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NESTING OF THE WESTERN GOSHAWK IN CALIFORNIA

WITH SIX ILLUSTRATIONS

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In San Diego County, California, the Western Goshawk (*Accipiter atricapillus striatulus*) is a common winter visitant. Thus, after having seen the bird during the wintering period, it was interesting to us to have an opportunity to study it during the breeding period. The following records were secured from a pair of Western Goshawks during the period 1930 to 1937, inclusive. The nest location was in Mono County, California. The data as given herein were obtained by the authors, assisted in the field by George Marquette, John Marquette, James Hanson and Ed Sechrist. The nest location was at approximately 8500 feet above sea level, as shown by the U. S. topographic maps of this area. As an indication of the scarcity of this species in the area concerned it is to be noted that in the eight-year period we have only seen three Western Goshawks other than the pair covered by this article. It is also interesting to note that during this same period of time we have found all three of the accipiters breeding within a mile radius of this section, but never all in any one season.

In June of 1930, the first season we visited the Mono area, a goshawk's nest was found by James Hanson. As is often the case, this nest was found quite by accident and would never have been found at the time except for the pugnacity of the hawks themselves. We had found a Ruby-crowned Kinglet's nest in a dead pine nearby, and in collecting the kinglet's nest considerable noise was made. This excited the hawks and they came calling through the forest, displaying anger and threatening to attack the climber.

Close search of the adjoining forest resulted in a goshawk's nest being found in a small lodgepole pine. The nest tree was a small one and was located in a densely wooded section of a belt of timber at the 8500-foot level. The nest tree was in about the center of this heavily wooded strip, which was about one-half mile in extent up and down the slope and fully a mile and a half in extent along the slope. The nest grove was on a comparatively level bench running from northeast to southwest. Above the nest grove the country opened up into summer-time meadow-land, but which during most of the year was covered with heavy snow banks. During the months of May and June the normal run-off from these snow banks ran down through the wooded area in numerous streams; but by the first of July these streams were usually dry. Below the nest grove the mountain dropped off abruptly, was rocky and rough, and had very few trees growing upon the slopes.

The nest was 30 feet from the ground in a small lodgepole pine and was placed against the trunk of the tree on the first large horizontal limbs, on the north or protected side of the trunk. This nest was large and appeared to be old; apparently it had been used for several years as it had the appearance of not being very stable. It was composed of assorted sizes and lengths of dead pine sticks. (See Dixon, Condor, vol. 36, 1934, p. 35.)

This nest was found on June 26, 1930, and at that time held three young birds. These were resting on a nest lining of broken up bits of dead sticks, and the original lining of hard dead bark had been so mixed into the nest by them as hardly to be noticed. As long as several of us remained upon the ground immediately under the nest tree, anyone climbing the nest was not molested. The old birds would fly over and through the trees near the nest, calling in protest; but if everyone left the immediate vicinity except the one climbing to the nest, the female would attack the climber.

We took moving pictures of the old birds on the nest and of the female feeding the young. Upon the return of our first lot of film we were not satisfied with the results. Deciding that he would risk climbing to the nest alone and get some additional pictures, Ralph Dixon returned to the nest tree to secure more and better movies of the birds at home. After finishing his exposures he started to climb down out of the tree from



Fig. 1. Woods of lodgepole pine where Western Goshawks nested, looking east and up-hill; photographed June 30, 1937, at 8500 feet altitude near June Lake, Mono County, California.

which he was taking the pictures, whereupon the young hawks noticing him became alarmed and commenced to talk about it. The female goshawk immediately attacked, striking the climber alongside of the head and causing him to bump his head hard against the tree trunk in trying to get out of her way. By throwing his arms up around his neck and head he was able to avoid being struck there, but he suffered several deep gashes in his arms and legs before he could get down out of the tree. The blows were struck with such force as to rip heavy overalls and to cause flesh wounds which bled freely.

Not realizing that this area would change greatly in appearance as between July and May we did not take particular pains to mark the nest tree, but did mark trees from the trail into the nest woods to the nest. In May of 1931, John Marquette made several trips to the woods endeavoring to re-locate the nest. The snow was now so deep that it covered all the trail marks made through the woods to the nest and he was unable to locate it. Upon our arrival in Mono County in early June we decided to make another try. Ignoring all previous marks and going entirely upon the topography as we remembered it, we were able again to find the nest tree. The old nest of 1930 had fallen out and been replaced by a smaller and new nest in exactly the same location.

This new nest was found on June 6, 1931, and at that time held two young birds, one of which was just out of the shell and the other looked to be two days old; also one infertile egg. Blazing the trees from the nest to the nearest trail as high as we could reach from the ground, we retired for another year. On May 7, 1932, John Marquette again visited the nest, finding the female sitting on it. He climbed the adjoining tree with the idea of taking a picture of the nest and eggs. Climbing up opposite the nest



Fig. 2. Nest tree of Goshawk at right; blind to be seen at extreme upper right; nest a bit to left and below blind.

he saw that it held the usual three eggs, but he was not able to set up his camera because the female attacked him and drove him out of the tree. He suffered several severe scratches in the face and head which took several weeks to heal. Forced to retreat that day he returned with help the next day, May 8, and collected the set of three eggs. Incubation in all three eggs was advanced about one week. He left the nest, thinking the birds would probably return to it and nest again. This they did not do, however, and in

June, the same year, we collected the nest. The measurements of the eggs are as follows, in inches: 2.22×1.73 ; 2.25×1.74 ; 2.21×1.73 ; the nest measures in maximum thickness 6 inches and is 24 inches across. The nest cavity is 4 inches deep. The nest is similar to that of the Cooper Hawk, only being larger, but has the same characteristic hard lining and dead-stick exterior. The eggs are unmarked and when first collected showed quite a bluish tinge, but with age this has bleached to a chalky white.

Every year from 1932 until 1937 we have looked for this pair of birds and their nest but without success, and in all that time we have only seen one of the birds, once. On June 12, 1937, we again visited the goshawk woods. Ed Sechrist found an old nest on the eastern edge of the woods in a typical location. It was placed against the trunk of a large pine tree, on the first horizontal limb thereof, about 30 feet from the ground. Believing that there was another and occupied nest near-by, we finally located it within a short distance of the original nest. The nest was a large new-looking nest placed differently than any found so far, in that it was 8 feet out on a horizontal limb of one of the largest pine trees in the woods and 35 feet from the ground. The head and tail of the sitting bird could be seen from the ground, and when the climber started up



Fig. 3. Nest of Goshawk 35 feet above ground in lodgepole pine; young 8 days old; egg infertile; photographed June 12, 1937.

the tree it left the nest and flew to an old perch in an adjoining dead pine. Turning quickly around it acted as though it was going to attack, but upon being shouted at apparently changed its mind and merely sat in the tree calling.

The nest on this date, June 12, held two young birds and one infertile egg. The young appeared to be five days old at this time. The action of the birds in the nest was no different than in previous years and at this time there was no food at the nest. After investigating the possibility of further observation by building a blind we retired. The nest location was such as to allow the building of a blind for observational and photographic purposes. Two days later we visited the nest with the intention of building a blind or at least of roughing in a blind with the idea of leaving it for some time in order that the birds would become accustomed to it. This we proceeded to do without any particular trouble, making the framework out of pine branches and the exterior out of green burlap. Limbs were large and numerous and fitted in well for observation seats and supports for the cameras.

Returning on June 30, at 11:30 a.m., we climbed into the blind and remained there until 5 p.m. of the same day. During this time the male bird came to the nest once, bringing with him the only food during the period. This was a ground squirrel from which the head had been eaten. The female came to the nest three times and fed the young birds the squirrel the male had brought in. The female was much the bolder of the two and would come to the nest; she knew someone was in the blind and would strike at the feet of the observer and fly at the camera lens projecting through the blind and would go around on the back side of the blind and try to strike the observer from the rear. Failing in all these attempts, her curiosity got the better of her and she seemed bent on finding out what was inside of the blind; she walked up the limb the nest was on until she was within 18 inches of the camera lens and looked it over very carefully; her attitude seemed one of curiosity and not one of anger such as she had previously shown. When the female was on the nest and we moved our feet, which were inside of the blind but only about 6 feet from the bird, she would go wild with anger. The burr of the movie camera had no apparent effect upon either the young or old birds; but the click of the still camera shutter would cause her to jump. So we had to take the stills with a bulb time exposure to get results, as the light was poor and would not allow of fast snap shots.

Close observation of both old and young birds disclosed the fact that none of them paid a great deal of attention to what was going on above them, but spent most of their time looking down or on a level and only looked up when some noise or movement attracted their attention. This trait was most noticeable in the young birds. While anyone was in the nest tree or even on the ground under the nest tree they froze into rigid postures, watching with keen interest every movement below them. If everyone walked away out of sight they would immediately relax and conduct themselves in a normal manner.

A great deal of their time was spent in preening themselves, apparently looking for lice and picking at the numerous flies that had been attracted to the nest by the remains of squirrels in and around the nest. A part of their time was spent in exercising, flopping back and forth across the nest; but by far the largest part of their time they spent in creeping out to the extreme edge of the nest and lying down so that their heads projected over the edge, and looking at every living thing that moved on the ground below. Nothing seemed to escape their notice. Birds, chipmunks, butterflies or anything that moved interested them. Noises made little impression upon them, although plainly heard. Impressions of sight seemed paramount to impressions of sound with both the old and the young birds.

The skill with which the old birds could fly in, over, and through the trees was uncanny. In approaching the nest through the densely growing trees they would not slacken their speed in the least until within fifty feet of the nest tree. The approach to the nest would be from below and would be accomplished by an upward arc of approach in which the normal speed was reduced in the abrupt rise to the nest. The birds seemed to be creatures of habit in that they always approached the nest from the same side and always lit on the edge of the nest in almost exactly the same spot.



Fig. 4. Young Goshawks 26 days old; photographed June 30, 1937.

This was probably due to the fact that at this elevation winds are often harsh and blustery, making it safer and easier to land against the prevailing wind.

The young birds would not give any indication of the approach of their parents to the nest. Sometimes an old bird would circle the nest tree calling meanwhile and otherwise conduct herself in a way to indicate she knew something was wrong. At other times she would alight directly on the nest and after giving a few defiant calls would proceed as though we were nowhere near the nest.

An old bird, while on the nest, would pay little attention to the noises we made within the blind, in placing and removing plate holders in the still camera, or to the noise made in cranking the movie camera, or to the burr of the movie camera, or to the sharp clack of the camera when it stopped; but the least movement of our feet or our reaching through the front of the blind to adjust the cameras was sure to cause her to have a brain storm. She would fly directly at our feet, striking the burlap a hard blow and then fly directly at the camera lens. As if she realized that all this was doing no good she would then quiet down and soon her curiosity would get the better of her and she would scramble up the nest limb until she was within two feet of the camera lens and look it over very carefully. We could look out through our peep hole in the blind and look right into her blood-red fiery eyes. We have never seen anything as wild and fierce looking. The red of the goshawk's eye in anger is so blood-like that at first glance we thought she had injured her eye in some way, but soon we saw that there was nothing wrong but that this appearance was natural.

Living in this same wooded area in which the goshawk's nest was located we noted in the time we were in the blind the following birds. A pair of Mountain Chickadees had a nest with six eggs in an overturned tree root within fifty feet of the nest tree; a pair of Cassin Purple Finches had a nest with eggs within 100 yards north of the hawk's nest; a Pine Siskin had a nest with eggs a short distance west of the hawk's nest; a Hermit Thrush was singing almost constantly in the woods near-by; a Calliope Hummingbird followed the hawk to the nest twice and took quite an active interest in our movie camera; a Junco's nest was found with newly hatched young in a small ravine not over 100 yards to the north and east of the hawk's nest.

We wondered if these nesting birds did not gather there for the protection afforded from other predators which might be driven off by the hawks. All of these birds had fear of the hawks, however, as shown by the fact that the only way we could tell the old hawk was approaching the nest was by the alarm notes these various birds sounded before the hawk appeared upon the nest. In this same wooded area we saw Horned Owls and Pigeon Hawks. A Pigeon Hawk was seen several times and from its actions we thought it was probably nesting there.

During all of our contacts with this pair of goshawks we have given special attention to the food found in and around the nest. We found the hawks living entirely upon small mammals, these consisting of the two kinds of chipmunks common in the wooded areas and the small ground squirrels so common in the meadow areas. Several tree squirrels were seen in this wooded area. Our observations would indicate that this particular pair of hawks were above reproach as to their food supply during the time they were raising their young. Observations taken at other times of the year might disclose an entirely different condition. Grouse were particularly abundant in this same area, and we saw one family of newly hatched young grouse.

The goshawk's nest during our observation underwent a great deal of change. When first visited, on June 12, 1937, the nest was neatly arranged, with its hard bark lining; several small green pine sprigs were lying around the nest hollow. Upon our visit of

June 30, this condition had changed. The entire top of the nest platform was covered to a depth of three inches with fresh green pine sprigs which were being replenished with more green sprigs as the older ones turned brown and wilted down. This replenishment was kept up as long as we watched the young birds.



Fig. 5. Adult female Western Goshawk at nest; photographed July 6, 1937.

This procedure would account for the large size of nests used over a period of years. The young birds, at all times, were careful to discharge their excrement clear of the nest. The nest appeared neat, but was far from sweet smelling on account of the pieces of cast-off meat that would fall down through the nest structure and decay, attracting numerous flies that would pester the young hawks but did not do any apparent harm to them.

Upon our visit to the young birds on July 6, 1937, a noticeable change in the young birds was apparent. Their feathers had grown rapidly and the birds were "itching" to get out of the nest, flying and flopping back and forth across the nest vigorously. Apparently the old birds were hardening them up, since they came to the nest the usual number of times but brought no food to them for the period of our observation, namely, from 9 a.m. until 5 p.m. Instead of bringing food an adult would come to the nest with a small piece of hard dry bark or a small green pine sprig. It would drop this on the nest the same as it did the food. The young birds would come over and peck at this

material and then would turn away in disgust. We feel certain the adults could have brought them food had they desired to do so; but every indication was that the youngsters were on a diet in order to keep them in the nest until the parents were ready for them to leave.



Fig. 6. Young Western Goshawks 32 days old; photographed July 6, 1937.

Usually the male bird would bring the food to the nest; but he would not feed the young. He would try to get them to help themselves by half-heartedly picking at the exposed pieces of raw meat. The female, however, would make short work of the food the male brought and left on the nest. Tearing the squirrel to pieces she would bolt all the hard, undesirable pieces and feed the young the choicest tender bits until each in turn was filled and turned away. Their table manners were very good and there was no crowding or interference with one another during the feeding time.

The adult male was the smaller in size and less aggressive. He seldom called and seemed more curious than angry when the camera would click or the movie camera buzzed. He would come to the nest about once to the female's three times during the day.

Summary.—Normal nesting date at this elevation (8500 feet) would appear to be the first week in May. Normal number of eggs laid would appear to be three, based upon four years' record. Food supply was entirely of mammals during the period the young were in the nest. Diet of young birds apparently was regulated. Early in their lives they were heavily fed; later, as their feather growing period arrived, hardened up. Time young are in the nest would appear to be around 42 days.

Escondido, California, July 24, 1937.