3-2005

Continued Range Expansion ny the Cave *Myotis*

Shauna R. Marquardt
Fort Hays State University, red_batt@yahoo.com

Jerry R. Choate
Fort Hays State University

Stanley D. Roth Jr.
University of Kansas

CONTINUED RANGE EXPANSION BY THE CAVE MYOTIS -- The cave myotis (*Myotis velifer*) is a cavernicolous bat that ranges northward from Honduras to the southern Great Plains and southwestern United States. Its known range in the United States includes the states of Kansas, Oklahoma, Texas, Arizona, New Mexico, and small, southern portions of Nevada and California (Fitch et al. 1981, Hayward 1970). The cave myotis inhabits caves, mines, and buildings, depending on time of year and specific roost requirements (Fitch et al. 1981, Hayward 1970, Kunz 1973, Sparks and Choate 2000). Before European settlement of areas within the range of the cave myotis, it likely was restricted to caves (Sparks and Choate 2000). However, it has adapted successfully to conditions that exist in roosts other than caves (Sparks and Choate 2000). The most obvious evidence of these adaptations is the formation of colonies during the summer months, when maternity or bachelor colonies are established in buildings, such as barns, and mines (Fitch et al. 1981, Kunz 1973, Sparks and Choate 2000).

In Kansas, the cave myotis is most abundant in the Red Hills of the south-central portion of the state in Barber, Clark, and Comanche counties. Most summer and transient roosts and hibernacula are located in the gypsum caves found in this region (Hayward 1970, Kunz 1973, Sparks and Choate 2000). However, the range in Kansas also includes areas adjacent to the Red Hills where there are no caves (Sparks and Choate 2000). Roost sites in these adjacent areas typically are buildings that are used by reproductive female cave myotis as maternity roosts, although bachelor and transient roosts have been observed (Kunz 1971).

In 1968 and 1971, specimens of cave myotis were collected from Pawnee and Edwards counties, respectively. As of 1971, when the most recent and comprehensive study on the cave myotis in Kansas was published, records (KU 119286-94) from Larned, Pawnee County were the northernmost for this species (Kunz 1971). Specimens collected from the locality in Pawnee County consisted of eight males and one female. Based on the sexual composition of individuals from Larned, Kunz (1971) suggested that males might use more peripheral areas than females.

In 2002, a colony of cave myotis was discovered in a building located on private property 4 mi. S., 1/2 mi. E. Nekoma, Rush County, about 32 km north of the locality in Pawnee County. According to the landowners, bats inhabited the building for two or three years prior to 2002. In May of 2002, a lactating female (MHP 36648) was obtained from the colony and subsequent examinations of the colony revealed that the roost was serving as a maternity site. The implications of this discovery contradict the suggestion of Kunz (1971) in that males apparently are not alone in traveling great distances to find optimal roost sites. It might be that males first locate peripheral roosts before females move in. The Rush County record not only offers new insight into summer movements of the cave myotis in Kansas, but also extends the northern range of the cave myotis and represents the

northernmost locality in Kansas and the United States. Finally, this maternity colony provides evidence that the range of the cave myotis continues to expand.

We thank the landowners (Scott and Diane Seltman), who have allowed access to their property, and Fort Hays State University for funding -- *Shauna R. Marquardt[1], Jerry R. Choate, and Stanley D. Roth, Jr. Sternberg Museum of Natural History and Department of Biological Sciences, Fort Hays State University, Hays, KS 67601 (SRM, JRC), Kansas Biological Survey, University of Kansas, Lawrence, KS 66047 (SDR). [1]E-mail address: red_batt@yahoo.com*

LITERATURE CITED

Fitch, J. H., K. A. Shump, Jr., and A. U. Shump. 1981. *Myotis velifer*. Mammalian Species 149:1-5.

Hayward, B. J. 1970. The natural history of the cave bat *Myotis velifer*. Wri-Sci 1:1-74.

Kunz, T. H. 1971. Ecology of the cave bat, *Myotis velifer*, in south-central Kansas and northwestern Oklahoma. Ph.D. Dissertation, University of Kansas, Lawrence.

Kunz, T. H. 1973. Population studies of the cave bat (*Myotis velifer*): reproduction, growth, and development. Occasional Papers of the University of Kansas Museum of Natural History 15:1-43.

Sparks, D. W., and J. R. Choate. 2000. Distribution, natural history, conservation status, and biogeography of bats in Kansas. Pp. 173-228 *in* Reflections of a Naturalist: papers honoring Professor Eugene D. Fleharty (J. R. Choate, editor). Fort Hays Studies, Special Issue 1.

Received: 1 November 2004 *Accepted: 9 May 2005*

Associate Editor for Mammalogy: Brock R. McMillan