

Reintroduction of Laguna Mountains Skipper (*Pyrgus ruralis lagunae*)

Progress report
August 26th, 2020



**Osborne
Biological
Consulting**



Laguna Mountains Skipper

- Endangered
- Restricted to Palomar Mountain
- Last seen in the Laguna Mountains in 1999
- Host plant: *Horkelia clevelandii*
- Diapause as pupae
- Spring and summer flights



Project goal

- Reintroduce LMS to the Laguna Mountains
- Methodology for rearing and release
- Hope to observe dispersal across the meadows
- Learning



Process

- Regulatory process
 - ✓ Identify suitable habitat patches
 - Collect a founder population (Palomar Mtn)
 - Rear pupae in the lab
 - Release pupae in protective shelters
 - Monitor pupae, adults at released populations
 - Evaluate results and adjust approach



Regulatory process

- Five consultations
- Stakeholders identified and contacted
- Tribal outreach and notification letter



Selecting release location

- 3-point rating system
- Expert opinion

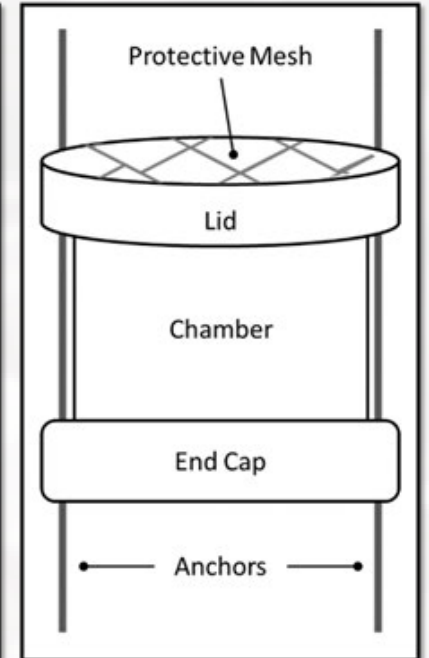


Weighted factor scores	Prado	Agua Dulce	Cheroske	S. Meadow	Mendenhall	Cattle Exclosure	Perfect Site
Horkel density	6	4	4	6	6	6	6
Over growth of other plants (problematic for horcle	2	2	1	3	3	2	3
Ease of Access	3	2	3	2	3	3	3
Potential for human impacts	3	9	6	6	9	9	9
Patch size/ extent	9	6	3	6	3	9	9
Connectivity with other meadows	2	4	2	6	6	6	6
Stakeholder concerns	3	6	9	9	9	9	9
Nectar plant availability	--	--	--	--	--	--	--
Time since last LMS sighting	--	--	--	--	--	--	--
Site totals **	28	33	28	38	39	44	45
Index ***	0.622	0.733	0.622	0.844	0.867	0.978	1.000



Other progress

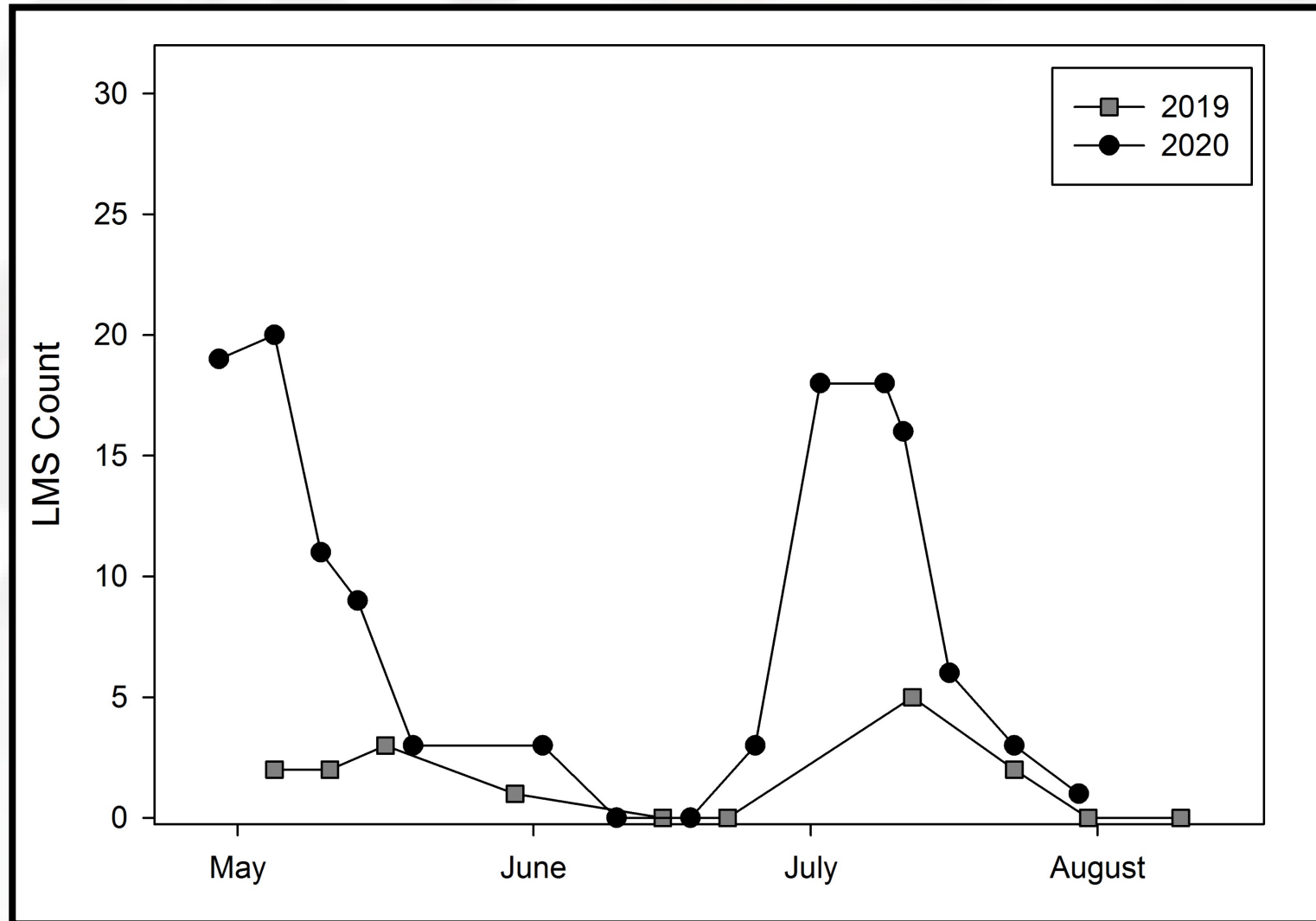
- *Pyrgus ruralis ruralis* rearing experiment
- Host plant grown at Zoo
- Protective cages for pupae
- Site specific release plan
- Project success criteria
- Host plant patches mapped
- Signage template constructed
- Collection site monitoring



Monitoring in brief



Collection site monitoring



Egg monitoring

- Significant spatial contagion
- Where you find one, you're likely to find more
- 2 spatial scales
 - On the plant: $\chi^2 = 14.26$, $P=0.0008$
 - On adjacent plants

Category	Observed	Expected
0 eggs	76	66.4
1 egg	8	21.6
2 or more eggs	8	3.9

