

## GENERAL NOTE

NOTEWORTHY RECORDS OF THE EASTERN PIPISTRELLE,  
*PERIMYOTIS SUBFLAVUS*, AND SILVER-HAIRED BAT,  
*LASIONYCTERIS NOCTIVAGANS*, (CHIROPTERA: VESPERTILIONIDAE)  
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Twenty species of bats have been documented from Big Bend National Park (Easterla 1973; Higginbotham et al. 1999; Higginbotham & Ammerman 2002), however the occurrence of one of these, *Lasiurus borealis*, has been questioned (Easterla 1975). Most netting efforts have been conducted at the lower elevations in the park, but a few investigators have examined the bat species occurring in the Chisos Mountains (Borell & Bryant 1942; Easterla 1973). The Chisos Mountains, within Big Bend National Park (BBNP), range up to 7835 ft (2388m) elevation at the highest peak. The vegetation is dominated by a woodland plant association (pinyon/juniper/oak), however some moist canyons support a cypress/pine/oak association (Wauer 1971). This report documents the occurrence of *Perimyotis (Pipistrellus) subflavus* and *Lasionycteris noctivagans* in a moist woodland canyon of the Chisos Mountains (Brewster County, Texas) and brings the total diversity of bats in Big Bend National Park to 22 species – one of the highest for any national park.

One adult male eastern pipistrelle, *Perimyotis subflavus*, and two adult male silver-haired bats, *Lasionycteris noctivagans*, were collected by mistnet on 22 May 2004. Use of the genus *Perimyotis* instead of *Pipistrellus* follows the recommendation of Menu (1984) and Hooper & Van Den Bussche (2003). Both species were collected at 2097m (6880 ft) elevation over pools in Boot Spring drainage (UTM 13R 0665488E 3235919N) in the Chisos Mountains. These three individuals were the first captured that evening (between 2110 and 2130h). Specimens were deposited in

the Angelo State Natural History Collection (*Perimyotis subflavus*, ASNHC 12899; *Lasionycteris noctivagans*, ASNHC 12897 and 12898) and tissues were deposited in the Angelo State Natural History Frozen Tissue Collection (*P. subflavus*, ASK 6764; *L. noctivagans* ASK6765, 6766). According to Schmidly (2004) these species are uncommon in the Trans-Pecos and have not been documented in BBNP or Brewster County, Texas. Therefore, these specimens represent new records for Brewster County.

*Perimyotis subflavus* is known primarily from the eastern two-thirds of Texas (Schmidly 2004) but Yancey et al. (1995) captured a single male in July 1994 in riparian habitat in Presidio County. This species is known to forage along wooded waterways early in the evening (Fujita & Kunz 1984) and Baker (1956) speculated that this species might use the Rio Grande as a corridor to disperse into Coahuila, Mexico. This explanation could also apply to the unusual records for *P. subflavus* in the Trans-Pecos region of Texas. The species may have dispersed from the Rio Grande northward into riparian zones at relatively high elevations. Yancey (1997) did not report the specific elevation at which *P. subflavus* was captured, however he stated that the site was in the foothills of the Chinati Mountains close to, but not above, 1500m. The capture of *P. subflavus* in the Chisos Mountains at 2097m is the highest reported elevation for this species.

Although, *Pipistrellus hesperus* (western pipistrelle) and *P. subflavus* generally are thought to be allopatric (Fujita & Kunz 1984) or to partition habitat (Baker 1956), both species were captured at the same site on the same night. This report agrees with Yancey et al. (1995) and Dowler et al. (1992) who also found these two species together. Based on work in Coahuila, Baker (1956) suggested that *P. subflavus* was restricted to large trees (pecan, cypress, and willow) along permanent streams while *P. hesperus* lived in the lowland desert and mountainous regions. Fujita & Kunz (1984) reported that solitary individuals of *P. subflavus* are known to roost in trees in summer, but more commonly roost in

caves and man-made structures, especially during hibernation. In contrast, *P. hesperus* roosts in cracks and crevices of canyon walls (Schmidly 2004). Both roosting habitats are available in Boot Canyon. In fact, it might be ecologically important that *P. subflavus* was captured near a relict population of Arizona cypress (*Cupressus arizonica*).

The discovery of two male *L. noctivagans* at high elevation in the Chisos Mountains in Brewster County was not unexpected. In fact, Easterla (1973) predicted that *Lasionycteris* might occur in BBNP and listed it as a hypothetical species. Male silver-haired bats have also been reported in west Texas in spring and fall (Terrell and Presidio Counties; Schmidly 1991; Dowler et al. 1992; Ammerman et al. 2002) but not in Brewster County. It is difficult to determine if the *Lasionycteris* specimens that were captured in late May in Brewster County are migrants or residents. *Lasionycteris* is generally thought to be absent from Texas in the summer but one mid-summer record in the Guadalupe Mountains (Schmidly 2004) to the north of BBNP suggests that individuals might spend the summer months in the Chisos Mountains as they do in mountains of the western United States (Cryan 2003). Additionally, Cryan (2003) reported that female silver-haired bats are generally absent from mountainous regions of western North America during summer so the presence of males in the Chisos Mountains of west Texas is consistent with this pattern. Contrary to previous reports that this species flies late (Kunz 1982), both males were captured early in the evening. Adams (2003) and Whitaker et al. (1977) also have observed an early activity pattern for *L. noctivagans*.

Along with *P. subflavus* and *L. noctivagans*, a total of 35 bats of 10 species were captured at the same site on the same night. Other bats captured were (number of males/ number of females): *Eptesicus fuscus* (8/0), *Myotis californicus* (2/1), *Myotis thysanodes* (3/0), *Myotis volans* (1/2), *Antrozous pallidus* (5/0), *Corynorhinus townsendii* (0/6), *Lasiurus cinereus* (3/1), and *Pipistrellus hesperus*

(1/0). Most individuals (25 out of 35) were male. The same locality was sampled previously on 23 May 1999 and 29 July 2002 and five species (16 individuals) were captured. The majority of these captures also were males (except for two *C. townsendii* and two *M. volans* females). A male sex bias also was observed by Easterla (1973) at the same site during his work between 1967-1971. Easterla documented 13 species at Boot Spring and 80% (124/155) of the bats of known sex were males. Cryan (2003) showed that within species of tree bats (*Lasiurus* and *Lasionycteris*), sexes segregate and males occupy the habitats at higher elevations in the summer. This study supports this pattern and suggests that it may apply more generally to other bat species. The significance of this phenomenon remains unknown, but likely reflects the physiological requirements of female bats during reproduction (Racey & Entwistle 2000).

The documentation of *P. subflavus* and *L. noctivagans* from the Chisos Mountains of west Texas is consistent with the discovery that other “eastern” bats (such as *Nycticeius humeralis*, *Lasiurus seminolus*) appear to be moving westward (Yancey et al. 1995; Dowler et al. 1999; Brant & Dowler 2000). Although it could be argued that these apparent distributional shifts are the result of an increase in survey effort in the western portion of the state, this may not provide an adequate explanation for the records reported herein. The same site was sampled six times by Easterla (1973) over the course of five years (during the summer months), and three times by the author over the last six years, before these species were discovered. An alternative explanation, and one that has been proposed to explain some recent distribution changes in Texas and Costa Rica (Brant & Dowler 2000; LaVal 2004), is that global climate change is driving the shift. Scheel et al. (1996) modeled environmental changes in Texas that would accompany global warming and one of their predictions was that tree-roosting bats would expand into more western habitats. This current study supports this hypothesized trend; the extent of which will only be understood with additional inventory and monitoring efforts.

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