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OBSERVATIONS AT A NIGHTHAWK'S NEST

By GEORGE MIKSCH SUTTON and HAVEN H. SPENCER

Several pairs of Nighthawks, *Chordeiles minor* (Forster), nested on flat roofed buildings in the city of Ann Arbor, Washtenaw County, Michigan, in the summer of 1948. Some pairs nested in the main business district or on apartment buildings between this district and the University of Michigan campus. At least three pairs nested on the campus. Two of these nested about 93 yards apart at opposite corners of the gravelled roof of the Natural Science Building. The nests were separated by the brick walls which surrounded an open court. The third pair nested on the tar-paper roof of the Museum of Zoology, about 350 yards to the east of the Natural Science Building. No pair nested on the Chemistry Building between the Natural Science Building and the Museum of Zoology, or on the Hill Auditorium directly across the street from the Natural Science Building. During late May we heard and saw the birds about the Museum building evening after evening; but not until early June did we learn through the janitors that there was a nest on the roof. The two eggs were at the extreme east end of the building's north wing, at the base of the 8-foot brick wall which enclosed the roof.

Throughout the period of our observations the only bird which we saw incubating the eggs or brooding the young was the female. We did not visit the nest regularly, however, nor did we ascertain which bird spent the night on the nest. At several nests which A. O. Gross observed at Brunswick, Maine, he never saw a male incubating. One of these nests was "subject to study day and night by a relay

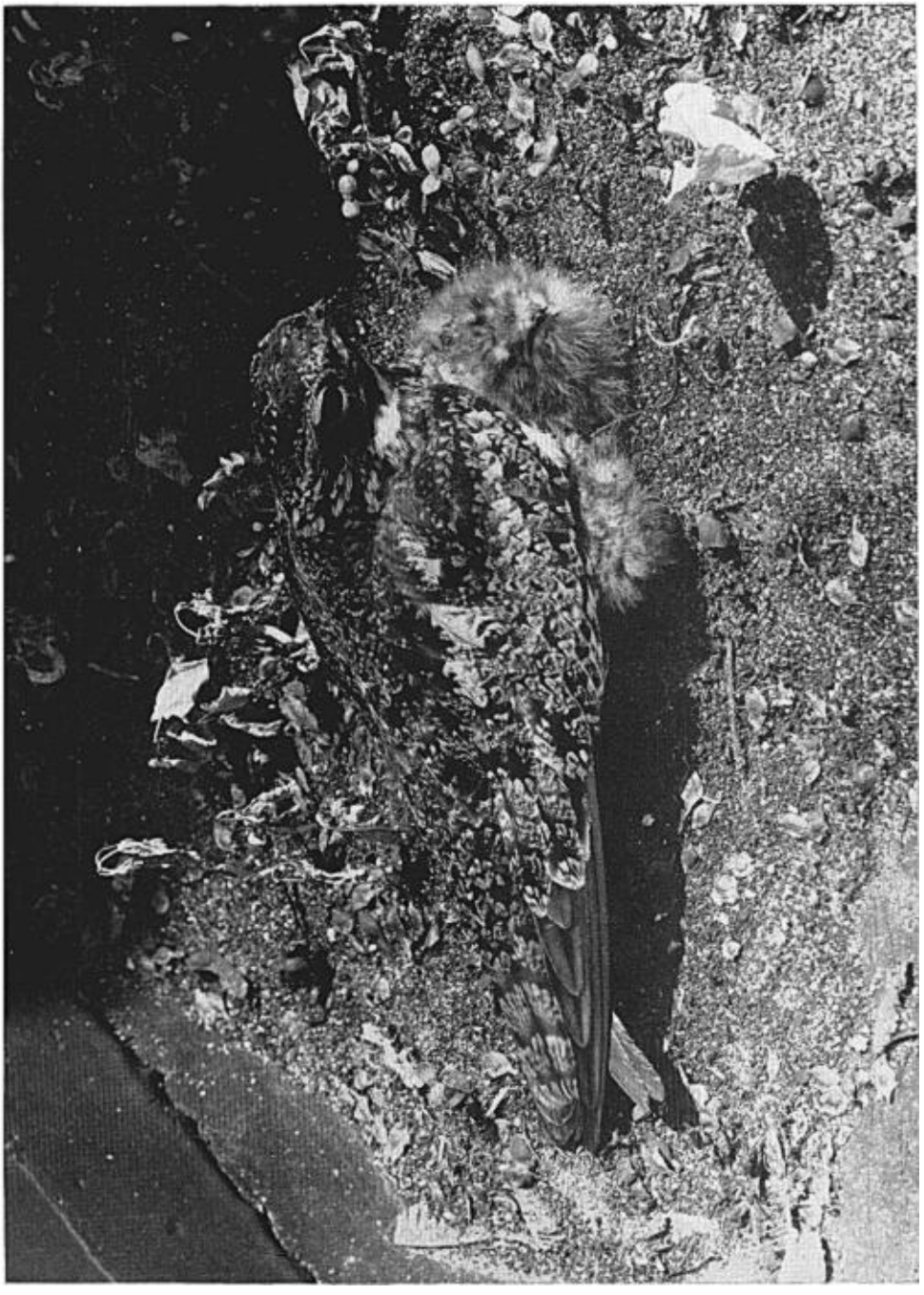
of observers for a considerable part of the incubation period." At a nest in northern Michigan which Gross studied closely in the same way, the female did all the incubating "although the male was often very near to the female or to the eggs" (see Bent, 1940: 214). Gentry (1877: 95); Herrick (1905: 135), and Bowles (1921: 204) express their belief that only the female incubates the eggs or broods the young. Selleck (1916: 6), however, says that the male sleeps "at home all day, incidentally incubating the eggs and brooding the little ones"; Allen says that the male keeps the eggs warm while the female "beats back and forth for her supper" (1933: 176); and Bendire (1885: 166), and Forbush (1927: 307), state flatly that both sexes incubate.

We do not know when the Nighthawk laid her two eggs. When Sutton first went to the nest, at about noon on June 9th, the female was obviously much attached to it. She was facing out from the wall and was quite motionless; her whole body was somewhat spread and flattened; and her eyes were half shut. The tips of her wings were slightly crossed. The nest was about ten feet from the southeast corner of the roof, and was without shade of any sort (aside from that of the bird) during the hottest part of the day. A few feet away, in the corner proper, was a low pile of sand and cinders (blown there by the wind or left by workmen) in which several *Ailanthus* seedlings had grown to a height of several inches and withered.

When Sutton stooped and slowly reached his hand toward the brooding bird she did not budge until his fingertips were about two inches from her side. Then she threw her wings up, gave an explosive hiss, and ran nimbly off. In departing she dislodged an egg, which rolled a few inches, struck a slight obstruction, and spun. When about five feet away, she turned with open mouth, eyes wide open and blazing, all feathers lifted, and wings and tail fully spread, and came back aggressively, jumping at Sutton's shoes and hands. When not actually jumping she stood erect, slowly beating the roof with her outspread wings.

The word 'blazing' needs explanation. The sun was reflected in the bird's wide open eye as a tiny, but extremely brilliant, highlight. More than this, it seemed to light up the inside of the eyes—now one, now the other, giving them a dull red glow. The open mouth was an unexpectedly bright red, for the sunlight illuminated the network of fine blood vessels; and at times a luminous spot appeared on the roof of the mouth, exactly as if the crystalline lens of the eye on the sun-struck side had passed the concentrated rays through the bone and other tissue to the palate.

The phrase 'all her feathers lifted' also needs explanation. Not only were her head and body feathers puffed out so that she appeared almost twice her usual size, but the upper and under wing coverts were also erected (see photo in Allen, 1933: 175). The small, usually unnoticeable under coverts of the manus stuck out almost at right angles to the surface of the skin. The system of subcutaneous muscles required for this drastic erection of feathers must be intricate indeed.



Female Nighthawk brooding young approximately 3 days old. Photo taken June 14, 1948 by Haven H. Spencer.

Young Nighthawk panting in the hot sun. The bird was approximately 21 days old and could fly, but it did not leave the roof on which it was hatched until 3 days later. Photo taken July 2, 1948 by Harold Broadbooks.

The waving of the wings had a somewhat forward-and-backward, as well as upward-and-downward motion, and the down-beat usually was strong enough to bring all the primary and secondary tips into contact with the roofing paper. The spread tail was used to some extent as a prop, for the bird stood back on it frequently. Her hissing was almost incessant. The odd sound was broken or roughened by a curious popping or snapping. This snapping sound has been reported by various observers, notably Herrick (1905: 130).

We do not know how or exactly when the dislodged egg was moved back into place.

On June 11 Sutton visited the nest at about 7 a.m. (E.S.T.). The female was facing out from the wall as before. She permitted the same close approach, and again ran off when the fingers of the outstretched hand were within about two inches. As she left the nest, one egg was again dislodged. This time it missed obstructions and rolled about 14 inches. The bird was very pugnacious, perhaps a little more so than she had been on June 9. She did not return to the nest nor attempt to roll the egg back into place while Sutton remained on the roof (7 to 7:30 a.m.).

At 9 a.m. Sutton took a friend to see the nest. The egg had been moved back into place. The Nighthawk was facing out from the wall as before and permitted the hand to approach to within less than an inch of her wing before leaving—this despite the presence of two persons instead of one. When she left the eggs she flounced about in great excitement, pounding her wings on the roof, falling forward and rising, and running back to strike the offending hand again and again with her feet and body. She made no attempt to bite. In the midst of these demonstrations, which were accompanied by the usual hissing and snapping sounds, she voided a huge, compact dropping which was white at one end and grey at the other and almost as long as the eggs themselves, though not quite so thick.

The cause of the bird's great anxiety now became apparent: one of the eggs was pipped. The chick inside was peeping in a fine, clear voice.

Heavy showers fell that day, though the sun shone brightly much of the time. A shower between 9 a.m. and noon was one of the heaviest of the summer. When Sutton went to the nest at 1:10 p.m. he found that the Nighthawk had moved the eggs 28 inches southward to the edge of the pile of sand and cinders. The original nest-site was now under water $\frac{1}{4}$ inch deep, but the new site was comparatively dry. The nest was exactly the same distance from the east wall as before, and the bird was facing out from that wall. As Sutton approached the brooding bird he noticed that she held her head higher than usual and that her eye had an alert, rather than drowsy, expression. When he was about five feet away, and moving slowly forward in crouching position, the bird sprang straight at him, hissing, flopping about his feet, and striking the roof with her wings. The pipped egg was now a chick. It was still a trifle damp in the middle of the back and its eyes were closed. The two parts of

the egg-shell lay close together about 15 inches west of the new nest. Sutton collected the shells. The other egg was not pipped.

From 1:30 to 4 p.m. Sutton painted the brooding bird direct from life in watercolor. He sat on a low box about five feet away. During this period clouds covered the sun part of the time, there was an occasional light sprinkle, and a friend visited the roof, but the Nighthawk did not leave her nest. The portrait began with the head in full profile, but the bird continued to turn her head very slowly in the artist's direction, obliging him to erase and re-draw several times. The only noticeable movement was that of her belly plumage when the chick changed position. The chick's foot actually showed for a time, then disappeared. At 8 p.m. the remaining egg was still unpipped.

At 6:45 a.m. on June 12 (10 hours and 45 minutes later) the female Nighthawk was brooding two nestlings. Two large pieces of egg shell were just in front of her. We do not know at what hour the second egg hatched. The bird left the nest and rushed at Sutton as she had the day before, *i. e.*, before he stretched his hand out toward her. Neither of the chicks seemed to be quite dry in the middle of the back. Their eyes were slightly open. They did not move nor cheep when touched by the fingers.

Sutton raised his left arm so as to attract the attention of the mother bird, and easily caught her in his right hand. For a brief period (possibly ten seconds) she ceased hissing and devoted her energy to violent wriggling and kicking. A few feathers came out, including a tertial. Then, after what appeared to be a glance at the chicks, and another at her captor, she stopped struggling, resumed her hissing, opened her mouth wide, and took the offensive once more. When released she flew off a few yards, alighted, turned with wings widely spread and lifted, and came back on the run.

On June 13 (6 a.m.) the female was on the nest. She permitted close approach and did not leave until almost touched by the finger tips. This time she flew off instead of running, and voided another large, compact, egg-shaped grey and white dropping about five feet from the nest. The two chicks were perfectly dry. One was perceptibly larger than the other. They cheeped feebly when lifted, but did not try to run off when put down.

On June 14 (1:30 p.m.) Spencer photographed the mother bird with the lens only twelve inches away. He had to touch her to make her leave the nest. The young were motionless at first, but when handled they stood up, opened their eyes wide, cheeped loudly and ran nimbly toward their mother. The larger chick was now almost exactly three days old. Its primary blood-quills showed distinctly among the down. As the three birds sat in the hot sun their throats vibrated noticeably.

For several days we did not visit the nest. On June 20 we found the young Nighthawks at the opposite end of the north wing (approximately 80 yards from the nest), again at the base of the wall enclosing the roof. They were about 20 feet apart and the mother bird was brooding one of them. She fluttered off as we approached, but was

not very demonstrative. The chicks were still downy looking. We did not disturb them.

On June 26 the young birds were still at the west end of the roof, again at the base of the wall, again some distance apart, and the female was brooding one of them. This time she was fairly demonstrative.

On June 27 (the young birds were now approximately 16 days old), we found them at the west end of the roof. The mother was not with them. They were sitting side by side, facing directly out from the wall. When touched they rose to their toes, spread and lifted their wings straight up high over their backs, and ran off. Their primaries and secondaries were about half grown. No down clung to the tips of these large feathers, but the body plumage was 'fuzzy'. The mother bird returned to the roof while we were there (mid-afternoon). She alighted on the wall and allowed us to approach her closely. She did not spread and flop her wings nor hiss, however.

On June 28 both young birds were at the west end of the roof, close to the base of the wall as usual. They were now about 17 days old. The mother bird was not with them. When we touched one of them on the back it emitted a low cry and both birds sprang into flight, making off at approximately right angles to each other, rising a foot or so above the roof. They flew, respectively, 45 feet (the larger bird) and 35 feet. They fumbled their landings badly, even bouncing. This may have been because they landed downwind. A rather strong breeze was blowing. Young Nighthawks studied by Herrick (1905: 130 and 132) first flew when 18 days old.

On June 30 we found the birds side by side at the very base of the west wall, facing the morning sun (6:30 a.m.). They flew off simultaneously when we were three or four yards away. Each gave a low rasping cry as it sprang up. The larger bird flew much farther than the other this time, rose about five feet, did not follow a straight course, and made a very good landing. The smaller bird flew directly toward a large air-vent which protruded from the roof, and bumped into it, falling heavily but apparently not injuring itself. We collected the larger bird, finding it to be a male. It weighed 62.8 grams. It was approximately 20 days old. Although more or less fledged, it apparently could not quite clear the wall surrounding the roof. Natal down still clung to the flank and lower belly feathers and to some of the wing coverts. The tail was 43 mm. long and without bold white markings. The smaller bird may or may not have been a female (see Chapman 1926: 261). We did not see the mother bird that day.

From July 1 to 5 we visited the roof daily, finding the remaining young bird by itself and in a different position each time. On July 2 Harold Broadbooks accompanied us and photographed the young bird at close range (about one foot). The bird was sitting well out from the wall, in the hot sun. It held its mouth open most of the time. Its throat vibrated noticeably while its mouth was open.

We last saw the young bird on the roof at noon on July 5. That evening it cleared the roof and made its way to the driveway back

of the building. Here Dr. Charles Walker almost caught it. Though still somewhat short-winged and short-tailed, it was flying strongly. It was approximately 23 days old. One adult Nighthawk (probably the female) was with it.

SUMMARY

1. In the summer of 1948 a pair of Nighthawks (*Chordeiles minor*) nested on the tar-paper roof of the Museum of Zoology at the University of Michigan, Ann Arbor, Michigan. Two observers made frequent daytime visits to the nest from June 9 to July 5. During this period they saw only the female parent incubating the eggs or brooding the young.

2. The two eggs hatched at least 6 hours and 50 minutes apart, or at most 21 hours and 45 minutes apart, on June 11-12.

3. During (or immediately after) a heavy rainstorm on June 11, the two eggs (or 1 egg and 1 newly hatched young) were moved 28 inches to higher "ground" presumably by the female parent.

4. On two occasions (June 11 and 13) when the observers caused the brooding female to leave her nest she voided a large, compact, egg-shaped dropping.

5. On June 14 both young Nighthawks ran well with wings fully extended vertically above their backs. The older bird was almost exactly 72 hours (three days) old at the time.

6. The observers first saw the young Nighthawks fly on June 28 when the birds were approximately 17 days old. On that date they flew in a straight line and landed clumsily. On June 30 they flew well, but did not seem to be able to clear the 8-foot wall enclosing the roof. The older bird, a male, was collected on that date. The remaining young bird (probably a female) cleared the wall, presumably of its own volition, on July 5, when it was approximately 24 days old. Its flight feathers were not quite fully developed on that date.

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GENERAL NOTES

Diving Herring Gulls.—We have heard it said, though we do not think it is commonly so reported, that Herring Gulls (*Larus argentatus smithsonianus* Coues) do not completely submerge themselves when they dive into the water in quest of food. The following experience tends to discount that belief.

At about high tide during the night of July 31, 1948 a large school of herring was driven by silver hake into Monhonon's Cove at Millbridge, Maine. As the water ebbed thousands of the herring died or were killed.

Next morning we were awakened by the clamorous shrieking of many gulls. A conservative estimate indicates that more than two thousand Herring Gulls were assembled at the head of the little cove. The spiraling and diving, the fighting over the fish which successful divers brought to the surface, the shrieking of the attackers and the attacked, the typically shrill appeals of the smattering of young birds among them, the swish and flutter of the mass of beating wings, all mingled with the cackling and the laughing calls of the hundreds of birds which rested momentarily on the ledges lining the shores into a picture of sound and action which defies description.

It was not until we paddled toward the head of the cove to investigate the cause of the gulls' congregating that we discovered the dead fish. Our long-handled net retrieved a few of them from the muddy bottom where they lay more than four feet below the surface of the water. Our approach drove the gulls briefly away. With the tide ebbing the depth of the water at this point had decreased, perhaps, four or five inches before the gulls began diving there again. Then, as we watched, bird after bird plunged from heights varying from approximately ten feet to, occasionally, as high as forty feet, disappearing completely into the water to reappear with, more often than not, a fish in its bill.

I dare not estimate the number of thousands of individual instances which we observed of these Herring Gulls diving into the water which was at least three and one-half to four feet deep and retrieving successfully dead fish which were lying on the bottom. From this experience it is certain that, on occasion, Herring Gulls do dive in such a manner as to submerge themselves completely, nor do they hesitate to do so again and again if the situation favors such behavior.—G. Hapgood Parks, 99 Warrenton Ave., Hartford, Connecticut.

Pintail Migrates to Europe.—On September 15, 1948, Martin P. Adams, Mill, Stoke Gabriel, Totnes, South Devon, England, shot a duck on the River Dart between Dartmouth and Totnes. The duck wore United States Fish & Wildlife Service band number 48-620729; the band has since been returned to the Patuxent Research Refuge, Laurel, Maryland. This duck was banded by the writer as an immature male American Pintail, *Anas acuta tzitzihoa* (Vieillot), on August 19, 1948, at Tinker Harbor, Hamilton Inlet, Labrador, for the Northeastern Wildlife Station, Fredericton, New Brunswick, operated by the Wildlife Management Institute. After the initial banding the duck was last recaptured