

## A NESTING OF VIOLET-GREEN SWALLOWS

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CHANCE observation of a pair of Violet-green Swallows (*Tachycineta thalassina*) choosing a site at our home near Eugene, Oregon, on June 8, 1951, led my husband and me to follow the whole course of the unusually late nesting. During its 47 days, I watched the nest each evening for about an hour and a half and made numerous observations and inspections at other times.

The nest box, attached to a northeast corner of the house, under wide eaves, and about 11 feet from the ground, is so constructed and situated that one can easily climb up to look into it and can observe it well from within an ell of the house. The box faces an open garden space and, beyond that, a strip of oak and Douglas fir woodland about a hundred feet away. We definitely know it was used by swallows in 1941, and every year from 1943 on; and we believe it to have been in regular use for at least 14 years. We had cleaned it out a few days before this pair of swallows chose it.

*Choosing the Site, June 8.*—The pair bond was apparently already formed on the morning of June 8, when the two birds were first observed, repeatedly swooping about the nest box and chattering, and landing occasionally on the roof or porch of the box. Both looked into the box from the porch. The female stood on the porch more than the male did, sometimes turning her head to look up at him on the roof of the box. Several times she went part way in, taking tiny steps forward and then backing out, each time advancing farther. Finally she went all the way in, stayed a moment or two, turned around, and then came out and flew away. The male was seen to enter once. The female's actions suggested that the choice of the nest-site itself was chiefly hers.

The male sat for a while on a dead branch of a nearby hawthorn tree and once clung to the side of the house. [Never, during subsequent observations, was he again seen in either place; he regularly perched on the box itself or on the beams or roof above, as did the female. Neither bird was ever seen to go to a nearby birdbath in the garden space before the nest.]

About 11:00 (standard time, as used in all of the succeeding account) both members of the pair were seen to come out of the box together. There were to be fewer than a dozen other times during the nesting when both birds were known to be in at once.

*Nest-building, June 8 to 13.*—Periods of continuous observation

began the afternoon of June 8: 1:30-2:45, 3:30-3:50, 4:00-4:42. As of 1:30, the birds were darting in unhesitatingly and silently, with building already in progress. In the 75 minutes of the first period they entered the box 13 times, presumably with nesting material, and in addition the male landed twice on the top of the box. The female left the box just after 3:30, but otherwise neither bird was seen during the second and third periods. After 4:42 we looked into the nest box. Fine-textured dry grass stems covered its floor, in a layer much thinner in one corner than elsewhere. The low place was as yet rather irregular in shape.

That evening (6:45-8:30) the birds were again much at the nest, flying up toward it, sometimes alighting momentarily, making a few brief trips in, and doing (for these usually rather silent birds) a very considerable amount of chattering. The male was not to be so often at the box again in the evening until there were young to be fed. For one period of twelve minutes, while the female sat in the box with her head out, he sat crouched on top of it, leaning forward somewhat and turning his head watchfully this way and that. [He was seen to act in this manner only once again, on the fourth evening.] The pair flew away together at 7:51.

During the second morning (June 9) the birds did a great deal of wheeling in circles toward the nest box without entering it. The male was twice seen clinging to its porch (rather than standing on it) to look in through the entrance; this was not to be a common practice of his.

Material gathered the second day was still only grass stems or straw. By evening the layer was considerably thicker than the day before and the nest hollow deeper and rounder. In all the years that we have looked into swallows' nests in that box, the hollow has always been at the back in the same (northwest) corner. On the third day feathers were first added to the nest hollow, which was by evening about three-fourths of an inch deep and nearly three inches across. By evening of the fifth day the many feathers made it impossible to see into the cup without moving them aside, and the nest seemed essentially completed. Actually, though, the gathering of feathers and of other material continued through at least the twentieth day of the nesting (only two days before the first egg hatched). Chicken feathers were used, presumably brought from some distance since no chickens were being raised in the immediate neighborhood. The male once brought a piece of absorbent cotton too large to take through the entrance. The cotton and several chicken feathers that proved too long to be maneuvered into the box formed a litter on the

shrubby beneath. No materials except grass stems and feathers were ever taken in.

Most of the work of gathering nesting material was done by the female. During nest-making she was observed to come to the nest box about twice as often as the male and to enter about four times as often. When he did come, it might be merely to sit on the top of the box for a moment and chatter. That he did actually bring material (later in the nesting) was indicated by the fact that he was actually seen a few times standing on the porch of the box with feathers or, once, the cotton in his beak.

The birds did not seem to gather material to any extent in the evenings but worked on the nest daily, and evidently mostly in the mornings and early afternoons. During the evening watching periods of June 9 through June 13 only four quick trips into the box might have been to bring material for the nest.

Nest-making in the mornings, the female would enter the box at irregular intervals usually a few minutes apart, sometimes staying in the box only for seconds and sometimes for a minute or two. One morning there was one interval when she stayed in the box, out of sight and so perhaps at the nest hollow in the rear, for nine and a half minutes.

*Roosting.*—The male never spent a night in the nest box or, so far as we know, anywhere near it. During the building period, however, he usually appeared in the evening, merely to circle, to sit for a period on the porch, or (this only once, on June 13) to enter the box briefly, chattering, after the female had gone to roost. During egg-laying, the male was observed only once at the box in the evening (on June 16) when he again went in briefly. The female roosted on the nest for 31 consecutive nights, beginning the second night after the nest was begun (see table below). The first evening of these 31 nights she went into the box at 7:44, spent much of the rest of the watching period (7:21–8:30) with her head out of the entrance hole but did not leave again. On the remaining evenings before egg-laying, she promptly disappeared for the night after entering. During the laying period, the female went to roost on June 14 and 15 about as before, but on the next two evenings she looked out and entered and left a number of times during our observations, as on subsequent evenings in the course of her incubation.

As she became progressively busier with the work of feeding, she retired later. This is shown in the following table, which gives her time of retirement for each night she slept in the box.

Date	Hour	Date	Hour	Date	Hour	Date	Hour	Date	Hour
June 9	7:44	June 16	7:14	June 23	7:45	June 30	8:10	July 5	8:13
10	7:50	17	7:43	24	8:02			6	8:16
11	6:53*	18	7:49	25	8:08	July		7	8:16
12	6:49*	19	7:46	26	7:40	1	8:11	8	8:18
13	7:15	20	8:06	27	7:46	2	8:06	9	8:20
14	7:23	21	7:45	28	7:55	3	8:06		
15	6:56*	22	7:47	29	7:57	4	8:02		

\* Before

We were interested to see what correlation might be found between time of retirement and time of sunset. From June 9 to July 9 sunset varied only a few minutes, from 7:53 to 7:59 and back to 7:56, whereas the female's latest entries into the box varied from earlier than 6:49 to 8:20; no real correlation appeared possible. Two of the three evenings when she retired before seven o'clock were cloudy, but the third was not.

Every night throughout the nesting the nest box was looked into by the light of a flashlight after dark, usually between 9:00 and 10:00. During the entire period she was observed to roost in the box, the female was always in the nest hollow. The first few nights she sat diagonally with her head right in the northwest corner. She usually was to sleep with her head thus, and never was she found facing the entrance of the box. She often seemed not to wake or notice when she was looked at.

*Egg-laying, June 14 to 17.*—The first egg was found in the nest at 8:20 a.m. on June 14. It had been laid sometime after 6:05 p.m. the day before. A new egg was found each morning, June 14 through June 17, and each was laid between 6:05 p.m. and 8:20 a.m. The first of the four eggs I tried to mark and in doing so broke a small hole into the air space at the large end. I returned the egg to the nest for the time but removed it a few days later; so the clutch was reduced to three.

The female spent most of the afternoon of June 14 in the nest box, but, since she sat most of the time with her head out through the entrance, she was not covering the egg. The high temperature for the day was 88°. And the next afternoon, which was nearly as hot, she spent mostly on the porch of the box. During this egg-laying period she was away much less during the daytime than she had been before, but the eggs could not have been covered much during the day. The weather continued hot. The eggs were covered at night from the first laying, as already stated.

*Incubation, June 18 to 29.*—During each of the twelve evening observation periods, from 7:00 to 8:30, here considered, the female made from one to five (average 2:83) trips out from the nest box. The duration of these absences ranged from 1 to 16.5 minutes, with a mean of 7.57 minutes. As she also frequently put her head out of the entrance and drew back in (ten times on the evening of June 28, for instance, besides the three times she flew out), it was apparent that in the evenings she never spent more than a few minutes at a time sitting on the eggs.

Incubation was undoubtedly done only by the female. The male was not often at the nest during this period, on eight of the twelve evenings did not approach at all, and was not seen at any time to enter the box. But he was several times seen standing on the porch with nesting material in his beak. Once he lighted on the porch when the female was inside; she put her head out; they touched beaks; and he flew: possibly he brought some small bit of nesting material which she took from him, but it rather looked as though she might be pushing him away. This incident was the only one of the sort we ever observed.

These twelve days, all clear and sunny, had highest temperatures ranging from 78° to 100°, but mostly in the 80's. Night temperatures did not drop below 45°.

*Hatching, June 30 to July 1.*—On the morning of June 30 the male seemed to be spending much more time than usual at the nest box. Both parents were obviously excited that day and were much about the nest, where for a time they seemed unusually sensitive to our presence. The first young swallow was hatched on June 30 between 10:14 a.m. and 1:55 p.m., and the second on the same day between 1:55 and 6:07.

As seen during the first few hours out of the shell, the young birds were doubled up perfectly quiet and unmoving, beside the remaining egg. The emptied shells were not in the nest. By 7:21 p.m. the young were moving a little. By 8:06 they had stretched their heads out, and one was sprawled over the egg. They were pink-skinned, dark only where the eyes showed through.

The third and last young one was hatched the next day, July 1, between 9:22 a.m. and 1:30 p.m. (When we looked in at 11:44 the female was sitting in the nest hollow.) The parents this time seemed not to show excitement.

Since the three remaining eggs were not marked, the shortest possible incubation period for any egg was a few hours over 13 days (June 17

to June 30); the longest possible was more than 16 days (June 15 to July 1—though it is uncertain when the female's effective incubation began). If the last-laid egg was the last to hatch, the incubation period for it was somewhat over 14 days (June 17 to July 1); and incubation of the others may have begun before it was laid.

*Feeding, Brooding, and Development of Young, June 30 to July 24.*—The male swallow, which so far as we knew had never spent longer than a fraction of a minute at once in the nest box, sat in it, looking out from the entrance for at least 5 minutes in the early evening of June 30. That evening's watching period showed a marked change in the birds' behavior. On the preceding evening (June 29), the male had not approached the nest, and the female had made only three trips out and back after 6:45. But on June 30 the male came 7 times after 6:45 and on 3 of those occasions went in, whereas the female went in 13 times, once with him. Presumably they were taking food in on at least some of the trips. His manner of entering was different from hers: she entered quickly, but he would stand on the porch a moment before actually going in. The afternoon and evening of July 1 both parents were making trips into the box, she more often than he. Sometimes they stayed in only momentarily; but even the male once stayed for nearly two minutes (mostly sitting at the entrance with his head out), and the female would occasionally stay out of sight, presumably at the nest hollow in the rear, for 2 to 7 minutes. Twice they were both in the box at once.

Feeding young was of course the parents' main activity during the remainder of the nesting. Presumably most of their trips into the nest were to carry food. The following table shows the number of entries each parent made during the evening watching period, plus the number of occasions, occurring during the last four evenings only, when the female fed from the porch. The time covered each evening was from approximately 7:00 until 8:30 or a few minutes later, by which time it was dark and the birds' activity had ceased. They stopped usually between 8:00 and 8:15.

July	Number of trips:			July	Number of trips:			July	Number of trips:		
	by the male	by the female	Total		by the male	by the female	Total		by the male	by the female	Total
2	3	12	15	9	14	23	37	16	0	29	29
3	3	13	16	10	4	23	27	17	6	22	28
4	4	16	20	11	0	31	31	18	0	28	28
5	10	22	32	12	11	24	35	19	0	18	18
6	11	38	49	13	5	33	38	20	0	17	17
7	4	37	41	14	0	27	27	21	0	9	9
8	8	40	48	15	0	30	30	22	0	17	17
								23	0	4	4

July 23 was the last evening of feeding, for the young birds flew from the nest during the next day.

It will be observed that the female was the more active. (A check showed her to be also much the more active in the morning and afternoon.) Of the total trips observed, the female made 86 per cent, and the male 14 per cent. The latter's attentiveness appears from the table to have dropped almost to nothing during the latter half of the feeding period, or from about the time the young began to leave the nest-hollow proper.

The number of evening trips into the nest box increased at first somewhat irregularly, reached its peak during the first week on July 6, and thereafter declined irregularly. The decline after July 19 was due at least in part to the fact that, during that day as we thought, one of the three young birds died of causes unknown; and so after that there were only two to be fed. The dead bird lay on the straw beside the nest hollow. We removed it.

The female covered the young for only ten nights. As long as she did so, they had seemed to sleep quietly, but when left alone they were apparently kept awake by mosquitoes. Unlike the mother, they seemed always to notice the flashlight. They were restless and jerking, and the sound of their beaks snapping could sometimes be heard even before the light was turned into the box. Mosquitoes hummed about them and were a few times seen sitting on them at night, on the still-unfeathered skin and later on their feathered backs.

On the evening of July 7, when the oldest of the brood had been out of the shell a few hours longer than seven days, the first sound was heard from the young birds. It was a faint peeping, seemingly a single note. On July 9, when nine days old, they first uttered the double note, characteristic of the young of this species, and heard especially when a parent brings food to the nest.

On the afternoon of July 15, one of the fledglings was for the first time seen out of the nest hollow when we looked into the box. It sat on the straw, facing the hollow, tail toward the entrance. Feeding must have become easier when it was no longer necessary always to take the food to the rear of the box; and indeed, beginning with a few times on July 11, the female sometimes paused for a moment, her tail still out of the box, before going on in to turn around. On July 19 one of the young ones was for the first time seen to put his head out of the entrance hole.

The afternoon of July 16, three adult swallows were fluttering about the box. One female entered and sat with her head out. Another female kept flying up to the nest; they pecked at each other; the one

in the box flew out; then both tried to enter simultaneously; then for a number of minutes they took turns flying up toward the box and hovering two or three feet in front of it, seeming to look in but making no effort to enter. Again on July 18 and 19 three, and once four, adult swallows were observed flying about the nest. We wondered if any of this activity could have been connected with the death of the one fledgling on July 19.

So far as was observed, only the female ever carried fecal sacs out of the nest box.

Both fledglings were still in the nest on the night of July 23. On July 24, the forty-seventh and last day of the nesting, feeding from the porch was going on during the morning, at least until 10:35. Sometime between then and 4:55 p.m., while the box was not under observation, the young left. The nest was still empty after dark that night. Neither the young ones nor their parents were seen any more in the neighborhood of the box.

#### SUMMARY

This was a late nesting of Violet-green Swallows, which began on June 8 and ended on July 24, 1951. The course of it was as follows:

June 8 (morning): Choosing the Site

June 8 to 13 (six days): Nest-building

June 14 to 17 (four days): Egg-laying (four eggs)

June 18 to 29 (twelve days): Incubation

{ June 30 to July 1 (two days): Hatching

{ June 30 to July 24 (two days plus 23): Feeding and Development  
of Young

July 24: Departure of Young.

The female seemed to do most of the work, including all of the incubation. The number of times the young birds were fed each evening increased at first but gradually tapered off. The female spent the second through the thirty-second nights in the nest box. When left alone at night, the young were wakeful and troubled by mosquitoes. They and the female always slept in the nest hollow. The male never spent a night at the nest.

*3021 Friendly Street, Eugene, Oregon, December 31, 1952.*