

for

Mike Scott

by

Kathleen Heide

(July 5, 1972)

## Introduction

The purpose of my project was to contrast a population of Cliff Swallows (<u>Petrochelidon pyrrhonota</u>) and a population of Bank Swallows (<u>Miparia riparia</u>). Both populations had nests located in a gravel pit near refuge headquarters. The specific questions I was trying to answer were: (1) Are there diurnal differences between the two species with respect to the time spent near their nests and time spent in their nests (presumably caring for young); (2) How old are their young; (3) What are the behavioral patterns between the two species, among each species and toward individuals of other species; and (4) Why are there so few Cliff Swallows and so many Bank Swallows.

## Methodology:

To determine diurnal differences between the two species in respect to the amount of time near the nests, I cho e eight 5-minute periods throughout the day and watched two specific locations, one in front of Cliff Stallow nests, and the other in front of Bank Swallow nests. I counted all of the individuals, of each respective species, which were in view of my binoculars and within approximately 10° of the experimental nests. I divided this number by the number of nests in the range of my binoculars, so that I could compare the two species. My assumptions in this experiment were: (1) Each nest is occupied by a single pair of birds, and only the occupants fly in front of their nests. (2) That I counted accurately. (3) All days are constant with that of my experimentation.

To determine diurnal variations in the number of times and length of time spent in the nest for each respective species, I chose 6 nests, 3 of 1

each species, and observed each 10 minutes at 4 different times throughout the day. I used a stop watch to determine the length of time of each visit, and my wrist watch to determine the time between visits. My assumptions are the same as those in the last experiment. I also noted the manner in which they entered their nests.

I tried to determine the age of the yoing by general observation. I looked inside of the nexts with a spotting suppe to see if the birds, with their heads poked out and directly inside, had yellowish gapes or downy plumage. I also used a ladder and climbed up (with Bob Magee's help) the treacherous embankment on which the nexts are located, to check the development of the Bank Swallows.

To determine the behavioral relationships stong each species, I sat on the bank across from the experimental nests and atched randomly chosen birds. I did the same with the intra-special belevior between the Cliffs and Banks. Whenever a bird of a different species flow over, I studied it and interpreted the reaction given it by the swallows

I observed the strates of soil, the physical instures of the area, and the actual makeup of the Bark Swallow and Cliff Swalle, dests to determine why there are such a large quantity of Bank Swallows. I also looked at other nests of the same species, located in different areas, to draw generalizations between the two.

## Results and Discussion.

My Cliff Swallows apparently fledged and joined a larger colony of their own species, because on the day of my censusing I didn't observe any of them. This threw we pretty far out of the field since 1/ original plans included a comparison of the two. As reality makes it, I'm just able to give diurnal data on the Bank Swallows.

2

By looking at Graph I, it's divious to see that a diurnal pattern took place. There was accelerated activity in the early orning and late afternoon. Two explanations for this may be: (1) Since it's warmer during mid-day, the birds stay in ide their burrows; or (2) The Bank Swallows are going out to forage during the mid-afternoon.

When you examine Graph 2, the second explanation sheds more light. It stands to reason that since there is a greater % of time spent going in and out of the nests in the mid-afternoon, the adult birds are probably foraging more and bringing food to the nests more frequently and only coming back to bring food.

By previous observations I would say that the Cliff Swallows and Bank Swallows habits, as far as frequenting their nests and colony go, are pretty much parallel in relation to the stage of development of their young.

I've already pretty much an wered question 2, the age of the young. The Cliff Swallows are undoubtably already fledged and the Bank Swallows are probably fledgling. By evidence for the Bank Swallow's stage of development includes: During general observation I've seen as many as four birds fly in and out of a single nest; the adult birds are still going back to the nests and appear to be feeding the young, when I climbed up to peer inside one of the burrows, I didn't see or hear any squeaking (reflecting the fact that the young could fly out of the burrow before I got there.)

In observing the swallows I didn't notice any direct intra-special aggression between the two species, as I've been a witness to in such species as Western Kingbirds. I observed their compatibility in many cases; on June 24 I noted a Gliff Swallow landing and perching for 30 seconds on the bank directly above a Bank Swallow nest without any aggressiveness from

-3-



Bank swanow activity in front of the Colony

-4-

the residents; when taking censuses before July 1, I noticed Bank Swallows in front of the Cliff Swallow Bests and vice versa without any noticeable hostilities; and another time a Bank Swallow peered in a Cliff Swallow nest four consecutive times while circling and there was still no aggression from within.

-5-

With respect to inter-specific behavior, I've noticed many patterns, but how to interpret these patterns is a different story. I saw alot of "chasing activity". My theories on this are: (1) Two mates going out to forage together, (2) Hostile action resulting from trespassing, (3) An adult with a young teaching it how to forage, or (4) Some type of "game". I doubt if this is hostile, because I've never seen them actually "catch" one another or be violent. IN's probably chasing between mates, because once I saw a chasing pair fly into a burrow, one right after the other. Many times one bird will "hover" in front of a burrow opening without going inside, sometimes one bird will do this three or four consecutive times, but I've never seen any reaction from the burrow's inhabitants. This may be an exemple of inter-special compatability. I've also noted a few examples of two birds flying parallel to a burrow, one going inside for a few seconds while the other one stays outside "hovering", and then they will both fly off together.

In some cases the swallows were aggressive to trespassers of other species and sometimes they were not. It seemed to depend on what species the trespasser belonged to, distance from the colony, and the number flying over. Some examples of trespassing are:

(1) At 10:30, June 24, a single raven flew overhead, immediately approximately 150 swallows (both Cliff and Bank) mobbed him until he was about 200 yards away.

(2) At 10:45, two Ravens flew over and the swallows didn't seem to notice.

It doesn't seem like two Ravens would be too much for the Svallows; so maybe the first Raven was acting in some way different from the second two which could have been directly detrimental to the colony.

(3) There were two Brewer's Blackbirds on top of the embankment, and they seemed to be very compatable with the Swallows.

(4) A Forester's Tern was immediately mobbed when flying over, almost identical to the incident happening with the first Raven.

(5) July 1, 6:00 A.M., a Swainson's Hawk flew by and immediately all of the Swallows began mobbing it. This hawk flew directly by the nests and seemed to look inside of them. The Swallows kept mobbing it the entire time. I saw this hawk six times in the one morning, each time it came within about 200 yards of the colony it would get mobbed.

(6) Common Egret and Yellow Headed Blackbird flew over, but no mobbing resulted.

I would say the colony has a fixed territory in which they will defend against certain species and certain individuals, if these act in a hostile manner.

In this colony there are 7 Cliff Swallow nests and 340 Eank Swallow burrows (whether or not each of these burrows houses a nest is another story.) The environmental limiting factor is the substrate rather than food or anything else. This is true because there is a group of Cliff Swallows nesting under a bridge within a mile from this colony and they probably forage in the same manner and the same places. The substrate is a limiting factor for the Cliff Swallows in that there are only a few overhangs associated with the semipermeable strata of soil. The Cliff Swallows need a surface which is relatively stable on which to "coment" their mud nests. The permeable layer is ideal for the Bank Swallows since it't soft and they



------

can dig in without any problems. Also this permeable layer of soil is located rather high off the ground and it's relatively inaccessible to most predators. There are other banks that have the same stratafication but are shorter; so steepness, height, and type of soil are the major limiting factors as far as the number of nests is concerned.

-8-

## Limitations

,0

Before any of my ideas could be taken for facts, much more authenticated research must be done. My generalizations come from about 20 hours of observation on 3 different days in a two-week period; so nome of this could be taken as "the rule," instead just a casual ovservation that may or may not hold true upon further research.