



Photo Credit: Brooke Dekker

# POLLINATION OF THREAD- LEAF BRODIAEA (BRODIAEA FILIFOLIA)

BROOKE PRENTICE-DEKKER

CENTER FOR NATURAL LANDS MANAGEMENT

LAND MANAGER MEETING 2020

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## BACKGROUND AND IMPORTANCE

- Federally Threatened
- California Endangered
- Perennial Bulbiferous Herb-Corm
- Seeds- Dispersal?
- Pollinators- Little is known
- Self-incompatible (Pollen from genetically distinct plant)



Photo Credit: Brooke Dekker

# STUDY SITES

- Rancho La Costa
  - Nonnative grassland (purple false brome)
  - Adjacent to riparian wetland and residential homes
- Buena Vista
  - Nonnative grasses
  - Adjacent to coastal sage scrub (an enhancement area) and black mustard slopes
- Calavera Hills
  - Nonnative grassland
  - Adjacent to patches of coastal sage scrub, native grassland and riparian vegetation communities



# STUDY OBJECTIVES AND METHODS

- **OBJECTIVE:** Conduct focused surveys to observe and note TLB pollinators (Visitation Rates)
- **METHOD:** Net Trapping
  - Monitor individual TLB Clumps for standardize 30 minutes (3 observations/site)
  - Net capture insects found on/pollinating TLB



RECTION  
deg(T)

33.17510°N  
117.31443°W

ACCURACY 5 m  
DATUM WGS84

## STUDY OBJECTIVES AND METHODS

- OBJECTIVE :Determine if TLB pollination leads to the production of seed pods and seed
- METHOD: Flag Flowering TLB
  - Randomly Pin flag 25 TLB/site
  - Check for seeds



Photo Credit: Brooke Dekker

BV

Pollination  
tie offs

2019-05-24  
15:48:30-07:00

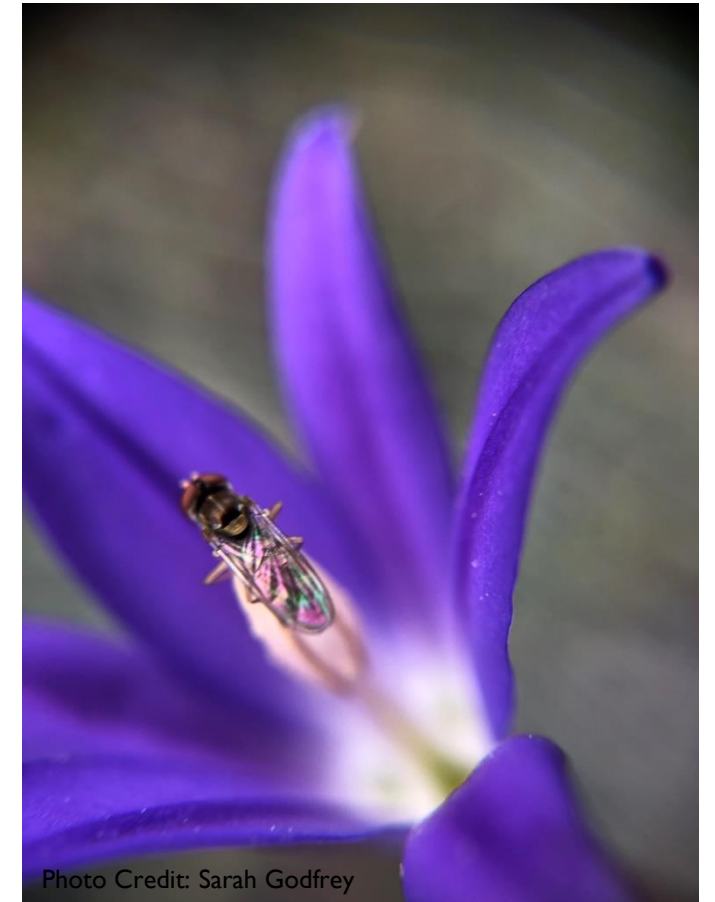
# STUDY OBJECTIVE AND METHODS

- OBJECTIVE: Assess pollinator diversity and abundance as it relates to habitat quality
- METHOD: Pan Traps
  - White, UV Yellow, UV Blue – Soapy water
- METHOD: Habitat Assessments
  - Two 25m vegetation transects per site

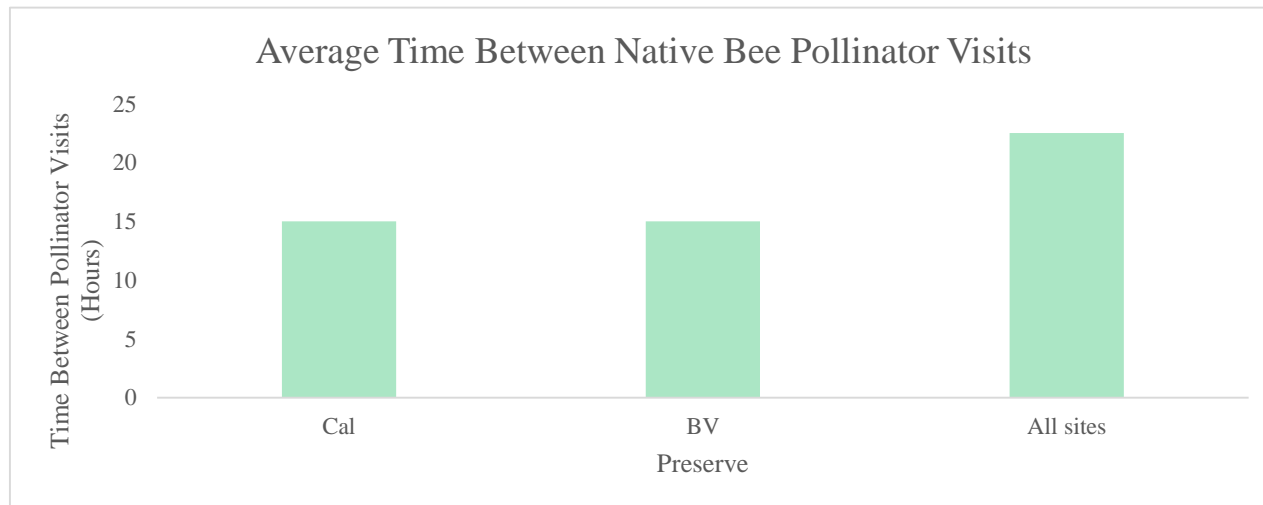
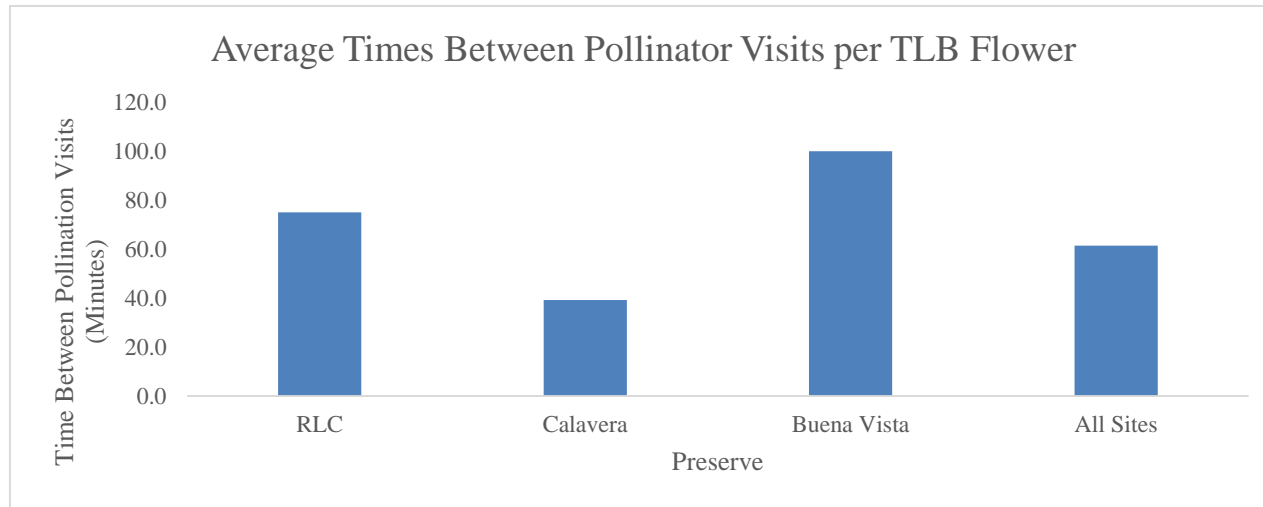


## RESULTS- NET TRAPPING

Pollinators	RLC	Buena Vista	Calavera	Total
Soft-winged Flower Beetle ( <i>Dasytinae</i> )	4	3	13	20
Calligrapher Fly ( <i>Toxomerus marginatus</i> )	6	4	9	19
Soft-winged Flower Beetle ( <i>Tanaops longiceps</i> )	0	2	1	3
Sweat Bee ( <i>Halictus ssp.</i> )	0	1	1	2
Honey-Bee( <i>Apis mellifera</i> )	1	1	0	2
Fiery Skipper ( <i>Hylephila phyleus</i> )	1	0	0	1



# RESULTS- NET TRAPPING





## RESULTS – FLAG PINNING

- Only Two TLB Plants Produced Seeds
- Both At RLC (3 seeds/pod)
- BV and Calavera = 0
- 8% of TLB plants produce seed (All sites)
  
- Self Incompatibly Problem?

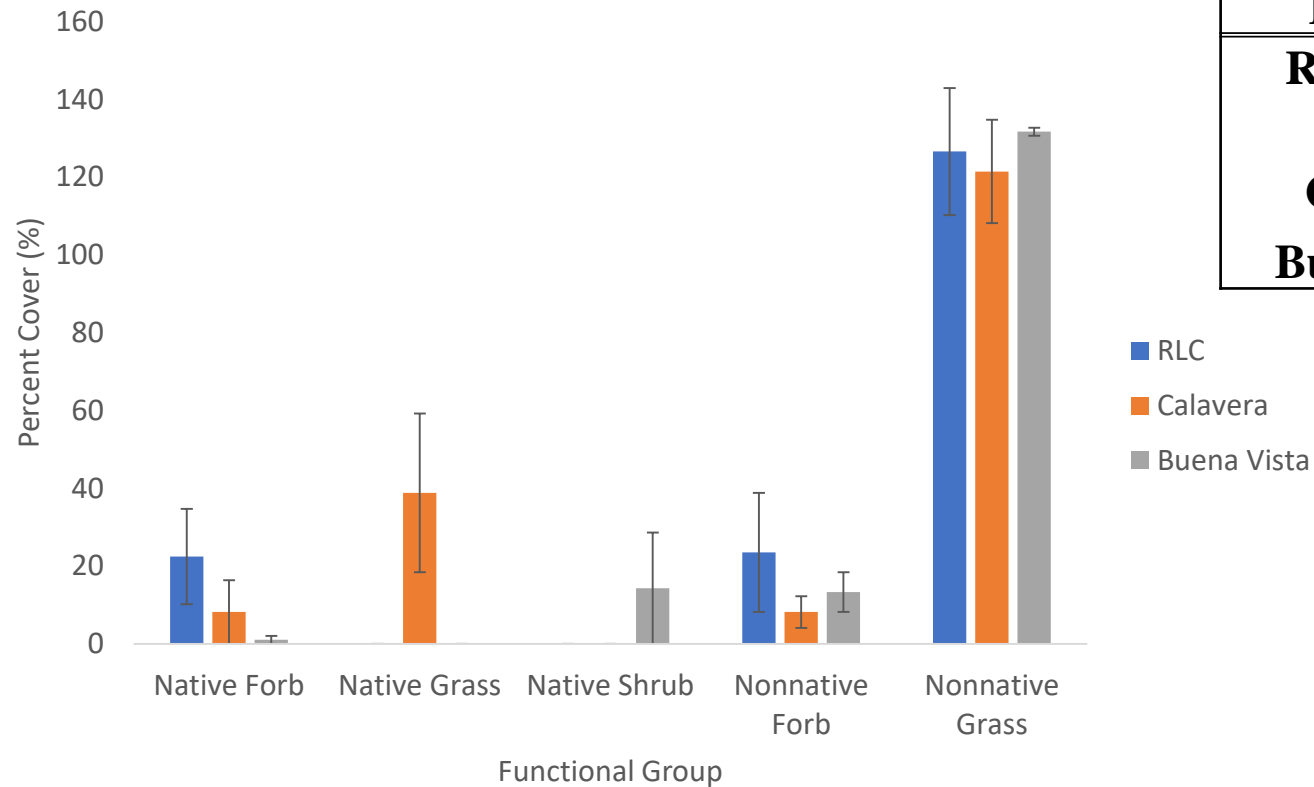
<b>Population Flowering Estimates</b>			
<b>Preserve</b>	<b>Flowering Estimates</b>	<b>Total</b>	
		<b>Potential Seed Pod /Site*</b>	<b>Total Actual Seed Pod/Site*</b>
<b>RLC</b>	10000	800.0	800.0
<b>Buena Vista</b>	249	19.9	0
<b>Calavera</b>	202	16.2	0
<b>Total</b>	10451	836.1	800.0

## RESULTS- PAN TRAP

<b>Pollinators</b>	<b>Rancho La Costa</b>	<b>Buena Vista</b>	<b>Calavera Hills</b>	<b>Total</b>
Soft-winged Flower Beetle ( <i>Dasytinae sp.</i> )	22	14	43	79
Calligrapher Fly ( <i>Toxomerus marginatus</i> )	18	11	5	34
Bristle Fly ( <i>Juriniopsis adusta</i> )	1	5	21	27
Sweat Bee ( <i>Halictus ssp.</i> )*	1	11	6	18
Sweat Bee ( <i>Lasioglossum ssp.</i> )*	2	0	0	2
European Honey Bee ( <i>Apis mellifera</i> )	0	0	2	2
Sphecidae Wasp ( <i>Prionyx ssp.</i> )	0	1	1	2
Cabbage White ( <i>Pieris rapae</i> )	0	0	1	1
Fiery Skipper ( <i>Hylephila phyleus</i> )	0	0	1	1
Soft-winged Flower Beetle ( <i>Tanaops longiceps</i> )	0	1	0	1
<b>Total</b>	<b>44</b>	<b>43</b>	<b>80</b>	<b>167</b>

# RESULTS- PAN TRAPS

Average Percent Cover by Preserve



Preserve	Abundance of Pollinators	Diversity of Pollinators
<b>Rancho La Costa</b>	44	5
<b>Calavera</b>	80	8
<b>Buena Vista</b>	43	6

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## MOVING FORWARD

- Follow up
- Survey at Dusk and Dawn
- Survey open ground and dead wood/branches
- Objective: Determine average distances between TLB individuals and clumps
- Method: A GIS exercise to measure distances between individuals and populations
- Method: Hand pollination study
  - Self-incompatible issue





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THE END!

QUESTIONS?