

Preliminary Report on Nesting Habits
of the Eastern Nighthawk
Chordeiles minor minor, (Forster)

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July 2-18, 1937

It is to be understood that this study embraced only one pair of nighthawks which had to be disturbed frequently. How their behavior under these conditions differs from that under natural conditions is not known to me.

Nest. I flushed a female nighthawk in the morning of July 2, 1937. A short search revealed two eggs on the ground. There was no semblance of a nest, the eggs being placed directly on the thin litter covering the soil. The habitat was typical aspen such as surrounds the biological station. Since the nest was about three-fourths of a mile from camp and about 250 feet from the nearest road, I had no interference from human sources.

Both eggs were elliptical in shape, but one was conspicuously larger than the other. The ground color was creamy white. Numerous grey-brown and pale blue blotches were distributed evenly over the shell. The markings were of the same basic color, but some appeared blue because they were beneath the surface.

Incubation. Unfortunately one egg hatched on July 3, the next day. However, I believe that the female did all the incubating since she always did the brooding. The male did not land near the female while I was present during the first two days.

Technique. The day after the egg hatched I erected a bird blind and a sixteen inch cheesecloth fence in the form of a six-foot square about the young bird. This was necessary in order to keep the little nighthawk near the blind.

When only two days old, it moved several feet from the site of the original nest. This left the other egg unattended. I opened the egg and estimated the embryo in it to be about eight days old. Therefore it must have died before I happened upon the eggs.

Heat probably killed the embryo since surface temperatures become very high with direct sunlight shining on the dark ground.

With the small tent or bird blind about two feet from the cheesecloth fence, I could use binoculars to obtain better vision. I usually crawled to the blind from the rear so as not to flush the female. She did not show much concern about noises coming from the blind.

Much of the feeding is done in the dark, making it difficult to determine if the young bird is being fed. On July 9th I set a lighted lantern in the corner of the enclosure nearest the blind. It was still daylight and the female didn't move because I walked very slowly. The adults didn't mind the lantern for its light became only slowly noticeable as twilight fell.

Later when it became dark I could still see which parent was doing the feeding. I stayed until midnight and returned twenty-four hours later, this time remaining until 5:00 A.M. Although the gradual change to darkness was lacking when I set the lantern up at midnight, the female returned to the enclosure within twelve minutes. After witnessing the feeding on several other nights, I could tell which parent was in the enclosure by their voices.

Brooding. All the responsibility of protecting the young nighthawk fell upon the female. She was with it constantly except for a few hours at dusk and dawn. I never saw the male except during these feeding hours.

At first the female ^{kept} the young bird day and night. As he grew larger, she allowed him to sit in front of her on warm days. The last few days she frequently sat outside of the enclosure.

Feeding. Both parents participated equally in feeding the young regurgitated food. On any one night, however, either parent may do most of the feeding. The adults approached the enclosure from all directions. They usually circled over the fence once before landing. Evidently the female can regurgitate food after being on the ground all day.

In feeding, the parent places its bill inside the young birds mouth. They then see-saw back and forth until the food is passed. The parent usually has to struggle to break out of the little nighthawk's grasp. Twice after being fed it shook its head as if it had difficulty swallowing the insect.



Identification of Adults. Both sexes utter the peent which is commonly heard while they are flying. The male's call can be distinguished from the female's by its loudness and harshness. This difference is easily noted when the birds are near the nest.

There seem to be several reasons for using the same call. Once the male used it at midnight when I disturbed him by walking too close to where he had been perched. The male has another call given only at feeding time. It is produced only at feeding time with the mouth closed, air moving from the lungs to an air sac in the throat.

He once gave this call while his bill was in the young one's mouth. Other times he calls from the air while near the enclosure, from the ground while within the enclosure, and especially while on his favorite perching log about seventy-five feet from the tent.

The female uttered low clucking notes before feeding or when she wanted the young bird to come to her. When she used these notes outside the fence, the little nighthawk would try frantically to get

through the fence. It succeeded twice while it was yet too small to get very far away. The female found it both times after I had returned it to the enclosure. It moved about by running and flapping its wings at the same time. I never saw it flap its wings while standing still.

Using sight only, the male could be told by the broader white stripe on the throat which was turned in at the ends thus: . The female's throat patch happened to be white also, but it was less conspicuous and straight at the ends thus: . Male nighthawks have a subterminal white band on the ?

Booming. During the breeding season, male nighthawks produce a sound called booming. They dive toward the earth at a high speed and then suddenly check the dive. Air rushing through the primaries is supposed to cause the booming sound.

The male that I was studying habitually boomed near the female and young. My entrance into the blind sometimes seemed to stimulate him to boom. On one occasion he gave me a scare by booming within fifteen feet of the tent. A male boomed close to a female in the air without taking the usual fast dive. He merely curved laterally to obtain the necessary speed. From the great amount of booming about July 4th, I believe that the height of the mating season occurs during the first week in July.

Fear. When flushed the female occasionally flew out of sight. At other times she perched quietly on nearby stumps or landed on the ground. While on the ground, she would flap her wings and open her huge mouth, producing only weak, scratchy sounds. I could approach to the edge of the enclosure without flushing her by walking very slowly.

The young bird also relied on his colors for protection. I could put my foot down within six inches of him without making him move. The last time I saw ^{him} alive, I placed a garter snake in the enclosure. It crawled past him three times. Once he became very frightened and ran four feet away before stopping. The other two times he remained motionless although the snake even touched him.

One morning about dawn I took the lantern out of the enclosure when I thought the parents were out of sight. I had just lifted the lantern out, however, when both adults were flying within five feet of my head. This suggests that they obtain the food for the young in the near vicinity. The very short intervals between some feedings bears out this statement.

Growth. When first seen on July 3rd, the newly hatched nighthawk was covered with a gray and very soft natal down. No quills were evident. By July 7th, the quills of the primaries were $3\frac{1}{2}$ " long and the down was disappearing from the ⁶back. Numerous quills gradually appeared on the back and wings.

Typical juvenal feathers broke through the quills of the wings ^{coverts} first, next through the secondaries, and then through the quills of the primaries. The middle portions of the head and back were first to lose the natal down and last to become feathered, because of rubbing while being brooded. Since there was only one bird, I could not bring it to camp to be weighed. White spots on the wings were first seen July 16th. At this time the tail was one-half inch long. If the young nighthawk had not been killed, I think it would have flown in five days or when it

would have been twenty days old. On July 18th, I visited the enclosure and found the young bird gone. Two goshawk feathers were in the enclosure. A third feather about five inches long, pure white, and very fluffy lay just outside the fence. Upon checking this feather against the bird skins in camp, I could not tell from which bird it came. It resembled closely certain feathers of the great horned owl except that the color didn't check.

It may be that the goshawk took the nighthawk away from an owl. The fluffy feather certainly did not come from the goshawk. It is hard to imagine the goshawk losing two feathers just while eating a helpless nighthawk.

Miscellaneous Notes. I saw only one evidence of territorialism. The male was perched on the fallen tree when a nighthawk flew about twenty feet above the enclosure. Immediately the male left his perch and drove the intruder away. He did not chase other nighthawks flying over seventy feet above the enclosure.

One mid-afternoon a nighthawk flew to the lake, drank some water while flying, and then flew away from the lake and perched on a tree. On August 12th, a nighthawk perched at least four hours crosswise to a limb of a tree. It was not disturbed by people passing below.

Feeding Chart

Date	♀	♂
July		
6	1	
7		
8		
9	1	3
10	7	1
11	1	2
12		
13	1	2
14	1	1
15	1	4
16	<u>1</u>	<u>1</u>
	14	14

Time - P.M.

8:30 - 8:45
 8:45 - 9:00
 9:00 - 9:15
 9:15 - 9:30
 9:30 - 9:45

Times Fed

2
 5
 5
 1
1
 14

Time - A.M.

3:30 - 3:45
 3:45 - 3:00
 4:00 - 4:15
 4:15 - 4:30
 4:30 - 4:45
 4:45 - 5:00

Times Fed

1
 .
 1
 3
 7
2
 14

7/16 measurement

Nighthawk Nesting Studies.

July 2, 1937. I flushed a nighthawk from the ground in open aspen type about 8:50 A.M. The adult fluttered along the ground for about fifty feet. After searching a bit, I found two eggs laid on the leaves. There was no semblance of a nest.

One egg was conspicuously larger than the other. The eggs were placed near a fallen branch on which the adult rested its tail the first time I saw it incubating.

July 3, 1937. 9:30-10:00 A.M. The female was incubating and the male was not around. The male is easy to distinguish ^{from} ~~the~~ ^{yes} the female by its much whiter band across the lower throat. The birds remain absolutely motionless while incubating as far as I can see. They always had their eyes open while I was around probably because of the noise I made.

7:45 P.M. A male night hawk was flying in the vicinity of the nest. The female was on the nest. About 8:00 P.M. the night hawks began booming. Four of them boomed in such close succession that I figured there were at least four males in the vicinity. One boomed just above me as I was standing near the nest. The noise was very startling. The booming continued until dusk.

At 8:40 P.M. the female left the nest to feed. The male did not appear in the five minutes that I remained there. Before leaving I looked at the nest and found one egg already hatched. Only one half of the shell was near the nest. I do not know whether the larger or smaller egg hatched since I did not get a chance to measure the eggs.

July 4, 1937. 8:30 A.M. The female was on the nest. I chased her off and put up a cheese cloth fence around the nest in the form of a six foot square. I was able to approach within eight feet of the female before it fluttered off.

I saw it only once while I was putting up the fence. That time it alighted on the ground about forty feet from the nest. The remaining egg is not yet hatched. The little night hawk cried for food while I built the fence which is eighteen inches high. I shaded him from the hot sun during the proceedings.

It looks as if the other egg is bad. I left the nest at 9:25.

1:45 P.M. The female was on the nest again. She evidently was not afraid of the white cheese cloth.

7:10 P.M. The female was on the nest. I left at 7:25 after having put the blind up. It is 4 feet from the cloth fence & about 9 feet from the nest.

July 5, 1937 Arrived at 7:15, entered the blind, and found the female on the nest. I will have to move the blind nearer to the fence in order to see over it easier. AT 8:45 the young one apparently came out and was fed. The mother uttered some low notes during the process. She left the nest at 8:50. The other egg is still being brooded.

July 6, 1937. Arrived at 8:00 P.M. Female was with the young which was two feet from the original nest. I removed the egg which was left behind. I then flushed the female and moved the blind closer to the fence in order to see the young night hawk. At first the female remained on the ground about 15 feet away. Here she fluttered her wings and opened her huge mouth wide but uttered no sounds. She flew about me occasionally while I was working, coming within 5 feet of me. She also alighted on a stump, a fallen tree, and on the ground.

~~July 7~~ I entered the blind at 8:15 P.M. The female flew into the enclosure immediately, hesitated about 15 seconds, and walked to the young one. It raised its head for food but didn't get any. It then snuggled under its mothers breast.

The young nighthawk emerged again ^{at around} ~~at~~ 8:45 and was fed. It placed its small head ^{No.} into the large mouth of the female three times to receive regurgitated food. The mother uttered low clucking noises when the young emerged. The young then wiggled head first under the mothers breast.

July 7, 1937 Arrived at 4:45 A.M. FEMALE was present with young which had been moved 4 feet over night. Flushed her accidentally because I couldn't see her. She flew around for 72 minutes before entering the enclosure. All this time she clucked continuously.

The flying nighthawks were booming about 4:30 this morning.

The parent closed his eyes occasional
 In order to move the young one, the old
 one moved about 15 inches away and clucked to
 the young bird. It then moved to its parent
 which happened to be on the site of the original
 nest.

6:55. I Flushed The parent + pulled
 some bracken which obstructed the view.

7:10 Went out + made some shade for
 The birds.

10:30 Left for camp. From

8:15 A.M. Young emerged, but did not feed.



8:30 It emerged again, looked sleepily
 around, & crawled under again. The adult straddles
 the young with its legs.

8:35 - 10:30 A.M. with its beak open about
 $\frac{1}{16}$ of an inch, it began vibrating its throat (or panting)
 The movement was most rapid in the region of the
 white stripe. The young nighthawk emerged at
 10:00 and copied its parents' actions for a
 few minutes.

July 8th cont. 8:35 P.M. Visited the nest
 with Duncan. Again found the "problem child"
 out of the enclosure. It happened that
 I found him in the same spot he had been
 the night before. I then placed him on
 a piece of white paper in the enclosure
 so that the mother could see him.

Tonight was the first time that both
 parents were in the vicinity at the same.
 I now realize that the female had been
 incubating and taking care of the young
 one all the time. She also has a white
 band on the throat which is quite conspicuous
 when her head is raised.

The male can be told by the white
 band on the upper tail and by the

shape of the larger mark on the thro.
 In the male it has a hook at the end of the
 V thus . In the female thus 
 We left at 8:50. ~~The ovenbird was~~
~~singing at this time~~

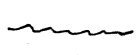
10:25 P.M. Flushed the female and
 found young against the fence. I sat
 on a stump 50 feet away for 25 minutes
 but parent did not return.

July 8^{9:25} Flushed female from spot
 4 feet from blind on outside. ~~Your~~ P.C.
 was trying to get thru the cheese cloth
 with no luck. I piled dirt all along
 bottom of fence to make it bird proof.

Also erected a white pine shade just
 outside of fence. P.C. panted while I took
 his measurements. He ran away almost
 every time I set him down.

I noticed that the female stayed
 much closer to me if I talked to her.

July 9, 1937 Arrived 7:50 P.M.
 Set a lighted Kerosene lantern in corner of
 the enclosure nearest Tent and farthest
 from female which didn't flush. Then
 left to visit ovenbird nest & broke one egg with
 my pencil.

Entered blind at 8:04. Young emerged
 at 8:35 but couldn't see if it was fed.
 8:50 - Male flew low over the fence
 several times and then landed on fallen tree.
 Another nighthawk or whip-poor-will flew low
 over enclosure & the male chased it away.
 He then boomed twice over the fence and
 again landed on the tree. He uttered a
 low, weak peculiar call  which seemed
 to come from deep in the throat.

4X. 8:57 Male flew over fence and almost landed. Female fed P.C.

9:009 Male landed in fence and fed young which went quickly to him. ✓

9:08 Male flew around several times, landed, & fed young. A little later one flew over but didn't land.

9:19. Male circled above ground, landed, & fed young. 13 X. ✓

9:20 - 9X Female landed inside then landed outside and called young which tried frantically to get thru the fence. Then landed inside, then outside until she had landed 7 times outside and 8 times inside. Each time she landed, she called to the P.C. so that he didn't really know which way to move. The last time she landed, she brooded P.C. and didn't move till 12:15 P.M. at which time I left. It was a warm, clear evening with no breeze. wind. The adults didn't mind the light much since I placed the lantern before dusk.

July 10, 1937. Arrived at 12:00 P.M.
 Flushed female and set lantern in enclosure. Move P.C. 4' from lantern since it was too close to the blind. P.C. cheeped softly for his mother until she appeared at 12:12. She landed on outside and clucked softly but evidently wasn't calling P.C. since he did not move.

12:13. She approached fence and flew over. Then brooded P.C.

I apparently roused the male bird while approaching the nest at 12:00 for he gave one peent from the air.

3:10 Again heard male calling from air.

3:32 Heard first nighthawk booming.

3:42 Female left, at and returned at 3:46.

I think she fed P.C. then - but visibility was too poor to know definitely. Then brooded P.C.

4:01 Female left. 12X, 11X From tree and stump.

4:10 ♀ landed & Fed P.C. Left in two minutes P.C. see-saws back & forth while being fed. ✓

4:25 Pulled lantern out, & put light out. Both adults flew closely about my head immediately although I hadn't know that they were so near. Female landed & fed young ✓ Then brooded him. She showed no fear of the lantern - landing within 4 feet of it. However, she always faced the lantern while brooding.

4:30 P.C. emerged & fed by ♀ ✓

4:37 " " " " " " , she then flew away. ✓

4:40 P.C. fed by ♀ ✓
" away. ✓

4:42 ♀ landed & fed young. ♂ flying low overhead. ✓

July 11 4:45 AM ♀ again fed young. ✓
Male landed & fed young. Then left. Then P.C. went to female for food but didn't get any. She brooded P.C. & left at 4:47.

4:54 ♂ landed & fed young. He makes a peculiar noise by expanding the throat at the white marking. As it expands, the noise is produced.

4:56 ♀ landed inside, then flew out & called to P.C. Then " " again & fed him. left at 5:05 for camp.

July 13, 1937 7:30 P.M. His tail is definitely started, $\frac{1''}{4}$ long. Primaries are about 1" long. The head is still covered with natal down with a few quills appearing along the median line. P.C. cried in a shrill voice and ran away when I set him down. He flaps his wings as he runs. The ♀ was just outside the fence & P.C. tried to get to her.

The first characteristic color of the juvenile plumage appeared on the tertiaries, then the secondaries, & then the primaries.

8:41 The male was the first to approach the enclosure which contained a lighted lantern. He landed & fed P.C.? also gave his food call. The females peent was shorter & softer with less vibration than ♂'s. ♂ left immediately.

8:56 Male landed & fed . 7x + 3 calls. ✓
 9:00 ♀ landed outside & called to young. He cheeped for her. She then moved opposite a corner & called. P.C. Tried desperately to get thru cheese cloth. ♀ soon gave up & entered & fed. ✓

3:30 AM. July 14, 1937. 4:30 ✓
 ♀ fed P.C., then ♂ landed & fed P.C. ♂ left. ♀ brooded P.C. He had his head sticking out, later reversed & left his tail sticking out. Left at 5:05.

9:30 AM. P.C. sitting just in front of female. 10:00 ♀^{P.C.} moved to shade beside stump. 11:05. Left for camp.

July 15, 1937 7:50 P.M. No adult in enclosure. Examined P.C. & left for oven bird nest. 8:36 3x Male circled once, landed, & fed. P.C. opens bill, parent places its bill in P.C.'s, & P.C. then grasps parents bill firmly. They face each other directly. After the food is passed, the parent has a hard time

breaking out of P.C.'s grasp. After the male left, P.C. shook his head as if he had difficulty swallowing the food.

8:47 The ♂ just boomed within 15' of the tent - slightly startling.

8:53 ♀ announced her coming with the characteristic clucking, fed P.C. & left. ✓

9:00 3 goatsuckers just flew over but I couldn't tell which was chasing which P.C. was cheeping.

9:02 ♂ landed & fed. ✓ 3X once while feeding.

The parents usually fed P.C. near center of enclosure. They After they left he often ran toward the edge where there was better cover.

9:13 ♂ landed 9X. & fed. ✓

9:32 ♀ " & fed ? ✓ Too dark. To see.

July 16, 1937 4:34 A.M. ♀ landed outside, P.C. went to fence, then she came inside & fed. ✓

4:40 ♀ landed outside & P.C. tried to break jail. 4:42 ♂ landed & fed. ✓ P.C. again tried to break out until 5:00. Left at 5:15.

July 17, 1937 2-5:30 P.M.

Natal down mostly gone, Juvenile plumage completely covering body. White spots on wings. Tail is .5" long. Put up an additional 18" of fencing.

8:30 - 9:00 P.M. Waited until male entered enclosure. Then left.

July 18, 1937 3:00 P.M. P.C. Gone. Two goshawk feathers were in the enclosure. A third, larger feather was just outside the enclosure. It looks as if it came from a