Breeding Colonies of Four Species of Bats of Indiana

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Introduction

In June 1958 the senior author, James B. Cope, initiated an extensive study of the bats of Indiana. Numerous Earlham students have helped with the project. Special assistance has been given by Bernard Gross, Roger Grothaus, Jay Schnell and Nixon Wilson. Russell Mumford of Purdue University has helped with field work. Special thanks goes to the National Science Foundation grant which made this study possible.

Most of the work was done during the summer, since the main objective was to locate breeding colonies of bats. The summers of 1958 and 1959 were devoted to the search for colonies throughout the state. The summer of 1960 was devoted to rechecks of colonies found previously, and new leads were checked out.

The method used in locating colonies was as follows: A sign was printed saying "Bats Wanted" in bold red letters. This was followed by finer print saying that a scientific study of bats in Indiana was being conducted; that if anyone knew of the location of colonies of bats in barns, schools, churches, other buildings, and caves, it would be appreciated if they would inform the senior author of the location. These signs were posted at places likely to attract attention; such as newspaper offices, stores, telephone poles, grain elevators, gas stations, etc. In each county the agricultural agent was contacted and informed about our study, and his help was solicited. An attempt was made to put short articles in county newspapers. Radio stations were also contacted.

By these methods a total of 275 leads were checked out during the three summers. Of these leads approximately 190 turned out to be good breeding colonies. A number of these colonies turned out to be inaccessible for banding. Many of the leads turned out to be places where they had had two or three bats in the house at one time, but where there was no indication of a breeding colony. These strays nearly always turned out to be males. Breeding colonies seldom have many adult males. It seems likely, therefore, that males establish "bachelor quarters" during the breeding season. These "bachelor quarters" contain only a few individuals. Often a male will return to the same place every evening. Evidently they have definite places to roost during the day and between feeding trips in the evening.

Our success in locating many colonies of bats was due to a number of people wanting to have their bats exterminated. This proved very helpful as it led us to contact exterminating companies for further leads. We found a number of colonies by this method. Our interest, of course, was not in exterminating bats, but we were able to give hints on how to build bats out.

Breeding Colonies

One colony of the Eastern Pipistrell, Pipistrellus subflavus, was found. This colony was located in Jackson County State Forest near (Map # 1) Brownstown, Indiana. On July 30, 1958, a colony of thirty ZOOLOGY



adults was found in a barn in the State Forest. It was estimated that seventy percent of the adults had young. This colony was checked again during the summer of 1959, but the bats were not there. The superintendent of the State Forest had spread axle grease along the beams where the bats had stayed.

This colony was checked again during the summer of 1960. On June

14 no Pipistrells were seen in the barn but a few were seen flying around at dusk. On June 30 six adults and six to ten young were seen.

Four active colonies of the Evening Bat, Nyctecieus humeralis, were found. They were all in southern Indiana, in Clark, Clay, Orange and (Map #1) Washington Counties. These colonies were in rather old homes, one being over 100 years old. The total estimated population of these colonies was 460 bats. In a recent letter, Russell Mumford informed



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us that the Clay County colony was no longer active. One other likely Evening Bat colony was found in White County in the northwestern part of the state. During the summer of 1959 three mummified specimens were found in the attic of a house. No live bats were seen either in 1959 or 1960. Another colony was found just over the state line in Illinois. This colony in Edgar County had approximately 75 bats.



According to our records, the Little Brown Bat, $Myotis \ lucifugus$, and the Big Brown Bat, $Eptesicus \ fuscus$, are by far the commonest colonial bats in Indiana. Forty-one colonies of the Little Brown Bat were found in 25 counties. (Map #2) This species was usually found in churches, houses and occasionally in barns. Many more individuals were found in individual colonies than any other species. One colony, for example, in Martin County, had by actual count 2,510 individuals. For the year 1960 the estimated population for $Myotis \ lucifugus$ was 13,000 individuals.

A total of 142 colonies of the Big Brown Bat was found in 51 counties. (Map #3) The size of these colonies was much smaller than those of the Little Brown. Most had 25 to 50 adults and several had about a dozen. The largest colony had 216 individuals. Big Browns were usually found in barns but occasionally in churches and attics. Our estimated total population for this species in 1960 was 7,500.

One very interesting fact was observed in some colonies. At several locations Big Brown and Little Brown were living in the same building. Usually these were stray Big Browns living with a colony of Little Brown Bats, although sometimes the opposite situation existed. But in seven instances there were two definite breeding colonies of different species occupying the same building.

Future Work

The chief concern of future work will be intensive life history studies of breeding bats. This will include: 1. the distances that bats travel from the home roost when they are foraging at night; 2. determination of the bat's diet; 3. re-checking and banding in colonies; 4. continued search for new colonies.