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### Observations On The Nesting

#### Ecology of Barn Swallows

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#### Introduction

The purpose of this paper is to report on a brief study of the nesting ecology of the Barn Swallow (Hirundo rustica) in Mississippi. Specific intentions were to make observations which might aid in a comprehensive study of Barn Swallows nesting under bridges in Oktibbeha and Lowndes County in Mississippi. This study included forty-one pairs of nesting birds; plus, at the time of conclusion of the study period, 68 nestlings. Field observations were taken between May 4 and May 14, 1972, and included a total of twenty hours of actual field work.

#### Methods and Techniques

Thirteen bridges were selected for study. Each nest was numbered and individual records kept. Observations were taken every two or three days. An aluminum pole with an attached mirror was used to view the inside of nests. No attempts were made to record the presence of adults on the nest (unless nest was solitary, rather than colonial). In certain instances, nests were constructed with top of the cup very near the bottom of the bridge, making placement of

the mirror difficult. Additional factors that limited observations were the height of the nests above the ground and inadequate light. In addition, swollen streams after rains made footing difficult. Feathers covering the nest and its contents, and the dark color of hatched birds, made counting difficult in some instances. In these cases, where observations were incomplete, the only data recorded were the presence of eggs or young.

### Observations

Four of thirteen bridges examined had no signs of nesting barn swallows. These bridges fit into one or more of the following categories: (1) small, low bridges, (2) vegetation obstructing the entrance to the underside of the bridge, and (3) were over very small or normally dry creeks. Three bridges examined had evidence of nesting birds, but could not easily be studied due to the size and depth of the streams. In the above seven bridges, no further observations were made. Six bridges had nesting Barn Swallows that were easily observable.

Nests are cup shaped and attached to the vertical surfaces of the bridge structure. They are either built on a supporting structure such as a large bolt, on the flaring of the bottom of the support beams, or in a corner where beams cross. When the nest is on a vertical surface only, it is normally located very near (2.5 - 4.0 centimeters) the bottom structure of the bridge.

### Egg-Laying

Five nests observed had adults in the process of egg-laying. Two of these had one egg each at the completion of the study period, and appeared abandoned.

### Clutch Sizes

Thirty-four pairs of adults were observed to have completed egg-laying during the time the study was in progress. Twenty-two nests had five eggs; five nests had three eggs; three nests had six eggs; two nests had four eggs; two nests had one each, both appeared abandoned.

### Brood Success

Twelve pairs of adults were observed to have completed egg-laying and have eggs hatch during the period of study.

Out of a total of fifty-seven eggs, forty young hatched, for 70.1% hatching success. In addition, seven nests were observed with young only. These, when totaled with the brood success figures, gives a total of sixty-eight nestlings, an average of 3.6 young per nest.

### Discussion

Bridges serve as an ideal nesting site for Barn Swallows. Highway bridges provide all requirements for nesting sites listed by Samuel (1971). These are (1) a vertical substrate for nest building, (2) open areas nearby for foraging, and (3) mud for nest construction. In addition to the above, the underside of bridges is rarely disturbed by man. Entrance and exit would be facilitated where there is little vegetation to block flight. These facts are supported by the lack of Barn Swallows nesting under (1) small bridges, (2) bridges with sides covered with vegetation, and (3) bridges with small or no streams. Another factor is that eighty-one of eighty-eight nests located were directly over water, with seven over land. Related to this is a tendency to construct nests with the greatest possible vertical distance above the ground or water.

A point which needs further investigation is reuse of nests. Samuel (1971) states that over half of the old nests are reused. This would explain about half (twenty) of the unused nests. An accumulation of old nests over a period of years may explain the large number of unused nests that I found. Falling of nests is probably caused by shaking of bridges by vehicles. The large number of unused nests may indicate that birds tend not to reuse nests under bridges.

Nest construction is the same as reported by other workers (see Bent, 1963). An interesting fact concerns nests constructed very near to the bottom of the bridge. Wood (1937) observed young Barn Swallows perched on the rim of the nest exercising wings.

Exercising wings would be difficult in nests located near the bottom of bridges. Water beneath the nests, and lack of perching sites under the bridge makes leaving the nest hazardous.

The following are recommendations for further study. (1) Use of a convex mirror to aid in viewing the entire contents of nests. This would be extremely useful in nests located near to the bottom of the bridge. (2) Use of a light to illuminate nests on dark, cloudy days. This would especially aid in counting newly hatched birds, which are difficult to distinguish. (3) A system of marking nests to aid in determining the number of nests reused, the number of birds that have second broods, and the effect of the shaking of bridges on the nests. (4) A good pair of boots to keep the sewerage off.

#### Summary

Thirteen bridges were selected for study. Six were suitable for further study of nesting ecology. A total of eighty-eight nests were observed, forty-three of these being active.

Clutch size varies from three to six eggs, with five being commonest. Hatching success averages 70% for all eggs observed. This included two nests that had a clutch of six eggs with 41% success. Success for nests with three to five eggs averages 78%, which is in agreement with Samuel (1971).

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#### References

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