

San Diego Thornmint Seed Collection, Expansion, and Buffering

Center for Natural Lands Management

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Goals and Objectives

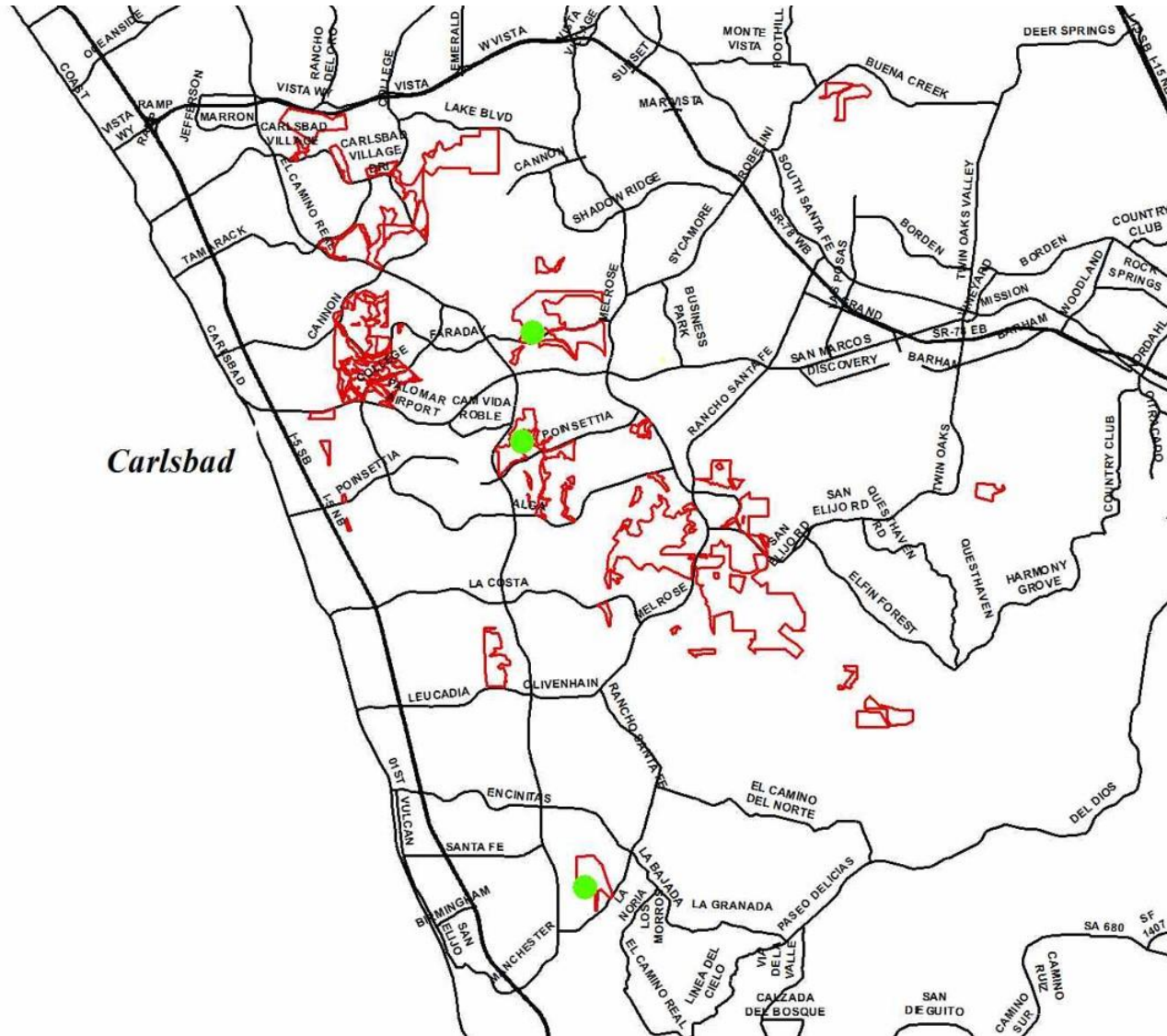
- ▶ Goal
 - ▶ Protect Existing Occurrences from Extirpation
- ▶ Objective
 - ▶ Expand and Buffer Existing Occurrences



Methods

- ▶ Methods
 - ▶ Long-term Monitoring
 - ▶ USGS Genetic Testing and Common Garden Study
 - ▶ Site Evaluations (Soil and Vegetation)
 - ▶ Seed Collections and Storage
 - ▶ Germinations and Viability Test
 - ▶ Seed Distribution and Monitoring





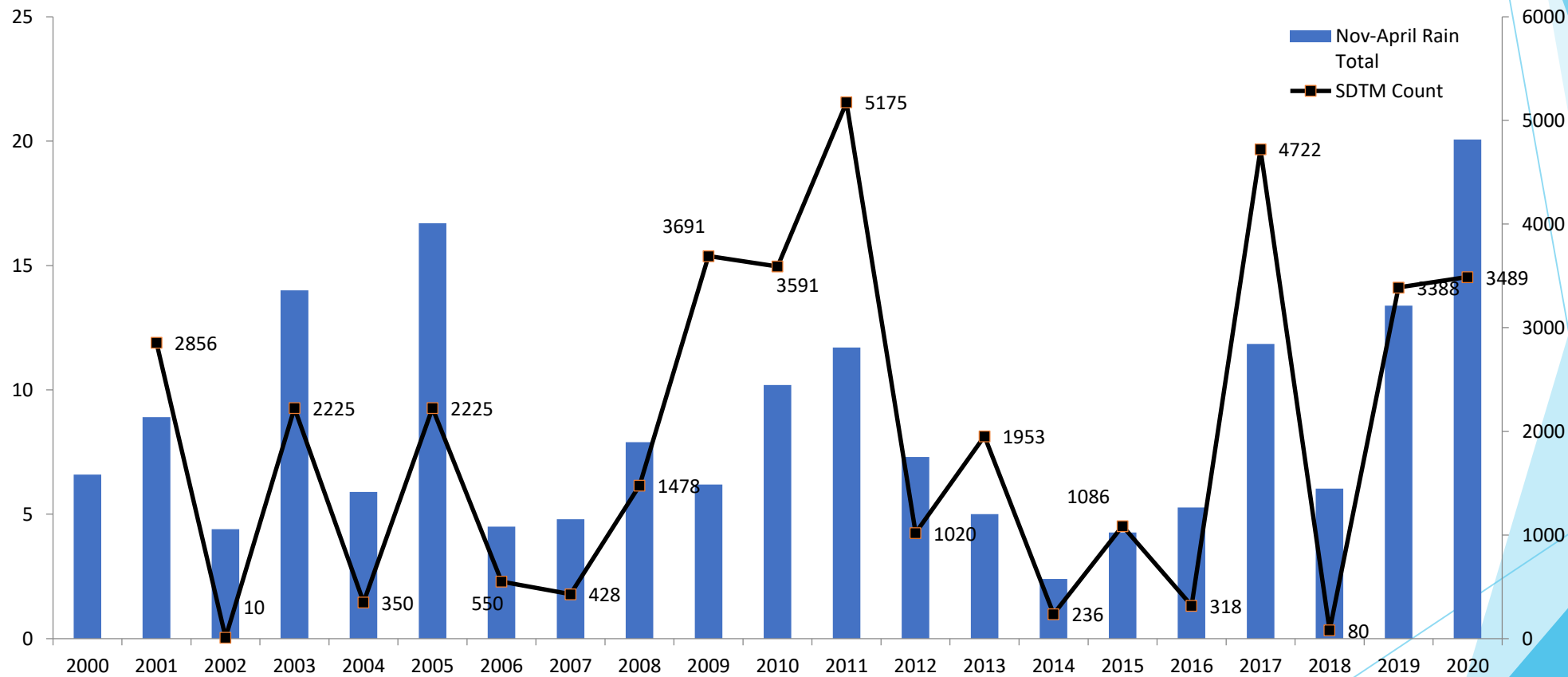
Site Specifics

- ▶ Manchester
 - ▶ 21-year trend data: Range 100's to ~ 5000 (3489 in 2020)
 - ▶ 4 Sub-units: 3 on the NW Mesa, 1 in the Valley
- ▶ Rancho La Costa
 - ▶ 14-year trend data: Range 123 to 2593 (Record in 2020)
 - ▶ One small location
- ▶ Carlsbad Oaks North
 - ▶ 14-year trend data: Range 20's to 2580 (Record 2020)
 - ▶ One small location

Manchester

Average Count ~1944 individuals

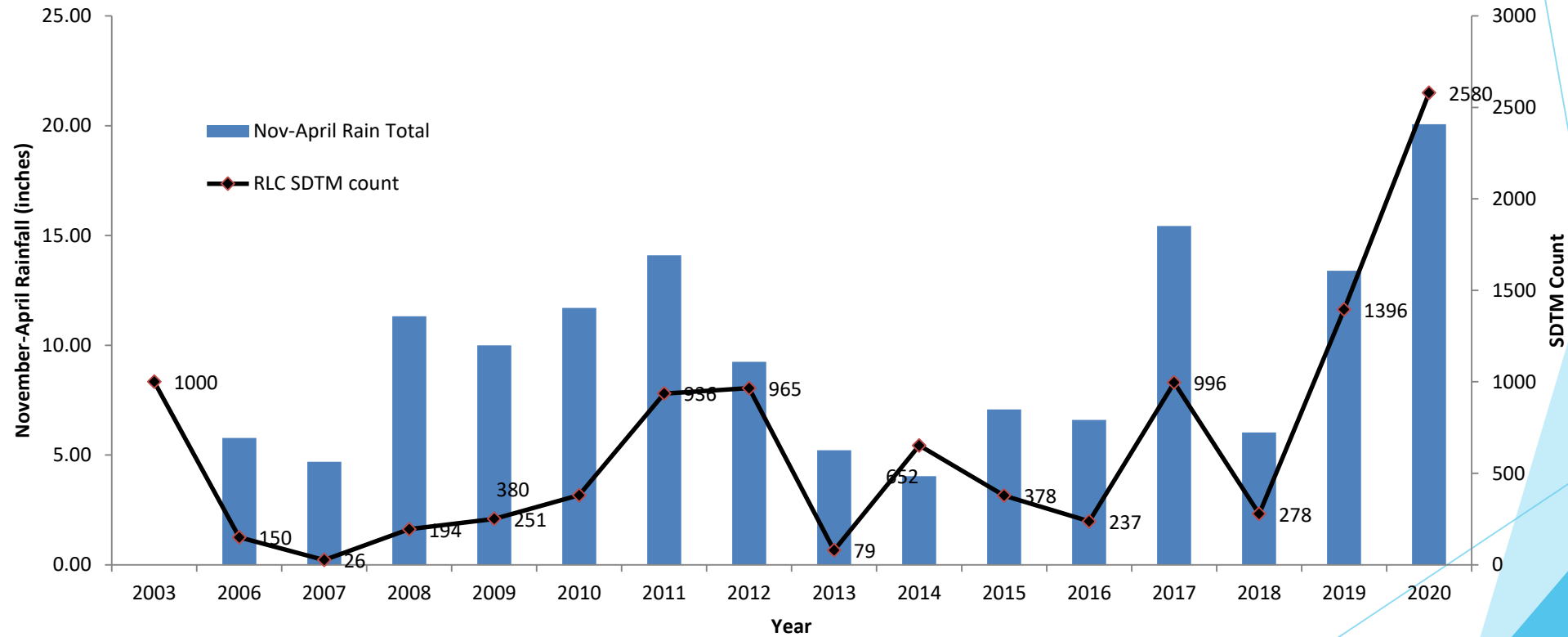
Nov-Apr Rainfall vs Counts



Rancho La Costa

Average Count ~656 individuals

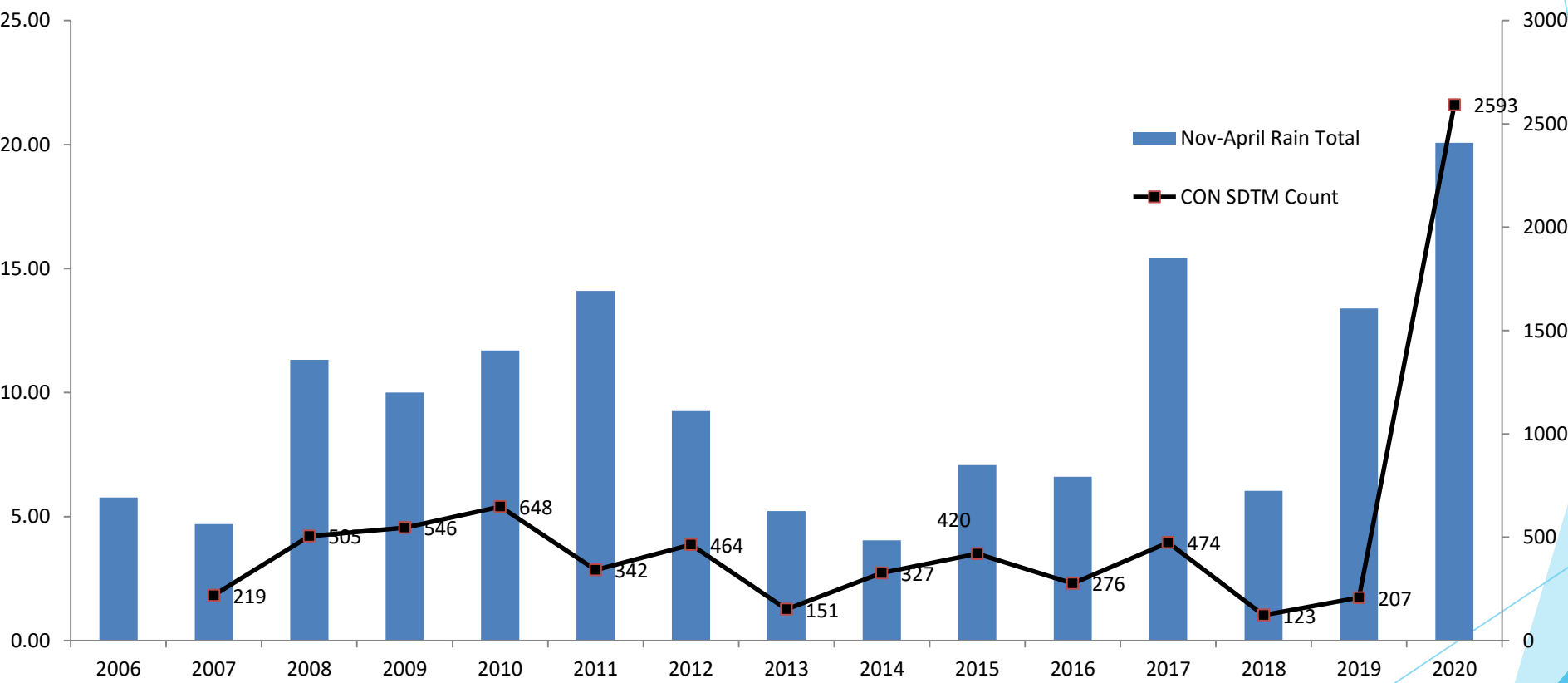
RLC Nov-Apr Rainfall vs Counts



Carlsbad Oaks North

Average Count ~361 individuals*
Excludes 2020 counts

CON Nov-Apr Rainfall vs Counts



Concerns

- ▶ Isolated populations:
 - ▶ Fire and fire preventions actives, soil loss, downhill drift, nonnative species, people
- ▶ Site specific issues:
 - ▶ Manchester: Stochastic events, *C. melintensis*
 - ▶ Rancho La Costa: Small lens, downhill drift, stochastic events, *C. melintensis*
 - ▶ Carlsbad Oaks North: Small lens, downhill drift, stochastic events

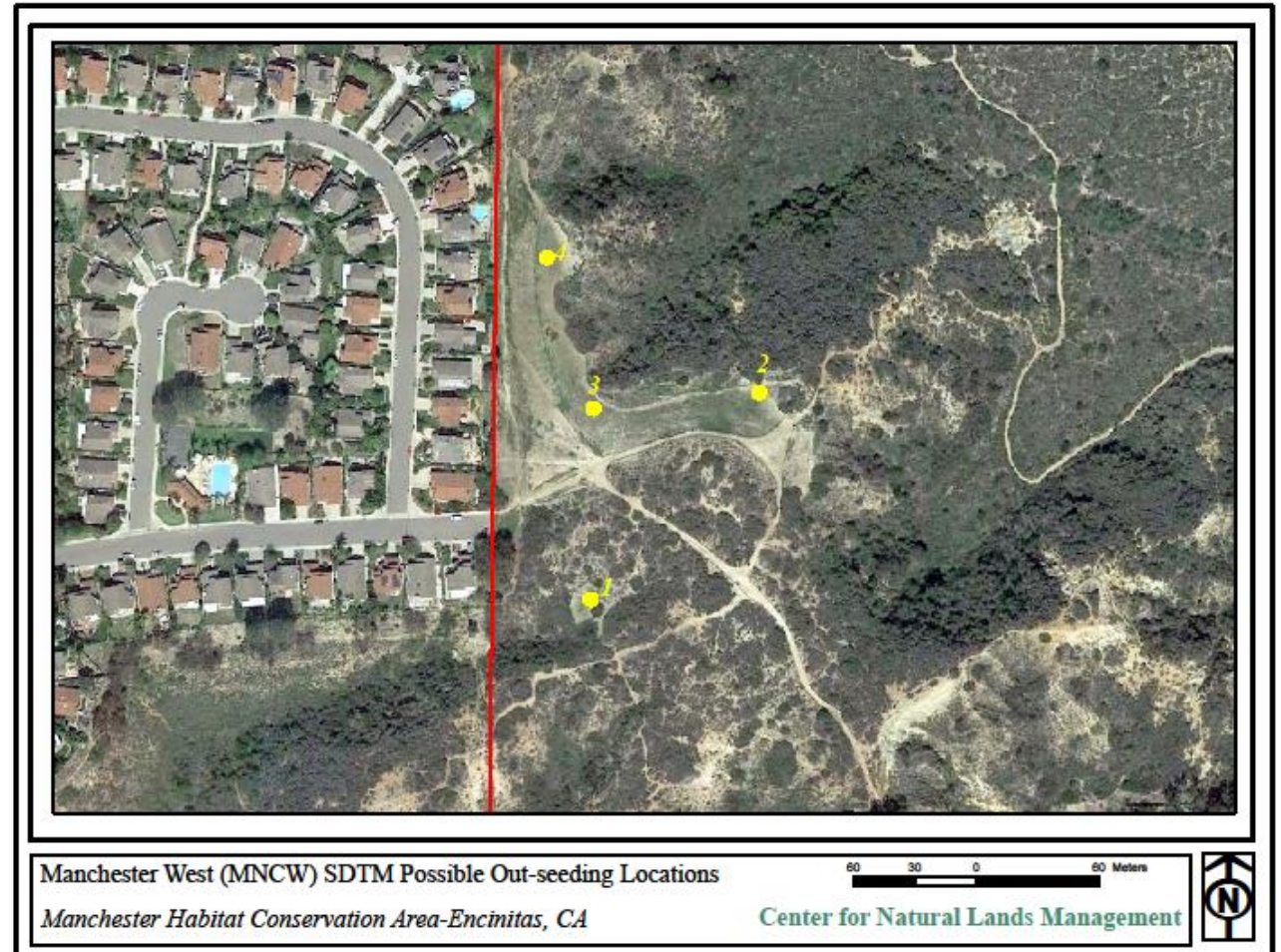
SDTM Enhancement

- ▶ Expand and Buffer
- ▶ Principles
 - ▶ Expansion not to risk existing occurrence
 - ▶ Seed is site specific
 - ▶ Collect seed over multiple years
 - ▶ Use seeds not seedlings
 - ▶ Use direct collection vs. seed bulking



Manchester

- ▶ Expand by seeding suitable unoccupied locations
- ▶ Created occurrence in NE mesa to ~1000 to 2000 individuals
- ▶ Create several new occurrences on NW mesa or areas with low # (500-1000 individuals)

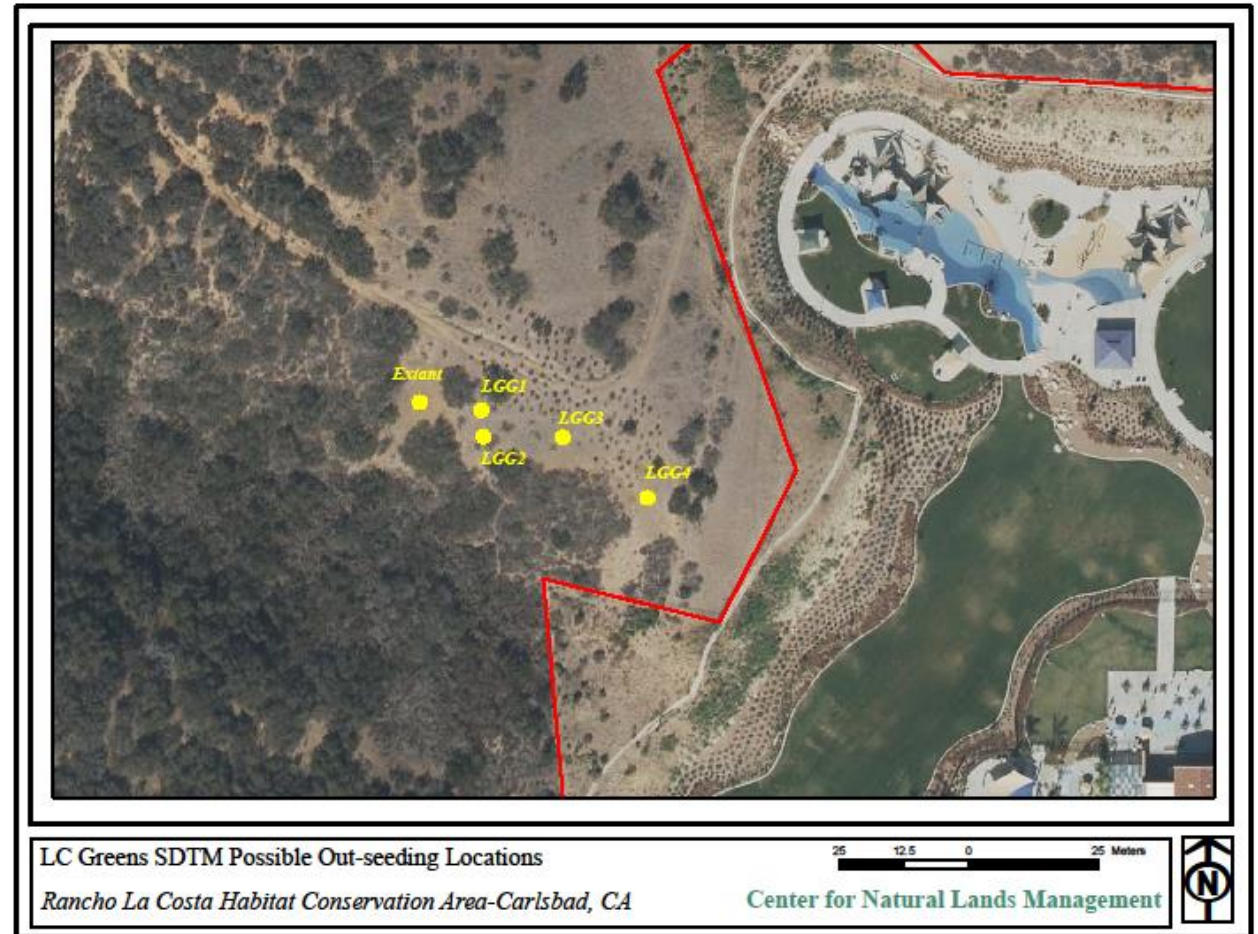


Manchester



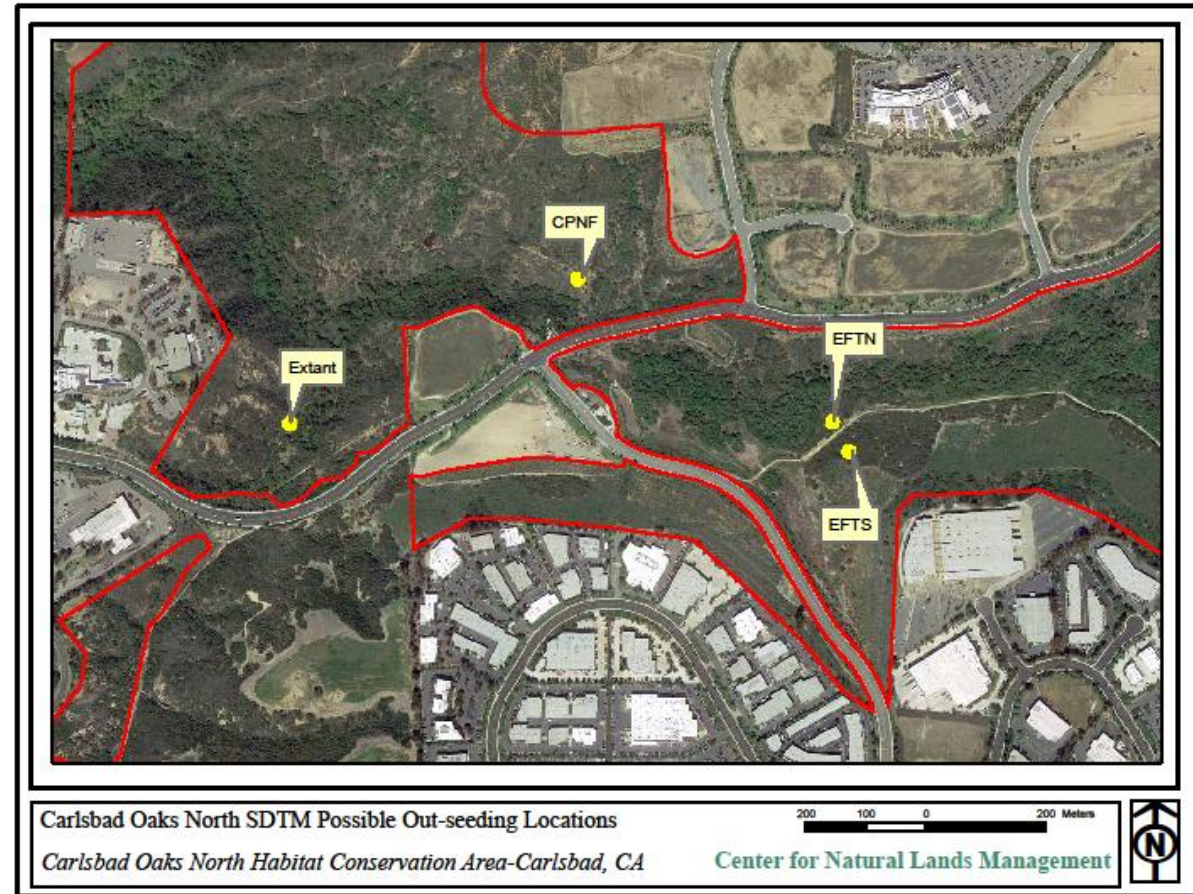
Rancho La Costa

- ▶ Buffer extant occurrence
 - ▶ Uphill seeding
- ▶ Increase extant to ~1000-2000 individuals
- ▶ Expand by seeding nearby unoccupied locations to ~1000-2000 individuals



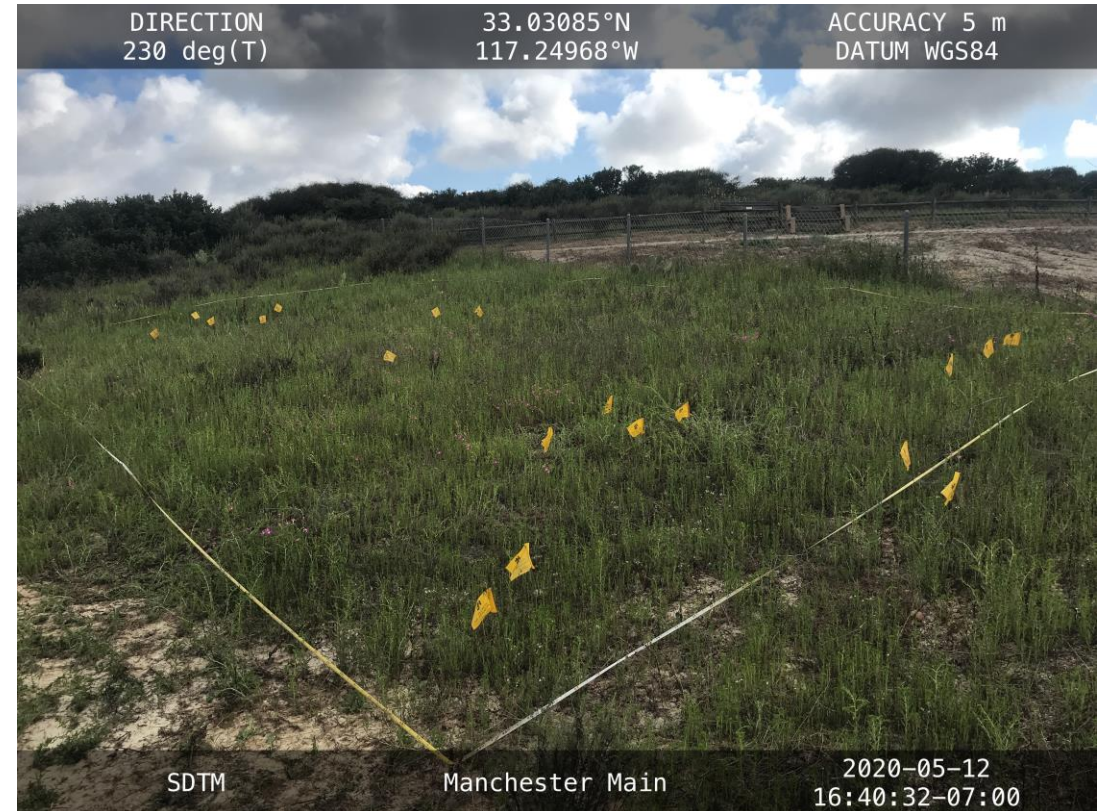
Carlsbad Oaks North

- ▶ Buffer extant occurrence
- ▶ Expand by seeding suitable unoccupied locations
- ▶ Increase extant to ~1000 to 2000 individuals
- ▶ Create several occurrence of ~1000 to 2000 individuals



Actions Taken

- ▶ Collected seed in 2017, 2019, 2020 (subset of plant & size diversity)
- ▶ Stored seed in Washington
- ▶ Germination test
- ▶ Site Analysis: Soil and Vegetation
- ▶ Seeded in November 2018, 2019, 2020* (1st rain)



Seed Collection Numbers

Year	Preserve Name	Plants Collected	Whorls Collected	Seed Estimate	Seeds/ Whorl	Germination	Viability	TZ
2017 Seed	Manchester	165	224	7020	17.4	48%(73%)	76%(73%)	93%
	Rancho La Costa	25	224	5137	22.9	73%(78%)	87%(78%)	91%
	Carlsbad Oaks North	25	53	500	14.2	NP	NP	NP
2019 Seed	Manchester	104	185	3090	16.7	69%	69%	NP
	Rancho La Costa	54	121	2100	17.4	74%	74%	NP
	Carlsbad Oaks North	NC	NC	NC	NC	NC	NC	NC
2020 Seed	Manchester	80	231	10072	43.6	TBD	TBD	TBD
	Rancho La Costa	76	197	6907	35	TBD	TBD	TBD
	Carlsbad Oaks North	36	100	1890	189	TBD	TBD	TBD

Results

2017 Seed, Outseeded 2019

Location	# of Seed Distributed	Results 2019	Percent	Average Whorl 2019	Results 2020	Average Whorl 2020
Manchester NW Mesa (2)	2000	155 individuals	7.8	NC	89 individuals	2.6 (0.3)
Manchester NE (3,4,5)	2000	147 individuals	7.4	2.4 (0.3)	476 individuals	3.1 (0.3)
Rancho La Costa Uphill	1000	55 individuals	5.5	NC	195 individuals	3.1 (0.4)
Rancho La Costa (2)	1000	103 individuals	10.3	5.6 (1.2)	21 individuals	5.9 (2.4)
Carlsbad Oaks North Uphill	250	107 individuals	42.8	3.1 (1.1)	776 individuals	1.4 (0.2)
Carlsbad Oaks North EFTS	250	26 individuals	10.4	1.6 (0.2)	42 individuals	1.0 (0.4)

Results

2017 Seed, Outseeded 2020

Location	Seed Distributed	Results	Percent	Average Whorl 2020
Manchester Valley Uphill	1500	179	11.9	2.8 (0.7)
Rancho La Costa (1)	1500	3	0.2	1 (1)



Results

2019 Seed, Outseeded 2020

Location	Seed Distributed	Results	Percent	Average Whorl 2020
Manchester NW (1)	2250	38	1.7	3.0 (0.8)
La Costa Glen (3)	1200	74	6.2	1 (0.3)



Next Steps

- ▶ Get Viability, Germination, and TZ tests for 2020 seeds
- ▶ Outseed two locations with 2020 at Carlsbad Oaks North (EFTS & EFTN)
- ▶ Outseed one location at Manchester (Uphill of NW Mesa)
- ▶ Continue Maintenance at all sites (RLC 1,2,3, & MNCHW 1)





► Questions?

Thank you!