## NOTES ON THE BREEDING BIOLOGY OF THE CLIFF SWALLOW IN WEST VIRGINIA By David E. Samuel

While carrying out my thesis research project this summer, I have discovered some interesting things about the breeding biology of the Cliff Swallow (<u>Petrochelidon pyrrhonota</u>). The thesis concerns "the ecology and behavior of Barn and Cliff Swallows in Preston County, West Virginia" but I will limit this discussion to a progress report on the Cliff Swallow.

It appears that West Virginia's Cliff Swallow population does not reach the high numbers found in the west and mid-west. The total number of breeding birds in my area (6 square miles, located 23 miles northeast of Morgantown) was 92, while the total estimated number of birds seen at the barns in this area on the first day they arrived was 169-189 (see Table 1). Birds first arrived at barn #1 on May 13. From a group of 35-40 birds. 7 pairs constructed nests, but only one was successful. The English Sparrow (Passer domesticus) was the culprit, and one afternoon I watched one pair of sparrows move ten Cliff Swallows from their nest. Five Cliff Swallow nests were located side by side on the third girder inside the barn. Each time the swallows tried to enter the nests the two House Sparrows would fly into the nests and drive the birds out. The sparrows only occupied two of the five nests on that girder (the male in one, the female in the other), and yet this affected all the swallows with nests in the vicinity. The swallows were not aggressive and after two days they moved completely away from the barn.

Some of these birds (from barn #1) were marked with paint, and so it was possible to trace their movements. One pair moved to an adjacent barn (#4), one-half mile away, and attempted to build nests with two other



pairs. Although it usually takes a pair from one to two weeks to build a nest, this pair chose to build on top of an unused Barn Swallow nest (see photograph at left). Eggs were discovered two days after they arrived and the nest was completed on the third day. Five days after eggs were laid, the barn doors were closed to keep the cows out and the nest was abandoned. On July 10. I discovered this marked pair of birds 31 miles

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south of barn #1, building a nest with ten other pairs of birds (barn #8). However, after eggs were laid, that nest was also taken over by English Sparrows and so this pair was unsuccessful after three attempts. Another pair from barn #1 moved two miles east to barn #5. As can be seen from Table 1, these birds were again unsuccessful. The successful pair from barn #1 began building a second nest on July 14, at barn #8 ( $3\frac{1}{2}$  miles south of barn #1). Their attempt to raise a second brood was unsuccessful also.

From Table 1 it can be seen that 46 pairs of birds built nests on the study area, while only 13 pairs produced broods. Nests were abandoned for the following reasons: 23 because of English Sparrows, four because the nests fell down, four for unknown reasons, and two because the barn doors were closed. Since I have data for only one summer, I do not know whether this is the usual population picture of not. But it seems obvious that the English Sparrow was a limiting factor here. I should also point out that when censusing Cliff Swallows during the summer, nest counts do not give accurate estimates (of 46 nests built, only 13 were occupied successfully).

In the far and middle west, Cliff Swallows usually colonize dams or bridges. In Wisconsin Cliff Swallows are found on the outside of barns, churches or houses. In my study area all nests were found inside open sheds or open barns (a typical barn is shown below). Nests were usually placed on the second or third girder inside the opening. When Barn Swallows were using the same barn, they would build farther back inside the barn. Behavioral interactions between these two species were very few, and they seemed to be quite compatible.

Sexing adults has proven to be difficult. Although one reference states that only females develop brood patches, I found that 18 of the



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Colony (Barn)	Dates <u>Arrived</u>	No. Birds in Area	Nests Completed	Nest <u>Success</u>	Reasons for Abandonment
1	5/13/67	35-40	7	1	English Sparrow (5)
2	5/18/67	28-34	5	1	English Sparrow (2) Nests fallen (2)
3	5/24/67	2	1	1	
4	5/25/67	6*	2	0	Barn door closed
5	5/25/67	6**	2	0	Nests fallen
6	6/15/67	2	1	1	
7	6/25/67	4	2	0	English Sparrow
1	7/5/67	14	6***	0	English Sparrow
6	7/10/67	4	1	1	
8	7/10/67	38-42	11	3	English Sparrow
9	7/21/67	30-35	8	5	Unknown reasons
Total		169_189	46	13	

\*4 of these 6 were originally marked at barn #1 \*\*2 of these 6 were originally marked at barn #1 \*\*\*birds took over and added mud to the nests previously abandoned in June

20 adult birds netted had brood patches. I was netting near the nests, and hence might catch a higher proportion of females, but this figure still seems quite high. If any EBBA members have kept brood patch data for banded Cliff Swallows, I would very much appreciate hearing from them. I do know that both sexes definitely incubate the eggs.

I would also like to begin a census of the Cliff Swallow in the greater Pennsylvania, West Virginia, Maryland and Virginia area in order to determine, to some degree, the status of this bird. I realize this would be a big task, and would not be 100 percent successful, but, it may be a beginning. I would most appreciate it if interested readers would answer as many of the following questions as possible and send their answers to me at the address given below.

1. Are there any Cliff Swallow colonies in your area? If so, exactly where? How many nests... or birds? Are all the nests occupied?

2. Where are the nests built? - inside or outside barns, houses, or churches ... under bridges ... on natural cliffs? How long has this colony been in this position or place?

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