

# Hermes copper & Harbison's dun skipper: Where we are and where we are going?



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UNIVERSITY OF  
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LEARNING TO A GREATER DEGREE

# Hermes Copper

- Monitoring Protocols
- Distribution
- Population Sizes
- Dispersal
- Captive Rearing
- Translocation Project



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# Basic Biology

- Phenology
  - Adults mid-May to mid-July
  - Eggs mid-July to early spring
  - Larvae early spring
  - Pupae late spring
- Male vs. female behavior
- Coastal sage scrub/open chaparral
  - Spiny redberry (*Rhamnus crocea*)

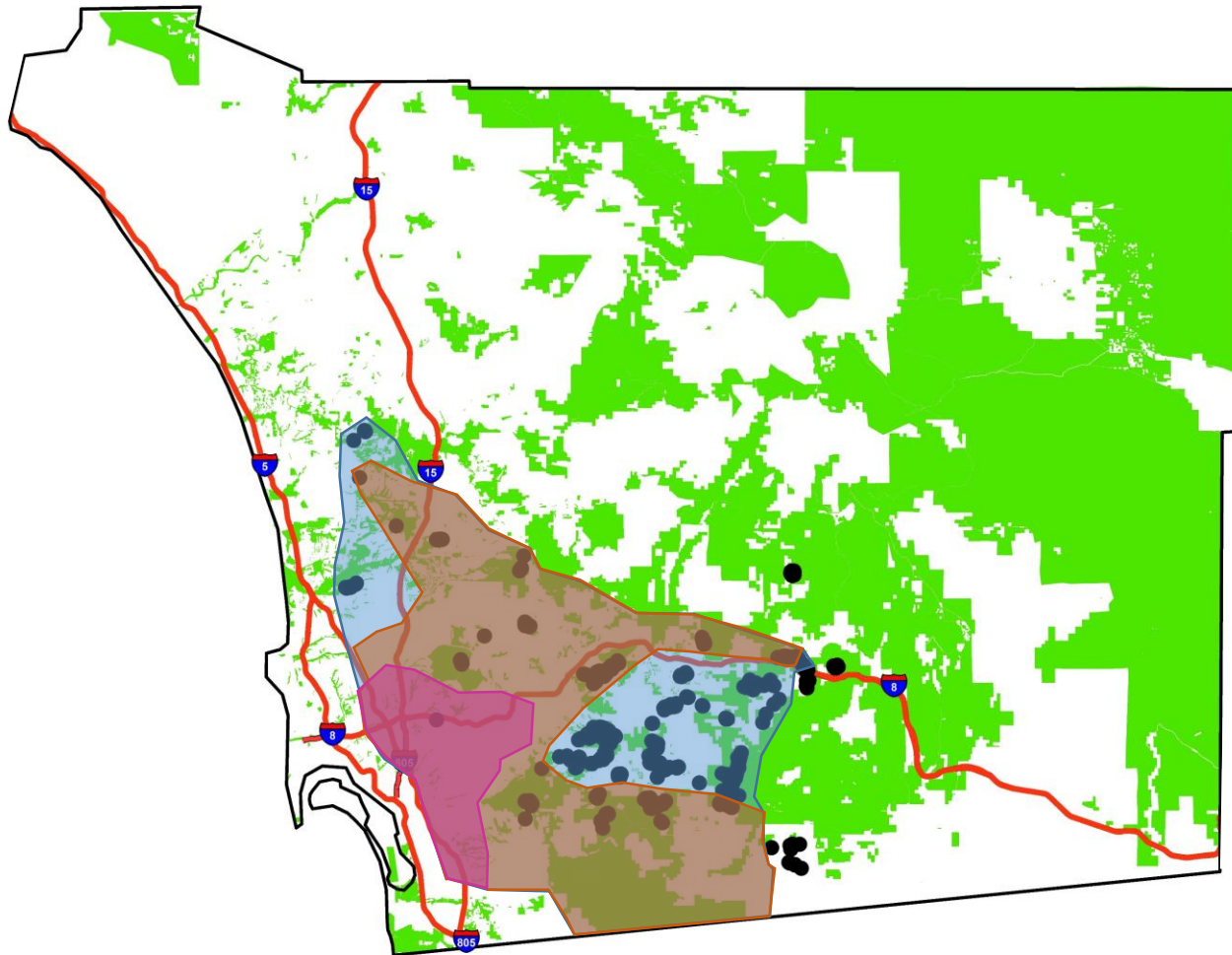


# Distribution

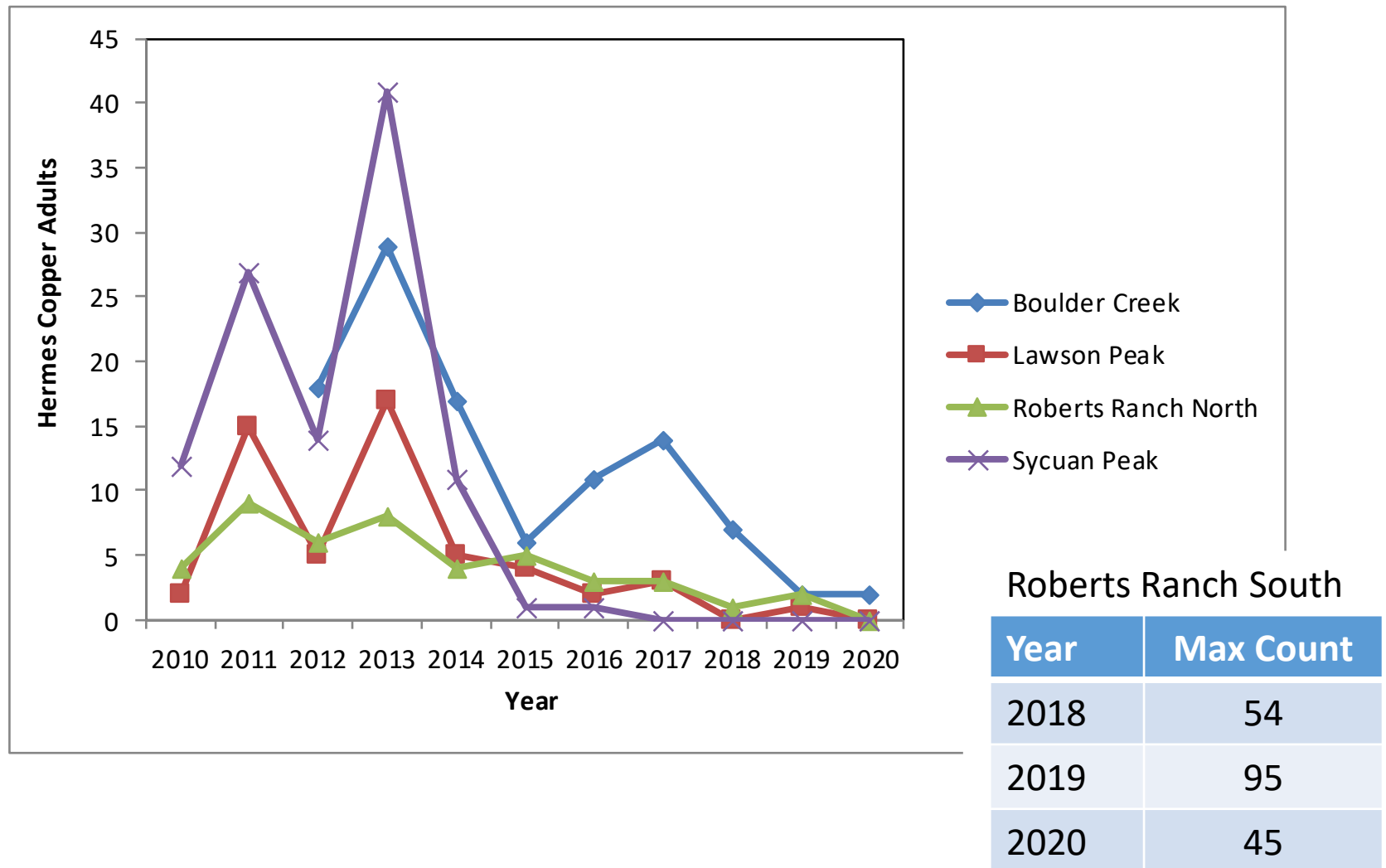
Before 2003

2003-2007

After 2007

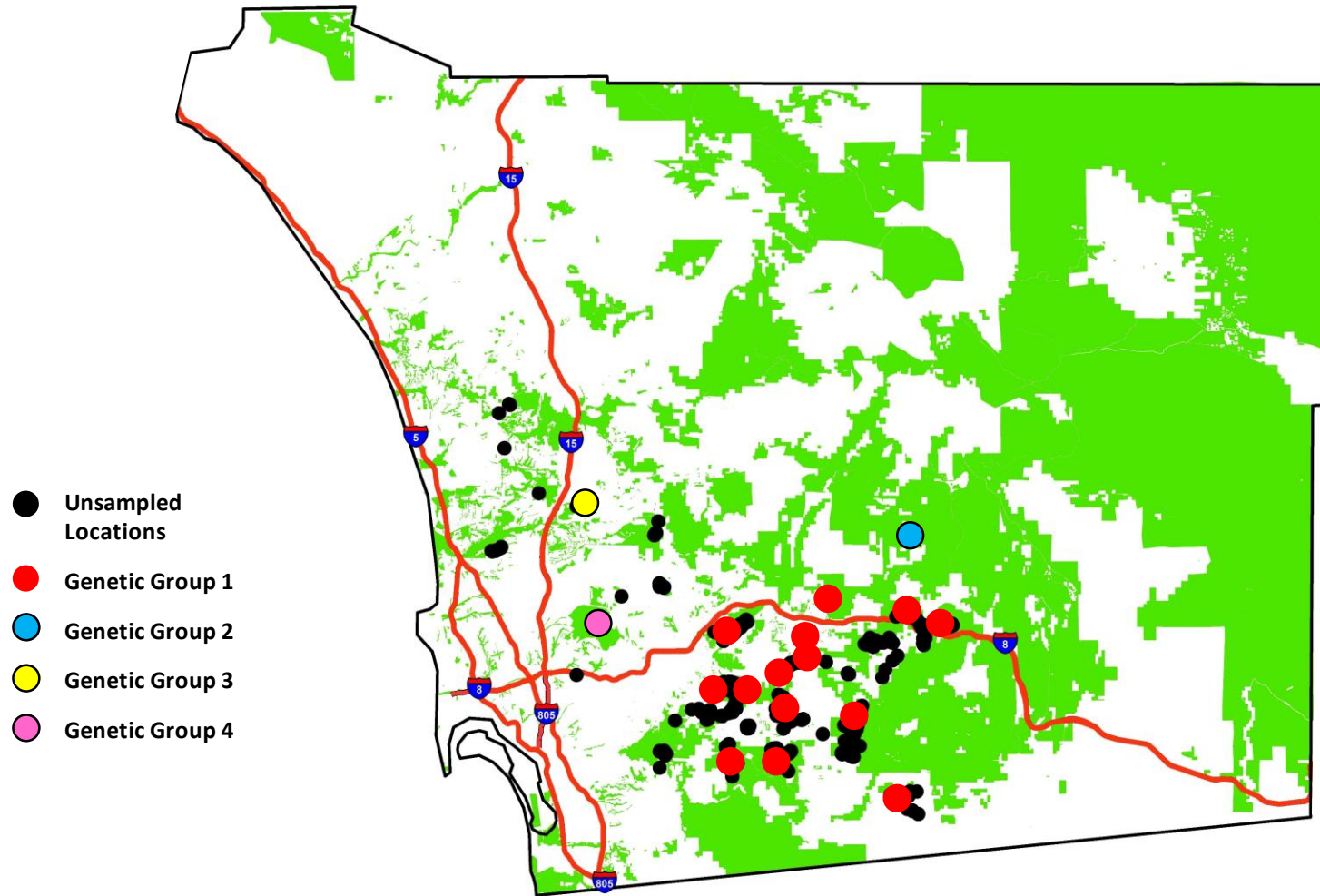


# Population Sizes: Reference Sites





# Dispersal



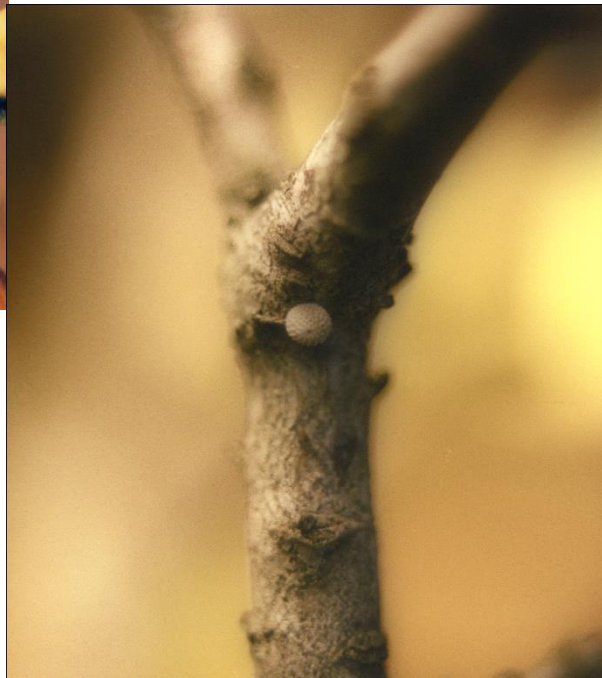
# Recovery Work

- ~~Increase habitat~~
- Captive rearing
- Translocation



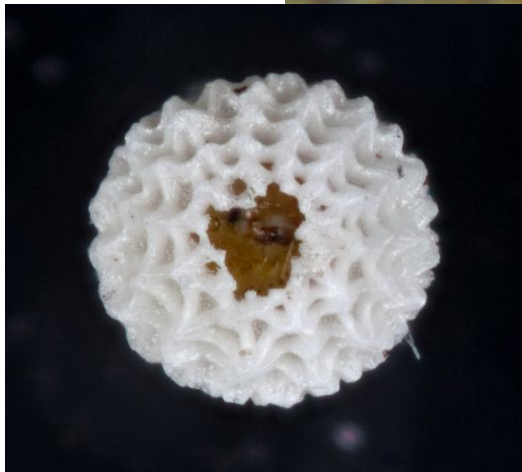
# Captive Rearing

- Eggs near base of leaf/branch

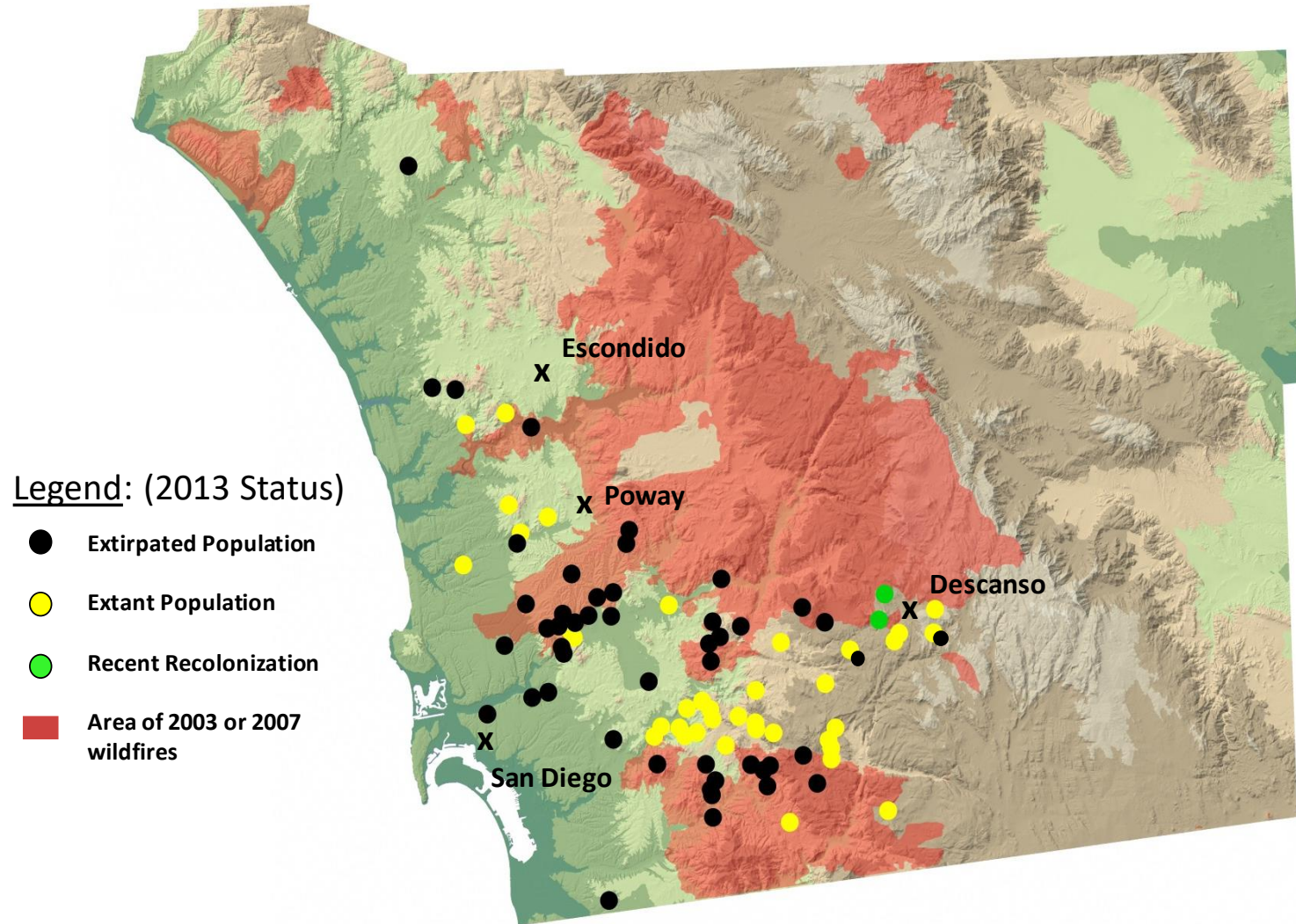




# Captive Rearing

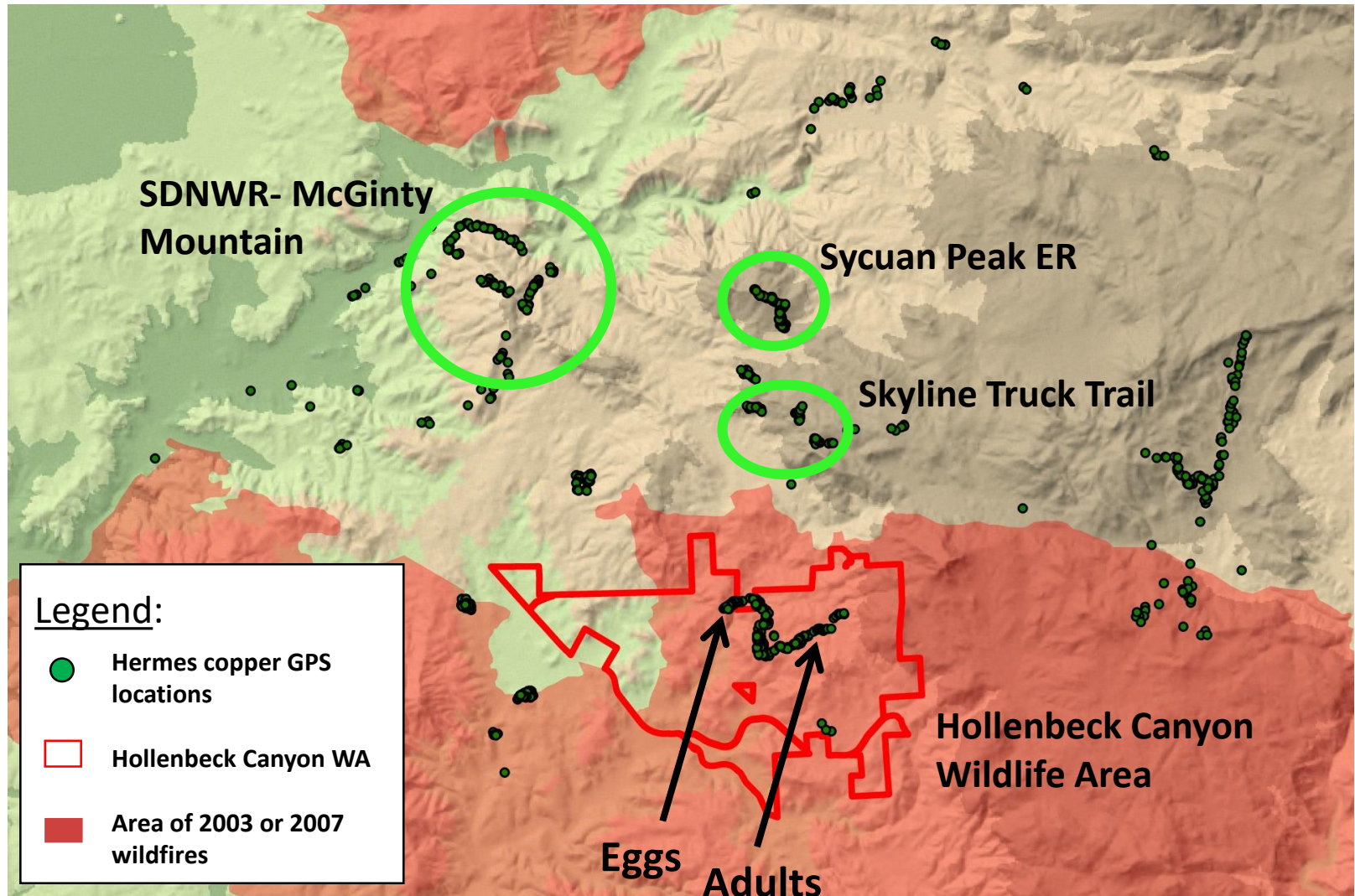


# Translocation (Assisted Dispersal)





# Translocation



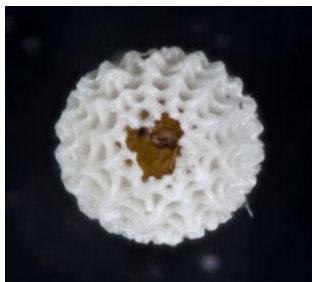
# Translocation





# Translocation

- Adults
  - Planned: 18 females, 18 males
  - Actual: 5 females, 6 males
- Eggs
  - 14 Total: 3 lost , 2 unhatched, **9 hatched**





# Future Directions

- Monitoring
  - Reference sites
  - Sites most likely to be/become occupied
- Captive rearing (in field)
- Establish new populations



# Questions?

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# Harbison's Dun Skipper

- Monitoring Protocols
- Distribution
- Population Sizes



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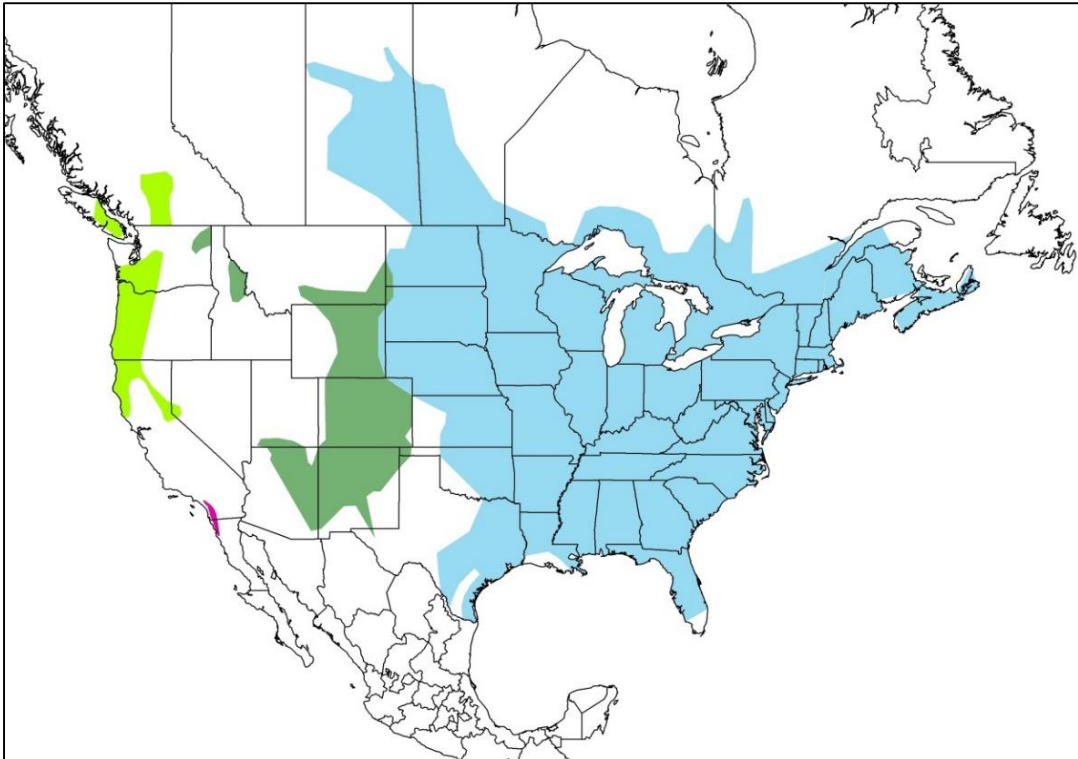


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# Distribution



Peterson Field Guides: Western Butterflies



## Legend

-  *Euphyes\_vestris\_vestris*
-  *Euphyes\_vestris\_metacomet*
-  *Euphyes\_vestris\_kiowah*
-  *Euphyes\_vestris\_harbisoni*

# Basic Biology

- Phenology
  - Adults mid-May to mid-July
  - Eggs late summer
  - Larvae October to April
  - Pupae April to May
- Oak riparian woodlands
  - San Diego sedge (*Carex spissa*)





# Dun Skipper Habitat



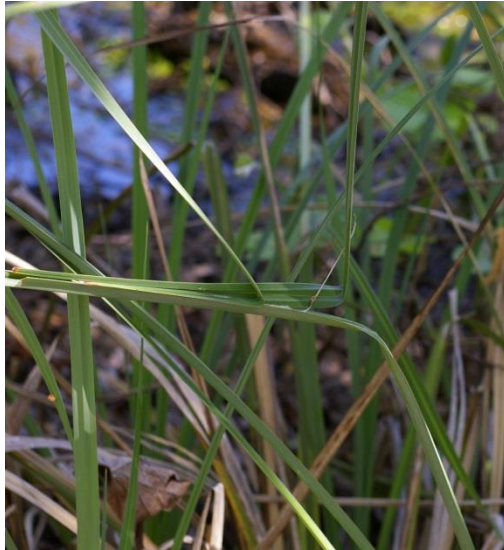
Charles Jones (CalPhotos)

# Life History

male



female





# Life History

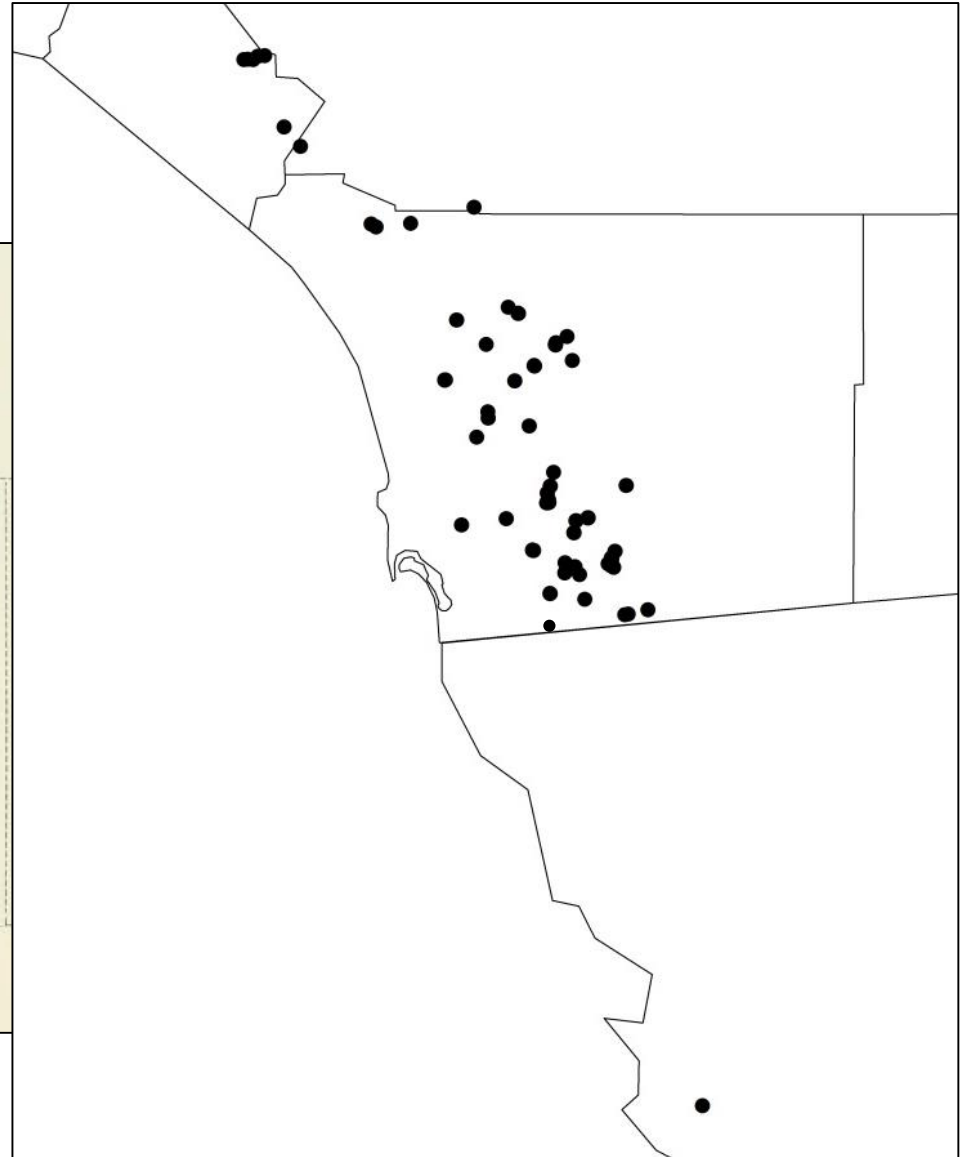
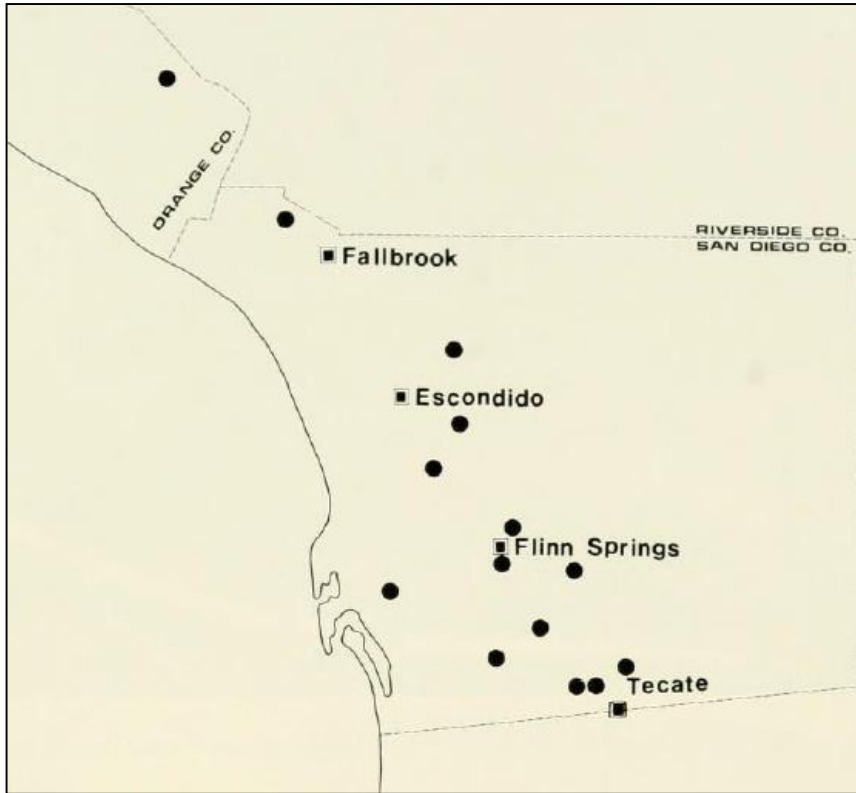


# Monitoring Protocol

- Presence/Absence: Larval surveys
- Adult surveys:
  - Flowers near *Carex spissa* (white, pink, purple)
  - In sun
  - At least 75°F
  - 8:20am - early afternoon



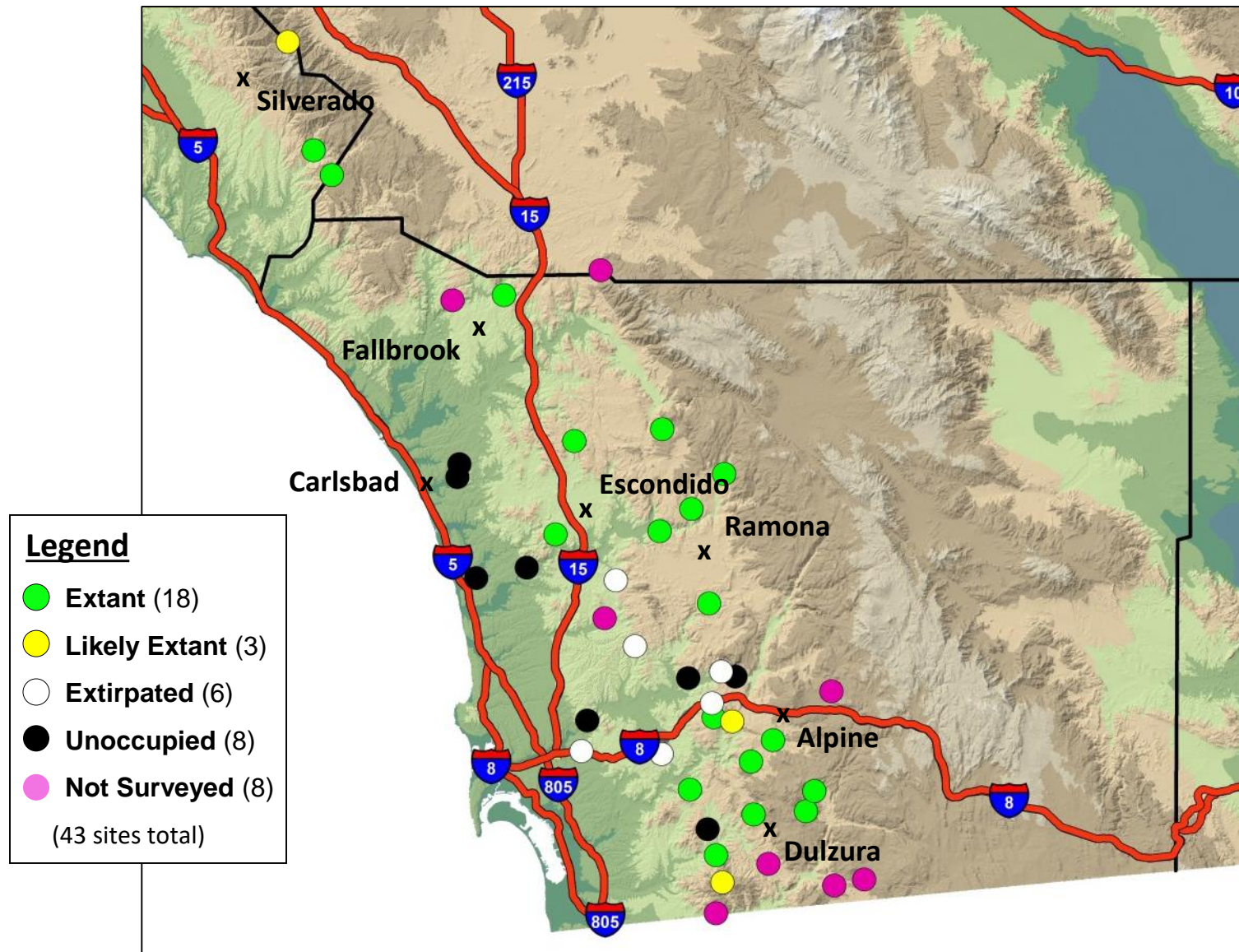
# Distribution



Brown & McGuire (1983)



# Current Distribution



# Population Sizes

- Generally few encountered

| Location                           | 2013 | 2014       | 2016 | 2017 |
|------------------------------------|------|------------|------|------|
| Barrett Lake                       | 6-8  | 4          | 11   | 1    |
| Boden Canyon Ecological Reserve    | 5-6  | 1          | 1    | 1    |
| Crestridge Ecological Reserve      | 1    | 0          | 0    | 0    |
| Daley Ranch                        | 1    | 2          | 4    | 0    |
| Hellhole Canyon County Park        | 4    | 1          | 1    | 0    |
| Hollenbeck Canyon Wildlife Area    | 6-10 | 5-6        | 2    | 3-4  |
| Lake Hodges                        | 5-6  | 4          | 5-6  | -    |
| Loveland Reservoir                 | 8    | 4-5 or 3-6 | 3    | 2    |
| Pamo Valley                        | 1-2  | 2-3        | 0    | 2    |
| San Diego National Wildlife Refuge | 2    | 1          | 0    | -    |
| Skye Valley Road                   | 2    | 2          | 6    | 1    |
| Sycuan Peak Ecological Reserve     | 5-6  | 2          | 4    | -    |

# Threats

- Small populations, restricted distribution
- Habitat alteration
- Fire
- Drought
- Goldspotted oak borer
- Grazing



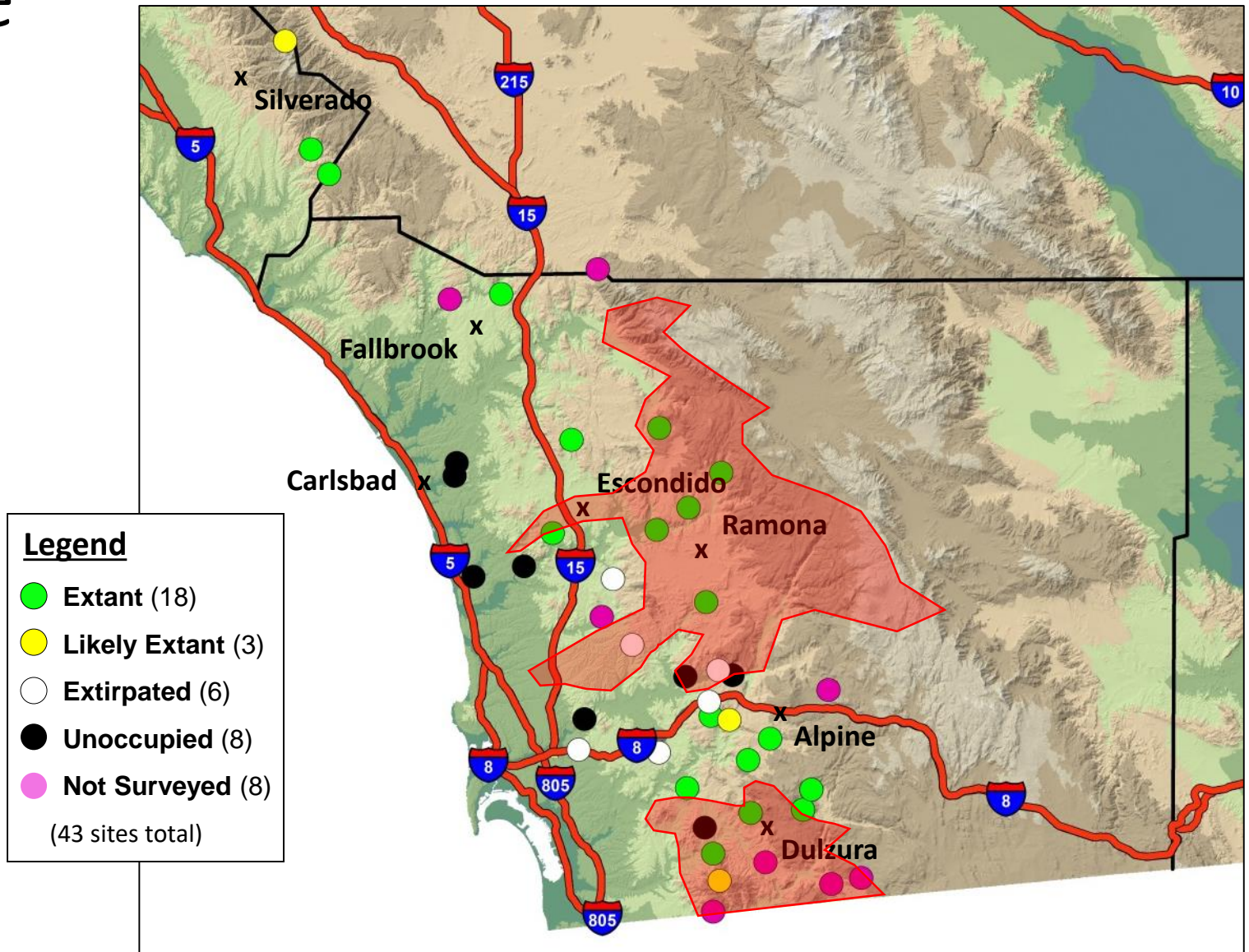


# Habitat Alteration





# Fire





# Drought





# Goldspotted Oak Borer



# Future Directions

- Continue surveys
  - Update status of recent populations
  - Calibrate survey counts with marking study
  - Assess connectivity and subspecies status (genetics)
- Restoration- *Carex spissa* & nectar source plantings





# Questions?

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