

## BARN SWALLOW BANDING - SOME RESULTS AND CONCLUSIONS

By Ralph K. Bell

John Taylor's very interesting article "Operation Barn Swallow" in the Sept-Oct. 1961 issue of EBBA NEWS has stirred me to the point of checking my banding records for the purpose of trying to find some of the answers to his questions.

Barn Swallows have always intrigued me. In fact, they are my favorite bird. As a lad of 12, I would watch them flitting around my father's barn and over the fields nearby. How I wanted them to nest in our barn, then I could study them more closely; but no, they just didn't seem interested. It was an old barn, unpainted, and similar in type to others in the neighborhood, but they would not nest as I watched hopefully every spring.

About 300 yards away my grandfather built a new barn and painted it white. He kept this barn closed up, but the Barn Swallows seemed to like this barn and sometimes would nest on the door track outside under the eaves. We now live where my grandparents did and this barn has many active nests inside. When the first Barn Swallows arrive in spring, I open the windows right away and soon there were several swallows flying up to the "most used" window and twittering loudly - who says birds don't have a memory?

Usually 6 to 8 pairs nest in the barn and others nest over the farm in poultry shelters. Due to the heat we sometimes have in late July, the nestlings in these shelters crawl sometimes out of their nests and drop to the floor. If I don't find them they usually die of exposure overnight. I have moved the young as much as 4 feet to a cooler nest and even divided the young by putting some in an empty nest nearby. The parents have always found the young and continued to feed them.

### Barn Swallows Banded

	Adults	Nestlings		Immature	Total	Nests on Farm
		On Farm	Off Farm			
1954	1	63				
1955	3	51			64	15
1956	32	88		5	59	12
1957	32	125		100	220	20
1958	45	124	4	412	569	30
1959	39	112	113	816	989	27
1960	16	72	54	602	866	27
1961	17	97	95	222	369	18
				308	517	24
Totals:	185	742	266	2465	3653	

The average number of young per nest has ranged from 4.00 to 4.59.

The best time to band nestlings is when they are in the quill stage. When the quills open up into feathers, it may be best not to try to band the young - especially if their eyes are wide open and are watching you over the edge of the nest. Once they flop out of the nest prematurely, the survival rate is pretty low, even if you put them back and hold your hand over them to quiet them down, they may jump out again as soon as you are out of sight. This is especially true when the parent birds are flying around and calling excitedly. Often there is quite a bit of fat on the tarsus of the nestling and the size 0 band may seem a little snug, but the leg becomes smaller by the time young swallows are ready to leave the nest.

I have never caught an adult Barn Swallow on the nest at night for fear the noise might cause other swallows to leave their nest and the eggs or young would get too cold as a result. No record has ever been kept of the number of eggs per nest or the percentage of eggs that hatch. However, the number of nestlings per nest here on the farm has been recorded, as follows. Only one nest contained one nestling; 10 nests contained two nestlings; 21 nests had three; 57 had four, 65 had five, and 7 had six young. There was one nest that had seven young in it, but there was an unusual circumstance connected with this nest. In checking my notes, I find this statement:

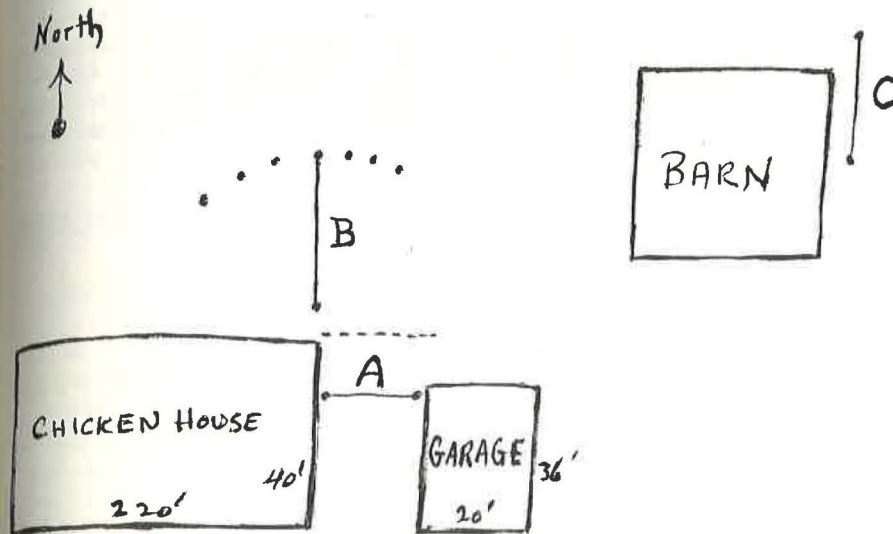
"May 7-14, 1960 - a very cloudy rainy period, most of the Barn Swallows and Purple Martins died. It is a sorry sight to see and find so many swallows on the ground, too weak to try and find insects any more. We tried to revive some of them, but by the time they could be picked up by hand they were mere skeletons and past the point of no return."

Getting back to the nest with seven young, one of the parent birds, probably the female, was found dead on the nest (containing 5 eggs) at the end of that rainy period, and was removed. Evidently the other parent managed to survive and found a new mate among the still arriving young of the year before, and five more eggs were laid - 10 in all. Two of the original clutch hatched and were banded on May 29. The last clutch of five eggs all hatched and were banded on June 15, 1960.

Netting of Barn Swallows was started on an experimental basis during the summer of 1956. Generally we use only one 5-meter net for them and keep it up all the time after June 20th. During the peak of the season, two nets (A and B) are used as shown in the drawing on the next page.

Net A was first placed as shown with the dotted line, but due to the wind constantly blowing the net to one end, many Barn Swallows escaped by bouncing off the tight net. This net was changed in 1958 (solid line A), and almost twice as many immatures were banded as the year before. When

ever there was any breeze, the wind seemed to funnel through the area between the buildings and billow out the net without blowing it to one end, except in extreme cases. The Barn Swallows seemed to enjoy zipping through



the alleyway between the two buildings as they flitted around picking up flies. Seldom were they caught twice though, and as the experienced ones came along they would fly up and over. Even when the net had been taken down they would still fly up and over, and it was comical to watch them. This net also catches Robins, Bluebirds, Chipping Sparrows, an occasional Meadowlark, and the only Kingbird I have ever banded as they are not common here.

Net B helps by taking additional birds but any breeze causes trouble, although shifting the end pole (to holes indicated) to correspond with the wind direction helps some. Net B also catches the few Cliff and Rough-winged Swallows that we band. Net C is sometimes put up for short periods to check on the adults nesting in the barn. This net covers the large opening on the side of the building that is often used as a quick exit, but we have more peace and quiet among the nesting colony if this net is used sparingly.

We try to check the nets every half hour (or oftener) during busy periods and have had few casualties. One flew in just as a heavy thunderstorm struck and drowned; one was killed by a dog; and one or two were caught by the neck and strangled. Barn Swallows have been netted every hour of the day, but early morning and late afternoon periods are the best. Cloudy days are a help but some good catches have been made on sunny days too. My son David helps out by watching the nets while I am delivering

eggs to stores. Many times I have come home to find a cage full of Barn Swallows. They are kept quiet by covering the cage with a coat.

Mr. Taylor's first question (in the Sept-Oct. 1961 EBBA NEWS) was, how does the percentage of returning adults compare with that of returning young? There is a very high mortality rate among all Barn Swallows. There is probably an average of six young produced for every pair that returns and is able to survive through the crucial spring days. Naturally the mortality rate is higher for the immatures because there are more of them and they lack experience.

Barn Swallows recaptured:	<u>2nd year</u>	<u>3rd year</u>	<u>4th year</u>	<u>5th year</u>
Banded as Adults -	18	8	3	1
Immatures -	9	3	-	-
Nestlings -	7	2	-	-

The above table is not exactly a true picture of the returning adults, as 24 were recaptured in the years following banding: some were not captured the year following banding, but the year after that. Some were probably never recaptured because they were too net-shy. 24 represents 13%, while the returning nestlings represent only one percent. With nestlings, returning to the place where hatched, I believe the law of chance applies here. If alive, they come back to the general area, but it is just chance if they nest where hatched. I have noticed this with Robins, and presume it applies to most passerines, also as it prevents interbreeding and weakening of the species.

If alive, most if not all old birds return to their former nesting sites and usually, I believe, nest in their old nest. This has its advantages as they are then more sure of being able to get off two broods in one season. They may raise both broods in the same nest or, due to parasites, mostly mites, may either move to an old unoccupied nest nearby or build a new nest. I feel that the young of last year do not ordinarily arrive until the first of May or later; however, one Barn Swallow banded as an immature in 1958 was netted on April 20, 1959, while the earliest nestling recaptured was one banded July 26, 1959 and recaptured on May 5, 1960. These late arrivals help preserve the species in case of a high adult mortality due to a cold late spring.

Mr. Taylor's next question was, do some family groups have higher return rates in the spring than others? There is nothing in my records to indicate that there is such a thing as a family group any longer than the few days necessary to teach the young how to forage for themselves. The following table illustrates this point. The recovered nestlings in this table were all banded in other barns, away from my farm in the directions and at distances shown, and caught here later. The mileages given are air miles, not road miles.

<u>Date Banded</u>	<u>Direction</u>	<u>Distance</u>	<u>Date Captured Here</u>	<u>Elapsed Time</u>
June 11, 58	Northwest	12 miles	July 5, 1958	24 days
May 30, 59	South	3 miles	June 24, 1959	25 days
May 30, 59	South	3 miles	June 26, 1959	27 days
June 2, 59	Southeast	6 miles	July 8, 1959	36 days
June 7, 59	Southwest	16 miles	July 24, 1959	47 days
July 19, 59	South	3 miles	Aug. 8, 1959	20 days
July 21, 59	North	1 mile	Aug. 14, 1959	24 days
July 25, 59	North	4 miles	Aug. 18, 1959	24 days
July 25, 59	West	$\frac{1}{2}$ mile	Aug. 13, 1959	19 days
June 12, 61	Southeast	6 miles	July 30, 1961	48 days
June 13, 61	Northwest	12 miles	July 6, 1961	23 days

The average time elapsed from the date of banding until the date of recapture in our yard was 28.8 days. The only two that could still have been in the family group were those banded on May 30, 1959, since they were recaptured only two days apart. To prove further that the young do not travel in family groups very long are the results of Barn Swallow banding by a sub-permittee, Ralph Horn, whose nestling banding was done 3 to 5 miles west of here. During 1957 Mr. Horn banded 199 nestlings (his nestlings are not included in my totals), of which 9, or 4.5% were later netted here. Elapsed time between banding and recapture varied from 21 to 39 days, with the average being 27.2, close to the above average of 28.8. No two of the nine recaptures were from the same nest.

The third question was, do some birds return in the early spring and then move on to nest at another location? Evidently Barn Swallows somehow estimate the available food supply and nest accordingly. Many farms with very few stock usually have only one or two nests at most, while the large dairy or poultry farms usually have more nests, if nesting sites are available. If there is a large percentage of returning adults then most of the returning immatures must look around for suitable nesting sites. I sometimes get reports of Barn Swallows trying to build nests in garages, or even on houses, and once they tried to build in the entrance to a modern school building.

Another question was, does the first brood of young remain in the area where they were hatched while a second brood is being reared? No, they are flitting around the countryside picking up insects and gathering strength and experience, and finding a place to call home next summer. The table on the next page gives the elapsed time (in days) of nestlings banded here until recapture in nets. Nineteen of the 139 were retrapped more than once, with an average of 7.5 days between first and last capture. This is probably not too far from the number of days the young Barn Swallow stays on the home farm after leaving the nest. Add 7.5 and 7.8 and you get 15.3 days (from time of banding until they leave the farm). This is slightly less than the 18.1-day average, in the following

table, but I feel that at least three came back by chance, as they travelled about the countryside, thus raising the average. Note that the greatest number were recaptured in 1958 (46), and the average time in days from banding until last captured was 15.8, very close to the above mentioned figure of 15.3 days.

<u>Year</u>	<u>Earliest</u>	<u>Latest</u>	<u>Average Days</u>	<u>Number Retrapped</u>	<u>Percentage</u>
1956	6 days	19 days	12.5	6	6.8
1957	9 "	53 "	19.8	32	25.6
1958	6 "	25 "	15.8	46	37.9
1959	8 "	43 "	18.9	27	24.1
1960	9 "	53 "	22.4	8	11.1
1961	9 "	26 "	19.0	20	20.6
	<u>7.8 (Ave.)</u>		<u>18.1 (Ave.)</u>	<u>139</u>	<u>21.0(Ave.)</u>

Some still unanswered questions that come to my mind are: Where do our Barn Swallows spend the winter? What is the length of time they take to travel to and from their winter quarters? Do they travel the same route both ways? The bird books say they winter in Mexico and South America. Mr. Albert Schnitzer has told me that he has seen large flocks of them on islands in the West Indies. As yet, I have never had a recovery in their winter range. They have been observed flying southwestward, very high, over the Operation Recovery station at Bear Rocks in the Allegheny Front Mountains in late August.

The only inkling of migration direction that I have noticed here was on August 29, 1958, when a lone Barn Swallow was flying on a southeasterly course late in the afternoon. All of the other swallows had left several days before and this one seemed to be flying with a purpose and in a straight line. My only recovery reports of over 25 miles distance are: an immature banded on August 9, 1957, and found dead at Woodland, West Virginia (reported by letter dated June 13, 1960), a distance of 42 miles direct, west-southwest of here; and a nestling banded June 3, 1959, found dead May 14, 1960 at Farmington, Pa., 30 miles by air east-southeast of Clarksville.

I know the above information was a revelation to me, and I sincerely hope other banders will have gained something by it too. A college president once said "The reason for living is to learn" and I am sure that I have learned much from this study. If other banders have made similar studies and they correspond to this one, then some definite conclusions may be drawn, but if they differ, then much more data remains to be accumulated.