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BEHAVIOR OF THE SAW-WHET OWL ON ITS NESTING GROUNDS

WITH FOUR ILLUSTRATIONS

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In the spring of 1937 a pair of Saw-whet Owls (*Cryptoglaux acadica*) occupied a nest-box placed by the authors in the Spring Valley game refuge, San Mateo County, California. Four of the set of six eggs hatched and the female and four young were later banded, as was related in an article already published (Granfield, Condor, vol. 39, 1937, p. 185). In order to provide nesting facilities for any other Saw-whets that might be in the neighborhood, we put up several more boxes in the autumn of 1937. During the winter, two of the boxes were used as sleeping quarters by Red-shafted Flickers, and a Screech Owl moved into the box in the live oak in which the Saw-whets had nested. Other boxes intended for Saw-whet Owls were occupied by white-footed mice (*Peromyscus* sp.), their principal prey, but nothing was seen of the owls themselves.

On April 3, 1938, we found the first of our two pairs of Saw-whet tenants of the year. The female of this pair later proved to be the same one (band no. 37-501436) which had nested in our 1937 box, but this time she had chosen a box about a third of a mile from the previous one. This box is located about 22 feet from the ground in a large valley oak situated in a small glen where live oaks, redwoods, and madrones are the principal trees, interspersed with patches of grass and brush. It is a secluded and protected area, abounding in wild life, and several other birds nested near the home of the owls.

Many other amateur ornithologists accompanied us on our visits to the owls and helped us in one way or another, among them Claude Hall, Miss Barbara Norris, Bob Folsom, and Bill Stearman. To Superintendent George Davis and Patrolman James Hourigan of the San Francisco Water Department we owe thanks for their interest and for allowing us to be on the property at night.

About 3 o'clock in the afternoon of April 3 we arrived at the tree in which the nest-box is located and climbed to the box without seeing anything to indicate that it might be occupied. However, when we opened the roof we felt well rewarded, for there, in a corner of the box, was a Saw-whet Owl blinking up at us defiantly. Whether or not it was brooding eggs at this time we did not determine for fear of causing it to desert. Scattered about in the box were five white-footed mice, all with their heads eaten off, and a few gray wing feathers of a small bird. During the time we observed the nest the owl remained motionless, snapping its bill until we closed the roof.

Returning on April 16, we again climbed to the box without seeing the owl. On looking in, however, we found the bird occupying the opposite corner of the nest, and since it appeared to be brooding, one of us reached in to determine if there were eggs. At this the owl backed away, striking upward with its talons and at the same time disclosing five white eggs. This action also revealed a band on its right leg, the first indication to us that it was the same female which had occupied our box the previous

season. The house contained feathers of several small birds (among them the tail feathers of a Vigors Wren), along with a freshly killed white-footed mouse and the tails of other mice.

On April 23 the female was again present, sitting on the five eggs, with the headless remains of two white-footed mice by her side. When a hand was reached in to obtain a mouse for a specimen she snapped at it vigorously, watching it intently and slightly rising from the eggs. Finally, when the hand was but two or three inches from her, she hopped to the edge of the box top, paused there with her back to the observer who was but a foot away, and then flew into the lower branches of a nearby oak. Her actions in this case seem characteristic of the species, for even at night the owls showed no fear of us and would usually not move except to get out of our way. The nest was still quite clean, there being no pellets or droppings in sight.



Fig 1. Nest-box in a valley oak occupied by Saw-whet Owls in 1938. Spring Valley, San Mateo County, California.

When the box was visited on April 30, it was found that two of the eggs had hatched. We lifted the female from the nest and verified the band number, noting also the large bare area on the breast, the "brood patch," which at this season distinguishes her from the male. The usual store of white-footed mice was present, this time the hind parts of three. Before leaving, we replaced the mother owl in the box, where she remained.

As we approached the nest tree on May 15, the female appeared at the entrance of the box and remained there until one of us had climbed within two feet of her. Thereupon she flew out, alighting first in a bush below the house and later flying into a live oak. All five of the eggs had hatched; the two oldest of the young owls were now two

weeks old. The others were noticeably smaller, but all showed pin-feathers coming out through the natal down.



Fig. 2. Female Saw-whet Owl in nest-box with eggs; April 11, 1938.

By May 19 the young owls were sufficiently well grown to require frequent feeding, so we decided to spend a night under the tree to watch the parents bring food; then, after learning something of their habits, we would try photographing them at the nest-box. Accordingly, we set out on the evening of May 19, equipped with sleeping bags, flashlights, and notebook, not knowing quite what to expect. Though it was just dusk when we arrived, a clear, tremulous call drifted down to us from the ridge to the west, and this we rightly attributed to the Saw-whet. The call consists of a single syllable, *quōō'-ik*, repeated at regular intervals, but increasing in rate and rising in pitch as the bird nears the nest. The call has an eerie yet pleasant quality that makes one naturally stop to listen to it.

The calling bird must have been the male, since the female was in the nest when we arrived, and she stayed in it most of the night. Though the moon did not rise until 10:30, there was light enough so that we could be reasonably sure of our observations. Our notes give the following account of the owls' activities.

7:48. The female appeared at the entrance of the box when the light was shone on it.

8:00. Male called at intervals from the hillside about 100 yards away.

8:06. Continuing to call softly, the male flew to the nest tree and perched about fifteen feet from the box. Then he flew to the entrance for an instant while calling more rapidly; but our presence must have frightened him for he returned to his perch.

8:08. Male continued giving an inquisitive *quōō'-ik* call at intervals. He made another attempt to fly to the box but again turned back.

8:11. This time when the male flew to the entrance of the box he remained there several seconds and then flew away. (Probably passed in food.)

8:15. Young owls kept up an almost continual "buzzing" noise, and also "peeped" much like baby chicks. Female apparently was still in the nest.

8:40. Female left the nest-box, flying away silently.

8:47. An old bird (probably the female) flew over us and into the nest without calling, and the young made the "peeping" noise.

8:49. The adult bird was looking out of the entrance when we approached and shone the light at the box.

8:55. It backed into the box again. Young occasionally "peeped"—otherwise all was quiet.

9:13. The male came and called in a nearby tree, then flew to the box for an instant and passed in food. The young kept up a continual chorus of noises.

9:22. Screech Owl was hooting nearby. Occasional noises heard from the box.

10:00. Male called twice from a distance, then twice a little nearer. An instant later he flew to the box, evidently with food, paused there a moment and then flew away. The young owls in the box were quite noisy after he left.

10:38. Calling as before, the male came to the box, this time being answered by one of the young before he passed in the prey and departed.

11:53. In the moonlight the male could be plainly seen as he brought food to the nest. He called twice from a distance, then continued calling from a dead willow about 40 feet away before flying directly to the box. The prey, carried in his talons, appeared to be a mouse.

12:47. When a noise was made on the ground beneath the box, the female jumped to the entrance and looked down at us. She did not seem to mind the beam of light directed at her.

1:04. The female, evidently having left the nest after looking out at 12:47, returned noiselessly.

2:03. Male called faintly from a distance and the young owls replied with a chorus of noises. He flew into the nest tree, called again, and flew to the nest box but did not land. A moment later he tried again, and when the light was flashed on he could be seen clinging to the entrance carrying a mouse. Returning in a few minutes, he succeeded in passing in the food. Young were noisy for a few minutes and then quieted down.

From this time on, no owl entered or left the box although it remained dark until about 3:30. Several times during the night the stillness was broken by birds other than the owls. A Dusky Poor-will called 307 times without stopping, and a Western Fly-catcher, a Spotted Towhee, and a Chipping Sparrow were also heard. We climbed to the box at 6:20 that morning; the female owl appeared at the entrance and remained there for about three minutes. We attempted to take her picture and succeeded in getting the camera within 16 inches of her, but she soon lost interest in our actions and dropped back into the box. When the roof was opened she stared up at us, protecting the five young. Two half-eaten mice were in the box.

The following day we nailed our photographic equipment, consisting of a box to hold the camera and a reflector for the flashlight bulb, to a limb 20 inches from the nest box. On this visit the female was not in the nest, and from then on she was not seen at all in the daytime. On the evening of May 22 we returned and set the camera in place, attaching a long lamp cord to the flash bulb so that it could be set off from the ground. At 7:32 p.m. it was still fairly light, and other birds were still moving about when a Saw-whet started calling from a nearby redwood. For several reasons we are quite certain that it was the female that came to the box from this direction, while the male continued to approach from the west. The female (assuming that it was she) then flew low over the ground and, after perching to call some more, flew to the house and deposited the food. It was surprising to us that the owl had caught a mouse so early, and that the small birds paid no attention to her as she came to the nest. Between this visit

and midnight the young were fed at 8:26, 9:45, and 11:38; photographs were taken of the last two feedings.

On May 25 we spent a part of the night trying to get more pictures. This time we waited beneath the redwood tree and at 7:38 p.m., only five minutes later than her



Fig. 3. Flashlight photograph of Saw-whet Owl carrying a white-footed mouse into the nest-box. Tail of mouse shows below feet of owl. The landing below the entrance was not used by the owls.

previous appearance, the female flew into the tree with a mouse in her talons. At 8:05 an adult came to the box from the direction in which the male usually approached, and from then until 12:40 we recorded five more visits. It was necessary to climb the tree after each picture to reset the camera; at 10:55 as one of us was doing this, the light happened to shine on a half-dead coyote-bush beneath the house. To our surprise we

saw the female owl sitting there, turning her head back and forth as if unable to look into the light for any length of time. We could see the band on her leg and noted that she carried no food before she flew off. A few minutes later, when the climber was near the nest, she returned and flew at him, striking him on the head three times. She did no damage, but nevertheless it was decidedly uncomfortable to be struck in the dark with no warning.

Our last nocturnal visit was on May 28 when again the female was heard calling from the redwood promptly at 7:37 p.m. One of the young appeared at the entrance, and the female then flew to the nest tree with a mouse in her talons and perched near the box. Picking up the mouse in her bill, she flew with it to the young owl who seized



Fig 4. The four young owls (one partly covered) and two infertile eggs of the 1937 nest; also, remains of two mice.

Photograph by Robert Barth.

it and disappeared inside the box. The old birds brought food only twice during the succeeding five hours that we watched, probably due to the fact that the female remained in the vicinity of the nest to dive at us every time we climbed the tree. By June 2 all but two of the young owls had left the nest and these, too, were gone when we returned to clean out the box on June 11. From the time the young had hatched no evidence of prey other than white-footed mice had been seen in the box, but on this occasion the remains of a field mouse were noticed.

Naturally believing that we had seen the last of the Saw-whets for that season, we were making a final check-up of the other boxes on June 11, when the second nest was discovered in a box about a half mile away. This one is approximately 35 feet above the

ground in a tall Douglas fir near the lake shore and had been unoccupied on our previous visits. As we opened the roof, the female jumped to the entrance where she was caught and banded. There were four eggs in the box. Some moss, scattered about in the sawdust on the floor, indicated that a mouse or small bird may have started a nest there.

The next visit was on June 17 and this time the female flew out of the box as we were about to look in. Another egg had since been laid and it was interesting to note that the floor was covered with dead red ants, evidently killed by the owl when they ran into the nest. Again, on June 25, the female flew out of the box, perching about eight feet away in the sunlight. As we approached to take her picture she flew down to a buckeye tree where a group of birds started scolding her. A few minutes later, when we had climbed down and were on the point of leaving, she flew back into the nest tree followed by the other birds and then disappeared into the box. On that visit and on the previous one there were two dead white-footed mice in the nest.

On July 8 a blind was placed several feet from the nest; the female left the box, watching us from a nearby branch for about 15 minutes before flying off. The next evening when we returned, the female was caught on the eggs, but during two and a half hours of watching no owl was seen to enter or leave the nest. Incidentally, two owls that appeared to be adult Saw-whets were seen on the dirt road that night about two miles from this house. Although the female was still incubating the eggs on July 17, it was apparent that something was wrong, because the other sets had taken less than a month to hatch. Two days later the female was gone, so the eggs were removed and given to the Museum of Vertebrate Zoology, Berkeley. When they were "blown," it was found that none of the eggs contained embryos and therefore it appears that the female had been incubating an infertile set.

Thus was our experience with these interesting birds ended for 1938. We might add that eleven other species of birds have used our nest-boxes and at least 40 of the boxes were occupied this year.

Summary.—During 1937 and 1938 a study was made of three nests of the Saw-whet Owl at Spring Valley Lakes, San Mateo County, California. The female of the 1937 pair was banded, and she nested in a different box in 1938. A second female nested unsuccessfully about a half-mile away and approximately nine weeks later. The nest-boxes were of different types and were located in different kinds of trees.

The number of eggs per set was six, five, and five. Only the female was observed to incubate. She stayed in the nest with the young during the day, and also during most of the night until the young were fully feathered.

The food consisted almost entirely of white-footed mice, and during one night at least seven mice were brought to the young owls. A store of extra mice was almost always found in the nest.

The adults called repeatedly when bringing food and usually dropped the prey into the box while clinging to the entrance. The female in each case was quite fearless and one of them would strike intruders at night. Young owls were in the nest more than four weeks. Their plumage differed markedly from the adult plumage.

San Mateo, California, September 21, 1938.