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NESTING OF THE SIERRA NEVADA ROSY FINCH

WITH THREE ILLUSTRATIONS

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The Sierra Nevada Rosy Finch (*Leucosticte tephrocotis dawsoni*) is a fairly common breeding bird in the higher mountains on both sides of Mammoth Pass, in the Sierra Nevada of California. Observations extending from June 12 to July 17, 1935, by the writer assisted by Charles Schnack, James Hanson, Ralph Dixon, and James Dixon, Jr., are incorporated in this article along with a few made previous to 1935. The data given herein were gathered within twenty miles of June Lake, Mono County, and at altitudes ranging from 7500 to 12,000 feet.

Early in June, 1934, a severe snow storm drove large numbers of Rosy Finches from the higher elevations to the eastern base of the mountains at the 7500 foot level. After this we were sure that the birds bred close by, and we determined to become better acquainted with them. Our first attempt to find breeding grounds was made by Ralph Dixon and Charles Schnack, on June 16, 1935, when they made a trip to the higher parts of San Joaquin Peak. Here at 9500 to 12,000 feet the ground was blanketed with snow and observations were difficult because of the hard going and the prevailing high winds. However, one bird was seen feeding on the snow near a likely looking cliff. On this trip another prospective cliff higher on the peak was seen and both of these cliffs subsequently proved to be breeding locations of colonies of Rosy Finches. (See fig. 1.)

Both cliffs were of black basaltic rock and had heavy snowdrifts above and below them. They faced into the setting sun and were one-quarter and one-half mile long. Each varied in height from 100 to 150 feet, and the talus slope under each extended for a long distance. Only the vertical or overhanging portions of these cliffs were free of snow. The large number of niches, cracks and benches on these cliffs ensured many suitable places for nests.

On June 22, another inspection trip was made to the lower cliff and birds were heard chirping to each other somewhere on the face of it, but they could not be located. Several birds were noted flying along the cliff but no nests or signs of nest building were seen. Observations, even at this late date, were difficult because of the glare of the sun on the snow, the speed of the flight of the birds due to the high velocity of the winds, and the general difficulty of keeping in sight such small birds amid such vast surroundings.

At this time males were making overtures toward females, but in every instance they were repulsed. One female flew into her mate with such force as to cause

feathers to fly. Through binoculars the male birds could be seen going through the motions of singing, but the roar of wind and water nearby drowned out the sounds. Several pairs were feeding in the snowdrifts below the cliff. At this stage of the thaw, birds are much harder to locate than later in the season when their feeding grounds are more clearly defined.



Fig. 1. Horseshoe Lake, Mono County, California, showing in distance the cliffs in which Sierra Nevada Rosy Finches nested; photographed July 11, 1935.

By the next trip, on June 30, conditions surrounding the cliffs had changed considerably. The steep talus slopes were appearing from beneath the snow and a closer inspection of the cliffs could be made with less danger from falling snow and rocks. Six pairs of birds were watched and either the exact nesting site found or the nesting areas were definitely outlined. In two locations females were incubating and in another a female was building a nest. Clark Nutcrackers (*Nucifraga columbiana*) were carefully searching over the cliff face for something, and chipmunks were also seen scampering around on the cliff. During the daytime portions of the cliff face would be dripping with water from the thawing snow banks on top and a close inspection proved that these areas were covered with ice which apparently formed during the night and did not entirely thaw out during the day. Moss was growing on warm ledges in these areas, and later these areas were veritable hanging gardens of moss and other greenery.

The ice-covered areas were chosen by the Rosy Finches in every instance for nesting locations. The nest sites were selected by the female and she also did all the building. The male gave only moral support, but also watched out for Nutcrackers. He would fly back and forth with his mate but kept his distance; for the builder would tolerate no assistance from him. We came to the conclusion that the finches selected these places for their nests as a means of protection from their enemies, the Nutcrackers and chipmunks, which were afraid or disliked to go into them.

Our observations at nine nesting sites indicate that the female rules with an iron hand during the period of nest building, egg-laying, and incubation; only after the young are hatched does she allow the male to take the initiative. The male does more than half the feeding of the young; their care seems to be more in his hands than in the female's. The female would discourage in every way the male from making himself noticeable around or near the nest prior to the hatching of the young.

During nest building the female exercised no caution in approaching the nest and paid little attention, if any, to anything except building her nest as quickly as possible in the place she had selected. After egg-laying, and particularly after incubation had begun, this condition changed. After incubation had begun, the female upon leaving the nest would drop vertically to the lower part of the cliff and then change her course to suit the direction of her destination. In returning to the nest extreme caution always was exercised. Usually the approach was made from level with the nest or slightly higher; and alighting first some distance from the nest the bird would carefully look the situation over and would then fly about half way to the nest and repeat the performance. If satisfied that the coast was clear she would then fly directly to the nest and enter with hardly a wing flutter to indicate where she had disappeared. In no instance did we see the male feed the female either on the nest or near it.

Our observations thus indicated that the female did all the incubating, leaving the nest through the day at regular intervals to secure food. Actual timing on warm days indicated forty-five to fifty minute incubation periods and fifteen minute feeding periods. When the female was off the nest she visited the same forage area time after time. During thawing hours she and her mate would feed around the margins of snowdrifts, but early in the morning they would feed in bare spots and in the lower parts of scrubby trees.

Close observation indicated a wide variety of food, the principal part of which was obtained from the edges of snowbanks and consisted of seeds, termites, lady-bird beetles and small black articles too small to identify. The birds were quarrelsome on their feeding ground and resented any intrusion by any other birds; any trespassing resulted in a battle. Almost the same feeding route was followed time after time, and, noticing this, I stationed myself at some distance from a feeding female but on her route as previously observed. She fed up to within a few inches of my feet and after looking me over casually passed around me. The two birds of a pair would feed in separate places but close to each other. They seemed to keep in touch with each other by twitterings and always signalled upon leaving.

One female, watched on four round trips between the feeding ground and nest, alighted every time upon the dead branch of a blasted small pine and from this perch began her regular round on the route previously selected. This was done in other instances too, and the flight from the feeding ground to the nest time after time was the same, but on account of wind it was not always in a direct line. At one place four pairs feeding within chirping distance of one another seemed to talk back and forth, but any straying away from the regular feeding ground of any pair was the signal for a battle, and round and round they would go so fast in flight it was hard to follow them; and then, in a flash, the whole group would return and go to feeding as though nothing had occurred. Apparently the birds feed down the slopes early in the season and as the thaw line rises the feeding areas are changed to places above the nests.

On July 7, we packed our ropes and rope ladder to the lower cliff, upon which

we had located six nesting sites and at close range proceeded to investigate three of them. (See fig. 2.) The first was about the middle of the cliff behind a slab of rock which had separated from the cliff face but still remained attached. The nest was found in a small recess behind this slab. It held one punctured egg and one

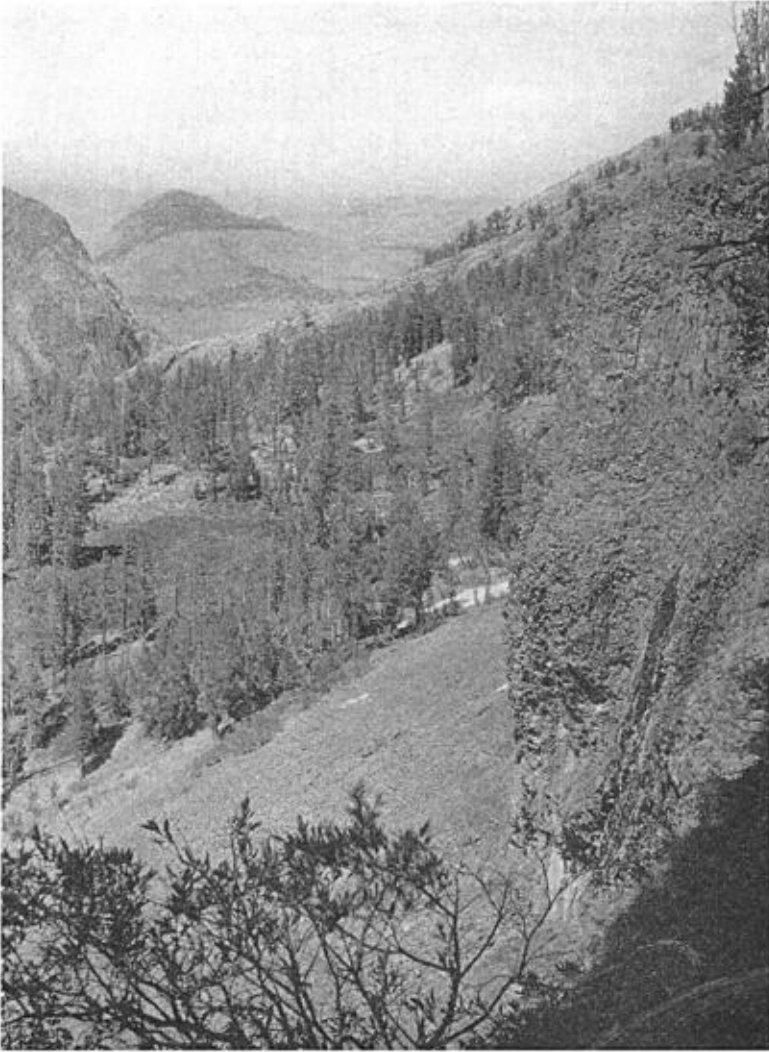


Fig. 2. Cliff (at right, looking north) from which set of four eggs of Sierra Nevada Rosy Finch was taken July 7, 1935.

newly hatched young bird which had been killed and left in the nest. We felt sure this was the work of Nutcrackers, as we had seen them working this part of the cliff apparently looking for nests, and we presumed they had done away with the rest of the eggs or young.

The next location was on a sheer face in an open niche about forty-five feet down from the top and contained four young birds estimated to be four days out

of the shell. All of these birds were in good shape and ten days later they were out of the nest being cared for by their parents near-by. The next location was back in a hole in the wall only about fifteen feet from the top of the cliff where it was badly cracked and fissured. This nest was being built on our visit on June 30 and now held four eggs in which the incubation was slightly advanced (fig. 3). We previously had noticed Nutcrackers fluttering around the entrance to this nest and thought it probably had been destroyed.

The nests studied are much alike as to materials used, being well made of wet moss at the base and sunk flush with the surrounding moss if possible, and lined with dry grasses and feathers. The bases and surroundings of nests under construction were so wet as hardly to seem habitable. If the nest location will not allow the nest to be sunk flush with the surrounding moss, an approach of wet moss is built.



Fig. 3. Nest and eggs of Sierra Nevada Rosy Finch removed from rocks; collected July 7, 1935, as described in accompanying article.

Believing the nest containing four eggs to be typical, we made the following measurements of it: Outside diameter, $4\frac{1}{2}$ inches; inside diameter, $2\frac{1}{2}$ inches; outside depth, $2\frac{3}{4}$ inches; inside depth, $1\frac{1}{2}$ inches. Average size of the four eggs in inches is .62 x .92.

The other locations on the cliff were not visited because the birds were feeding well grown young. Fecal sacs were being dropped by the parent birds some distance from the nests.

With the information we had secured at the lower cliff we made an effort to find nesting places on the cliff which was at a higher elevation. We felt it would show later nesting dates. We had no particular difficulty in finding nests here; but we found conditions much the same as at the lower cliff, and some of the young were out of the nest at this date. We also tried another location some distance removed and under the proper conditions everywhere found nests. We failed to find any evidence of nesting in a moraine.

On July 11, a nest was found and the bird was busy building, at about 3 p. m. She was like the previous bird we had found building, as regards lack of attention to our presence. We returned to this nest on July 15, to take pictures and to make

some experiments with the incubating birds. The nest was in an exposed location almost at the base of the cliff and only a short distance from other occupied nests. By building a short ladder we were able to inspect it without using ropes. Efforts to flush the sitting bird by dangling a tin can full of small rocks in front of the nest and shaking the can vigorously, by throwing rocks against the cliff face near the nest, and by shooting a small calibre rifle bullet against the cliff face near the nest, failed. Finally a rock was rolled down the mountain-side. This brought the bird out at once, but only long enough to see where the rock was and to ascertain that it would do her no harm, whereupon she returned at once to the nest; and she did not flush again until we climbed up to take pictures.

This nest held five fresh eggs. It differed in shape from, and was slightly larger than, the first nest collected. It measured as follows: Inside diameter, $2\frac{3}{4}$ inches; outside depth, $2\frac{1}{2}$ inches; inside depth, $1\frac{1}{2}$ inches. A landing platform 3 inches long extended from the nest to the edge of the ledge that supported it. Average size in inches of the five eggs is .60 x .83.

In the protection of their nests Rosy Finches seem to rely mainly on the exercise of caution as indicated by the fact that whenever a Nutcracker came in sight all activities on the part of the finches ceased and were not resumed until the Nutcracker passed out of sight. No effort on the part of the finches was ever made to harass the chipmunks that were seen often on the cliff. As an indication of their success in keeping the locations of nests a secret during the incubation period, we were unable to find a nest while it held eggs, but found all our nests while under construction or else after the young had hatched and were being fed.

Apparently the birds colonize for the protection it gives them in sounding alarms to indicate the approach of enemies. In all three places we found the birds nesting under the same peculiar conditions and always in groups of six pairs or more. None of the nests found was so located as to require the removal of any rock or material of any kind in order to inspect it.

The young birds did not stay in the nest over ten days, and the parents seemed anxious to get them out and hidden away in the rock piles near-by, only one young bird in a place. In several instances we flushed young birds from the rocky slopes under the cliffs and soon the parent bird would appear with food and go to the place where the youngster had been left and give the usual note which would be answered by the young bird. The parent would then coax the youngster into a new hideout before feeding it. During this phase of the rearing of the young the male is much more in evidence and feeds about twice to the female's once.

The following possible enemies seen in the vicinity of the breeding grounds are listed in order of their importance: Clark Nutcracker, Chipmunk, falling rock and snow, Prairie Falcon, Sharp-shinned Hawk, Western Goshawk, and Saw-whet Owl.

Escondido, California, August 1, 1935.