

LIFE HISTORY OF THE RED-BELLIED HAWK

WITH FIVE ILLUSTRATIONS

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THE RED-BELLIED HAWK (*Buteo lineatus elegans*) is a fairly common bird in San Diego County, California, and while this narrative has to do with a particular pair of these birds which had their home just across the line in Riverside County, the data in general were gathered in Los Angeles, Riverside, Orange and San Diego counties during the years from 1898 to 1927, inclusive.

For years I had hoped to find a nest that would lend itself to photography and to easy observation, and finally one was located on April 25, 1927. This nest was in a large willow in a thick grove of trees in the Temecula River bottom of Riverside County. The location of the nest tree is almost exactly 1000 feet above sea



Fig. 72. GENERAL VIEW OF NESTING GROUNDS OF RED-BELLIED HAWK ALONG TEMECULA RIVER, RIVERSIDE COUNTY, CALIFORNIA. NESTING GROVE IN FAR CENTER OF PICTURE.

level, and it is less than 150 feet from the road known as the inland paved highway. The nest was an old one and had been used the year previously by a pair of Long-eared Owls which had successfully raised a family therein. In the early part of February, 1927, a pair of Red-bellied Hawks was seen and heard in this immediate vicinity, being noticed sitting upon a nearby telephone pole.

Upon reaching the road alongside the nest we could see the head of the brooding bird. Upon climbing the tree, three heavily marked, badly incubated eggs were found to be in the nest. The brooding bird left when the climber was about two-thirds of the way up the tree, and without any noise sailed away across the tree tops. As we were leaving, she was heard squalling among the trees a short dis-

tance upstream. At the time of this visit there was no food of any kind in or around the nest, as we took pains to ascertain.

The next trip was made on May 1. Nothing was seen of the birds when we arrived, and as some Mexicans were loading wood into a wagon directly under the tree, we supposed that the old birds had left the vicinity for the time being. However, when we were nearly up to the nest one of the old birds flushed therefrom and sailed silently away over the tree tops. We did not see them again that day, but a little later heard them both calling a little way upstream. The old



Fig. 73. TYPICAL NEST AND SET OF EGGS OF RED-BELLIED HAWK.

birds when disturbed, always flew away in the some direction, upstream.

At this time the nest contained one infertile egg and two young, which we judged to be five days out of the shell, appearing as shown in figure 74. The nest was not changed in appearance since our previous visit except that some green leaves had been recently renewed. On the edge of the nest lay the hind quarters of a young cottontail rabbit and there was considerable fur scattered about. The young birds did not seem at all alarmed and did not even show any signs of fright when taken in our hands. Their home was neat and clean and the young birds, even at this age, were careful to discharge all excrement clear of the nest. As it

was a cloudy, cold day and the young birds gave some indications of chilling, we cut our call short after obtaining several photos.

On May 14 we made another visit, and upon driving the car under the tree, one of the old birds flew out, disappearing in the same general direction as before. Shortly after, she was heard calling. The young birds were found to have made a wonderful growth in the two weeks since our last visit, but they were disappointing in their actions. They seemed very much afraid and sought to hide themselves, thrusting their heads under the fresh willow sprigs, which were still kept as carefully renewed as before the eggs were hatched. The young birds did not offer any resistance when taken in the hands. The infertile egg was still



Fig. 74. VERY YOUNG RED-BELLIED HAWKS, PHOTOGRAPHED MAY 1, 1927.

there and the nest platform was commencing to show the results of use. The only evidence of food at this time was the uneaten remnants of several wood rats. A careful search was made at this time and at all other visits to the nest, for bird feathers or remains, but none was ever found. As the day was a warm one and the birds were past the period of being hurt by being chilled, we spent considerable time watching them and waiting to see if either of the old birds would bring them food while we were near; but the young birds would only try to hide themselves and the old birds did not make their appearance during the two hours of our stay.

On June 5, upon driving under the nest, we noticed that something was wrong with the tree, and found that the large limb from which we had been operating our camera had been torn off and was lying on the ground. Wondering how now to proceed, we commenced to climb the tree, but the young hawks were not to have their pictures taken again in the old nest. As soon as we climbed high enough to be seen by the birds, they both, without a moment's hesitation, took flight, in opposite directions, to nearby willow trees. After quite an exciting time we managed to secure both of them. They were no longer the heavy featherless squabs that we had seen on our last visit, but were now two fighting wild creatures which would lie on their backs and present a formidable array of sharp claws for one's reception.

The nest had been beaten flat and all of the new work that had been done at the time the eggs were deposited had been worn away; the infertile egg had disappeared, presumably having been rolled overboard by the young birds. The only sign of food at the nest was a full grown mole which lay on the nest edge, untouched by the young birds. The youngsters appeared well fed and in fine condition. After considerable trouble several exposures were made of them sitting upon an overturned willow tree, after which we banded each of them and returned them to the lower branches of the nest tree. They speedily climbed some twenty-five feet upward and found for themselves suitable perches. While we were watching them, one of the old birds flew over our heads and onto the nest, apparently not knowing that we were there or that anything unusual had taken place. When the old bird began calling, the youngsters only turned their heads sidewise and looked up toward the nest, but they did not answer or make any attempt to climb nearer. At the very first movement we made, the old bird left the vicinity and we did not see or hear either of the old ones again on this visit.

On June 12, 1927, we returned in search of a California Cuckoo's nest, and while going through thick willow thickets about one-half mile down stream from the hawk's nest we found a young hawk roosting there. After considerable climbing and bending of limbs we secured a young Red-bellied Hawk, which proved to be number 100529. The bird seemed well, and was full of fight after being captured. We could not see anything wrong with it; and apparently there was not, for when we turned it loose it climbed up into a larger willow tree and took flight. The last we saw it was some distance upstream flying as though it had been doing so for years.

We were unable to locate number 100530, but I have no doubt it also was hidden away from the crows and ravens in some nearby thicket. The captured bird's beak and feet were bloody, and in a nearby willow stub on top of a flat limb we found part of a full-grown wood rat which the old birds had apparently furnished.

Of all the raptors living in this section, the range of the Red-bellied Hawk is the most restricted. This is caused apparently by its food habits, since by far the larger part of its prey consists of small mammals which are found abundantly where moisture is plentiful and where green food for rodents is growing nearly the year around. I have never seen or heard of a pair of these birds residing in a section where there was not permanent running water and where beds of water cress and green grasses were not abundant. This sort of surroundings creates a large supply of meadow mice, rats, gophers and rabbits, upon which the hawks prey.

The range of this hawk, as regards elevation above sea level, is sharply defined.

I have never found a pair resident and breeding above 1200 feet, although running streams and green meadows are more prevalent at higher elevations. It is essentially a bird of the lower wooded river bottoms, between sea level and 1200 feet; and, unlike the Cooper Hawk, Swainson Hawk and Western Red-tail, the Red-bellied Hawk does not adapt itself to different surroundings. If a pair becomes established in a certain range it is not easily driven out, and often bloody tussles occur with the larger Western Red-tail. I have never known of an instance where the smaller gave way to the larger bird, even though the Red-tail might preempt the



Fig. 75. YOUNG RED-BELLIED HAWKS, PHOTOGRAPHED MAY 15, 1927, WHEN TWENTY DAYS OLD.

nest of the Red-bellied Hawk and force construction of another.

The typical range of a pair of these birds usually contains a central grove of oak, willow, or cottonwood trees in a river bottom, in which to build the nest. The birds are particularly partial to such a location when the surrounding canyon sides are heavily wooded and the stream bed is surrounded by open meadows of wet pasture land and alfalfa fields. They have a habit of sitting low on some dead snag or telephone post from which they can dart suddenly down and capture their prey. Their sense of hearing is extremely keen and I think they hunt as much by it as by sight. They do not descend from a great height in a grand swoop to strike

their unsuspecting prey as does the Western Red-tail or the Golden Eagle, their hunting tactics being much more like those of the Marsh Hawk and the American Long-eared Owl.

The Red-bellied Hawk, like the Cooper Hawk, selects as a nest site, not some commanding view of its hunting grounds, but a location in a densely wooded grove. Preferably, the nest is placed about one-half way up the main stem of the tree (see fig. 75), upon horizontal limbs and braced against the main trunk. This is a distinctive trait where nesting groves have not been disturbed by clearing of land or been washed away by floods. Rather than leave a chosen hunting ground, however, the hawks will accommodate themselves to almost any kind of a location. Considering their size, the birds build the smallest structure of any of the raptors hereabouts. I have often found nests which from the ground looked as



Fig. 76. YOUNG RED-BELLIED HAWKS WHEN FORTY-ONE DAYS OLD.

though they could not possibly contain eggs, let alone conceal a sitting bird, but upon climbing the tree, the bird would leave and the nest would be found to contain four eggs. After incubation is well begun it is almost impossible to flush the sitting bird by any other method than climbing to the nest, and in several instances I have known the bird to remain until the climber reached it.

The nest is composed outwardly of dead twigs of the trees common to the river bottom, such as sycamore, willow and cottonwood, the inner part of frayed-out bark of the cottonwood and willow. This bark makes a soft mat upon which the finishing touches of green leaves and downy feathers are placed. The green

leaves are constantly replenished during the incubation period and long after the young are hatched. After incubation has progressed somewhat a large number of downy feathers will make their appearance on and around the nest. This becomes so noticeable in some cases as to be a sure sign of occupancy and one which I have never noticed to such a marked degree in any of our other raptors.

A pair of hawks often has two or more nests, usually in the same tree or in adjoining trees, and if undisturbed they will remain year after year in the same grove. If an old nest is used, very little is done to it with the exception of relining with bark and green leaves; so the structure does not take on such a large size as with other hawks. The determining factor in a location seems to be the food supply, and if that is to be had the hawks will use whatever trees are available. I have found nests in willow as low as twenty-five feet from the ground and in large sycamores as high as eighty-five feet. I have never found these hawks using any nest but one constructed by themselves, though I have found other birds using theirs.

If it were not for the Red-bellied Hawk being so noisy during the mating season, it would be very little noticed; but, because of this habit, it is easily found at that time of year. While it is not often seen, it is often heard, especially during the last of February and the first few weeks in March. The call consists of seven or eight sharp, shrill, whistling sounds starting with a lower and subdued note and gradually ascending to the middle of the call and then descending again both in pitch and in volume. As nearly as I can express it in words it would appear as *keee-ah, keee-ah, KEEE-AH, KEEE-AH, keee-ah, keee—a-h, keee-a-a-hh*. This squalling is usually indulged in while the bird is circling high in air, usually a mere speck against the sky, but it is also often heard in a more subdued and shorter form shortly after a brooding bird has been flushed from the nest.

At this time of the year the birds do their hunting early in the mornings and late in the evenings; from about nine o'clock in the morning until mid-afternoon they are busy nest building, loafing and indulging in queer aerial antics. As I have never been able to tell the male from the female bird by observation I could not say whether one or both perform in the air, but presume that it is the male bird; only one is seen at a time doing stunts. The usual program is for the bird leisurely to ascend in wide spirals to an elevation of 1500 to 2000 feet above the nest grove, where it will give a few preliminary flaps of its wings, the signal for the noise to begin, and squalling and diving it will descend to the same place from which it started or to the nest grove nearby, in a series of nose dives and side slips. I have seen eagles doing this same stunt without the noise, but have also noted that always in the offing there is an interloper in the form of another eagle, to whom it is perhaps given as a warning. The Red-bellied Hawk seems to do this stunt for the sheer joy of the thing. The birds are not conspicuous in other ways during the breeding season and do not sit around close to the nest as does the Western Red-tail.

The time of the laying of the eggs varies considerably with the years. If rains come early in the fall of the year previous, the eggs are deposited earlier. Normally they are laid between March 21 and April 10. From one to four eggs are laid and often the laying of a set of eggs takes as much as a week. The more heavily marked eggs are almost always deposited first. The eggs vary greatly in markings, even in the same set of eggs, and are the handsomest of all our raptors. The number of eggs in the clutch varies with different seasons. In October, 1925, this section of California was visited with unusually heavy rainfall. In the spring of 1926, I visited five different pairs of the Red-bellied Hawk, trying to find a nest which

would lend itself to successful photography and observation and every one of these nests contained four eggs. During the spring of 1927, the same territory was visited and apparently the same five pairs of birds were located, and every nest contained three eggs. Previous to this I had noted that during certain years sets of four eggs were common, and I had always correlated this with seasons of heavy rainfall. Search back over the rainfall records, however, revealed the fact that the laying of large sets of eggs and the raising of large families took place in years following early fall rains. Early rainfall is conducive to a much longer growing season for the native grasses, the natural food supply of small rodents. I am firmly convinced that the number of pairs of hawks in a territory suitable for their support, as well as the size of the families they may elect to raise, is governed entirely by the food supply, and this, in turn, is dependent upon rainfall and the proper distribution of the same over a long growing season.

The smallest egg in a series of eighteen sets, consisting of thirteen of four eggs each and five of three eggs each, measures 1.91 x 1.61 inches, and the largest 2.25 x 1.68 inches, indicating an average size of 2.08 x 1.64 inches.

After the eggs are laid and incubation begins, the two birds seem to share equally in this duty. The incubation period varies from twenty-three to twenty-five days, varying according to the care with which incubation was conducted in the first few days, during the laying of the eggs and directly afterwards. As incubation starts usually with the laying of the first egg, the young emerge from the shell over a period of several days. Quite a difference in size is often noted when they are first hatched, but this disappears as they reach the age of four or five weeks. In several instances where I have observed that the heavily marked eggs of a set were laid first, they were the first to hatch, and in all cases where infertile eggs were noted, these were the lightly marked or plain eggs of the sets. Infertile eggs are not at all uncommon and it is rarely that all of a set of four eggs are fertile. The young birds do not develop very fast the first week, but thereafter they increase rapidly in weight up to five weeks from hatching. Then the feathers begin to make their appearance and from this time on the feathers develop rapidly. (See figs. 74 to 76, which show the young at different ages.) I am firmly convinced that the Red-bellied Hawk does not prey upon birds, and that by far the larger part of its food supply consists of small mammals, mostly rodents such as are injurious to the growing agricultural crops of man.

In 1907, I personally visited and either collected a set of eggs from, or located, the nests of seven pairs of Red-bellied Hawks in the northern end of San Diego County, and in 1927, twenty years later, I made it a point to renew my acquaintance with these seven locations. In every instance I found a pair of hawks still resident in the same general locality. I have a record of twenty-three nesting locations within a radius of thirty miles of Escondido, and I think that this is all the hawks that the food supply will now warrant. Generally speaking, I do not think the food supply has undergone any radical change in the last twenty years.

Twenty years ago it was a common practice for everyone traveling through the country to carry along a shotgun, and any bird of prey was considered a good target. This condition does not exist at present, as the cost of ammunition has increased, the game laws are being enforced, and, last and most important, the people are becoming educated to the fact that our hawks and owls have their economic place in the well-being of the farmer, and they are seldom shot. Other changes are taking place which make the outlook in this section more cheerful for a continuing number of these beautiful birds to live here. A few years ago not far from where I live

there was a long strip of river bottom in which resided a single pair of Red-bellied Hawks. Today, this same stream has been dammed and where the river bottom used to be there is a lake, and along the shores of this lake, in the same area which used to support a single pair of birds, three pairs now live, and all of them seem to thrive and find plenty of food. This has proven conclusively to me that if food supply conditions are right, the existing birds will breed up to fill in this favored area or less favorably situated birds will move in to fill the gap.

The only enemies this hawk has to my knowledge are his larger cousin, the Western Red-tail, and the man with a gun. I have seen the larger hawk attack and try to kill the smaller one where their hunting grounds overlapped, but I have never seen such an attempt succeed, although I have seen the smaller bird badly hurt. To some hunters a hawk is still a chicken thief and to be shot at sight; and as this hawk hunts low and is prone to nest alongside of well traveled roads and near occupied buildings, and, as it has a habit of perching on fence posts and telephone poles along well traveled roads, it is often shot. Even so, I feel sure that the Red-bellied Hawk has not diminished in numbers in the northern end of San Diego County in the past twenty years and I do not feel alarmed for its continued well-being as long as basic food conditions do not change. However, as this southern section fills up with people there is a constant crowding out from the populated centers for more rich lands on which to grow vegetables, and there has been a marked tendency to clear and cultivate the rich river bottoms where the Red-bellied Hawk makes its home. As time goes on, this is sure to continue and it is hard to say how these birds will then adapt themselves. In the past they have been found only in certain restricted areas and have not adapted themselves to any other, and it would seem that, when the time comes that man will need their present feeding ground, upon which to grow his own food, these birds will disappear.

Escondido, San Diego County, California, June 30, 1927.