Tadarida brasiliensis (Chiroptera: Molossidae) from Southeastern Oklahoma

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During July, August, and October of 1985, a total of 39 *Tadarida brasiliensis* were mist netted at Beavers Bend State Park in McCurtain Co., Oklahoma. This locality is within the postulated range of *T.b. cynocephala* (1) and over 400 km east of the nearest known summer colonies of the western Oklahoma subspecies *T.b. mexicana.* The occurrence of *T.b. cynocephala* in southeastern Oklahoma has been suggested by several workers (1,2, Bryan Glass, personal commun.) but no colony has been reported from that region. The nearest reported occurrences are from Cherokee Co., Texas, 277 km S (2), Hempstead Co., Arkansas, 100 km E (3), and Lincoln Parish, Louisiana, 265 km SE (4).

Average external measurements (mm) of six specimens (two males and four females) were: total length, 101.3 (97-106); length of tail, 33 (32-34); hind foot, 10.0 (8-12); ear, 16.7 (15-18); forearm, 44.5 (42-49); hind foot to tibia ratio, 0.77 (0.56-0.90). Averages of selected cranial measurements (mm) were: greatest length, 16.8 (16.3-17.3); least interorbital breadth, 3.7 (3.5-3.9); zygomatic breadth, 9.9 (9.5-10.3); mandibular length, 12.3 (11.7-12.8); depth of cranium, 6.8 (6.3-7.3). The average weight was 12.6 g (males averaged 12.5 g and females 12.7 g). Adult females (13.8 g) averaged 1.2 g heavier than adult males (12.6 g). Subadult females averaged 11.4 g, 0.7 g less than subadult males (12.1 g). All bats had either full or partially full stomachs.

These measurements and weights do not completely distinguish the southeastern Oklahoma specimens from *T.b. mexicana*, the subspecies which commonly occurs in western Oklahoma. However, most morphological features of these two subspecies broadly overlap (2, 4, 5) and ecological or ethological differences are usually employed to separate the two forms. The western form, *mexicana*, roosts primarily in caves and regularly migrates prior to winter, whereas *cynocephala* prefers to roost in trees or buildings and usually exhibits only short, local, seasonal movements from one roost to another. Apparently, southeastern Oklahoma, like eastern Texas (5) is a region of morphological intergradation between the two subspecies. In behavior, the eastern Oklahoma individuals resemble *T.b. cynocephala* in that they roost in buildings in the summer. It has not yet been determined whether the eastern Oklahoma population migrates or overwinters in the area. Park personnel indicated that bats have been heard in the Forest Heritage Center in December, but the identity of these bats is unknown.

Of the 39 *Tadarida* mist netted, 12 (one subadult, nine adult males; and two adult females) were captured 11 July at the Forest Heritage Center in Beavers Bend State Park. On 1 August, 16 (four subadult and three adult males; seven subadult and two adult females) were captured at the same spot. A female subadult was mist netted 2 August approximately 1.6 km northwest of the Forest Heritage Center on the Mountain Fork River. The remaining ten (five adult males and five adult females) were captured 11 October. Bats have been in the Forest Heritage Center since its construction in 1980. The arrival of bats coincided with the sealing of another building in the park that contained bats.

Fifty-nine percent of the bats were captured between midnight and 0200. Eighteen percent were captured between 2300-2400 and 0200-0400, respectively. The earliest bat caught was at 2142 and the latest was at 0430.

Apparently the bats use the Forest Heritage Center as a maternity roost part of the year. Park personnel report that the bats were most prevalent (strongest odors

and loudest squeaks and scratching) in the building throughout June and early July. All bats captured in August were entering the roost area of the Forest Heritage Center rather than leaving it (mist nets were arranged to completely block the entrance to the roost). In October, two of the ten bats netted were captured coming into the building. Eight were caught in what we interpreted to be a flight corridor or flyway parallel to the side of the building. After the maternity season (which probably extends from May through early July) when the young were capable of flight, the colony for the most part switched to another roost of unknown location. Sections of the subflooring of the roost area were removed in late August and no bats were found. This abandonment is similar to the behavior noted for *T.b. cynocephala* in Louisiana (6).

No information is available concerning the winter activity of this colony. In other portions of its range *T.b. cynocephala* exhibits local seasonal movements but it may also use the same roost during the winter as summer and not move (2, 3, 6). Apparently many individuals in Louisiana change roosts during the year, because the numbers of bats in a roost fluctuate considerably (6). A population of *Tadarida* in eastern Texas contains bats which in part migrate and those which do not. Schmidly (2) suggests that this is evidence for ethological intergradation for the two subspecies. Additional collecting during the winter will determine if the southeastern Oklahoma population migrates.

Beavers Bend State Park is composed of upland pine-hardwood forest and lowland riparian habitats that include the following trees: *Pinus echinata, P. taeda, Juniperus virginiana, Carya* sp., *Ostrya virginiana, Carpinus caroliniana, Quercus alba, Q. stellata, Celtis* sp., *Cercis canadensis, Ilex opaca, Acer* sp., *Nyssa sylvatica, Cornus florida,* and *Fraxinus* sp. Cabins and other buildings in the park may provide roost sites. An outtake (formally the Mountain Fork River) from a hydroelectric station flows about 100 meters east of the Forest Heritage Center, and Broken Bow Reservoir is approximately 2 km north of the building. The area is hilly with occasional rock cliffs along the river. This habitat is mesic and quite different than the more arid regions of western Oklahoma where the *T.b. mexicana* subspecies occurs. The western form is found only during the summer and it roosts in gypsum caves that serve as maternity roosts. The vegetation surrounding the caves is primarily shortgrass prairie.

Other species of bats mist netted with *Tadarida* in flyways near the Forest Heritage Center were 36 *Eptesicus fuscus,* five *Lasiurus borealis,* one *Nycticeius humeralis,* and one *Pipistrellus subflavus.* Captured at the river site were 41 *L. borealis,* one *Myotis keenii,* and one *P. subflavus.* The bat species most often reported occurring in roosts with *cynocephala* is *Nycticeius humeralis* (4, 6). This species is not found in western Oklahoma with *T b. mexicana.*

The southeastern Oklahoma *Tadarida* colony is tentatively referred to the subspecies *cynocephala* based on geographical, habitat and ethological differences as compared to the *Tadarida* of western Oklahoma. This southeastern colony will provide additional material for investigations of possible morphological and ethological intergradation of the two subspecies of *Tadarida.*

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