

SMALL MAMMALS OF SOUTHERN CALIFORNIA

Venkat Sankar

May 22-23 and June 18-20, 2020 (5 nights total)

Introduction

The Peninsular Ranges and Colorado Desert of Southern California are home to one of the world's highest diversities of rodents. The region represents the global center of diversity for pocket mice and also holds an impressive number of kangaroo rat, *Peromyscus*, and woodrat species. "Stuck" in California since spring due to the coronavirus pandemic and eager to return to the region (my last trip was in 2017), I took advantage of good but late spring rains to explore a selection of sites with the goal of getting to grips with southern California's small mammals.

All rodents were found without live-trapping on walks or drives, aided by a Pulsar thermal scope. These excursions were my first time using the scope to find desert mammals, and it performed amazingly well. Rodents were only confidently identified if I could appreciate multiple of each species' key field marks, and all IDs were verified by checking database collections where present, or the *San Diego Mammal Atlas*.

Adam Walley in San Diego also visited several of these sites regularly, and we spent a very enjoyable and productive night searching for small mammals together in eastern San Diego County. Thanks, Adam for a great time in the field and the excellent advice on Snow Creek and Anza-Borrego.

Part 1: Joshua Tree South and Palm Springs



Desert Woodrat (*Neotoma lepida*)

(5/22) Departing around midday from the SF Bay Area, I traveled south on the I-5 and I-10 to San Geronimo Pass, arriving around nightfall. I spent 30 minutes (8:30-9PM) exploring Snow Creek Canyon Road (after eating dinner), seeing 3 **Desert Pocket Mice** and 5 **Bryant's/Desert Woodrats** (both are thought to meet in the Coachella Valley).

I then drove the remaining hour to Joshua Tree South BLM Lands near Cottonwood Springs, at the southern entrance of Joshua Tree NP. The area was teeming with rodents, and I saw 5 species in just 1.5 hours (10:30-12AM) of night walking, with a thermal imager. **Merriam's Kangaroo Rats** were abundant and I saw at least 20, including many juveniles (indicating a late reproductive peak coinciding with spring rains). There were also at least 5 **Long-tailed Pocket Mice** and a **Spiny Pocket Mouse** around boulders in the scrubby washes. Lots of (10+ seen) **Desert Woodrats** were nesting in the creosote and ocotillo, and I saw a **Cactus Mouse** near a nest too.

After 2 hours of sleep, I went to Red Cloud Wash in the Chuckwalla Mountains, arriving around 2:30AM. This barren landscape of stony desert pavement composed of black rock chips is **Baja Pocket Mouse** habitat, and I found 2 adults and 1 juvenile crossing rocky patches between stunted shrubs, where they burrow. Although reliable records of this species are sparse in southern California, I suspect it might be quite common in its preferred habitat—sparsely vegetated, barren rocky or heavy gravel desert at the base of arid mountains. Perhaps the reason for its perceived rarity is that most of this habitat is in remote, rarely visited areas of low Colorado Desert in eastern Riverside and Imperial Counties. Woodrats were abundant, and I saw more than 10 **Desert Woodrats** and at least 2 of the larger **White-throated Woodrats**, in the sandy washes around mesquite trees. A few **Merriam's Kangaroo Rats** were around too. Several **White-tailed Antelope Squirrels** and **Black-tailed Jackrabbits** were along the road out the next morning.



Baja Pocket Mouse (*Chaetodipus rudinoris*) juvenile

(5/23) After a few hours' sleep and breakfast, I searched around the very flat, sandy Coachella Valley Preserve and finally found a rare **Palm Springs Ground Squirrel** on Ramon Road. Very tired from the previous night, I continued up to Thomas Mountain to escape the desert heat and get a few more hours' rest.



Record shot of a pale, rare Palm Springs Ground Squirrel (*X. tereticaudus chlorus*)

I spent the afternoon scouting sites for night walks in the Santa Rosa-San Jacinto NM, and looking for California Chipmunk near Pinyon Pines, which I didn't see (I did however see a **California Ground Squirrel**). After dinner, I returned to the area for a few hours (9PM-12AM). A brief night walk near Ribbonwood only produced a **Brush Mouse**, but the pinyon-juniper woodland around the Sawmill Trailhead was better, with a **Dulzura Kangaroo Rat**, a **Pallid San Diego Pocket Mouse**, and 2 **Pinyon Mice**. A brief heat scoping session along Carrizo Road produced many rodents, but I was tired and saw most poorly; I could identify many **Merriam's Kangaroo Rats**, 2+ **Bryant's Woodrats**, and 2 **Black-tailed Jackrabbits**. It would've been nice to visit low-elevation palm canyons to look for Spiny Pocket Mouse, Canyon Mouse, and Western Yellow Bat (all common, according to Adam), but I couldn't find a site with legal night access.



Dulzura Kangaroo Rat (*Dipodomys simulans*)

I slept for 3 hours then went back to Snow Creek Canyon Road for more night driving. Activity was even higher than on the last visit, and a different set of species was

present. I saw a pale **Merriam's Kangaroo Rat**, 6+ **Palm Springs Pocket Mice**, a few more **Bryant's/Desert Woodrats**, and 10+ *Peromyscus*—1 **Desert Deer Mouse** and several others I couldn't identify (probably Cactus/Northern Baja Mouse). Lots of **Black-tailed Jackrabbits** and **Desert Cottontails** were around when I woke up. Unfortunately, I ran out of time to visit Whitewater Road, where Adam has seen Southern Grasshopper Mouse twice.

Part 2: Hemet, Julian, and the Anza-Borrego Desert

(6/18) After another somewhat brutal drive from the SF Bay Area, I arrived in the Laguna Mountains around 8:30 PM. Here, I met up with Adam Walley, whom I had corresponded with extensively on southern California's small mammals, and we set off on a night of exploring the Laguna Mountains and Anza-Borrego Desert.

We visited a bridge in the Laguna Mountains rumored to hold night-roosting bats, which turned out to be incredible! We found many **California Myotis**, **Yuma Myotis**, and **Big Brown Bats** plus some rare treats—2 excellent **Long-eared Myotis**, a **Fringed Myotis**, a **Dark-nosed Small-footed Myotis**, and 2 lovely **Townsend's Big-eared Bats**! Due to the sensitivity of the site and species involved, I feel it should not be in the public domain; those who know me are welcome to ask for site info by PM. Every bat species listed was identified from photographs we took of bats night-roosting under the bridge.



Townsend's Big-eared Bat (left) and Long-eared Myotis (right)

We continued directly to Sentenac Cienega, a large sandy arroyo at Scissors Crossing. Adam and I found 2 rare, distinctly yellowish **Aguanga Kangaroo Rats**, a **Pallid San Diego Pocket Mouse**, 2 **Cactus Mice**, 2 **Desert Deer Mice**, and a probable **Bryant's Woodrat** in an hour. *Dulzura* Kangaroo Rat, Los Angeles Pocket Mouse, and Southern Grasshopper Mouse (*ramona*) also occur here, though none are common. The bridge at Scissors Crossing held no bats and little evidence of use.

We then explored the amazing County Highway S2 to Vallecito Stage Station County Park. The Old Butterfield Station here is a night roost site for California Leaf-nosed Bats (and a few other sp.), but the park was closed (open for camping early Sep-late May

only) with stern warnings against trespassing so we dropped the idea of a night visit. We then worked our way north through the alternating grades and valleys of the S2. The valleys were loaded with **Merriam's Kangaroo Rats** and **Desert Pocket Mice**. The latter were particularly abundant in the Mason and Vallecito Valleys, and we were surprised to see many climbing 2-3ft up in creosote bushes foraging for berries. Other notable sightings included a **White-throated Woodrat** (in a mesquite thicket) and a (surprise!) large, gray **Baja Pocket Mouse** in Vallecito Valley, 2 **Jacumba Pocket Mice** in Blair Valley, and 2 **Long-tailed Pocket Mice**, several **Bryant's Woodrats**, and a **Cactus Mouse** on the rocky grade between Mason and Blair Valleys. **Desert Cottontail** and **Black-tailed Jackrabbit** were also abundant.



Jacumba Pocket Mouse (*Perognathus longimembris internationalis*)

We spent the remainder of the night on the grade between Scissors Crossing and Yaqui Pass. In Sentenac Canyon, we had excellent, very close views of a **Canyon Mouse** on a vertical bare rock face, then many **Desert Pocket Mice** and a surprise **Little Pocket Mouse** on the rise leading to Tamarisk Grove CG. Exploring the rocky road cuts at Yaqui Pass, we saw 2 **Long-tailed Pocket Mice** well, 2 **Bryant's Woodrats**, and another **Canyon Mouse**, but only 2 possible glimpses of the main target, **Spiny Pocket Mouse**. A lovely Peninsular Leaf-toed Gecko was ample consolation, however.

Returning to Julian, we slowly drove the pinyon-juniper habitat between Scissors Crossing and Banner, seeing at least 1 **California/San Diego Pocket Mouse** (probably San Diego, which is much more abundant here based on capture records). This is one of the few sites in San Diego County for Pinyon Mouse, and Brush Mouse and Western Harvest Mouse occur, but we saw none of these. We then added a **Striped Skunk** and a few **Mule Deer** on the grade up to Julian as the sun rose, ending the night with an amazing 23 species!

(6/19) The previous all-nighter merited a relaxing day, and I only left our comfortable Airbnb for more mammals at 8PM! We first drove to Dripping Springs, seeing several **California/San Diego Pocket Mice** en route near Ranchita, Warner Springs, and Holcomb Valley. On a previous trip, Adam saw California Mouse and night-roosting

Pallid Bats at a nearby bridge, but I couldn't find the access point in the dark and left empty-handed...

I continued to Crown Valley near Hemet, where 40 minutes of thermal scoping produced a remarkable 30+ rare **Stephens' Kangaroo Rats**, 3 **Northwestern San Diego Pocket Mice**, a **North American Deer Mouse**, and a few **San Diego Black-tailed Jackrabbits** and **Desert Cottontails**. A visit to a different part of the SW Riverside Co. Multi-Species Reserve along Thomas Road produced 4 lovely **Dulzura Kangaroo Rats**, 2 more **Northwestern San Diego Pocket Mice**, and finally a **Northern Baja Mouse**. The sandy chaparral habitat here also holds Southern Grasshopper Mouse (*ramona*) and Ticul's Desert Shrew.



Northern Baja Mouse (*Peromyscus fraterculus*)

The final site visited in the Aguanga area, Tule Creek, is probably the only publicly accessible area of the rare Riversidean alluvial sage scrub habitat. A short visit was enough to find 1 rare **Los Angeles Pocket Mouse** in the sandy wash, but no more Aguanga Kangaroo Rats. I also saw 4 more **Dulzura Kangaroo Rats**, 3 more **Northwestern San Diego Pocket Mice**, and a **Bryant's Woodrat** nearby.

But the night wasn't over yet... Returning on Highway 79, I kept seeing rodents and, of course, had to make stops to walk, get proper views, and make IDs. It was nice to see a **California Mouse** near Sunshine Summit and 4 **Stephens' Kangaroo Rats** in the open grasslands on Warner Springs Ranch (the species' stronghold).

(6/20) After another relaxing morning and late afternoon start, we went to the area near Indian Gorge and Agua Caliente County Park to look for Bighorn Sheep at canyon entrances and an undescribed dark ssp. of Round-tailed Ground Squirrel in Mason Valley. No luck on either front, but I did see some **Black-tailed Jackrabbits** and added **White-tailed Antelope Squirrels** and **California Ground Squirrel** to the trip list.

After a quick dinner, my dad and I went to Ocotillo Wells and drove the Fish Creek Wash Jeep Trail to Split Mountain (33.03893, -116.09689). This really needs 4WD and preferably high clearance (our Subaru Outback scraped the rocky bottom once). Take care to stay on the stabilized track and do NOT veer off onto the sandy wash, which bogged down an F150 on our way in! A rocky crag at Split Mountain is a roost site for **Pocketed Free-tailed Bats** and **Western Mastiff Bats**, and we saw at least 15 of the former and 2 of the latter emerging high above. It was nice to hear the different flight calls, with the soft chirps of the freetails contrasting with the very loud, harshly metallic calls of the large mastiff bats, which flew a fast, straight flight down the canyon. There were also a few **Canyon Bats** around, with a low moth-like flight. Returning to Highway 78 on Split Mountain Road, there was a **Desert Kangaroo Rat**, 2 **Desert Pocket Mice**, and a **Palm Springs Pocket Mouse** in the Ocotillo Wells SVRA.

We then went to the very hot, sandy Borrego Valley and explored Borrego Valley and Henderson Canyon Rds. I didn't notice it at the time, but including Peg Leg Rd would make a nice circuit through the sparsely vegetated windblown sands. There were loads of **Desert Pocket Mice** and several **Merriam's Kangaroo Rats**, but best of all were great views of 3 lovely, large and pale **Desert Kangaroo Rats** with white-tipped tails. Another pleasant surprise was a very pale, almost white **Baja California Pocket Gopher** (ssp. *albatus*) waddling along the roadside. It was also nice to see a couple of Desert Banded Geckos and a Spotted Leaf-nosed Snake. Palm Springs Pocket Mouse and Kit Fox also occur here, and during the day, Round-tailed Ground Squirrel. Due to the heat (91F), I had to forego my heat scope in favor of "old-fashioned" spotlighting!



Desert Pocket Mouse (*Chaetodipus penicillatus*)

I then went back to Yaqui Pass to look again for Spiny Pocket Mouse. Despite an hour of effort, I saw very few rodents—just a few unidentified pocket mice and a **Bryant's Woodrat**. Somewhat disappointed, I continued to Sentenac Canyon where a **Spiny Pocket Mouse** suddenly appeared on the road, froze, and gave great views. Finally! There were also several **Desert/Long-tailed Pocket Mice** in the area.

Very pleased, I returned to Blair Valley to explore some promising grassland habitat I had seen in the afternoon for Southern Grasshopper Mouse. No luck with those, but the valley was loaded with **Merriam's Kangaroo Rats** and **Desert Cottontails**.

Returning to Julian on the Banner Grade, I saw several kangaroo rats (likely **Merriam's**) in the pinyon-juniper zone, and a **Gray Fox** and an almost-certain (by habitat and elevation) **Dulzura Pocket Mouse** in the chaparral above Banner. So another epic (16-species) night and a great end to the trip!

Combined Species List:

1. White-tailed Antelope Squirrel (*Ammospermophilus leucurus*)
2. California Ground Squirrel (*Otospermophilus beecheyi*)
3. Round-tailed Ground Squirrel (*Xerospermophilus tereticaudus*)
 - a. Palm Springs Ground Squirrel (*X. t. chlorus*)
4. Baja California Pocket Gopher (*Thomomys nigricans*) (ssp. *albatus*)
5. Desert Kangaroo Rat (*Dipodomys deserti*)
6. Merriam's Kangaroo Rat (*Dipodomys merriami*)
 - a. Aguanga Kangaroo Rat (*D. m. collinus*)
7. Dulzura Kangaroo Rat (*Dipodomys simulans*)
8. Stephens' Kangaroo Rat (*Dipodomys stephensi*)
9. California Pocket Mouse (*Chaetodipus californicus*) (probable)
 - a. Dulzura Pocket Mouse (*C. c. femoralis*)
10. San Diego Pocket Mouse (*Chaetodipus fallax*)
 - a. Northwestern San Diego Pocket Mouse (*C. f. fallax*)
 - b. Pallid San Diego Pocket Mouse (*C. f. pallidus*)
11. Long-tailed Pocket Mouse (*Chaetodipus formosus*)
12. Desert Pocket Mouse (*Chaetodipus penicillatus*)
13. Baja Pocket Mouse (*Chaetodipus rudinoris*)
14. Spiny Pocket Mouse (*Chaetodipus spinatus*)
15. Little Pocket Mouse (*Perognathus longimembris*)
 - a. Palm Springs Pocket Mouse (*P. l. bangsi*)
 - b. Los Angeles Pocket Mouse (*P. l. brevinasus*)
 - c. Jacumba Pocket Mouse (*P. l. internationalis*)
16. White-throated Woodrat (*Neotoma albigula*)
17. Bryant's Woodrat (*Neotoma bryanti*)
18. Desert Woodrat (*Neotoma lepida*)
19. Brush Mouse (*Peromyscus boylii*)
20. California Mouse (*Peromyscus californicus*)
21. Canyon Mouse (*Peromyscus crinitus*)
22. Cactus Mouse (*Peromyscus eremicus*)
23. Northern Baja Mouse (*Peromyscus fraterculus*)
24. North American Deer Mouse (*Peromyscus maniculatus*)
 - a. Desert Deer Mouse (*P. m. sonoriensis*)
25. Pinyon Mouse (*Peromyscus truei*)
26. Black-tailed Jackrabbit (*Lepus californicus*)
 - a. San Diego Black-tailed Jackrabbit (*L. c. bennettii*)

27. Desert Cottontail (*Sylvilagus audubonii*)
28. California Myotis (*Myotis californicus*)
29. Long-eared Myotis (*Myotis evotis*)
30. Dark-nosed Small-footed Myotis (*Myotis melanorhinus*)
31. Fringed Myotis (*Myotis thysanodes*)
32. Yuma Myotis (*Myotis yumanensis*)
33. Townsend's Big-eared Bat (*Corynorhinus townsendii*)
 - a. Pale Big-eared Bat (*C. t. pallescens*)
34. Big Brown Bat (*Eptesicus fuscus*) (ssp. *pallidus*)
35. Canyon Bat (*Parastrellus hesperus*)
36. Western Mastiff Bat (*Eumops perotis*)
37. Pocketed Free-tailed Bat (*Nyctinomops femorosaccus*)
38. Gray Fox (*Urocyon cinereoargenteus*)
39. Striped Skunk (*Mephitis mephitis*)
40. Mule Deer (*Odocoileus hemionus*) (ssp. *fuliginatus*)

Other possibilities

1. Desert Shrew and Southern Grasshopper Mouse were two uncommon (or at least rarely seen) species I hoped to luck into somewhere but never did. Adam has seen both (the former in a palm oasis near Palm Desert, and the latter at Whitewater Rd), but he has spent more time in the field in Southern CA than I have this year.
2. Among the regional specialties, I was disappointed not to see any Bighorn Sheep and also missed Western Yellow Bat and Ringtail this year (all of which I've seen before). This was due to not spending time in palm canyons, where all are reasonably common.
3. Pine-oak forests of the Peninsular Ranges (e.g. Cuyamaca Rancho SP) hold many typical species of the CA Coast Ranges, e.g. Western Gray Squirrel, Merriam's Chipmunk, Ornate Shrew, Brush Rabbit, California Vole, Large-eared Woodrat, Bobcat, etc. none of which I observed due to lack of effort in appropriate habitats.
4. I saw California (Dusky) Chipmunk in 2017 on Mt. San Jacinto, but missed it this year in the Santa Rosa Mountains. It is perhaps best to look for this species at Barker Dam in Joshua Tree NP, where it is both common (unlike in the Santa Rosas) and the only chipmunk species.
5. High-elevation conifer forests of the San Bernardino Mountains hold several montane isolates: Humboldt's Flying Squirrel (rare ssp. *californicus*), Golden-mantled Ground Squirrel, Lodgepole Chipmunk, Long-tailed Vole, and Montane Shrew, and Little Brown Bat.
6. The most interesting part of Southern CA I didn't visit this year is the Lower Colorado River near Blythe. California Leaf-nosed Bat and Western Red and Yellow Bats are common, and several species just occur into CA here like Cave and Arizona Myotis and Arizona Cotton Rat.