

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



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UNIVERSITY OF
**CENTRAL
MISSOURI**
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*)

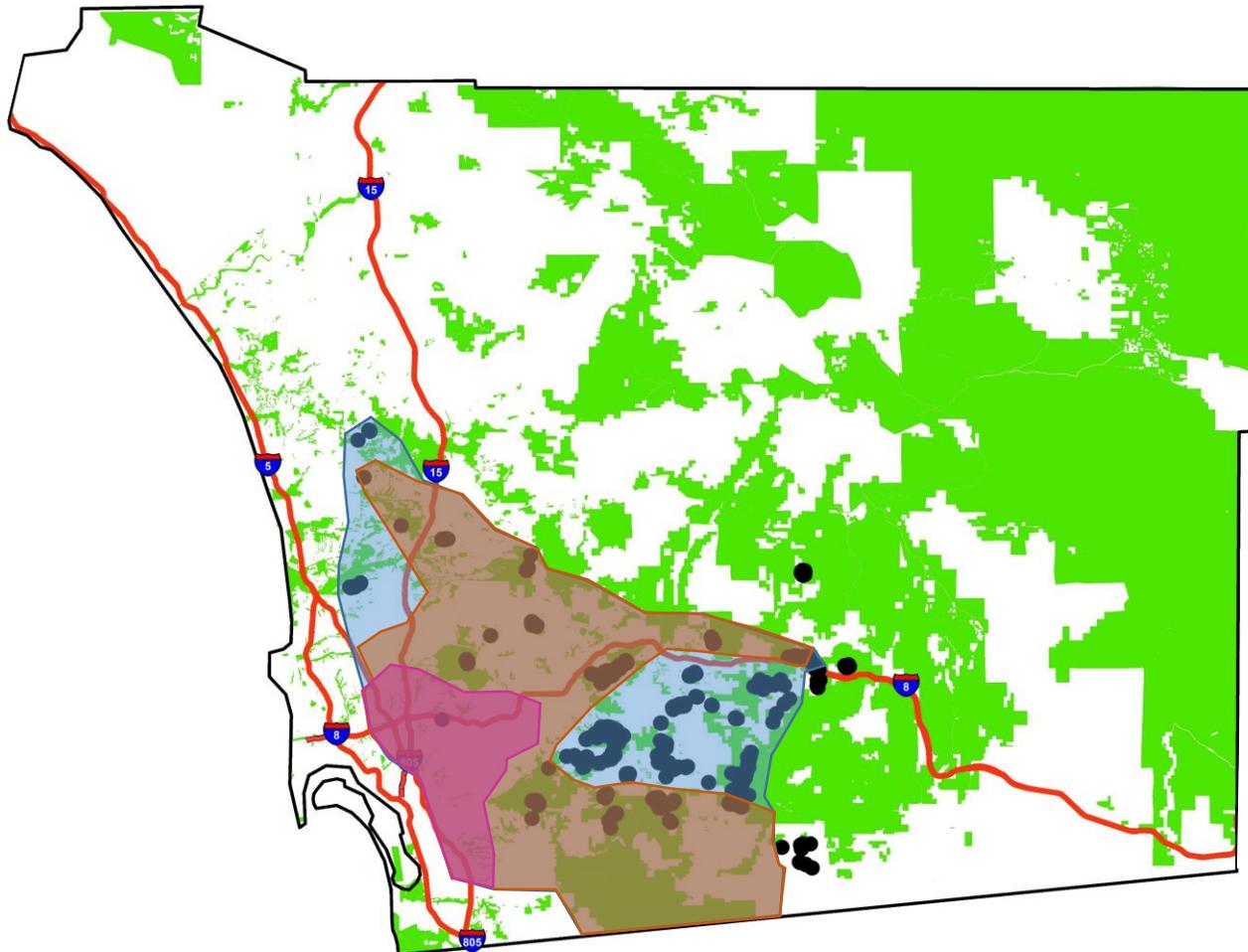


Distribution

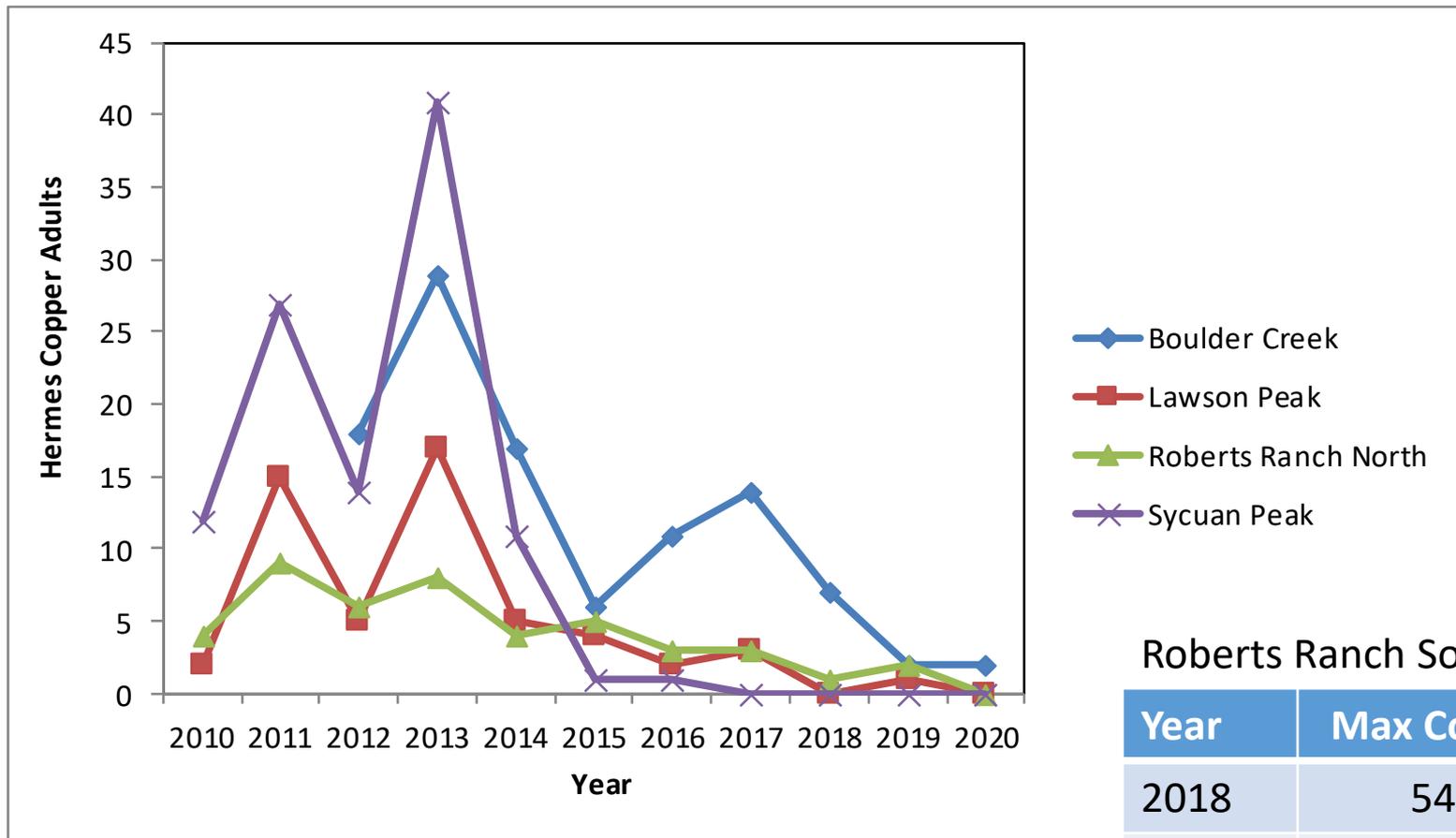
Before 2003

2003-2007

After 2007



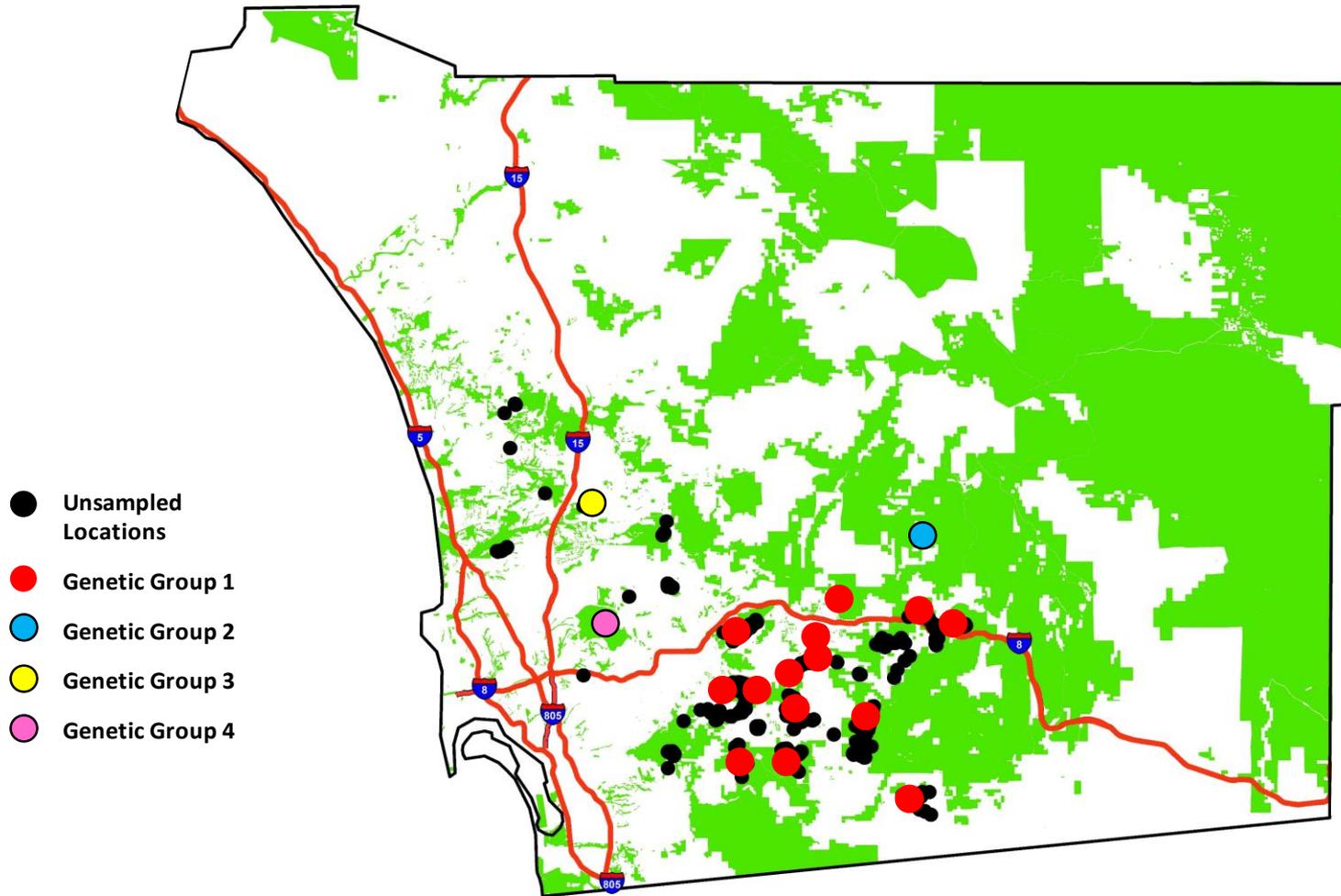
Population Sizes: Reference Sites



Roberts Ranch South

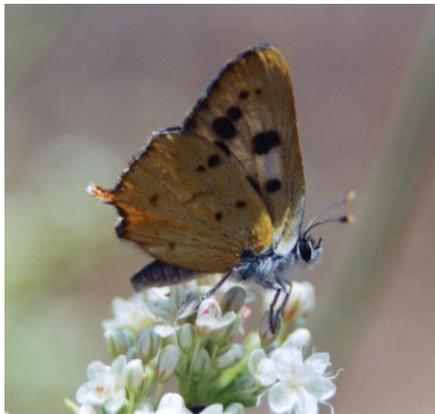
Year	Max Count
2018	54
2019	95
2020	45

Dispersal



Recovery Work

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



Captive Rearing

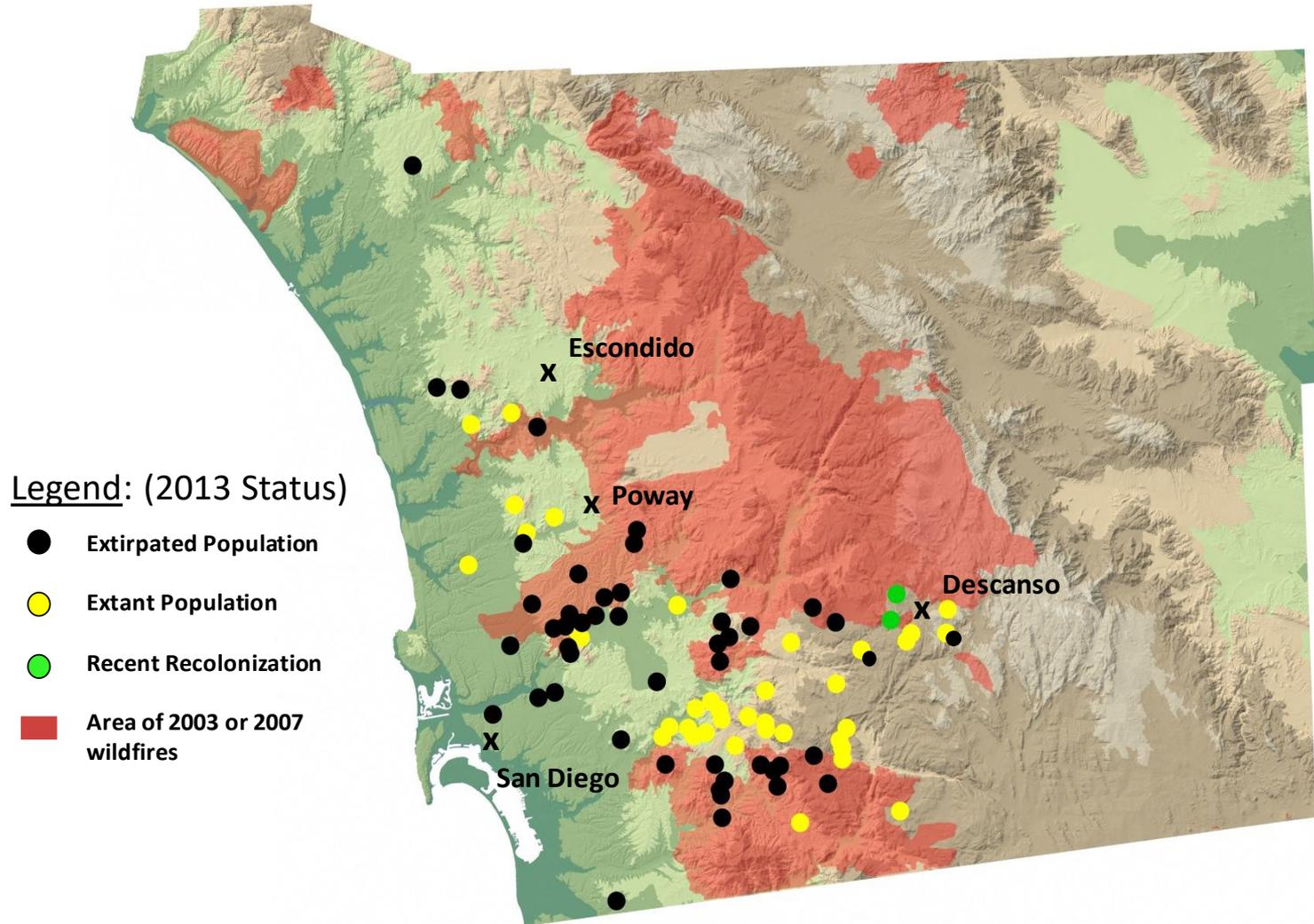
- Eggs near base of leaf/branch



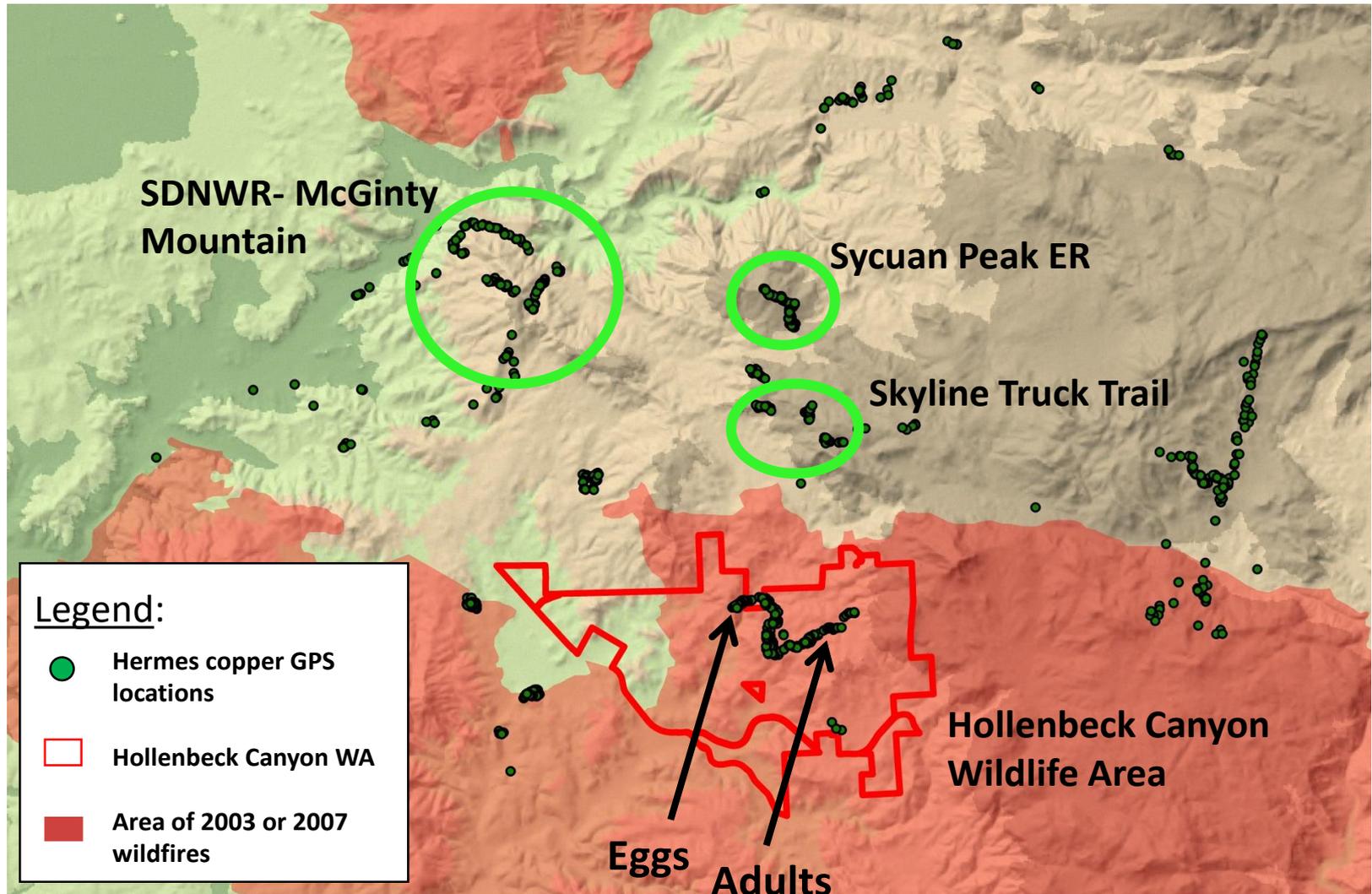
Captive Rearing



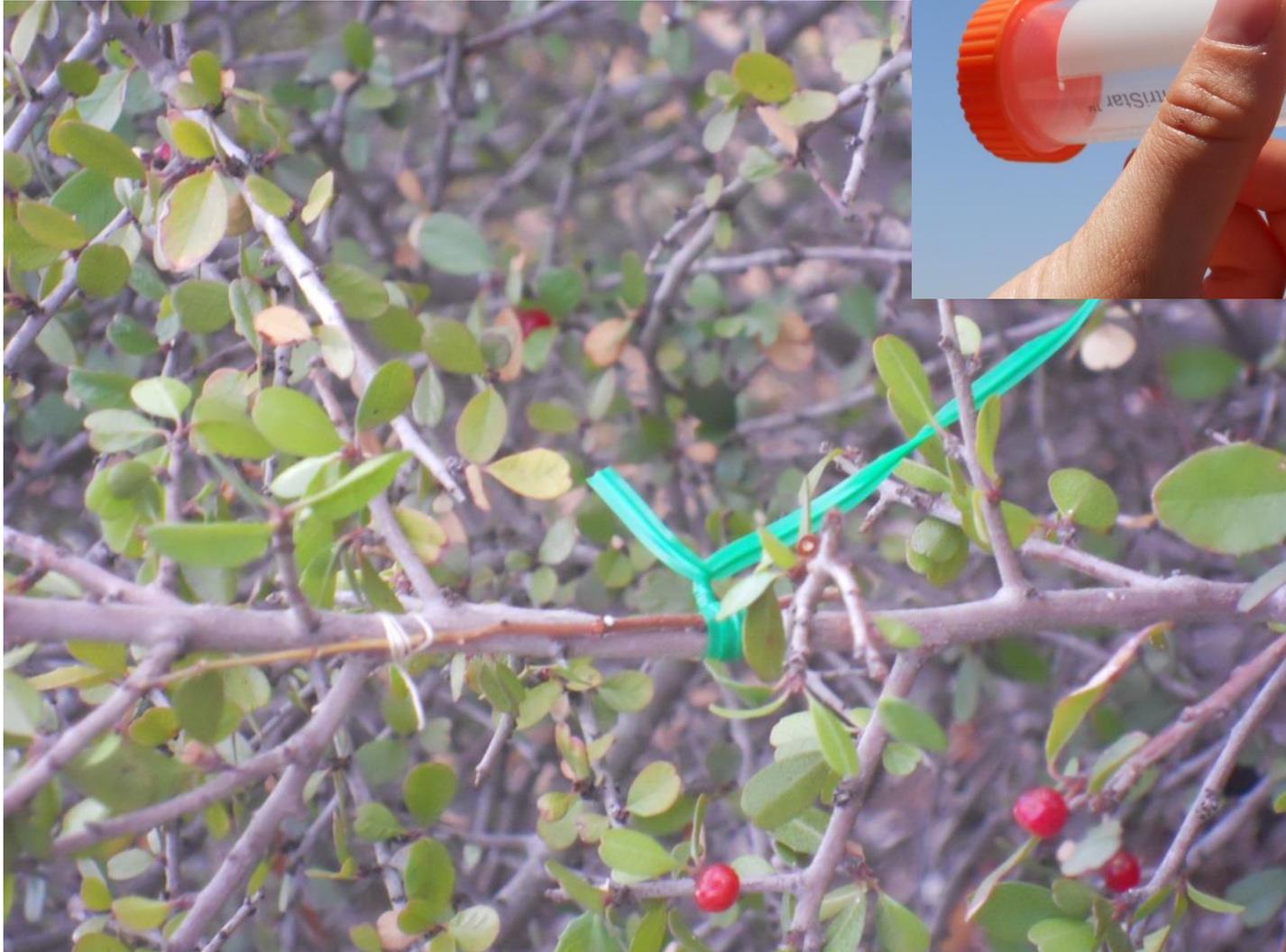
Translocation (Assisted Dispersal)



Translocation



Translocation

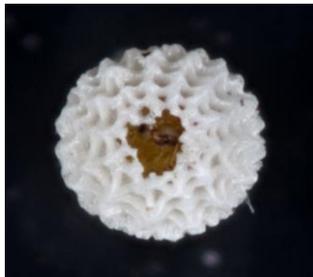


Translocation

- 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



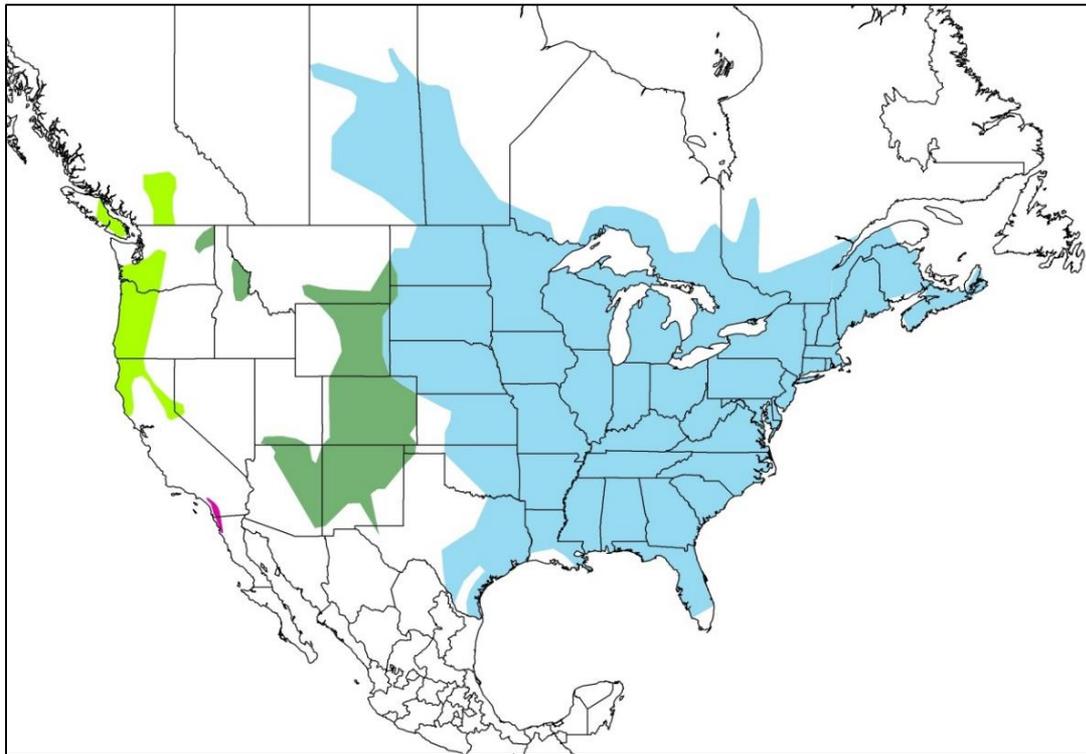
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Distribution



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



Life History

male



female

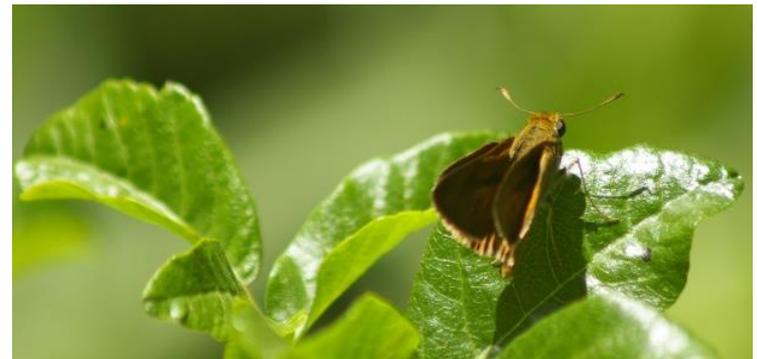


Life History

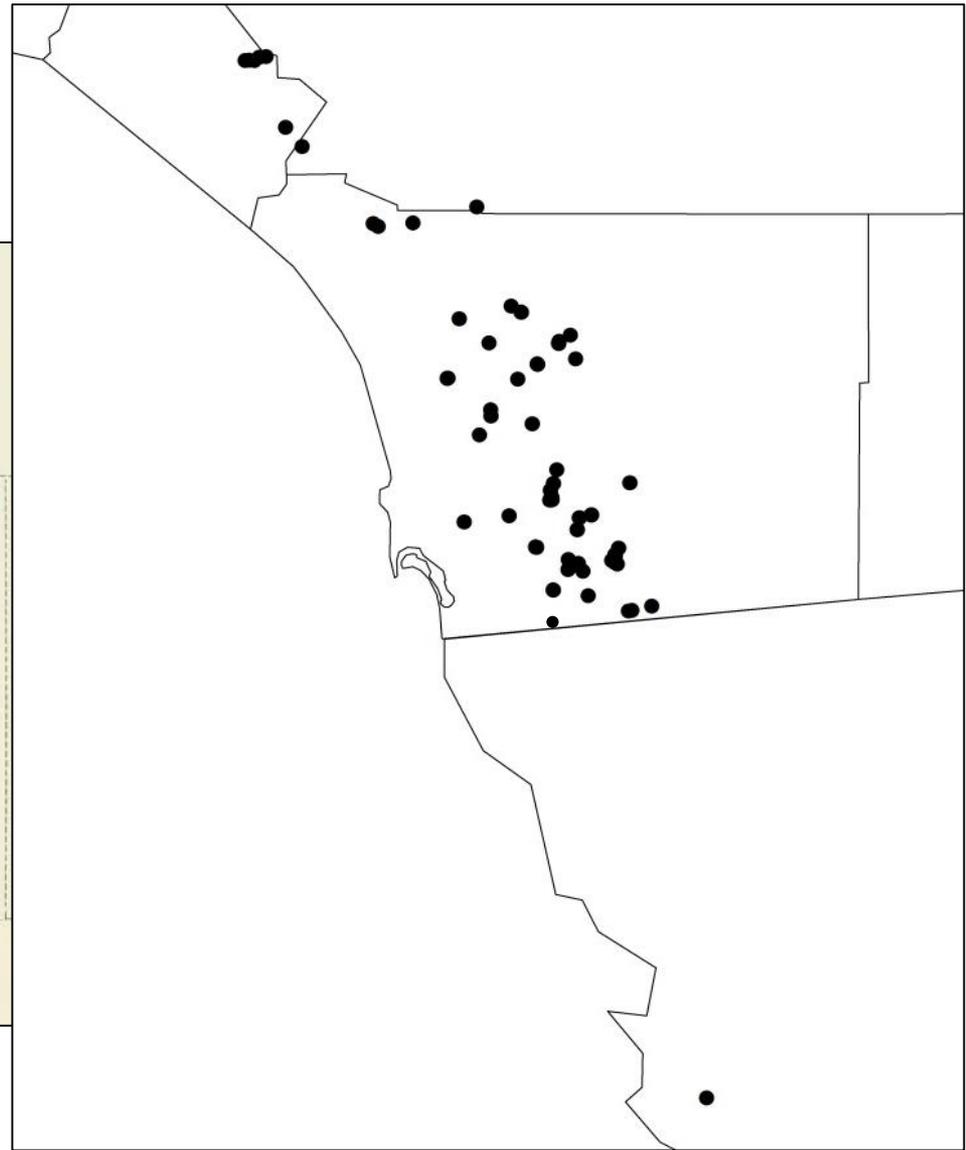
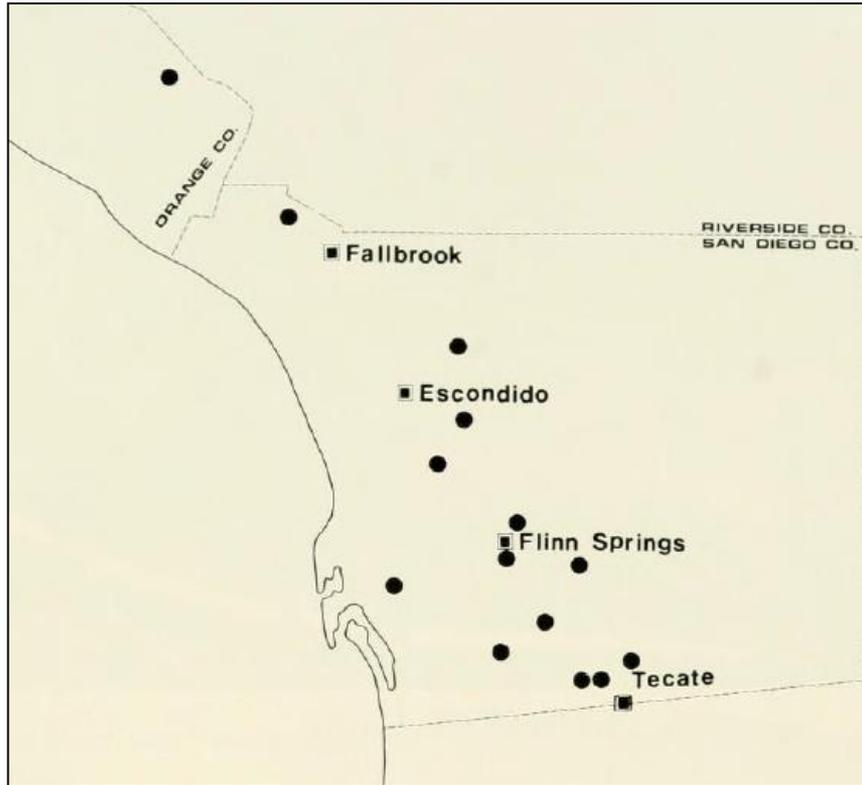


Monitoring Protocol

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

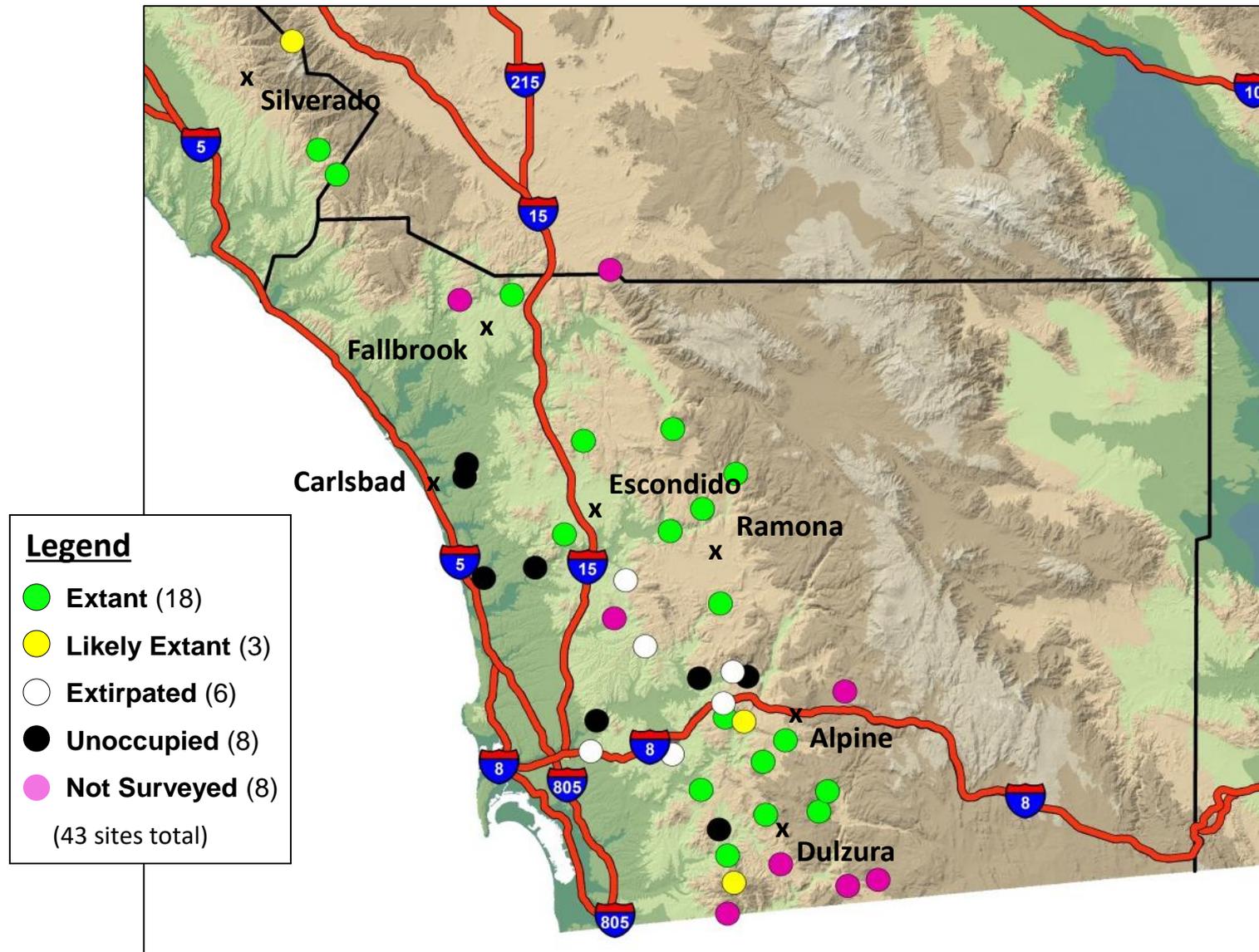


Distribution



Brown & McGuire (1983)

Current Distribution



Population Sizes

- Generally few encountered

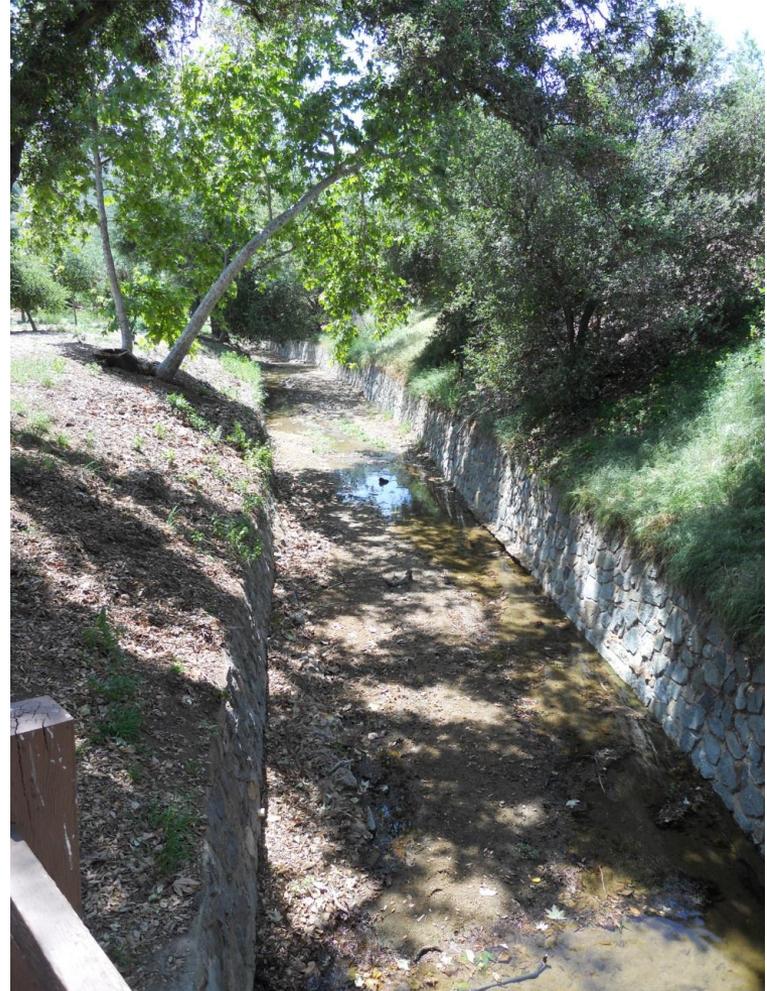
Location	2013	2014	2016	2017
Barrett Lake	6-8	4	11	1
Boden Canyon Ecological Reserve	5-6	1	1	1
Crestridge Ecological Reserve	1	0	0	0
Daley Ranch	1	2	4	0
Hellhole Canyon County Park	4	1	1	0
Hollenbeck Canyon Wildlife Area	6-10	5-6	2	3-4
Lake Hodges	5-6	4	5-6	-
Loveland Reservoir	8	4-5 or 3-6	3	2
Pamo 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

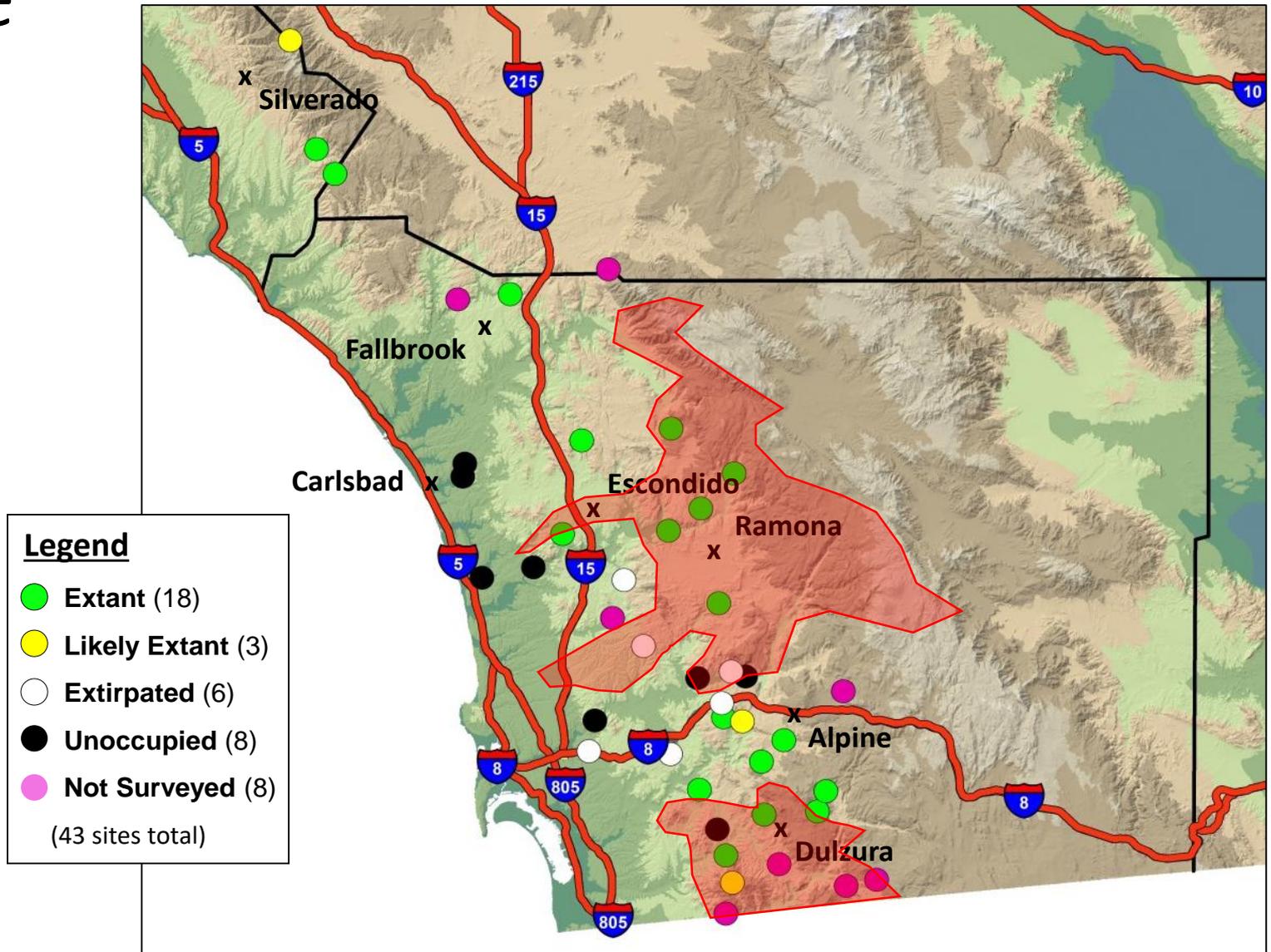
- Small populations, restricted distribution
- Habitat alteration
- Fire
- Drought
- Goldspotted oak borer
- Grazing



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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