

Grinnell Resurveys in the Mojave Desert: SDNHM Field Report #3

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Since last fall, our resurveys in the eastern Mojave Desert have continued with field trips to the area around Kessler Spring 3 miles north of Cima, 6–10 November 2016, to the eastern section of Cedar Canyon 10–14 November 2016, to the Borrego Canyon/Cave Spring area on the east side of the Providence Mountains 28 November–2 December 2016, and to Horse Thief Spring and vicinity at the north base of the Kingston Range 23–27 May 2017. All of these surveys encompassed both birds and mammals, except the one to Cedar Canyon in November addressed mammals only. Our trips paralleled work by various biologists from the Museum of Vertebrate Zoology around Cima and in Cedar Canyon in January 1938, to the region east of the Providence Mountains near Granite Well in December 1937 and January 1938, and to Horse Thief Spring in June 1939 and June 1940.

These sites range in elevation from about 3700 feet near Cave Spring up to about 5100 feet in Cedar Canyon, except on the north side of the Kingston Range we also climbed up the steep slope as high as 6600 feet to reach this sky island's zone of pinyon pines just below where it transitions to white fir. Below the pinyon zone, which includes upper Cedar Canyon, the vegetation is diverse desert shrubs with varying densities of the Joshua tree. Permanent water is available to wildlife at Cave Spring, Kessler Spring, and Horse Thief Spring, but the surrounding oases of water-loving plants such as cottonwood trees, willows, and cattails are minimal, except at Horse Thief Spring, where they are well-developed enough to have become a well-known stop for migrating birds.



Water at Cave Spring with no surrounding riparian vegetation.



Small patch of cattails at Kessler Spring.



A portion of the substantial riparian habitat at Horse Thief Spring, Kingston Range.

We continue to accumulate data supporting the idea that certain birds have increased or spread over the past 75 years. Among the more interesting is the Crissal Thrasher, which we found at all three sites whose bird surveys we address in this report. The early surveys detected it at none of the three, though they did encounter one or two individuals at two nearby sites we have not covered yet. And the thrasher is no longer rare: around both Kessler Spring and Borrego Canyon we recorded it daily, with up to 6 individuals per day. Though often shy, the birds made themselves conspicuous by calling frequently. Including Cedar Canyon, we have now found this species at 4 sites that the early expeditions covered well without encountering a single individual. Therefore we think it likely there has been an actual increase and question the conclusion (in the California Department of Fish and Wildlife's "California Bird Species of Special Concern") that the apparent spread represents "increased observer coverage rather than a true range extension."

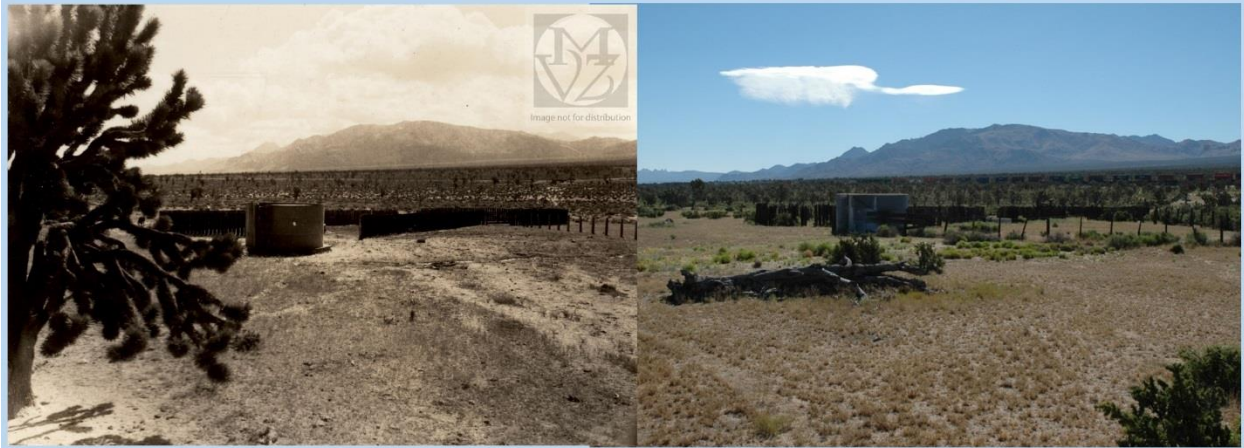
Of course, one goal of our study is detecting changes that may be linked to climate change. One of the strongest candidates for such a change is the Black-tailed Gnatcatcher. MVZ's early expeditions did not report this tiny bird anywhere in the eastern Mojave Desert. Of the few sites from which Joseph Grinnell and Alden Miller cited it in their 1944 book on the distribution of California birds, the highest in elevation is Goffs, at 2590 feet. We have recorded the Black-tailed Gnatcatcher at Borrego Canyon (3850 feet), Kessler Spring (4860 feet), and Cedar Canyon (5200 feet), and many reports to www.eBird.org attest that it is now a widespread resident up to at least 5000 feet elevation. In 1998, the late Pat Mock proposed that the closely related California Gnatcatcher is limited by winter low temperatures, being unable to survive when the nighttime low consistently dips below 2.5° C (*Western Birds* 29:413–420). Possibly, the Black-tailed is similarly limited but has been able to spread upslope as winter temperatures have warmed.



Black-tailed Gnatcatcher at Kessler Spring, November 2016. (Photo by Lea Squires.)

An apparently recent range expansion is of the Rufous-crowned Sparrow to the Kingston Range. In our report on our spring 2016 trip to Cedar Canyon, we mentioned our discovery of the species there, representing a spread of the population of *Aimophila ruficeps scottii* discovered in the New York and Providence mountains in the 1970s. Previously, this subspecies had been known only from Arizona, southwestern New Mexico, Sonora, and Chihuahua. On our hikes up the steep north face of the Kingston Range on 24 and 25 May 2017, we encountered at least three singing males at elevations between 5200 and 5700 feet. The Rufous-crowned Sparrow was missed in the Kingston Range by not only Alden Miller and colleagues from the MVZ in 1939 and 1940, but also by Steve Cardiff and Van Remsen during their visit in June 1977 (*Western Birds* 12:73–86, 1981). But in 1980 C. Bradley Bush recorded it on two dates (in *The Kingston Range of California: A Resource Survey, Environmental Field Program, University of California, Santa Cruz, Publication 10*, 1983). He interpreted the birds were spring migrants, but the Rufous-crowned Sparrow is nonmigratory, and on one date he noted four individuals in a grassy area in a burned stand of *Nolina wolfii*, an expected habitat. It seems likely that the species spread west into the Kingston Mountains not long after its colonization of the New York and Providence mountains, reported by Remsen and Cardiff (*Western Birds* 10:45–46, 1979). Clark Mountain, where the Rufous-crowned Sparrow has been reported since the 1990s, is the only other site known for *Aimophila ruficeps scottii* in California.

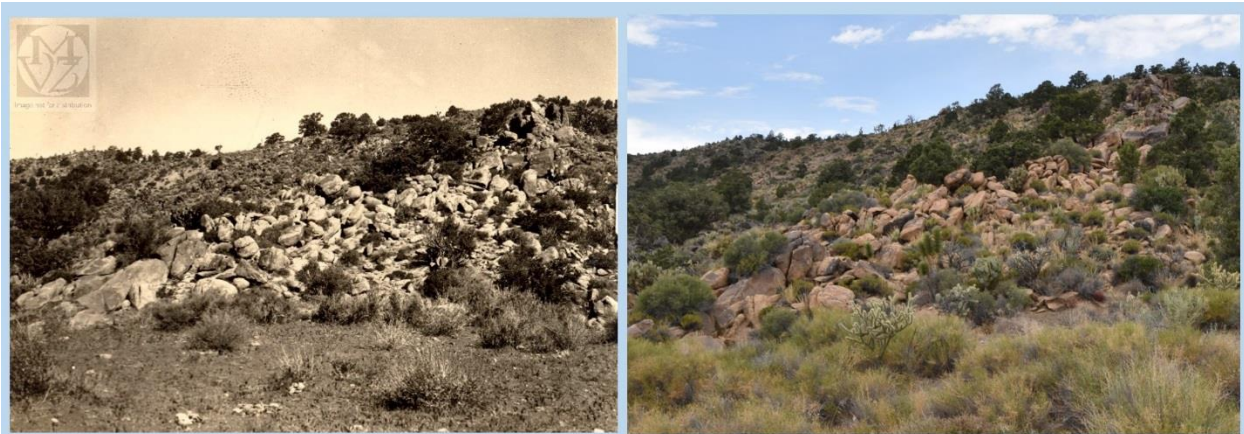
Our evidence for a change in the Gilded Flicker is only tentative, but since this bird is regarded as endangered by the California Department of Fish and Wildlife, we believe the possibility that it has increased since the 1930s merits further investigation. The biologists from MVZ covered the area around Cima intensively, but their only sightings were of a “loose flock of about five” on 11 January 1938, a nest from which kestrels had evicted flickers (eggs only remaining) on 20 May 1938, and one call heard on 23 May 1938. Subsequently, birders have continued to report the Gilded Flicker regularly but usually only one or two per day and never more than four. But from 6 to 10 November 2016 we saw the species daily, with five individuals on two days and a remarkable 12 on 9 November—easy to count accurately since most were flying in a single direction. These were along the wash paralleling the hills south of Kessler Peak. Lori Hargrove’s photos clearly show an increase in the density of Joshua trees in this area since 1938, a change that presumably has benefited the flicker, which excavates its nest holes in the trees’ trunks. The red-shafted subspecies *Colaptes auratus canescens* should be a common winter visitor in the east Mojave, but it’s possible that our few sightings of red-shafted flickers represented the Gilded too: the single specimen of the Gilded collected near Cima in 1938 had the wing and tail linings red instead of the usual yellow, though its small size, rufous-brown crown, and finely barred back are all typical of the Gilded, not the Red-shafted. Collections preserved in both MVZ and SDNHM attest that about a quarter to a third of the population of the Gilded Flicker nesting along the lower Colorado River (now nearly extirpated) was also red-shafted. Without the specimen in hand, the identity of a red-shafted flicker in the east Mojave is ambiguous.



2 miles NNE Cima (left, Elmer Aldrich, May 19, 1938) vs. today (right): note the increased cover of Joshua Trees in the background.



2 miles NNE Cima (left, Elmer Aldrich, May 16, 1938) vs. today (right): note the same tank from the previous photos in this view (red circle) and increased cover of vegetation, including grass, shrubs, cacti, and Joshua trees.



Cedar Canyon (left, Elmer Aldrich, May 31, 1938) vs. today (right): note increased cover of vegetation. This site now supports the Crissal Thrasher, Black-tailed Gnatcatcher, and Rufous-crowned Sparrow.

Reaching the stand of white fir trees on the top of the Kingston Range (and highest peaks at 7300 feet) requires more time and effort than we were able to devote on our visit in May. We reached the zone of pinyons, but our surveys there were far from exhaustive. Nevertheless, Lori located one singing male Hepatic Tanager and saw one probable female at 6600 feet elevation, and heard a possible second singing male lower down. The Hepatic Tanager was first discovered in the Kingston Range by Cardiff and Remsen in 1977 and seen again in 1980 by Bush. It was first discovered breeding in California in the San Bernardino Mountains in 1972, a new colonization, and the New York and Clark mountains are the only other sites in California where it occurs regularly. Other species of higher elevations found breeding in the Kingston Range in 1977 and 1980 and relocated by Lori in 2017 are the Olive-sided Flycatcher, Woodhouse's Scrub Jay, Violet-green Swallow, and Black-throated Gray Warbler.

The Gray Vireo and its serious decline have been a focus for us for many years. On 17 June 1940 Alden Miller heard one singing in probably the same canyon in the Kingston Range where we found our Rufous-crowned Sparrows. But neither Cardiff and Remsen nor Bush encountered any during their visits in 1977 and 1980. The only report from the area to www.eBird.org is of one, possibly a migrant, as Horse Thief Spring in April 2016. So it was an unexpected but welcome encounter when Lori found one Gray Vireo singing at 6500 feet elevation in the pinyon zone. The species' tenuous status throughout California makes any suggestion of a new or reestablished population notable.

Unsurprisingly, we found Anna's Hummingbirds at Kessler and Horse Thief springs and the Common Raven at all three sites. Neither of these species was recorded there by the early expeditions, but both are now far more common and widespread in the Mojave Desert, and these observations just add to the evidence we've discussed in previous reports. At Horse Thief Spring, a pair of Cooper's Hawks had a nest with young—this species had not been found there by Miller in 1940 and was reported only as a nonbreeding visitor in the Kingston Range by Bush. Perhaps this species' surge of abundance in urban areas over the last 35 years has yielded a spillover into remote areas of the Mojave Desert, paralleling Anna's Hummingbird.

A possible negative change concerns the Lesser Nighthawk at Horse Thief Spring. Alden Miller saw multiple individuals on 16 June 1940, but neither Bush in 1980 nor our team in 2017 observed any nighthawks in this area.

The Bushtits in the east Mojave are of the subspecies *Psaltiriparus minimus plumbeus*, the Lead-colored Bushtit, with a lead-gray crown contrasting with brown "earmuffs." The Lead-colored Bushtit has an unusual polymorphism, in which the earmuffs of some juvenile males near the Mexican border in Arizona and Texas are black, and the frequency of the black increases and appears in additional age and sex classes toward the south through the species' range in mainland Mexico, until in southern Mexico and Guatemala all or nearly all individuals have black ears. We had been unaware of any previous report of black-eared Bushtits in California so were dumbfounded to capture at Horse Thief Spring one juvenile male with a complete black mask plus another with the brown earmuffs narrowly outlined in black. Further correspondence with birders experienced in the region (Tom & Jo Heindel, Jim Pike, David Vander Pluym) revealed

only six previous sightings of black-eared Bushtits in California, and only one of these has been published (*North American Birds* 64:399, 2011). The black-eared variation is evidently possible, if very rare, over a wider area than heretofore known.



Black-eared Bushtit at Horse Thief Spring.

One of the most striking birds we saw at Horse Thief Spring was the Long-eared Owl, of which a brood of four fledglings was keeping its parents busy supplying woodrats. Early one morning, after we had opened our mist nets, we were startled to find a woodrat in the middle of one net, three feet off the ground. Then we noticed one of the adult Long-eared Owls entangled a few feet away. Evidently the owl had been cruising low with its prey, still alive, in its talons, then dropped it when it struck the net. Fortunately, the bewildered owl proved docile during the extraction from the net. Miller did not record the Long-eared Owl at Horse Thief Spring, but the species is well known for its irregularity, and other birders have reported it at this site in other recent years.



Phil Unitt holding a Long-eared Owl, Horse Thief Spring.

After leaving Horse Thief Spring on 26 May, Andrea Ríos-Dominguez, Dan Wait, and Phil Unitt drove to Cedar Canyon to see if the Zone-tailed Hawk nest Phil located last year was being used again this year. As soon as we climbed up the dry waterfall, the male Zone-tailed Hawk began screaming at us, and then the female flushed from the nest—a nest different and more accessible than the one the pair used last year. From a vantage point on a nearby slope we could see at least two, probably three white downy chicks in the nest. We left the screaming pair quickly, but Lori returned on 7 July and saw one large young near fledging in the nest. One or more fledglings may have been nearby, but again the pair's aggressiveness in defending the nest dictated the check be as brief as possible.

MAMMALS:

Around Kessler Spring north of Cima, the most interesting difference between the list of rodents we captured in November 2016 and those captured in the area in January 1938 is the appearance of the western harvest mouse. Among the sites where we laid our traps was a meadow of dense bunchgrass near the spring, a microhabitat suitable for the harvest mouse that Johnson and colleagues apparently did not sample in 1938 from their camp about a mile to the southeast. But we trapped harvest mice not only in this meadow and at Kessler Spring itself but in the wash away from the meadow, in habitat similar to that trapped in 1938. In April 2016, we also captured two harvest mice near Rock Spring, a site the MVZ team visited in June 1938 but where they did not trap the harvest mouse either. It is possible that an increase in the cover of bunch grass around Cima has allowed the harvest mouse to spread. In the 1930s the biologists from MVZ collected it at only two localities, neither of which we have visited yet.

After leaving Kessler Spring, Scott and Howard Thomas went to Cedar Canyon, where they were joined by SDSU's mammalogy class. Our main story of a change in the mammal fauna here is the great decrease in the Panamint chipmunk, of which we saw none in November 2016, after having seen only a few the previous spring, collecting one. The biologists from MVZ had found this chipmunk common in the 1930s and collected 32 specimens in Cedar Canyon.



Scott Tremor demonstrates handling of small mammals to SDSU mammalogy class, Cedar Canyon.

At Borrego Canyon we missed several species of mammals, such as the rock squirrel, long-tailed pocket mouse, and southern grasshopper mouse, that the biologists from MVZ had collected there in December 1937. Our visit in late November and early December 2016 came at the beginning of the winter and the end of the long drought, so our success in trapping rodents of all species was low. But the continued grazing of the site by cattle has left it degraded, possibly eliminating species more sensitive to such disturbance, such as the grasshopper mouse. One means by which cattle degrade rodent habitat is by crushing burrows, a factor that could have contributed to our not finding the round-tailed ground squirrel, collected between Borrego Canyon and Colton Well 6 miles to the south by the early expeditions, as well as at Colton Well itself. Even in June 2016, when it should be more active, we did not find any round-tailed ground squirrels at Colton Well.

At Horse Thief Spring we encountered a population explosion of the desert woodrat. Each night, nearly all of our traps caught a rodent, and the vast majority of those were woodrats. Clearly, the species responded immediately to last winter's rains. Many of the animals were juveniles, nearing adult size. The dominance of the woodrat complicates our interpretation of the other species, since the woodrats, becoming active even before sunset, may have hogged the traps, precluding other species from entering them. But the response of other species to the winter rains may be delayed after that of the woodrat. The habitats where we laid our traps were suitable for the little pocket mouse, canyon mouse, and western harvest mouse, all of which were collected at Horse Thief Spring in 1939/1940 yet none of which we trapped in 2017. One species we were especially glad to capture was the chisel-toothed kangaroo rat, to familiarize ourselves with it before we visit the single site in Joshua Tree National Park where that species is known historically, Stubby Spring. The pattern of dark and light on the feet of the chisel-toothed kangaroo rat is distinctive and striking.



The desert woodrat was by far the most frequently trapped rodent at Horse Thief Spring, 2017.

During her climb up the steep slopes of the Kingston Range on 24 May, Lori saw 5 Panamint chipmunks at elevations between 5200 and 6600 feet. Thus this species may be doing better at the higher elevations than in the areas we have searched north of Cedar Canyon, at elevations of 5000–5700. If so, it's good news for the subspecies *Tamias panamintinus acrus*, endemic to the Kingston Range.

We have now confirmed during our Mojave surveys a total of 13 bat species by call or net capture, with 4 additional species possible on the basis of recorded calls. Bat diversity was particularly high at Horse Thief Spring. One call recorded at a cattle trough 1.3 miles east of Horse Thief Spring was either a of spotted bat (*Euderma maculatum*) or possibly an Allen's lappet-browed bat (*Idionycteris phyllotis*). If the latter, it would be a new record for California, so when we return to this area next year we hope to confirm this species by net capture. Even the spotted bat, though, is so rare that any confirmation is notable.



Long-legged myotis, Horse Thief Spring.

Upon our arrival at Borrego Canyon, we discovered a pallid bat (*Antrozous pallidus*) drowned in the cattle trough. The escape ramp had become detached, so we repaired it. Amazingly, the carcass was not badly decomposed, and it made into a reasonably good specimen. At the cattle trough near Horse Thief Spring, over 50 bats were caught and most were pregnant females. The high bat diversity and activity of breeding females that we are recording attests to the importance of these remote springs and cattle troughs, which should be checked periodically for maintenance (adequate water level, escape ramp present and intact, water free from obstructions including plant material that can completely cover the water making it inaccessible to drinking bats).



Pallid bat found drowned in cattle tank, Borrego Canyon.

Thanks to Howard Thomas, Jack Daynes, Lea Squires, Erik Funk, Sula Vanderplank, Dave Fillion, Daniel Wait, Andrea Francesca Rios Dominguez, the SDSU mammalogy class, Shauna King, and Troy Maikis for assistance in the field, and to Debra Hughson, Neal Darby, and David Nichols of Mojave National Preserve and Katherine Maikis of BLM for facilitating access. Thanks to funding from the National Science Foundation for making this research possible.



Phil Unitt and student volunteer Eric Funk removing a bird from a mist-net at Kessler Spring.