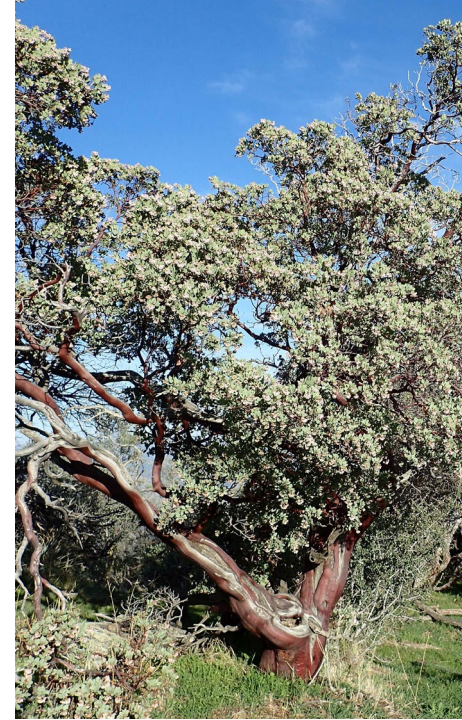
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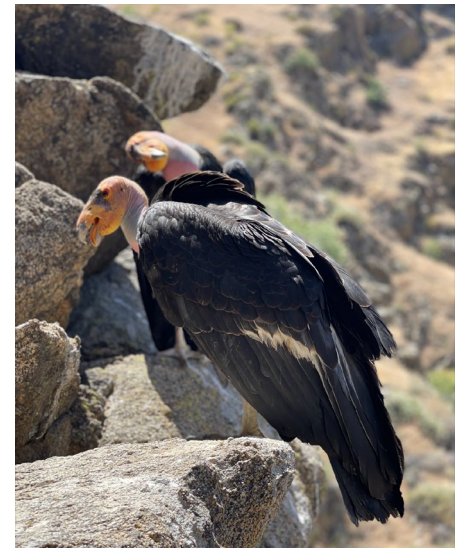


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# Rare Animals

- 18 rare, threatened and endangered animals
- California condor
- Vernal pool fairy shrimp
- Golden Eagle



# Monitoring and Research

- **Translocations**
- **Blue oaks**
- **Botanical surveys**
- Wide-ranging species connectivity
  - Mountain lion and mule deer
- Plant community monitoring
- Invasive species
- Birds monitoring



# Translocations

- Bakersfield cactus
  - Two projects to reinforce and reestablish
  - Germination trial





# Blue Oaks

- Landscape genomics
  - Genetic variability; heat and drought tolerant genomes
- Plant phenology monitoring
- Dendrochronology
  - Tree growth, age, drought response
  - **Oldest Known Blue Oak!!!**
- Oak Woodland plots
  - Mortality and recruitment
- Acorn viability study



# Vascular Plants

- Nearly **800 taxa** to date
- **90** plant families
- **83%** of taxa are native

adoxaceae agavaceae alliaceae amaranthaceae anacardiaceae **apiaceae** apocynaceae  
araceae **asteraceae** azollaceae berberidaceae betulaceae **boraginaceae**  
**brassicaceae** cactaceae campanulaceae cannabaceae caprifoliaceae caryophyllaceae  
casuarinaceae **chenopodiaceae** deomaceae **convolvulaceae** crassulaceae cucurbitaceae  
cupressaceae **cyperaceae** datiscaceae dryopteridaceae ephedraceae equisetaceae ericaceae euphorbiaceae  
**fabaceae** fagaceae garryaceae **geraniaceae** grossulariaceae iridiaceae juglandaceae  
juncaceae **lamiaceae** liliaceae loasaceae lythraceae **malvaceae** melanthiaceae  
montiaceae moraceae myrtaceae nyctaginaceae oleaceae **onagraceae**  
orobanchaceae papaveraceae **phrymaceae** pinaceae  
plantaginaceae platanaceae **poaceae** **polemoniaceae**  
**polygonaceae** potamogetonaceae primulaceae pteridaceae puniceae  
**ranunculaceae** rhamnaceae rosaceae rubiaceae rutaceae **salicaceae**  
sapindaceae saururaceae saxifragaceae scrophulariaceae selaginellaceae simaroubaceae **solanaceae** tamaricaceae  
**themidaceae** typhaceae ulmaceae urticaceae valeriacae verbenaceae violaceae viscaceae zannichelliaceae  
zygophyllaceae

# Special-status plants

- **21** Special-status plant species
- **9** taxa with Federal, State or CRPR 1.B ranking

CRPR = California Rare Plant Ranks

Species	Federal	State	CRPR	Common Name
<i>Androsace elongata ssp. acuta</i>			4.2	California androsace
<i>Azolla microphylla</i>			4.2	Mexican mosquito fern
<i>Convolvulus simulans</i>			4.2	small-flowered morning-glory
<b><i>Diplacus pictus</i></b>			<b>1B.2</b>	<b>calico monkeyflower</b>
<i>Dudleya abramsii ssp. calcicola</i>			4.3	limestone dudleya
<b><i>Eremalche parryi ssp. kernensis</i></b>	<b>FE</b>		<b>1B.2</b>	<b>Kern mallow</b>
<i>Eriastrum tracyi</i>			3.2	Tracy's eriastrum
<i>Eriogonum nudum var. indictum</i>			4.2	protruding buckwheat
<b><i>Eschscholzia lemmonii ssp. kernensis</i></b>			<b>1B.2</b>	<b>Tejon poppy</b>
<i>Gilia interior</i>			4.3	inland gilia
<b><i>Layia heterotricha</i></b>			<b>1B.1</b>	<b>pale-yellow layia</b>
<i>Microseris sylvatica</i>			4.2	sylvan microseris
<b><i>Monardella linoides ssp. oblonga</i></b>			<b>1B.3</b>	<b>Tehachapi monardella</b>
<b><i>Navarretia setiloba</i></b>			<b>1B.1</b>	<b>Piute Mountains navarretia</b>
<b><i>Opuntia basilaris var. treleasei</i></b>	<b>FE</b>	<b>CE</b>	<b>1B.1</b>	<b>Bakersfield cactus</b>
<i>Pentachaeta fragilis</i>			4.3	fragile pentachaeta
<i>Perideridia pringlei</i>			4.3	adobe yampah
<i>Plagiobothrys torreyi var. perplexans</i>			4.3	chaparral popcornflower
<b><i>Pseudobahia peirsonii</i></b>	<b>FT</b>	<b>CE</b>	<b>1B.1</b>	<b>San Joaquin adobe sunburst</b>
<b><i>Ribes menziesii var. ixoderme</i></b>			<b>1B.2</b>	<b>aromatic canyon gooseberry</b>
<i>Trichostema ovatum</i>			4.2	San Joaquin bluecurls

# Diplacus pictus - Calico monkeyflower

- CRPR 1B.2
- 26 records, 4,356 plants documented to date
- 1 record on quartzite at 4,300 ft pushing the upper elevation range for this species (4,100 ft)



# Eremalche parryi ssp. kernensis - Kern mallow

- FE, CRPR 1B.2
- 1 record, ~150 plants
- Both Kern mallow and Parry's mallow (*E. parryi* ssp. *parryi* - larger bisexual flowers, no rare plant status) are present.
- Voucher specimens collected
- Plants having pistillate only smaller flowers, considered Kern mallow.



Flower comparison



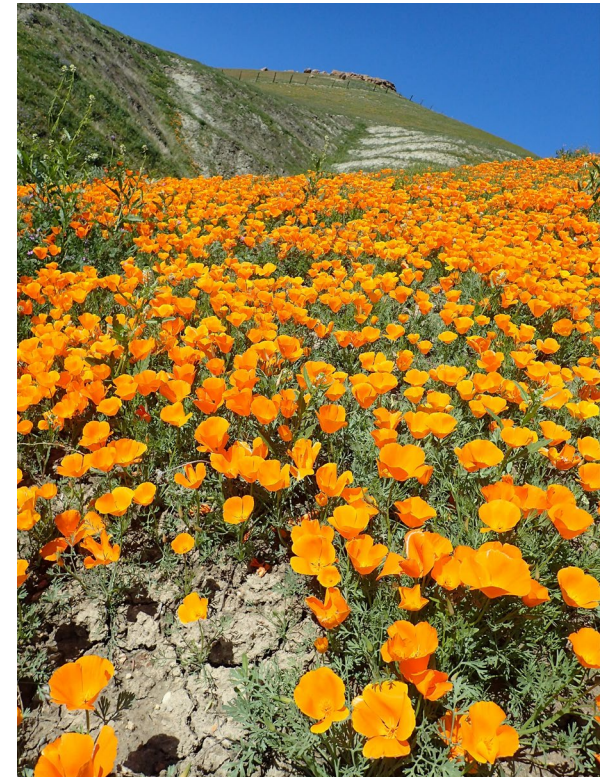
*E. parryi* ssp. *kernensis*



*E. parryi* ssp. *parryi*

*Eschscholzia  
lemmonii* ssp.  
*kernensis* - Tejon  
poppy

- CRPR 1B.1
- 53 records, more than 78,000 plants documented to date.
- Found at lower elevations, on loose chalky soils often on steep slopes



# Navarretia setiloba - Piute Mountains Navarretia

- CRPR 1B.1
- 54 records, more than 44,000 plants documented
- More than 50% of these concentrated on 1 localized area of < 90 acres (only 0.0001% of the Preserve)
- Clay soil



# Pseudobahia peirsonii - San Joaquin adobe sunburst

- FT, CE, CRPR 1B.1
- 27 records, 14,000 plants documented to date
- All within one localized area of the Preserve
- Clay soils





# Ribes menziesii var. ixoderme - Aromatic canyon gooseberry

- CRPR 1B.2
- 20 records, 95 plants
- Strong distinctive aromatic odor from dense glandular hairs
- Generally shaded slopes and draws, under interior live oak/California buckeye woodland on the Preserve.



# Oddities and Questions

- Oddities in Onagraceae
  - Camissoniopsis – *narrow petals*

Special thanks to:

- Crystal Anderson, Biologist
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- Southern Sierra Research Station
- Vernadero Group



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