

DIARY OF FIVE CHIMNEY SWIFTS

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A breeding colony of Chimney Swifts (*Chaetura pelagica* L.) on the campus of Kent State University at Kent, Ohio, has been investigated each year since 1944. The methods of trapping, banding, and observation have been published earlier (Dexter 1950a). A report has also been published on the detailed life history of two individual birds over a period of six years (Dexter 1950b). These papers have stimulated sufficient interest to justify another one at this time, giving the known life history of five other birds selected from the 84 Chimney Swifts which have nested from time to time in the air shafts of three adjacent college buildings. Altogether there are 88 air shafts on the roofs of these buildings, but only 27 have been used for nesting, with an average of 19 occupied with a nesting pair each year. The five individuals selected for this paper represent somewhat different patterns from those already published and from each other, giving a more comprehensive review of mating and nesting behavior in the colony which has been studied over the past seven years. To avoid undue repetition, much of the accumulated data on nesting will be reduced to a minimum or omitted altogether, since that pattern is quite similar for all pairs, but variations or unusual features will be described in detail as will the mating combination for each year.

DIARY OF FIVE SELECTED SWIFTS

1. Chimney Swift no. 42-196913, a male which we shall refer to as no. 13, was banded on June 22, 1944, when it was mated to no. 42-196915 in shaft J1. At that time there were four eggs on the nest which was 12 feet down on the south wall. The following day hatching began. That evening both parents were sitting on the new nestling and three eggs. The next day two more hatched. Two days later the fourth hatched. The adults took turns keeping the nestlings warm and catching flying insects for food. At night one parent sat on the nest and the other clung to the wall beside the nest. In a few days the naked nestlings grew blue pin feathers which later opened out into the characteristic black plumage of the species. On July 8 it was discovered that the nest had fallen from the wall and the four nestlings had dropped 40 feet to the bottom of the shaft. Two survived the crash and clung to the wall at the bottom. In a week's time these climbed up some 26 feet to a point about mid-way in the air shaft where they were still attended by the parents. After July 27 the family left this shaft and scattered.

Beginning with May 14, 1945, a pair of birds was seen regularly in shaft J1. One turned out to be no. 13 returned for another nesting season, but he had a new mate at this time, no. 42-1884485. The former mate went into shaft D1 and spent the season with a pair of birds nesting there, although it cannot be stated with certainty whether no. 15 was the visitor or the functional female, since there were two females in the trio. No. 13 with his new mate started nesting on June 17. The nest, made on the same spot as last year, was completed in six days. The first egg was laid on July 1. Two more were laid, but one was lost on July 8. Eleven days later the eggs had disappeared and the adults abandoned the nest. No explanation can be given for this sudden disappearance of eggs and parent birds. The female was never seen again.

No. 13, however, returned to the campus in early May of 1946, and again took up residence in J1. At first he was found with female no. 42-196924, a nesting

bird in shaft G4 for the past two years and which soon left to continue nesting there for the next three years. For several nights J1 was then left empty, but soon no. 13 returned with another female, no. 42-196931, which had nested for the past two years in N9 and had returned to N9 with her former mate earlier this season. However, a change was made and nest building for this new pairing began on June 4. This was completed in a week's time on the same spot as in the two previous years.

On May 12, 1947, no. 13 with his mate of the previous year, no. 31, were found back again in J1 roosting side by side on the wall. Then for two nights a single bird was in the shaft, but it is not known which individual this was. On May 17 two birds were again found there, but soon a single bird was left there once again. Then for several nights no birds occupied this shaft. On June 3, no. 31 was alone there, but after that date Swifts were not again found in J1. On June 21 an examination was made of all shafts in which Swifts had not been found earlier. It was surprising to learn that no. 13 with his mate had moved into J5, just six feet away in the same block of air shafts, and had nested there. Four eggs were on the nest at that time located 13 feet down on the west wall. The next day a fifth egg was laid. Hatching began July 7; either four or five nestlings were raised.

Birds were first found in J5 in the spring of 1948 on May 13. Three days later nos. 13 and 31 were trapped there. While these former mates returned to their nesting site of the previous year, they did not remain together at first. Both left J5 at once. No. 13 was found alone back in J1 on May 19, but did not remain. The following night he and his mate were together in shaft M7 with an unbanded bird, all three of them spending the night side by side. All then separated. No. 31 was found in L3 with 42-188518 on May 23. No. 13 was alone in J2 on May 26. Very soon, however, nos. 13 and 31 were back together in J5 and another nest was started on June 9 on the same site where the previous nest had been made. It required nine days to complete it. The first egg was seen on June 21. Four were deposited in all, but only three nestlings were raised. They left the nest on July 29 and flew out of the shaft after August 9, only one bird being found in this shaft during the rest of the season. On August 12 no. 13 roosted for the night in shaft E1 with the pair that nested there that season and another bird which was not yet banded. This was the last it was seen in 1948.

A pair of Swifts took up residence in J5 on May 15, 1949. A week later no. 13 and his mate of the past three seasons were trapped there. On occasion the two were separated from each other by a short distance rather than being side by side as mated Swifts are usually found. However, on the first of June this pair started nesting together for the fourth year and in the same place for the third time. In six days the nest was ready, and three days later the first of five eggs was despoited. All five succeeded in producing nestlings. They began leaving the nest and clinging to the wall after July 14. Following the end of July Swifts occasionally roosted in J5 for the rest of the season, but it is not known whether they were the ones raised there or not. Nos. 13 and 31 have not been seen since that time. Both failed to return in 1950.

2. Chimney Swift no. 42-196914, a female we shall call no. 14, was first trapped on June 23, 1944. She was mated with no. 42-196922, which was to remain her mate for another two seasons. The nest, containing three eggs, was placed seven feet down on the south wall of shaft K7 within a recess of a few inches in the wall of the shaft which served to protect the nest. Three nestlings were raised which left by the end of July. The male parent, however, remained alone at intervals as late as August 27. No. 14 was recaptured September 25 from the shaft on Merrill Hall with 43 other birds, including 6 birds which nested on the campus that season, but none of them was with its mate of the year.

In 1945 and 1946 no. 14 returned to mate with no. 22, building a nest in the same place during the first week of June, and producing three nestlings each year.

On May 3, 1947, the pair again returned to K7 but soon separated. No. 22 has not been seen since that date. No. 14 then brought in no. 42-196952 for her new mate and continued to nest in the same place just below the overhanging portion of the wall. Four eggs were laid. One nestling disappeared early in development. On July 24 one nestling was found dead at the bottom of the shaft and another one dead on the nest. Both parents were on the wall of the shaft at the time, but no. 14 remained alone in the shaft that night. The male was found alone in M1 two days later. Two months later, however, both parent birds were together in the nesting shaft for a single night, but remained several inches apart. The nest and dead nestling remaining in it were removed from the wall upon discovery, and both were found to be completely covered with a mass of insect pests.

In 1948 the male left no. 14, eventually going into shaft H5 where he nested successfully for the next three years, with a different female each year. No. 14 returned to K7 where she roosted alone at intervals for some two months, failing to mate during that season. On August 9 she roosted in shaft P3 with 12 other birds; on August 27 she again roosted there with 10 birds. One month later she was once more trapped from P3, this time with 32 other Swifts, flocking in preparation for migration.

In the spring of 1949, no. 14 returned and was found in turn in both M1 and K7 with a new male, which soon disappeared from the campus colony, leaving no. 14 without a mate for that season. She roosted alone until the end of the nesting season, joining other birds at that time. On May 1, 1950, she returned for another year and was found in M7 with the male which had nested there the previous year, but they roosted on opposite walls. Two weeks later she was back in K7 with her former mate of that shaft, no. 52, but he soon returned to H5 for another nesting season. No. 14 then moved back into M7, but the male there had in the meantime brought in another female (42-196906). Nevertheless, all three remained together throughout the nesting season and even for some time after the juveniles left the nest. During incubation one sat on the nest while the other two clung to the wall just below it. Sometimes all three roosted side by side near the nest. Four young were raised. Apparently no. 14 was an all-summer visitor. After the nesting season, no. 14 was found roosting with three other birds in shaft P3 on the roof of the Administration Building in the evening of August 19. When no. 14 was released from the trap its flight was very feeble. It glided to the ground and died several hours later.

3 and 4. Chimney Swifts no. 42-196909, a female, and no. 42-196921, a male, have been so intimately related in their life history that the two will be considered together. They were first found mated in shaft E1 in the summer of 1944 where they had made a nest on the west wall 25 feet down from the top. Three nestlings were produced from four eggs laid. For a brief time a third swift lived with this pair during the early nesting period. After the juveniles left the nest a number of birds roosted with them. On July 24 seven other birds, including one previously banded, were trapped with the parents. Three of these may have been their own offspring. Four days later 10 banded birds and five unbanded birds roosted with the original pair, two of the 15 being repeats from the trapping of four days earlier. On August 5 ten birds roosted in this shaft; but after that, none was found for several weeks. During the latter half of September and the first four days of October, two birds roosted there until they left for the season.

In 1945 no. 21 did not return. However, no. 9 came back to E1 and mated with another male which was one of those that had roosted with the original pair at the end of the preceding year. Four young were raised, but this new mate did not return again. Strangely enough no. 21 came back in 1946 to its former mate after a year's absence and again they nested in E1. They were together in that shaft as late as September 24 although they did not spend every night there in the latter part of the season. In 1947 they nested together for the third time.

Five eggs were deposited of which four hatched. On July 10, several days after hatching, all of the nestlings disappeared. That night one parent roosted under the nest which now contained only the infertile egg while the other parent roosted on the adjoining wall. The next day they deserted E1 and were not seen again for some time. On September 18, no. 21 roosted there with five other Swifts, but not with his mate. On October 4, however, the two mates roosted together in E1 with one of the birds from the small flock found earlier. These were the last Chimney Swifts seen on the roof in 1947.

Both birds returned to E1 in 1948 for another nesting season. This time they were successful in raising four nestlings in a new nest constructed on the site of the old one which they removed from the wall as soon as they returned in the spring. In 1949 they mated together for the last time, again producing four offspring. During that season they had two frequent visitors which roosted with them from time to time throughout the nesting season and during the post-nesting season. On August 11 no. 9 was found dead by a schoolboy, Bobby Bilanych, a quarter of a mile from the Kent campus.

No. 21 returned for at least the seventh season in the spring of 1950. At first there were two birds residing with him, his new mate, no. 42-188595, and another male, no. 42-188588. The latter was one of the all-season visitors of the preceding year while the former was one of the occasional visitors roosting in E1 after the nesting season of 1949. A nest was made at the usual place, and one egg had been laid, when on June 4 it fell from the wall after a rainstorm. In two days time a new nest was under construction on the foundation which remained from the first. Four eggs were laid. At the time the second nest was completed, the visiting male, no. 88, left E1 to enter G3 and mate with the female there whose first mate had fallen dead in the shaft six days before. After the nesting season, however, no. 88 returned to E1 and roosted with no. 21 again.

5. Chimney Swift no. 42-184486, a male, was banded as a juvenile on October 5, 1945. It returned to the campus buildings on the first of May, 1946, with 42-196912 in shaft D1 where the latter bird, a female, had nested for the past two years. One week later no. 86 was retrapped from D1 but this time it was with 42-196934, another male, which had nested in D1 with no. 12 and another female the previous year. On May 17 all three of these, nos. 86, 12, and 34, were together in D1, and remained together for the nesting season. It is not known whether no. 86 or no. 34 was the functional male, but most likely it was the former since the latter was found visiting in another shaft at the time that nest construction was being completed. The nest was made 34.8 feet down on the south wall. After the nesting season, on September 26, no. 12 came back to roost in D1; but she was not with either of the males with whom she nested. Instead, she was hanging to the wall side by side with the other female 42-196915 which had spent the nesting season with her and no. 34 during the previous year. At this time no. 86 was roosting alone in D3.

In late April of 1947 nos. 86 and 12 returned to D1, nesting together without any visitor since no. 34 went to the adjoining roof and nested in S1 where it continued to do so with the same female for another two years. In 1948 nos. 86 and 12 again returned to D1, removed the old nest still hanging on the wall, and prepared a new one on the same site. One night, just as nest construction was getting under way, they were visited by a bird which had been banded from D1 the previous September, but it was never seen again. The pair continued to roost in D1 off and on after nesting was finished for the season until September 27.

In 1949 no. 86 returned to D1 on May 15 with his former mate no. 12 and another male which had roosted with them in D1 the previous year, but which soon left. Nest building began ten days later, and again they built on the south wall 34.8 feet down from the top. During its construction a new bird, a male which was then banded with no. 42-188589, joined the mates and remained for the

balance of the nesting period. Two days later the nest, then about three-fourths made, disappeared. A new one was started immediately on the same foundation. Four eggs were laid, one of which failed to hatch. It is possible that a change of mates may have taken place, the new bird replacing no. 86 as the male parent, but there is no evidence to support such a belief. Furthermore, no. 86 was observed in the process of incubation which he probably would not do if he had been supplanted as a parent. In any case, all three returned to shaft D1 for another nesting on May 8, 1950. A new nest was made at the usual place, and the first egg appeared May 27. Five eggs were laid, but one was lost. After June 4 the eggs were deserted. Three days later no. 86 roosted high in the shaft alone, making no attempt to incubate the eggs. On June 11 the eggs disappeared from the nest. Six days later no. 86 came back with a new female which proceeded immediately to lay eggs in the same nest until a clutch of four was complete. The former female parent, no. 12, disappeared. The visiting male, no. 89, then moved into shaft A1, replacing a male which had nested there for five years, and nested with his mate of the past three years.

SUMMARY

Thus we see that while there is a common pattern of seasonal migration, annual return, selection of nesting site, mating, and nesting, there are a number of interesting variations in the breeding process, especially that of choice of or competition for mates, and of the behavior of individual birds in the colony.

1. Swift 42-196913 nested for three years (1944-46) in air shaft J1 with a different female each year. He continued nesting in J5 with the mate of 1946 for the next three years.
2. Swift 42-196914 nested in air shaft K7 with the same male for three years (1944-46), but acquired a new mate in 1947. She did not nest for the following three years, but in 1950 was an all-season visitor with a nesting pair in M7. She died on August 21, 1950.
3. Swifts 42-196909 and 42-196921 were mates in shaft E1 in 1944 and 1946-49. Another male replaced no. 21 in 1945 when that bird did not return to the campus colony. After the death of no. 9, no. 21 continued nesting in E1 with another female in 1950.
4. Swift 42-184486, after visiting a pair in shaft D1 during 1946, mated with the female of that shaft in 1947 and continued to do so for the next three years, although in 1950 the female disappeared immediately after egg-laying and no. 86 brought in a new female to lay a replacement clutch of eggs.

LITERATURE CITED

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