

Nearly every picture that I took of the young specimen shows her in the act of hissing. The sound was made well back in the throat, like the passage of air thro a moderately large opening, a rather subdued sound, not unlike the sharp hiss made by the human tongue and teeth. The note of the old birds was merely a single menacing cry, perhaps most truly characterized as a scream, uttered as they darted toward us when we approached their nesting place. This cry might be compared to that of the red-tailed hawk so commonly heard in the big timber of the bottom lands of Kansas.

Unfortunately the skin of the male bird spoiled in transit but I still have the skull and wings. The female skin Martin sold to an eastern museum, I understand, while the skin of the youngster is mounted in the museum of the State Normal School at Greeley, Colorado.

*Topeka, Kansas.*

## NESTING WAYS OF THE WESTERN GNATCATCHER

BY HARRIET WILLIAMS MYERS

I HAD always admired him—this dainty little blue-drab bird with his white breast, long black tail with conspicuous white outer shafts, and blue-drab mantle, so, when on the morning of July 9, I came upon him and his mate engaged in household duties, my delight was boundless. We had come up from Los Angeles, my companion and I, for a week's stay in the Little Santa Anita Canyon situated in the Sierra Madre Mountain range.

The first nest of the gnatcatcher (*Poliophtila carulea obscura*) that we found was near the top of a holly bush that had grown so tall that it was more like a tree than a shrub. The nest was in an exposed, upright crotch, and tho overhanging branches sheltered it from the sun the most of the day, not a twig or a leaf obstructed our view of it. It was cup-shaped, being much deeper than broad, and was made of fine gray material that just matched the tree trunk. There were three birds in the nest and we judged them to be somewhat less than a week old.

We stationed ourselves among the tall weeds in a shady spot and the birds, paying not the least attention to us, went on with their feeding, thus enabling us to observe them under natural conditions. Another holly bush grew close by the nest tree, and when we first found the nest and saw that each bird came into this neighboring holly before feeding, we thought it was fear of us on their part that made them do it; but we soon found that this was a regular habit of theirs. In all the hours that I watched at the nest, I never saw them go directly to the young. Even when they came from the nest side they flew past and into this one tree, where they hopped about in it as if in search of food, then usually down onto a bare twig, and from there straight across the several feet of clearing to the nest. It seemed like such a waste of time, but it was their way.

These western gnatcatchers were so much alike that our first thought was whether we would be able to tell the male and female apart. They looked exactly alike except that one bird seemed in better plumage, looking slicker and smoother than the other. However, we had not watched long before we discovered that one of the white tail-feathers of one bird was shorter than the other. It looked as if a new white feather was just coming in, which proved to be the case. It was on the

bird whose plumage was rather mussed, and as the female would naturally not look quite so slick, after her setting, as the male, we put this bird down as the female. Then, too, she seemed to be not quite so matter-of-fact and business-like in her habits, there being more femininity about her which expressed itself in the way she loitered by the nest, often flying past just above the nestlings' heads, a thing the slick bird never did. Several things in our subsequent watching proved, to our own satisfaction, that this was, indeed, the female bird, one being that the well-kept bird was the singer.

In the three hours that I first watched at the nest the birds fed fifty-four times, an average of three and one-half minutes apart. The shortest interval was one-half minute, the longest nine minutes. The male fed about twice as often as the female. Several times they both came at once with their offerings. It was amusing to see them hurry at these times. The bird that came first always shortened its preliminaries when it saw its mate coming, and the last bird arriving, seeming to fear it would be left behind in the feeding, did not stop for any extra flitting about, but in a grand scramble both birds made a rush for the nest, arriving, usually, at about the same time and feeding at once. Tho we could see the wabby heads stretched up and the big mouths opened to receive the food, we could not tell whether there was any method or regularity pursued by the parents in feeding.

At ten o'clock the sun beat down upon my shoulders relentlessly. I had been slipping along on the big stone on which I rested, striving to keep out of its pitiless rays, but only successful for a few minutes. The nest at this time was also in the sun and I knew how to sympathize with the helpless nestlings who were unable to slip away from its hot rays. At four minutes past ten, the father came to feed. He seemed to take in the situation for, having fed, he slipped onto the nest and sat lightly above his skinny babies. For five minutes he shielded them before the mother came, when he slipped off and was away while the female took her place on the nest and shielded the young with out-stretched wings. One little fellow showed from my side of the nest as he stretched up to reach the shadow made by his mother.

The female stayed eleven minutes on the nest this time and three times the male brought her food which she in turn fed to the nestlings beneath her. At the expiration of the eleven minutes she left the nest and did not come back for ten minutes. During her absence the male fed four times, but did not attempt to shelter the nestlings at this time. However, in the hour that I watched in the sun the male took the nest four times, remaining, with the exception of the first time, not more than two minutes, and generally leaving when the female came. Once, however, he sat on the nest and she fed a young bird beneath him. It was interesting to note that when the female was on the nest the male always gave the food that he brought, to her, while the female did not give hers to the male but directly to the young.

The call note of these gnatcatchers is a twanging one: a nasal "tzee" given sometimes once, sometimes several times in rapid succession. This nasal note is usually kept up while the little sprites are foraging for food, but we noticed that they were rather quiet about the nest. Quite often, but not always, the male gave the single "tzee" just before feeding the young; on the contrary the female gave it, if at all, *after* feeding, as she left the nest. Twice in the course of my watching, I heard the male's song. It was a low warble with something of the nasal twanging about it; still, on the whole, it was very pretty.

On the morning of July 11, as I climbed the hill that led to the nest shortly after six o'clock, I heard the gnatcatchers making a great commotion, and coming in sight of a small tree I saw that some large bird was making all this trouble.

Stoically and unflinchingly he sat on a limb among the leaves, while the two blue-drab midgets were attacking him vigorously. Coming closer to the tree I saw that it was a California shrike that these little birds were fighting, and tho he seemed to be minding his own business, the small birds resented his presence in their vicinity and kept up the attack until he left their neighborhood.

On this same morning from 7:25 to 8:25, the birds fed thirty-five times, less than two minutes apart; the male twenty-seven times, the female fourteen. The next morning, in the hour from 6:37 to 7:37, the birds fed forty-six times, the male thirty-six and the female twenty-four times. In looking over my notes I find that the birds fed more often early in the morning than later in the day.

In five hours, 6:30 to 11:30, they fed one hundred and fifty-two times, or an average of thirty-eight times an hour. Allowing sixteen hours to their day, we can estimate that they fed six hundred and eight times. The word "gnatcatcher" proved to be a misnomer, the food brought so often being small white worms.

On the night before our departure for the city, my companion returned to camp and announced that she had found another gnatcatcher's nest. It was built on the south side of a tall, straight eucalyptus tree about twenty feet from the ground, its only supports being the tiny twigs that grew out from the side of the tree. Like the other nest it was small across, but deep, and so exactly matched the gray of the tree that it was hard to locate, even when one knew where it was. The tree grew near the road and tho we had passed it many times every day, it remained unknown to us until the vociferous calling of the young revealed their whereabouts.

There were three birds in the nest and we were more than pleased to see that they were much larger than the others we were watching. These little fellows were fully feathered and looked just like their parents except that their tails were shorter. They were very uneasy in the nest and it seemed evident that they would not stay there long. They noticed the old birds when they came near the tree and called loudly to be fed. We had never heard the other nest of young make any noise or take any notice except as the old birds put the food in their mouth.

An oak tree grew so near the nest tree that its branches almost touched the latter. This tree was used by the gnatcatchers for their preliminary jumping ground when they did not go directly to the nest; but quite often they came right to the nest, or approached it by way of a lower twig, leaving by one of the upper ones. These birds fed oftener than the others, one hundred and five times being the record for two hours that we watched them. Little wonder that they had no time to waste in unnecessary movements with such vigorous youngsters making demands upon them!

At 7:37 A. M., as we watched at the nest, we believed our dearest hopes were to be realized, and that we were to see these youngsters make their debut into the world; for suddenly one fluffy ball came fluttering forth from its gray home, landing on one of the twig supports. But, alas, all too quickly our hopes were crushed, for no sooner had the nestling stopped himself than he turned about and scrambled post-haste, back into the nest. It was really very funny to see him. He cuddled down into the nest after this exertion as if he were glad to rest. Again in the afternoon about 1:30 a young bird left the nest. Standing on the edge he fluttered his wings twice as if trying to get up courage, and then the third time he flew out onto a twig, perhaps six inches from his home. This time as before, the stay on the twig was a short one, the bird hurrying back to the nest as in the case of the morning trial.

We watched at this nest until 4:30 P. M., when it was time for us to start for

the station. I feel that could we have stayed one day longer we should have been able to have seen these nestlings launched upon the world. However, it was of value to know that their departure differed from that of most birds in that they returned to the nest, so many nestlings never going back when once they have left it.

*Los Angeles, California.*

## THE CALIFORNIA DISTRIBUTION OF THE ROADRUNNER (*GEOCCYX CALIFORNIANUS*)

BY JOSEPH GRINNELL

THE extremely limited powers of flight of the roadrunner are partly compensated for by its pedestrian capabilities. So that the range of territory possible to the individual roadrunner is doubtless much greater than one might at first suspect.

Yet I consider this species to be about as permanently "resident" as any bird we have. There may be a slight downward displacement on steep mountain sides in winter. But even if this is homologous to migration the movement must be so limited that we can safely ignore it in a distributional study. We can therefore establish its breeding range as practically coincident with its record area, irrespective of the season of observation.

On the accompanying map, I have plotted all the definite stations of occurrence on record in available ornithological literature. Many of the records pertain to counties or other extended areas. For example: "thruout the region;" "all along the Colorado River;" "all along the coast from Morro to Carpenteria," etc. In such cases I have not set down any single station; but the region indicated is of course included in the shaded area on the map. Altho this shaded area may cover some small tracts where the roadrunner does not occur, such as timberlands, swamps and alkali flats, I believe it fairly indicative of the roadrunner's California range.

The species is shy, and may not be seen for days in a region where it is known to be common. There is a sure means of detecting its presence, however, wanting among other birds; and this is the characteristic foot-prints in any soft ground, the dustier the plainer. I have seen these unmistakable tracks (two toes forwards and two backwards) during wagon trips over many parts of southern California. They are all that is necessary to establish the presence of the roadrunner.

The species is most abundant in the San Diegan District (faunal area). It is none the less characteristic thruout the desert regions of southeastern California, tho not so numerous. Its numbers become still less towards the northern limits of its range. It extends sparingly a little ways into the humid coast belt of central California. Mailliard records it as very sparingly resident in Marin County (CONDOR II, May 1900, p. 63); and there is one record even beyond that, at Sebastopol in Sonoma County (Belding, Land Bds. Pac. Dist., 1890, p. 56). This is the northernmost in the coast belt. But in the interior the roadrunner occurs along the foothills at each side of the Sacramento Valley nearly to latitude 41 degrees, this being the