

# The California Deserts: Plant Life at the Extremes

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**Eastern Kern County, California  
Western Mojave Desert**



**29 million acres (45,000 sq mi), or 28% of California's landmass.**

GIS layer source: Omernick ecoregions level 3.



# A Conspiracy of Extremes

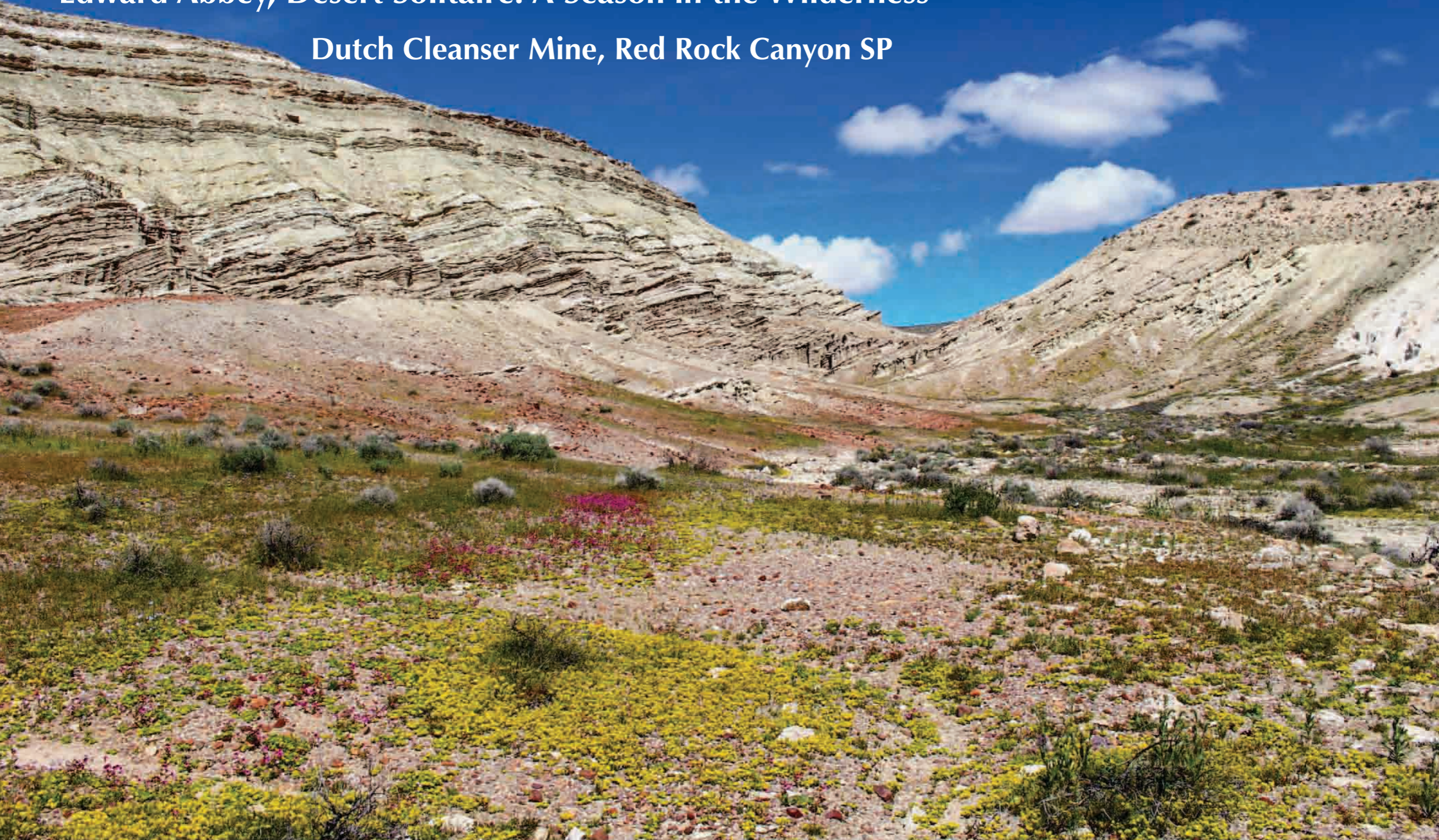
*Bruce Pavlick- 2008 The California Deserts*

- Topography: 14,246 to -279 ft.
- Geology: Limestone, granite, sand dunes
- Temperature: below freezing to 134°F (1913)
- Changing history over the past 12,000 years
  - Transition to modern desert complete by 8,500 to 5,000 years ago

“Water, water, water....There is no shortage of water in the desert but exactly the right amount, a perfect ratio of water to rock, water to sand, insuring that wide free open, generous spacing among plants and animals, homes and towns and cities, which makes the arid West so different from any other part of the nation. There is no lack of water here unless you try to establish a city where no city should be.”

— **Edward Abbey, *Desert Solitaire: A Season in the Wilderness***

**Dutch Cleanser Mine, Red Rock Canyon SP**



# Desert Flora



- **2377 taxa native to desert (37% of the CA flora)**
- **785 taxa that do not occur elsewhere in CA (33%)**
- **232 naturalized taxa (9%) when compared CA (17%)**

## Sources

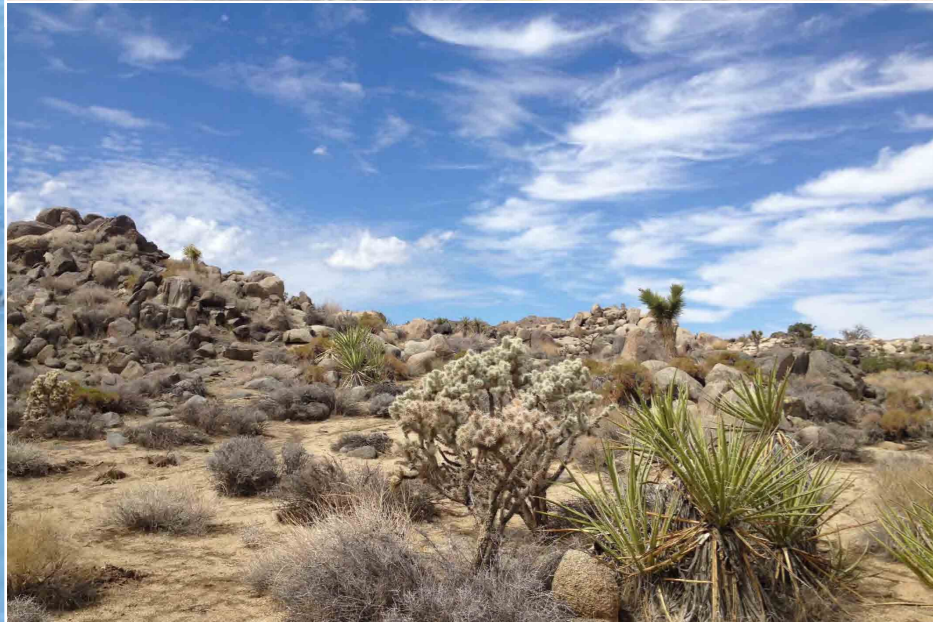
Desert Jepson Manual (2002)

Jepson e-flora (2017)

Pavlick (2008)

*Hesperocallis undulata* (desert lily)

**Topographic diversity = species diversity**



# Remarkable Flora

*Dr. Frank Vasek's students circling King Clone on April 1, 1979. Photo by Dr. Vasek*

- ca. 11,700 years old!





# Plants From Space!

- ca. 11,700 years old!



# Exceptional Flora



- Ancient bristlecone pines  
>5,000 years old!

# Long lived and slow to heal

- *Coleogyne ramosissima* (black brush) >1,200 years
- *Eriogonum fasciculatum* (California buckwheat) >700 years
- *Thamnosma montana* (turpentine broom) >1,100 years

*Longevity, recruitment, and mortality of desert plants.* Bowers et al. 1995

*Slow motion population dynamics in Mojave Desert perennial plants.* Cody 2000

# Life forms



Owens Peak eastern watershed flora Fraga (2008)

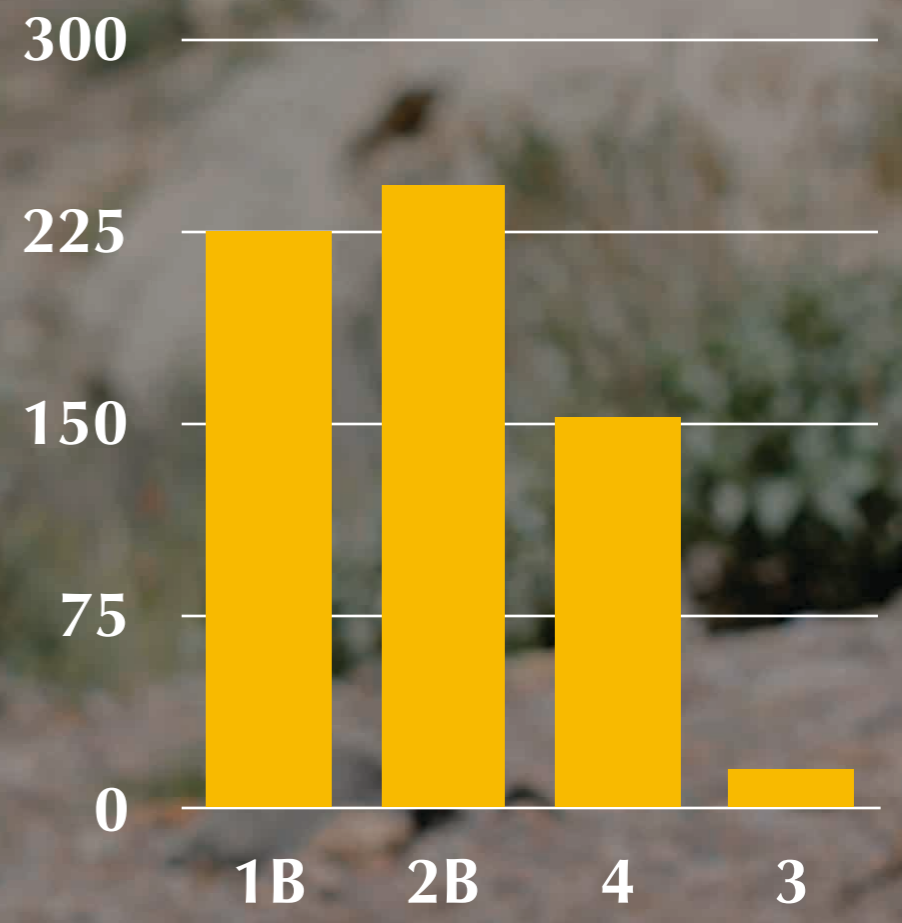
# Rare Plants

- 642/2377 rare plant (27%)
- None presumed extinct
- 2 taxa extirpated from the state

*Holmgrenanthe petrophila* (rock lady)  
Titus Canyon, DVNP

# Rare Plants

## Rare plants by ranking

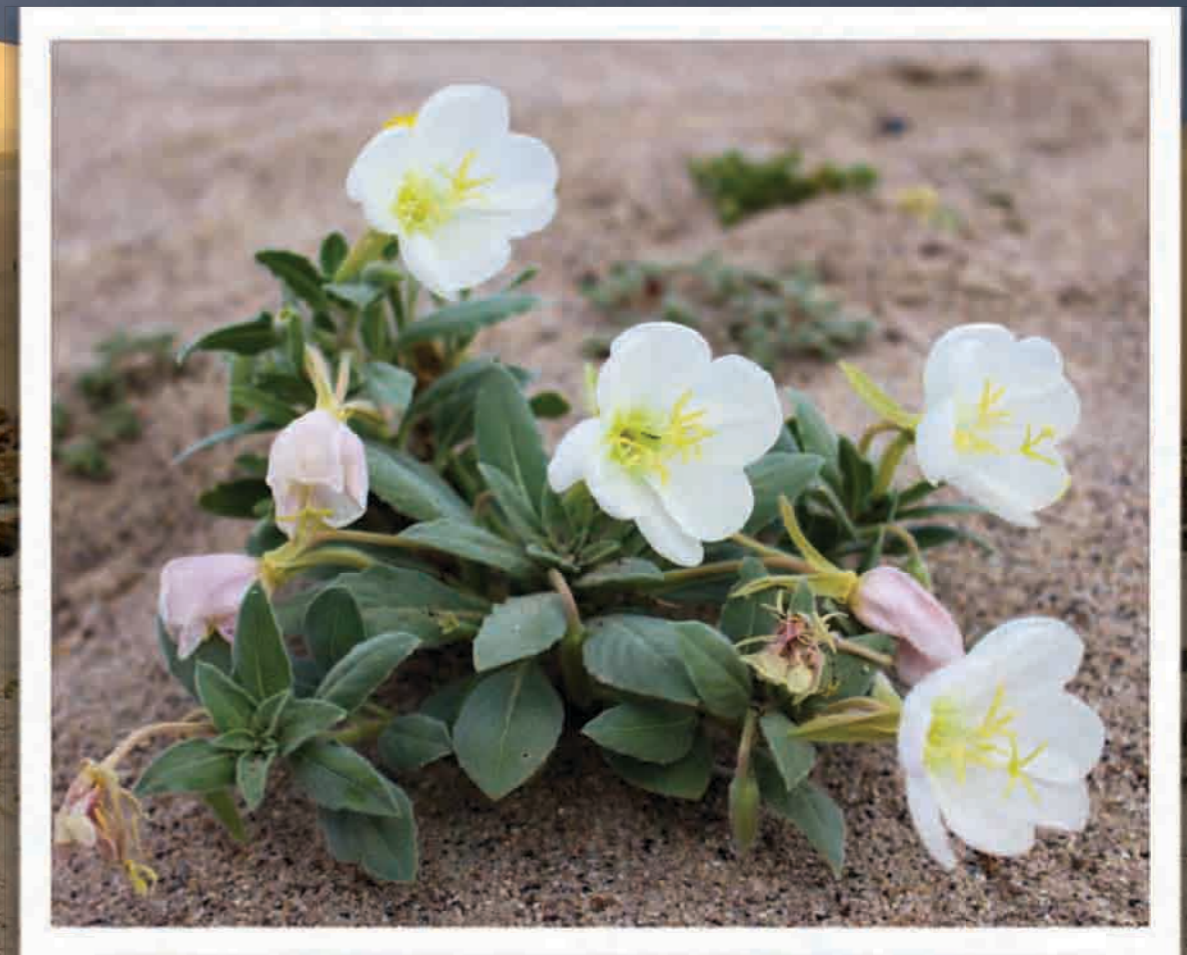
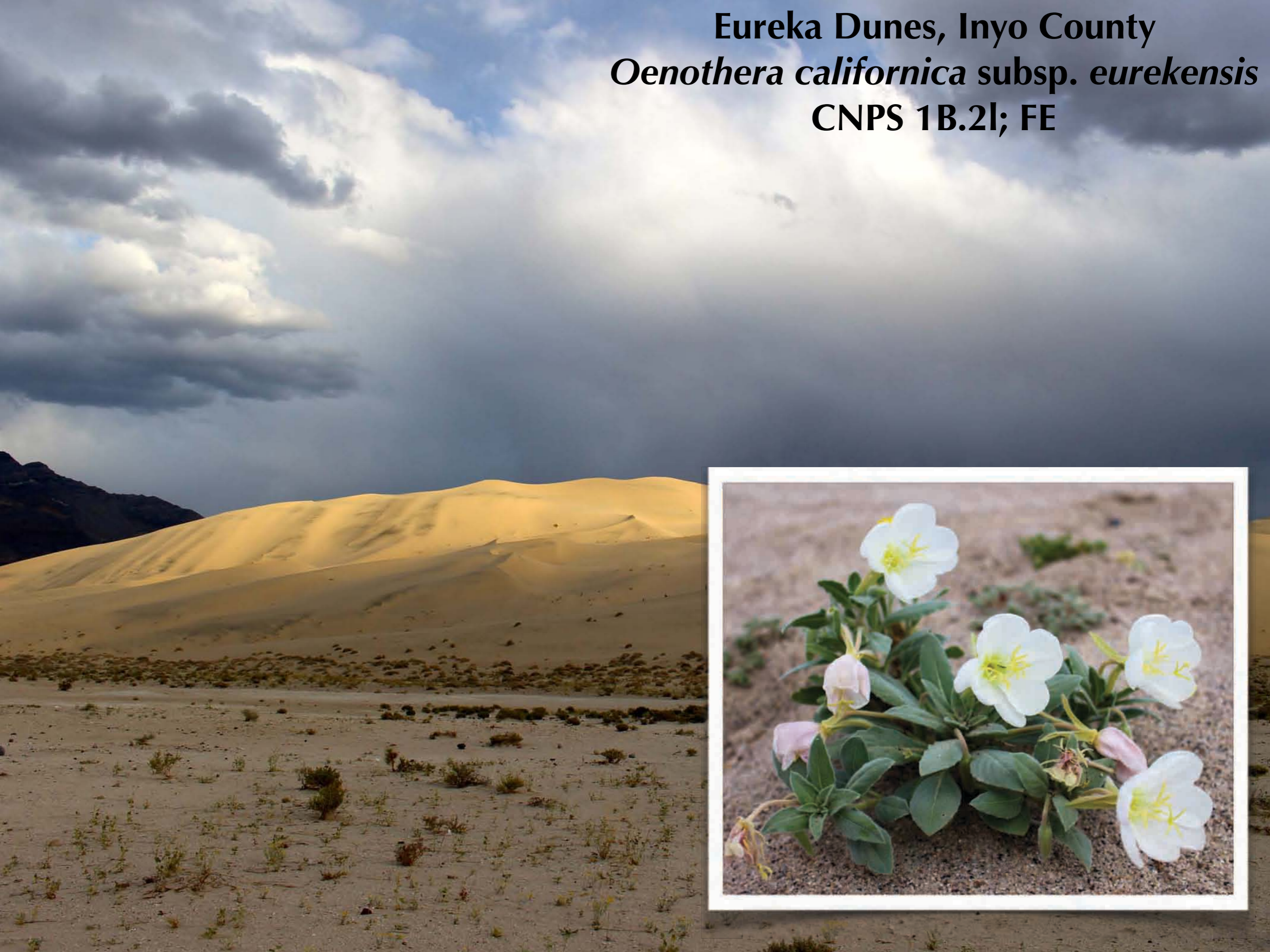


*Enceliopsis covillei*  
(Panamint daisy)  
Wildrose Canyon,  
DVNP

Short Canyon, Kern County  
*Phacelia nashiana* (Charlotte's phacelia)  
CNPS 1B.2



**Eureka Dunes, Inyo County**  
***Oenothera californica* subsp. *eurekensis***  
**CNPS 1B.21; FE**

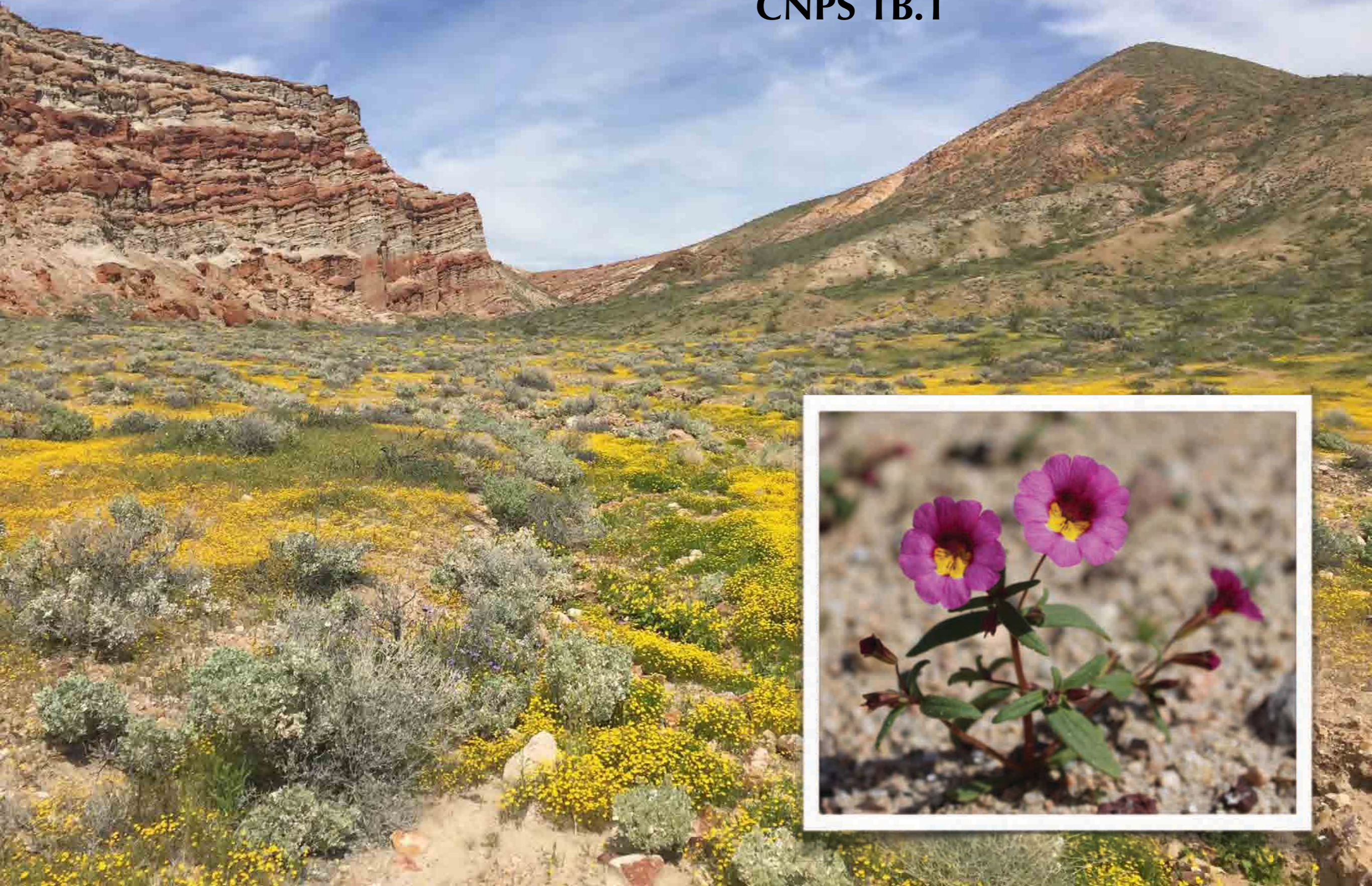




**Carson Slough, Inyo County**  
***Nitrophila mohavensis* (Amargosa niterwort)**  
**CNPS 1B.1; FE, CE**



**Red Rock Canyon SP, Kern County**  
***Erythranthe rhodopetra* (Red Rock Canyon monkeyflower)**  
**CNPS 1B.1**



# Threats

- increase fire frequency
- changes in fire regime

Sawtooth Complex Fire 2006



# Threats



Rattlesnake Canyon grazing allotment

# Threats



New Dixie Mine Road, Flamingo Heights

# Threats



Jawbone Canyon OHV area and Industrial Solar

# Invasive species

- 232 weed species
  - Poaceae 75 taxa, or 33% of the total non-native plant diversity.
  - Asteraceae (sunflowers; 25)
  - Brassicaceae (mustards; 24)
  - Chenopodiaceae (goosefoot family, 12).
- 
- Documentation
  - Early detection
  - Control and Eradication
  - Research



***Tamarix* in Amargosa River Canyon  
(salt cedar; Tamaricaceae)**



# Native or Not?



*Imperata brevifolia*  
(California satintail; Poaceae)

***Bromus berterioanus* (*B. trinii*)**  
**(Chilean chess; Poaceae)**



Florets of *B. berterioanus*

Photo by Jose Hernandez (USDA Plants)

- Attributed as native in *Distribution of Native Grasses of California* (Beetle 1947)
- Jepson Manual 2012 listed as native, e-flora listed as naturalized
- Andy Sanders at UCR. Once widespread now more restricted to Mojave Desert where competition is less intense.



Photo by Keir Morse

***Portulaca oleracea* subsp. *impolita***  
**(verdolagas, purslane; Portulacaceae)**



*Mollugo cerviana*  
(threadstem carpetweed; Mollugaceae)

# Desert Explorers

Mary Dedecker  
Edmund Jaeger  
Bruce Pavlick  
Jim Andre



Mary Dedecker  
CNPS Bristlecone chapter.

***“The desert is complete; it is spare and alone, but perfect in its solitude.” -Kiersten White***



**Bighorn Mountain Wilderness, San Bernardino County**