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# Distribution and Status of the Brazilian Free-tailed Bat (*Tadarida brasiliensis cynocephala*) in Arkansas

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# DISTRIBUTION AND STATUS OF THE BRAZILIAN FREE-TAILED BAT (*TADARIDA BRASILIENSIS CYNOCEPHALA*) IN ARKANSAS

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## ABSTRACT

Investigations of building infestations, mist netting activities, and specimens submitted to the Arkansas Department of Health document the Brazilian free-tailed bat to be found in 14 Arkansas counties. Both overwintering and maternity colonies were examined. Numbers of individuals ranged from one to several thousand.

## INTRODUCTION

Until 1982, the known Arkansas range of the Brazilian free-tailed bat (*Molossidae: Tadarida brasiliensis cynocephala*) was limited to Ashley, Hempstead, and Pulaski counties where individual specimens were found roosting solitarily or in colonies of the evening bat, *Nycticeius humeralis* (Sealander, 1979; Sealander and Price, 1964).

Saughey *et al.* (1983) reported the first known occurrences of maternity colonies, added two new county records extending the northern distribution approximately 40 km, and firmly established the Brazilian free-tailed bat as an Arkansas resident mammal. Steward *et al.* (1986) reported the occurrence of the bat from seven additional southwestern Arkansas counties, and Saughey *et al.* (1988) reported the capture of seven *Tadarida* while investigating the bat fauna of Hot Springs National Park in Garland County.

Heidt *et al.* (1987), reporting on bat rabies in Arkansas, indicated the exact range and status of this bat in Arkansas was unknown. The purpose of this paper is to present the known distribution and status of the Brazilian free-tailed bat in Arkansas.

## METHODS AND MATERIALS

Data for this study were derived from specimens submitted to the Arkansas Department of Health Rabies Laboratory (ADHRL), investigating infestations of buildings and homes, mist netting pools in perennial streams, and consolidating published literature.

## RESULTS AND DISCUSSION

The known distribution of the Brazilian free-tailed bat, *Tadarida brasiliensis cynocephala*, in Arkansas is shown in Figure 1. Annotations for the 14 counties follow:

**ASHLEY COUNTY:** Two free-tailed bats were captured in June and May, 1960 and 1961, respectively, from an attic of a residence in Crossett. Both animals were found in a small maternity colony of evening bats (Sealander and Price, 1964).

**CLARK COUNTY:** Seven individuals have been submitted to the ADHRL. On 3 March 1983 and 24 March 1984, individual males were submitted, and on 2 April 1984, five females together with four big brown bats, *Eptesicus fuscus* (two of each sex) were submitted from a single locality. Submissions of these same two species from Garland County were recorded during the same time period.

**FAULKNER COUNTY:** Saughey *et al.* (1983) reported the occurrence of a large maternity colony in old dormitory building on the campus of Central Baptist College in Conway, and briefly discussed roost characteristics and the significance of this maternity site. Since



Figure 1. Counties with documented occurrence of *Tadarida brasiliensis cynocephala* in Arkansas.

that date, more data have been collected and will be reported elsewhere. This colony, however, numbered between 1500 and 3000 individuals and used the roost throughout the year. Big brown bats were found in association with the free-tailed bats.

**GARLAND COUNTY:** The first occurrence of *Tadarida* in this county was reported by Saughey *et al.* (1983) when they reported a maternity colony of approximately 100 individuals roosting with a maternity colony of the evening bat. This colony was located in the attic of an old two story apartment building in downtown Hot Springs. Since then, several other colonies have been located in the Hot Springs area, numbering up to 5000 individuals. Between 1983 and 1986, 96 specimens have been tested by the ADHRL, with one animal testing positive for rabies (Heidt *et al.*, 1987). Saughey *et al.* (1988) captured seven *Tadarida* (6 males/1 female) in mist nets while conducting a survey of bats in Hot Springs National Park.

**HEMPSTEAD COUNTY:** Sealander (1979) made reference to a male(s) free-tailed having been collected from an evening bat colony in the city of Hope. Other than this brief reference, however, published data as to time of year, number of specimens removed, and collector are unknown.

HOWARD COUNTY: One male bat was collected from a church steeple in Nashville on 8 May 1986.

LAFAYETTE COUNTY: A number of male specimens were extracted from cracks and crevices in the Highway 313 bridge located 13.5 km southeast of Lewisville on 8 October 1983. This small colony was dispersed throughout suitable areas within the structure of the bridge and was found in association with *Eptesicus*.

LITTLE RIVER COUNTY: A colony numbering over 600 individuals was observed in an abandoned two story frame house in the community of Winthrop from November, 1984 through June, 1985. Large quantities of guano and many skeletons and decaying bats indicated that this colony had occupied the house for a long period. The house was utilized throughout the year and *Eptesicus* were found in conjunction with the *Tadarida*. When revisited in October, 1987, the house was badly deteriorated and had been abandoned by the bats.

LONOKE COUNTY: A single male specimen from the city of Lonoke was submitted to the ADHRL in February, 1984.

MILLER COUNTY: Previously reported by Steward *et al.* (1986), a single male specimen was submitted to the ADHRL in September, 1983. Since then, a colony of males were discovered roosting in a bridge spanning the Red River. In addition, one male was taken from a house in Texarkana on 19 June 1986.

OUACHITA COUNTY: One male was collected from Camden in July, 1983.

POLK COUNTY: A temporary colony consisting of 14 *Tadarida* (4 males/10 females) was found roosting with an equal number of *Eptesicus* during October, 1986 in the main pavilion area of Shady Lake Recreation Area on the Ouachita National Forest. Forest Service personnel indicated that the colony had been much larger in late spring and early summer and had diminished toward autumn. The pavilion was an open structure and unheated during winter months rendering it unsuitable for overwintering quarters. Approximately 65 km southwest of the Shady Lake site, Hardisty *et al.* (1987) found an active colony of free-tailed bats in a building at Beaver's Bend State Park in southeastern Oklahoma. This was the first record for this subspecies in Oklahoma.

PULASKI COUNTY: Sealander and Price (1964) reported the capture of an adult female in October, 1962. This animal was captured on the University of Arkansas Medical Sciences Campus and represented the first state record for the species. A number of colonies as well as individual records have been reported from the Little Rock area since that time. In many instances *Eptesicus* have been associated with *Tadarida*.

SEVIER COUNTY: An estimated colony of 1500-2000 individuals was investigated in 1986-87 in the high school gymnasium at Horatio.

#### DISCUSSION

The data reported in this study demonstrate that *Tadarida brasiliensis cynocephala* has become widely distributed in Arkansas. Maternity sites are located in several widespread localities and at least a portion, if not most, of the general population overwinters in the state. Many of the single specimens that have been sent to the ADHRL may actually be indicative of yet undiscovered significant local populations. The species is often found in association with evening and/or big brown bats.

Free-tailed bats apparently utilize a wide variety of structures for roosting sites, as bats were found in bridges and open pavilions in addition to closed buildings (both occupied and unoccupied). In extensive surveys, however, no free-tailed bats have been found in abandoned mines or caves (Heath *et al.*, 1986).

Davis *et al.* (1962) hypothesized that *Tadarida* would overwinter only in a favorable building (which they implied should be heated above freezing) and in an area which rarely received frost. Spennath and LaVal (1974) speculated that in reality, food and temperature were probably both limiting factors and that some *Tadarida* may winter as far north as favorable sites and dependable food supplies are available. Relatively mild winters, the protracted period during the year when plentiful insect prey are available, and the abundance of suitable roost and foraging habitats will probably contribute to the eventual statewide occurrence of this species.

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#### LITERATURE CITED

- DAVIS, R. B., C. F. HERREID II, and H. L. SHORT. 1962. Mexican free-tailed bats in Texas. *Ecol. Monog.* 32:311-346.
- HARDISTY, R. M., W. CAIRE, and K. E. LACEY. 1987. *Tadarida brasiliensis* (Chiroptera: Molossidae) from southeastern Oklahoma. *Proc. Okla. Acad. Sci.* 67:77-79.
- HEATH, D. R., D. A. SAUGEY, and G. A. HEIDT. 1986. Abandoned mine fauna of the Ouachita Mountains, Arkansas: Vertebrate taxa. *Proc. Ark. Acad. Sci.* 40:33-36.
- HEIDT, G. A., D. A. SAUGEY, and S. R. BRADFORD-LUCK. 1987. Reported bat rabies in Arkansas. *Proc. Ark. Acad. Sci.* 41:105-107.
- SAUGEY, D. A., D. R. HEATH, C. EFAW, G. A. HEIDT, and T. E. BEGGS. 1983. First report of Brazilian free-tailed bat maternity colonies in Arkansas. *Proc. Ark. Acad. Sci.* 37:98-99.
- SAUGEY, D. A., D. G. SAUGEY, G. A. HEIDT, and D. R. HEATH. 1988. The bats of Hot Springs National Park, Arkansas. *Proc. Ark. Acad. Sci.* 42:81-83.
- SEALANDER, J. A., JR., 1979. A guide to Arkansas mammals. River Road Press, Conway, AR. 313 pp.
- SEALANDER, J. A., JR., and J. F. PRICE. 1964. Free-tailed bat in Arkansas. *J. Mamm.* 45:152.
- SPENRATH, C. A., and R. K. LaVAL. 1974. An ecological study of a resident population of *Tadarida brasiliensis* in eastern Texas. *Occas. Paper No. 21.* The Museum, Texas Tech Univ. 14 pp.
- STEWART, T. W., V. R. McDANIEL, D. A. SAUGEY, and D. R. ENGLAND. 1986. Elements of bat fauna of southwestern Arkansas. *Proc. Ark. Acad. Sci.* 40:95-96.