

Center for Natural Lands Management

City of Carlsbad 2019 Annual Stewardship Summary



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CNLM is a 501(c)3 nonprofit corporation created to protect and preserve biological resources through the long-term stewardship of mitigation and conservation lands.

Biological Monitoring Summary (2019)



- Sensitive Plant Species Monitoring
 - Thread-leaved brodiaea
 - San Diego thornmint
 - Orcutt's hazardia
 - Blochman's dudleya
 - Cliff spurge
 - Box thorn
 - Seaside Calandrinia
 - Others
- Least Bell's Vireo Surveys
- CSS Plots + Arg. ants
- Poinsettia Post-fire Plots
- Adopt-a-Pinch-Point
 - Wildlife Cameras/maintenance
- Wildlife Movement
 - Mule Deer Scat Collection
- SHB surveys

Management



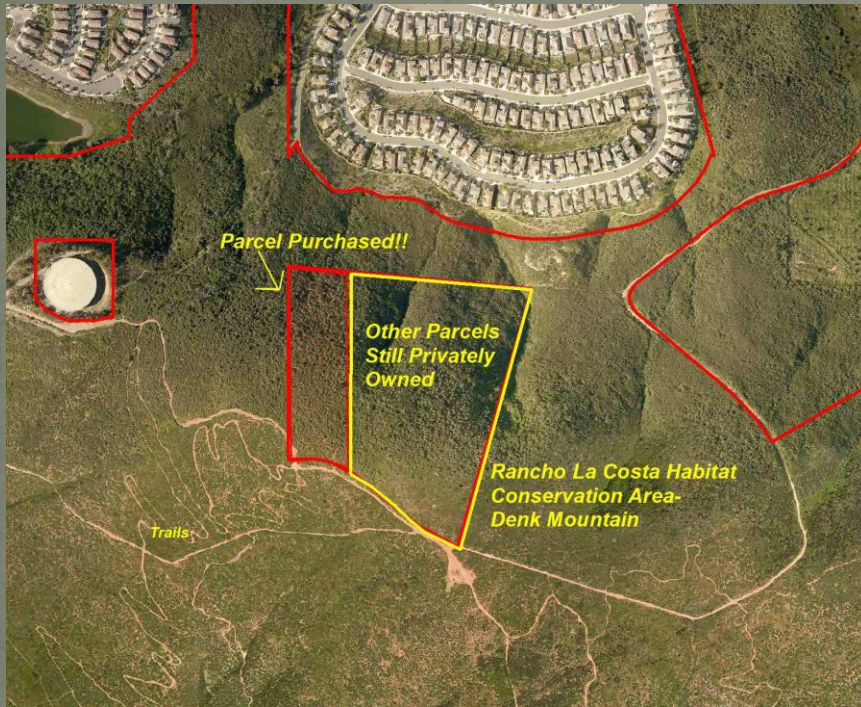
2015



2019

- 1000's of nonnative species treated
 - Ward's weed; Veldt grass, etc
- Planted ~125 Cliff Spurge at Kelly Ranch
- Poinsettia Fire-Burn Area Maintenance
- Out-seeded San Diego Thornmint
- Village H Restoration
 - Planted ~300 grass container stock
 - Hand seeding
- Gibraltar Street Restoration with PC
- 100's of hours of patrols
- Cowbird trapping (GC)
- SHB tree removal at Encinas Creek

RLC-Denk Mountain 5.5 acre purchase



- USFWS Section 6/WCB Grant Funding Purchase
- North County Advocates Financial Assistance
- City of Carlsbad Support
- Fund Raising Effort has raised ~\$14,500 to date for long-term Stewardship



San Diego Thornmint Seed Collection, Expansion and Buffering

Center for Natural Lands Management

Markus Speigelberg, Sarah Godfrey, Brooke Prentice-Dekker, Dr. Deborah Rogers

- Goal: Protect Existing Occurrences from Extirpation
- Objective: Expand and Buffer Existing Occurrences
- Methods:
 - Long-term monitoring
 - Genetic and common garden study
 - Site evaluations (soils and vegetation)
 - Seed Collection & Storage
 - Seed Distribution and Monitoring



DIRECTION
340 deg(T)

33.11813°N
117.26536°W

ACCURACY 5 m
DATUM WGS84

RLC Greens

SDTM

2017-03-21
16:11:37-07:00

Issues

- Isolated occurrences that could easily be lost to various events: fire and fire prevention activities, soil loss, downhill drift, nonnative species, people doing silly things
- Site Specific Issues (short term)
 - Carlsbad Oaks: small lens, downhill drift, stochastic event
 - RLC: ~small lens, downhill drift, *C. melintensis*, stochastic event

Site Specific Objectives

- Carlsbad Oaks North (counts at low end of range in 2019)
 - Buffer extant occurrence by seeding “uphill”
 - Expand by seeding suitable unoccupied locations
 - Increase extant to ~1,000-2,000 individuals
 - Create several occurrences of ~1,000-2,000 individuals
- Rancho La Costa (largest count ever in 2019)
 - Buffer extant occurrence by seeding “uphill”
 - Increase extant to 1,000-2,000 individuals

Recent Actions

- Collected seed in summer 2017-did not take entire plants-only subset of seed whorls
 - Rancho La Costa ~5,137 seeds from 50 plants (224 whorls)
 - Carlsbad Oaks N ~500 seeds from 25 plants (53 whorls)
- Stored seed in WA storage facility
- Germination tests (May, 2018)
 - Manchester (76% viable via germ tests; TZ 93%)
 - RLC (87% viable via germination tests; TZ 91%)
- Site Analysis
 - Soils and vegetation
- Seeded in fall 2018 after first rain
- Collected seed again in 2019 and seeded in the fall of 2019

Results (2018 seeding and 2019 flowering)

Location	Seed Distributed	Results	%
RLC- Uphill Buffering	1,000	55 individuals	5.5
RLC- Buffering	1,000	103 individuals	10.3
CON-Uphill Buffering	250	107 individuals	43.0
CON-New	250	26 individuals	10.4

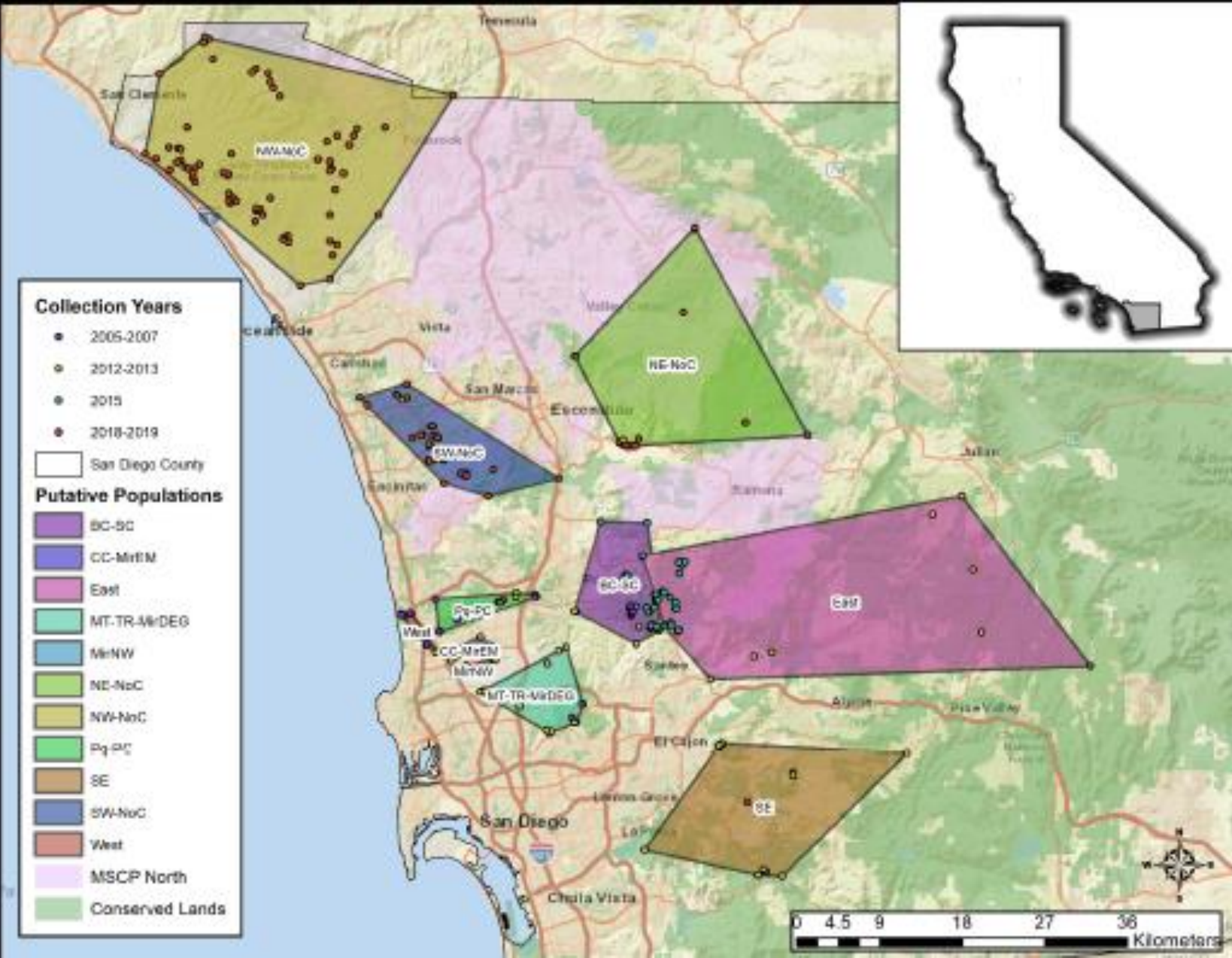
Southern Mule Deer Movement Study



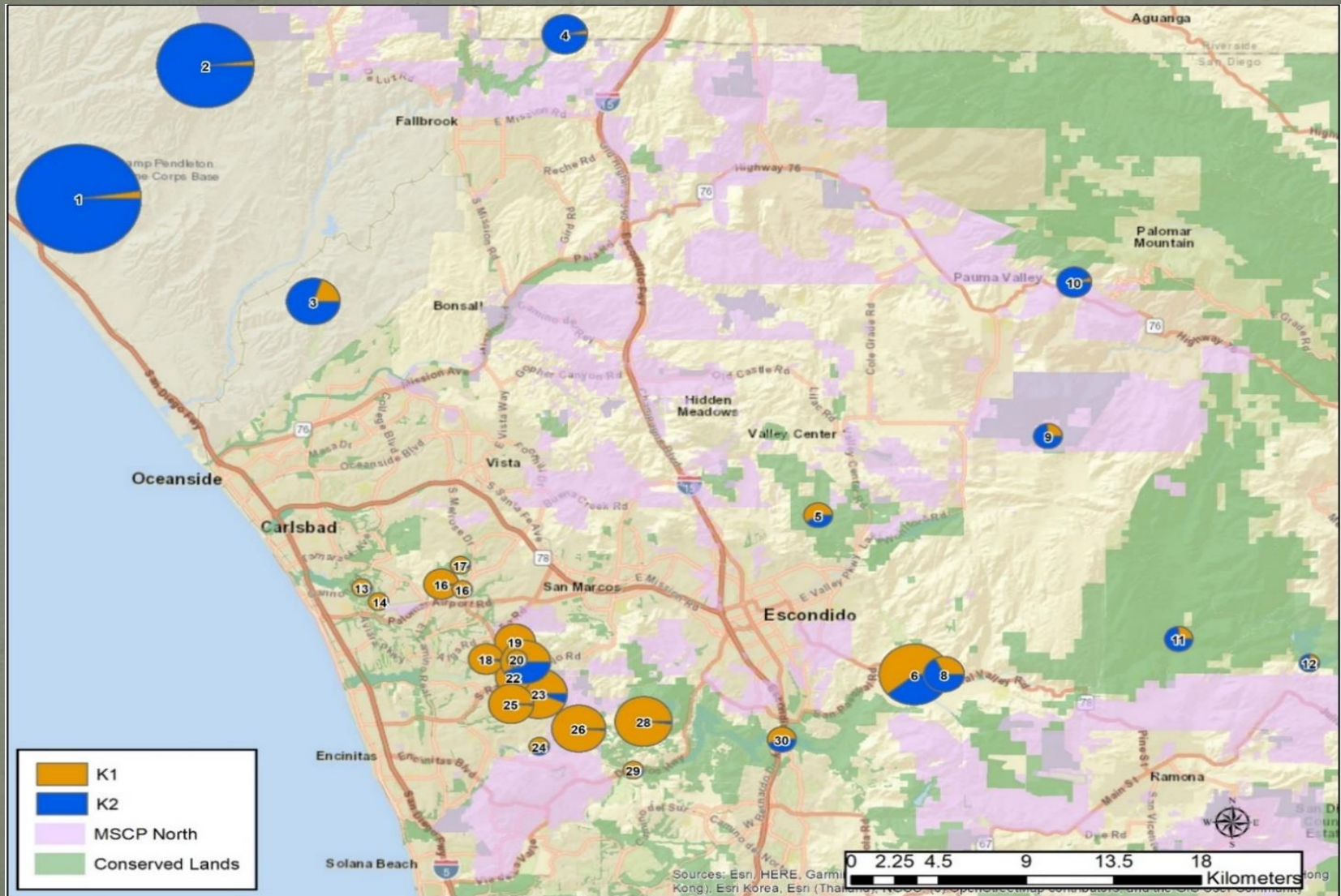
- North County Coastal Population and Movement Poorly Understood
- Road Kill and Public Safety issue
- Deer located north of Palomar Airport stranded?
- How many deer?
- Primary movement patterns?
- Gene flow?
- Engaged in Regional Study with SDMMP/USGS

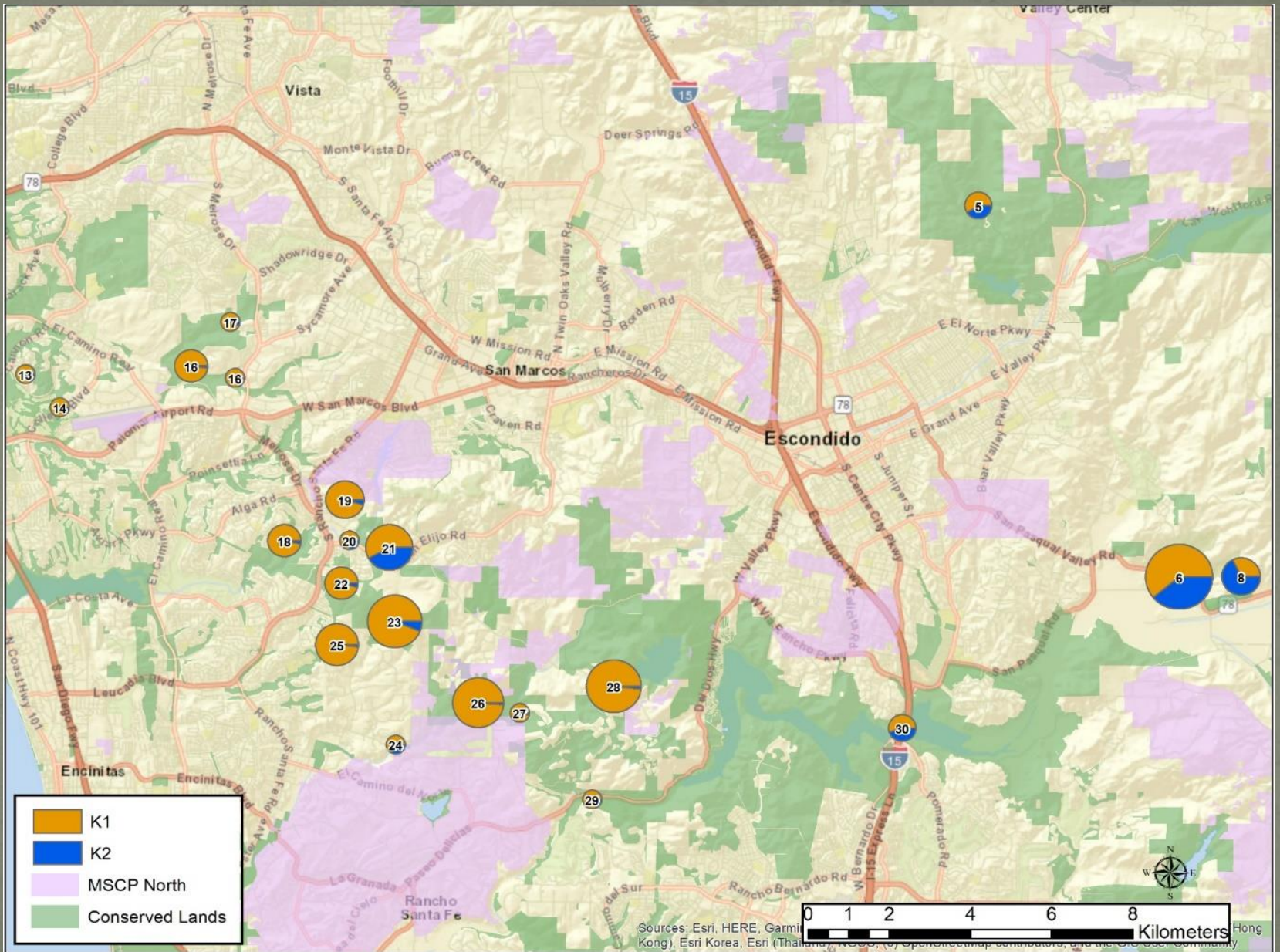
Regional Study

- Primary focus on deer movement and gene flow across North County
- Secondary focus was to assess genetic structure across San Diego
- Methods: Scat collections and tissue, genetic analysis
- Sampled April-June, 2018 and February 2019
- ~354 scat/tissue samples used, of which 205 came from Carlsbad group! No region sampled as intensely as Carlsbad!!



2 genetic clusters





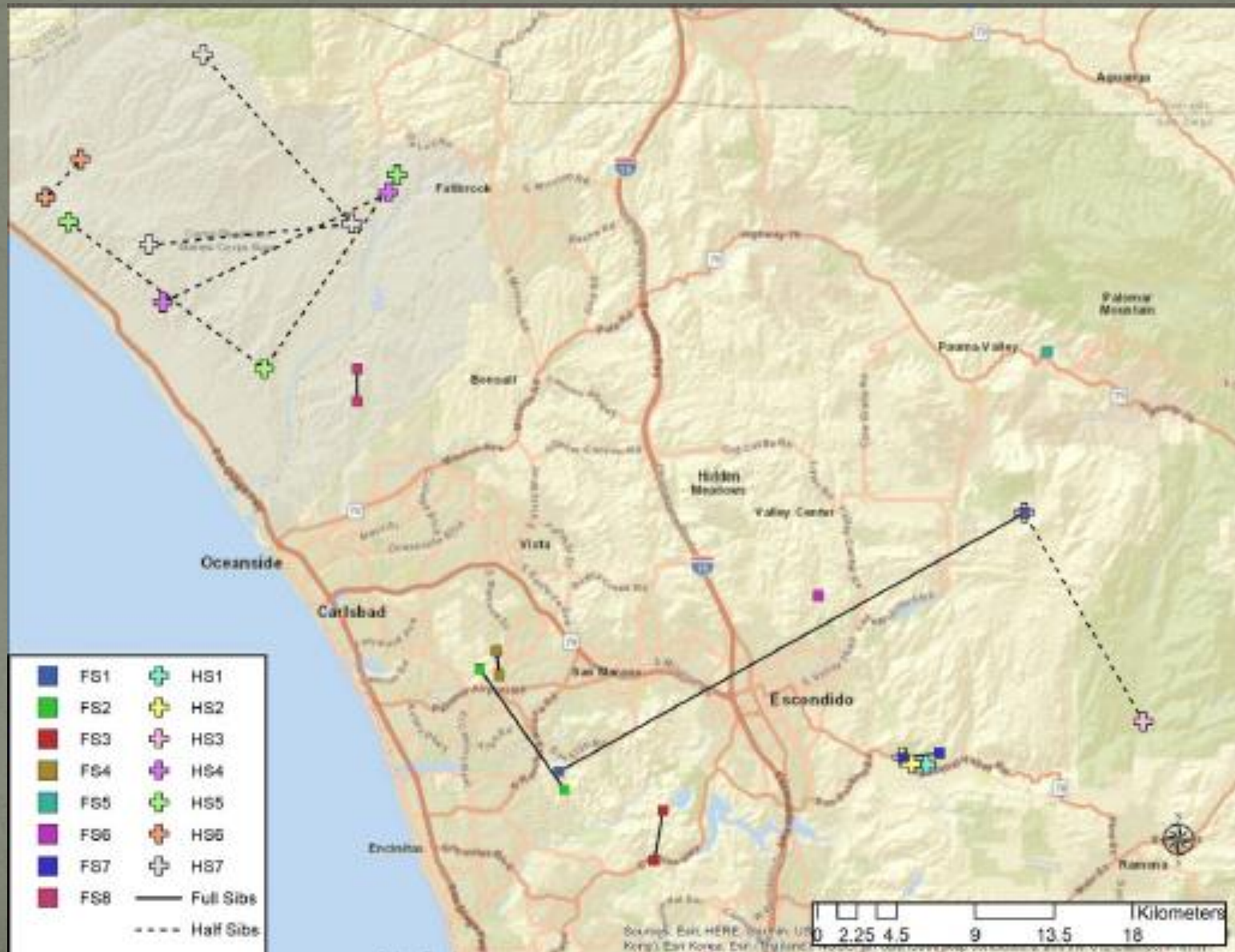
Sources: Esri, HERE, Garmin, Esri Korea, Esri (Thailand), NAVTEQ, and the OpenStreetMap contributors, and the GIS User Community







Siblings/Half Siblings



Other Results and Summary

- Less Genetic Diversity in Coastal Cluster than other regions of San Diego
- Movement mostly restricted within sub-geographic areas
- Deer Totals
 - 24 deer in Carlsbad
 - 48 deer from Crossings east to Elfin Forest/Bridges
 - 10 deer North of Palomar Airport Road
- 59 Individuals Found in the SWNoC with Effective Population Size of 45.1 (range 31-69)
 - N_e below threshold of 100 to avoid genetic inbreeding

Future work

- Signage (i.e. RSF Road others)
- Collections
 - More Collections needed to further study gene flow and movement (CHER-EncCreek-LC Glen)
- Radio Collaring
- Undercrossing Management