PHOEBE BANDING IN PENNSYLVANIA

By Dorothy Bordner

On June 22, 1958, we banded five nestling Eastern Phoebes (Sayornis phoebe) in a nest under a bridge about five miles from State College, Pa. In late May, 1959, the nest was again in use. This article might be called a progress report on the project which grew as one bridge led to another. The placing of the Phoebe on the disaster list further spurred our curiosity. In 1960, Mr. Bigger began an independent banding study of Phoebes under bridges in his own area around Trout Run, Pennsylvania.

The equipment and techniques used have been essentially the same in both areas. The equipment needed is very simple. First, a stepladder - a four foot one will reach most nets. Second, a snoopstick - an effective one can be made with either an automobile mirror with double-knee-action or a bicycle mirror with a ball and socket joint. The mirror must be adjustable to any angle. The mirror is fastened to the end of a stick that is slightly longer than the ladder. In this way if the nest can't be observed with the mirror it couldn't be reached with the ladder for banding. (This saves the frustration of being able to see nice banding-sized nestlings without being able to get your hands on them.) Third, hip boots or at least knee boots are very useful and provide added protection in snake country. However, if they are not available and you don't mind wading in cold water, a pair of old shoes relegated to the status of wading shoes and a pair of shorts will serve as well. A couple of neighbor children who like to wade can be a great help in this respect. It is fun for them and saves the bander some wet feet if there are just eggs or small fledglings. If you have no helper a small gathering cage can be fastened to your belt to hold the nestlings until they are all banded. In this way nestlings which are close to flying can be kept together and placed back in the nest together.

A preliminary study of maps (e.g. Geological Survey maps) was helpful in finding areas with large numbers of bridges. Bridges which were located near houses where there might be children were passed by for the protection of the birds that might be there. All other bridges were checked. The type of bridge was more important than the size of the bridge or the stream. One bridge which hardly looked big enough to bother with produced both Phoebes and Barn Swallows (Hirundo rustica) each year. A nest has even been found under a bridge that was so low it was necessary to crawl under it. (This turned out to be a rather unpleasant experience since even the ground under the nest was covered with mites.)

After a nest was found, all observations were made with the snoopstick or a hand mirror so that the only time the nest and its contents were touched was when the nestlings were banded. This was a precaution against predators being attracted to the nest rather than fear that the birds would desert.

Young can be banded any time from eight days until fledging if conditions are normal. However, if fly larvae or large numbers of mites are present, development will be retarded. It is important that the legs are well developed, far enough so the band does not slip over the foot. With Phoebes there is never the problem of the leg being too large for the band at any stage of its development, as we have found with Barn Swallows. I like best to handle the nestlings when the tail feathers are a fourth to a half of an inch long. At this time the body is fairly well covered with feathers and the pot-bellied look is almost gone. However, smaller birds have been successfully banded.

"Full House - Ready to Band"

In 1960, I noticed that there was considerable variation in egg color and began to suspect that there was some change during incubation. Careful notes were made in 1961 and this observation was verified. Phoebe eggs have a pinkish tinge when newly laid. With incubation they become chalk white. This has proved to be a very useful characteristic. By noting the egg color we could get a better idea how soon to revisit the nest. Unfortunately we have not had a nest located where we could observe it every day to determine the progress of this change.

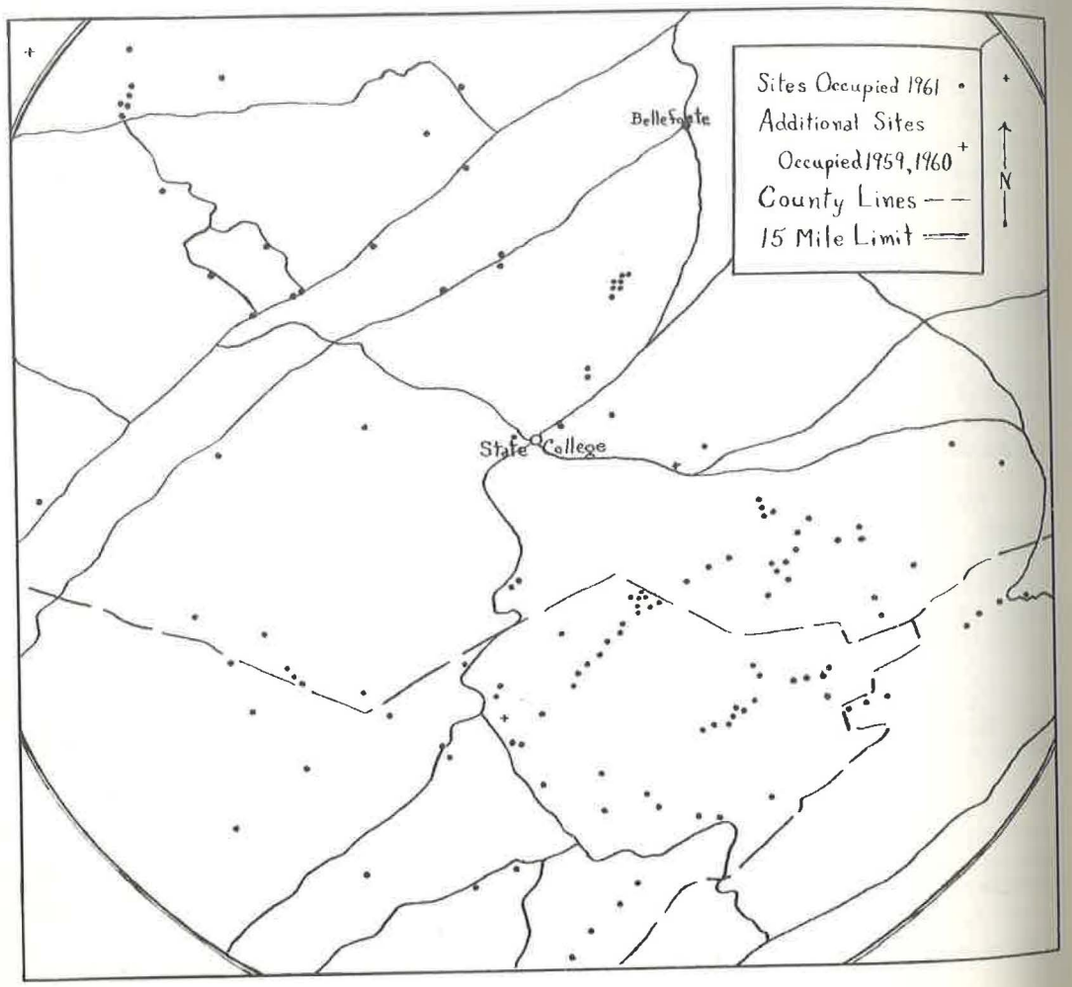
We have restricted our study to the "State College region" - the area within a radius of fifteen miles of State College covering portions of Centre, Mifflin, and Huntingdon Counties. Special attention was given to the Rothrock State Forest area, comprising Tussey Mountain and part of the Seven Mountains, lying to the southeast of State College, and the Moshannon State Forest area of the Alleghany plateau lying to the Northwest. In both of these areas numerous small mountain streams and springs provide suitable nesting habitat with many bridges and cabins. Nests were also observed in the farming areas of the Bald Eagle, Penn, and Stone Valleys. All active nesting sites found in the region are shown on the map on the next page.

We kept a record of the location of each nest and its contents at each visitation on a chart similar to Table 1. This was handy to carry and previous contents could be checked at a glance.

Nests have been found in a great variety of locations but all have the common characteristic of a roof over the nest - on natural locations

Table 1.

Location \ Date	May 20	May 28	June 1	June 6	June 22	July 6	July 8	July 10	July 15	July 21	Aug 3
Stone Valley B.B.	5 e		3 b 2 e			5 e		5 e	t. b.	4B	
Stone Valley L.B.	t. b.		5B			2 b 2 e } Dead					
Black Mo. Br.		3 b 3 e		Dead. Build. N.N.	Old N. 5 e	5B					Mouse



on rock cliffs, an overhanging rock provides the shelter. The Phoebe appears to choose only a solid foundation for her nest. None have been found on tumbledown cabins or rickety bridges.

The favorite type of bridge is one with steel I-beams. In the case of large bridges with slanting cross beams the nest may be built on one of these rather than on the flat surface of the I-beam. Cement bridges are also used frequently when a rough place provides a base for the nest. In our area we have found only two nests on bridges with wooden beams.

On buildings any projection in a sheltered place may be used. In addition to the common locations of door and window frames and porch supports we have found nests on top of porch lights and one constructed on the fastener of a screen door. (Needless to say, it had not been successful.)

One nest was found inside a springhouse. This nest site had probably been used all three years of the project since Phoebes were seen and heard in the vicinity each year. The first two years we searched the nearby cabin and even looked on the outside of the springhouse with no success. This year we again found a Phoebe and saw it perch on the roof of the springhouse. When a search of the outside produced nothing I finally looked inside in desperation and found the nest on a beam supporting the rafters. An opening about three inches wide between the side and the roof was used as an entrance and exit. Three nestlings were observed on the beam beside the nest, when they looked as large as adults.

Table 2, below, summarizes my totals for three years of the project.

Table 2.

Year	Active Nest Locations	Active Nestings	Banding Locations	Broods Banded	Nestlings Banded
1959	45	52	21	26	103
1960	42	46	24	26	107
1961	135	172	81	90	356

The majority of the nests were second nestings for various reasons: in 1959 the project grew with the summer; in 1960 many of the first nestings left the nests before school was finished when I had no time; and in 1961 many reached banding size during June while I was attending the Wilson meetings. The increase in numbers does not necessarily reflect a corresponding increase in Phoebes in the area. Each year we have become more adept at finding nests and have extended our coverage to more cabins. This can be noted in Table 3 which gives a breakdown into type of nesting location for each year.

Table 3.

	1959	1960	1961
Bridge	39	29	59
Cabin	3	10	57
Cliff	3	2	8
Others	-	1	10

The average number of nestlings per brood (calculated for the broods banded) ranged from 4.08 (1961) to 4.41 (1959). This figure would be higher with more nestlings from first broods since the first broods averaged larger than the second for all years. Generally there was one less egg in the second clutch than in the first. Clutch size ranged from three to six, usually five in the first clutch and four in the second. In one instance a bird laid eggs in two adjacent nests - two in one and three in the other - and incubated the nest with two eggs. Unhatched eggs were encountered more frequently in second nestings. Also, more variation in the size of the young was noted, with one or two nestlings smaller than others in the brood, particularly in 1961. The latter did not appear to be connected with the presence of nest parasites since it was found in some nests with no sign of fly larvae or mites.

The 1961 season was abnormal because of the cold weather late in the spring. Many nests were one or two weeks later than usual. These were scattered among locations which were on the normal schedule. This created a spotty situation where one nest might have banding sized young while another a few hundred yards away still had eggs. This meant more visits to each area.

The only mass mortality we have had in the three years occurred in 1961. Between July 6 and July 17, 41 nestlings from ten nests were lost in the Rothrock area, 35 from eight nests known to be dead. All of the nestlings were less than a week old. There were no signs of animal predation and only moderate numbers of mites. From July 5 to July 11, night temperatures fell into the 40's. This unseasonable temperature may have directly or indirectly (through the insect supply) contributed to the deaths.

In 1961, one banded Phoebe was observed by Mr. Wood on a nesting territory. Since its nest was located in an inaccessible position under the eaves on the outside of a barn, no attempt was made to capture it. No nestlings had been banded in the immediate vicinity in previous years.

There has been very little parasitization of our Phoebe nests by the Brown-headed Cowbird (Molothrus ater). Two nests (3.8 percent) were parasitized in 1959, two nests (4.4 percent) in 1960, and eight nests (4.7 percent) in 1961. This low percentage of parasitized nests - much lower than some other published studies - is not due to a lack of Cowbirds since many have been seen. Because of the protected nest locations chosen by the Phoebe other host species are easier to find. Sixty percent of the nests in natural locations on rock cliffs were parasitized.

Half of the parasitized nests were located in the area of a small limestone cliff at the Benner Spring Fish Hatchery. When found, one nest in this area contained four Cowbird eggs and three Phoebe eggs. The Cowbird eggs were removed and one Phoebe egg later hatched. Another nest contained one Cowbird egg and one Phoebe egg; after removal of the Cowbird egg two more Phoebe eggs were laid. This nest was later destroyed by a predator.

Nests on one small bridge have had Cowbird eggs or young each of the three years. Could it be the same Cowbird returning each year?

Most of the Cowbird eggs and young have been removed when found so we have little information on the host young. One nest was found with banding size Phoebes and an unhatched Cowbird egg. However, in only one instance where nests were found with large young Cowbirds has there been a live Phoebe nestling also (Bordner, 1961. Wilson Bull., 73:212).

During incubation the reaction of the incubating adult to our approach was uniform although some birds allowed a closed approach than others before flight. A few could almost be touched. When they left the nest all birds dropped almost vertically to approximately a foot from the ground and flew some distance at that level before rising to a perch. One bird even used this same means of escape in a garage and became rather frantic trying to go through the back of it before she finally made her way up and out an opening under the roof.

During banding the behavior of the parents varies considerably - from

complete silence and absence to loud chips and even bill snappings. This reaction appears to be entirely a behavior characteristic of the individual adult and does not depend on the stage of development of the nestlings. No Phoebes have deserted the nest because of our handling of the nestlings.

Two of our observations illustrate the extreme reluctance of Phoebes to desert their nests. One cabin was freshly spray-painted. Evidently the nest was covered during the operation because neither the inside of the nest nor the young which flew at our approach had white paint on them, but the outside of the nest was painted along with the beam it rested on. At a bridge location in open farm country the bridge was completely refloored and the young later fledged. Both operations occurred shortly after the young hatched.

It appears that in some areas of the State College region the Phoebe has reached its maximum breeding population. All existing nest locations (bridge, cabin, etc.) are occupied. Territory conflicts have already occurred between birds nesting on cabins located within sight of each other.

Although no adults have been banded we feel that many of our adult birds are returning to the same nest sites each year. In a few locations the same nests have been used all three years. The behavior patterns of the adults in many locations have remained the same through all our bandings. The clutch size is another reason for our feeling - several locations have consistently had six eggs in the first clutch and five in the second. We hope that another year we will be able to capture and band some of the adults. By banding the adults on the left leg we will be able to tell on sight the returning adults (all nestlings have been banded on the right leg).

We look forward to continuing and expanding the project in the future. The Phoebes can be found if suitable nest sites are searched.

TROUT RUN, PENNSYLVANIA

By Walter K. Bigger

This portion covers a small section of Lycoming, Sullivan and Columbia Counties. Principal mountain areas are Burnett's Ridge, Alleghany Ridge and North Mountain lying generally to the north and east of Williamsport. The names of the streams are descriptive: Big, Short and Long Runs, several Dry Runs and a very Pleasant Stream. There are half a dozen Mill Creeks, of course a Fishing Creek, and Elk Creek, Painter and Wolf Runs in honor of those departed species. In memory of the early settlers there are Joe Gray, Murray, King, Engle, Wallis, Slacks, Martins, Calebs, Greys and Bovier. Among many others there are Big and Little