



OCCASIONAL PAPERS

Museum of Texas Tech University

Number 368

27 August 2020

NOTEWORTHY RECORDS OF 14 BAT SPECIES IN TEXAS INCLUDING THE FIRST RECORD OF *LEPTONYCTERIS YERBABUENAE* AND THE SECOND RECORD OF *MYOTIS OCCULTUS*

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ABSTRACT

Bats submitted to the Texas Department of State Health Services (DSHS) for rabies testing often provide insight to changes in species distributions. Between 2012 and 2019, more than 16,000 bats were received by DSHS in Austin, Texas, identified morphologically, and tested for rabies. Approximately 10,900 bats tested negative, and a subset of these were then archived at the Angelo State Natural History Collections in San Angelo, Texas. A total of 175 specimens reported herein substantiate 92 new county records (including 11 instances of range extensions for five species) including one phyllostomid, 12 vespertilionid, and one molossid species. Two significant findings include a new species of bat for the state (*Leptonycteris yerbabuena*) and the second record of *Myotis occultus* in more than 100 years. The majority of the new records were for *Nycticeius humeralis* with 38 county records supported by vouchered specimens. Though not collected by traditional methods, these records revise our understanding of chiropteran distributional patterns within the state of Texas.

Key words: Chiroptera, county records, distribution, *Leptonycteris yerbabuena*, museums, *Myotis occultus*, *Nycticeius humeralis*, Texas

INTRODUCTION

Documenting the distribution of species, especially of bats, traditionally has been accomplished through collecting efforts by researchers affiliated with universities, state agencies, and other scientific institutions as part of specific research projects (Ammerman et al. 2012). Compared to such targeted collecting efforts, the salvaging of bat specimens is less typical because of their small body size, nocturnal activity patterns, and volant nature. However, specimens submitted by the public to the Texas Department of State Health

Services (DSHS) for rabies testing provide an excellent sampling source for discovering potential county records, determining changes in species distributions, and providing additional data related to a variety of questions pertaining to bat species (Tipps et al. 2011; Demere et al. 2012; Ammerman et al. 2019; Decker et al. 2020).

Although data associated with salvaged specimens (e.g., collection date, locality), typically are less

detailed than data obtained from targeted collecting efforts, these vouchers nevertheless can document species occurrence in the counties from which they were collected and can clarify our understanding of species distributions. The purpose of this study was to evaluate specimens submitted for rabies testing from 2012

to 2019 to the Austin, Texas, DSHS for noteworthy records of occurrence. While conducting this study, two important records that were submitted to the El Paso, Texas, DSHS—a *Myotis occultus* from 2011 and a *Leptonycteris yerbabuena* from 2010—also were discovered and are reported herein.

METHODS

Bat carcasses examined had been submitted to the DSHS rabies laboratory in Austin, Texas, from 2012 to 2019. Although bats from across the state can be submitted to this facility for testing, bats from localities in central Texas were more commonly submitted. Additionally, two records included in this report were submitted to the DSHS rabies laboratory in El Paso, Texas. All bats had been tested for the presence of rabies virus ($n = 16,193$) with many testing negative ($n = 10,875$). A subset of these rabies-negative bats were then archived within a natural history museum and evaluated in this study for status as new county records. Records of Yellow Bats (*Dasypterus* sp.) are reported elsewhere (Decker et al. 2020) and Brazilian Free-tailed Bats (*Tadarida brasiliensis*) were not considered in this study. Species documented in a county for the first time were identified by referencing record lists for all bats from *Bats of Texas* (Ammerman et al. 2012, www.batsoftexas.com), *The Mammals of Texas* (Schmidly and Bradley 2016), and additional records in recent publications (Demere et al. 2012, 2017; Bradley et al. 2014; Garcia et al. 2016; Halsey et al. 2018). In some previous distributional accounts (Schmidly 1991, 2004; Schmidly and Bradley 2016), records labeled as “literature” or “DSHS database-based” generally lacked a voucher archived in a natural history museum. In this study, county records were considered novel if no voucher existed in a museum to verify species identification.

Specimens were prepared as skins, skulls, skeletons, or fluid specimens fixed in 10% formalin then stored in 70% ethanol. During specimen preparation, tissue samples (heart, kidney, liver, and/or muscle) were

taken unless specimens were severely degraded. When specimen quality allowed, standard measurements, sex, age, and other data were taken at time of preparation. Date of receipt at DSHS (after actual date of collection, which was unknown but generally one to three days prior to receipt) and county of collection were recorded. Locality information was very general (i.e., only to the county level) because most specimens were found on private property, reported to animal control, then submitted to DSHS whose policy is to retain that specific data as per the Health Insurance Portability and Accountability Act of 1996 (HIPAA). Most vouchers were cataloged and deposited at the Angelo State Natural History Collections (ASNHC), and one voucher (*Leptonycteris yerbabuena*) is archived at the University of Texas at El Paso (UTEP) Biodiversity Collections. Taxonomic order and scientific names of specimens herein follow Wilson and Reeder (2005), except where noted due to a change in generic status. Common names follow those in Bradley et al. (2014).

The identification of one *Myotis* specimen was confirmed using genetic data (mitochondrial cytochrome-*b*, or *cyt-b*, gene sequence). DNA was extracted from liver tissue using DNeasy Blood and Tissue Kit (Qiagen Inc., Valencia, California) protocols. Amplification and sequencing of the *cyt-b* gene was performed using standard PCR techniques and published primers (Gludg, Palumbi et al. 1991; HCB, Piaggio and Perkins 2005). The sequence was compared to the GenBank database using a BLAST search to identify sequences with the highest similarity score and subsequently was submitted to GenBank for publication.

SPECIES ACCOUNTS

Family Phyllostomidae

Leptonycteris yerbabuenae Martínez and Villa-R,
1940

Lesser Long-nosed Bat

The Lesser Long-nosed Bat is a medium to large bat that feeds on nectar, pollen, and fruit and is a pollinator of agave species (Fleming and Nassar 2002). *Leptonycteris yerbabuenae* has a southwestern range previously limited to California, Arizona, and New Mexico within the United States (Cole and Wilson 2006). We examined one specimen that demonstrates a range extension eastward of more than 150 km and represents the first record in the state of Texas. Although this particular specimen was received by DSHS in El Paso 10 years ago and is available in public databases, it has never been officially reported as a new record for the state. Because of the migratory behavior of this species and its occurrence in New Mexico and Arizona (Hoyt et al. 1994), we expect that this individual was a vagrant and the occurrence does not indicate an established population in Texas. However, this record increases the number of documented bat species for the state of Texas to 34 (Ammerman et al. 2012).

Specimen examined (1).—El Paso County (1): adult female, 19 October 2010 (UTEP 8480). Forearm measured 54 mm and total length was 72 mm.

Family Molossidae

Nyctinomops macrotis (Gray, 1839)

Big Free-tailed Bat

The Big Free-tailed Bat is uncommon and has a poorly known distribution in the state of Texas (Ammerman et al. 2012). Specimens primarily have been collected between March and November and are dominated by females during the summer. Presumably, males maintain a more southerly distribution in Mexico (Ammerman et al. 2012). The following specimen adds to our knowledge of this species in the panhandle region of Texas.

Specimen examined (1).—Bailey County (1): male, 23 October 2018 (ASNHC 19107).

Family Vespertilionidae

Eptesicus fuscus (Palisot de Beauvois, 1796)

Big Brown Bat

The Big Brown Bat is widely distributed across North America (Hall 1981). This species is found year-round in Texas, and its range in the state consists of *E. fuscus fuscus* in northern and eastern Texas and *E. fuscus pallidus* in far western Texas (Ammerman et al. 2012). This species has yet to be reported in west-central Texas. Occurrences reported for the following 10 counties were all novel records except for Lubbock County (previously non-vouchered DSHS records). A record in Victoria County represents the southernmost record for this species within Texas.

Specimens examined (12).—Anderson County (1): male, 23 August 2018 (ASNHC 19297). Caldwell County (1): female, 25 October 2016 (ASNHC 17839). Cherokee County (1): female, 16 January 2019 (ASNHC 19104). Grimes County (1): unknown sex, 6 August 2016 (ASNHC 17838). Hood County (1): female, 8 December 2015 (ASNHC 18829). Houston County (3): female, 5 December 2013 (ASNHC 19338); male, 18 March 2014 (ASNHC 19351); male, 26 August 2014 (ASNHC 19345). Lubbock County (1): male, 19 October 2017 (ASNHC 19096). Sherman County (1): female, 22 October 2012 (ASNHC 19620). Travis County (1): male, 30 September 2015 (ASNHC 18827). Victoria County (1): unknown sex, 2 August 2019 (ASNHC 20010).

Lasiurus borealis (Müller, 1776)

Eastern Red Bat

The Eastern Red Bat is widely distributed throughout Texas and is usually common in the eastern portion of the state (Schmidly and Bradley 2016) due to migration patterns and the availability of appropriate habitats (abundant trees or forest) to accommodate its roosting and foraging needs (Ammerman et al. 2012). Herein we report records from nine counties. Four individuals from Freestone County were a family group that was genotyped as part of a study on multiple paternity in *L. borealis* (Ammerman et al. 2019). Records in the DSHS databases existed for Coryell, Ector, Freestone,

Henderson, and Washington counties but voucher specimens were lacking. A non-vouchered literature account (Wiseman et al. 1962) existed previously for Wilson County. Vouchered records from the western region of the state include Ector and Hockley counties.

Specimens examined (22).—Coryell County (7): male, 25 June 2015 (ASNHC 19443); female, 26 June 2015 (ASNHC 19451); male, 14 September 2017 (ASNHC 19307); two females, 13 July 2018 (ASNHC 19251, ASNHC 19252); unknown sex, 17 July 2018 (ASNHC 20008); female, 18 July 2018 (ASNHC 19253). Ector County (1): female, 10 April 2013 (ASNHC 19069). Freestone County (4): adult female, 20 June 2015 (ASNHC 18280); juvenile male, 20 June 2015 (ASNHC 18279); two juveniles of unknown sex, 20 June 2015 (ASNHC 18281, ASNHC 18282). Henderson County (1): male, 7 July 2017 (ASNHC 19306). Hockley County (1): female, 5 October 2015 (ASNHC 19452). Hood County (4): female, 15 May 2015 (ASNHC 18234); female, 7 June 2016 (ASNHC 19309); female, 25 May 2017 (ASNHC 19308); female, 29 June 2018 (ASNHC 19248). San Augustine County (1): male, 22 September 2016 (ASNHC 19312). Washington County (2): unknown sex, 15 May 2018 (ASNHC 20007); male, 13 July 2018 (ASNHC 19243). Wilson County (1): female, 30 June 2016 (ASNHC 19311).

***Aeorestes (Lasiurus) cinereus* (Palisot de Beauvois, 1796)**

Hoary Bat

The Hoary Bat recently has undergone a change in generic status. Formerly assigned to the genus *Lasiurus*, it has been reassigned to *Aeorestes* (Baird et al. 2015, 2017). *Aeorestes cinereus* is found statewide, although observation of migratory habits indicate that both sexes are rarer in the summer (Hayes et al. 2015). During summer months, males are more common in montane regions of the western United States and females are more common in northern regions (Hayes et al. 2015). Hoary Bats generally roost in trees and are a forest-dwelling species (Schmidly and Bradley 2016). New records of *A. cinereus* were documented from seven counties.

Specimens examined (7).—Carson County (1): male, 8 October 2019 (ASNHC 20012). Castro

County (1): female, 5 October 2017 (ASNHC 20011). Hale County (1): female, 27 March 2018 (ASNHC 19962). Hood County (1): female, 20 September 2017 (ASNHC 19299). Jack County (1): male, 1 October 2018 (ASNHC 19963). Lavaca County (1): female, 15 April 2016 (ASNHC 17841). Webb County (1): female, 9 March 2019 (ASNHC 19961).

***Nycticeius humeralis* (Rafinesque, 1818)**

Evening Bat

The Evening Bat generally is a forest-dwelling species (Schmidly 2004), and its current known distribution in the state is in the eastern and southern regions of Texas. However, outlying records suggest that the species is expanding westward into counties such as Val Verde, Presidio, and Tom Green (Dowler et al. 1999; Ammerman et al. 2012). Recent updates confirm a westward expansion of the species (Andersen et al. 2017); occurrences have been documented in much of Oklahoma (western-most records include Kiowa and Major counties; Braun et al. 2020) and into New Mexico (Andersen et al. 2017). Herein, thirty-eight new county occurrences help define the distribution of *N. humeralis* within western Texas and substantiate the current range in eastern Texas with vouchered records. The following counties represent range extensions from the distribution reported in Ammerman et al. (2012) and are consistent with westward expansion of this species: El Paso, Knox, Lubbock, Midland, Ochiltree, and Wichita (Fig. 1). The following counties were previously known only from their presence in DSHS databases: Bell, Guadalupe, Henderson, Karnes, Midland, and Smith. Previously, Bee County was considered a non-vouchered literature account (Blair 1952; Ammerman et al. 2012).

Specimens examined (99).—Bastrop County (12): three females, 14 May 2012 (ASNHC 19558, ASNHC 19603, ASNHC 19604); male, 14 May 2012 (ASNHC 19601); female, 15 October 2012 (ASNHC 19602); female, 29 June 2015 (ASNHC 19428); male, 3 July 2017 (ASNHC 19271); male, 19 July 2017 (ASNHC 19270); male, 24 August 2017 (ASNHC 19272); two males, 4 June 2018 (ASNHC 19264, ASNHC 19265); female, 3 July 2018 (ASNHC 19970). Bee County (3): male, 20 January 2016 (ASNHC 19287); male, 20 September 2016 (ASNHC 19288); male, 9 December 2016 (ASNHC 19131). Bell County (2): male, 1

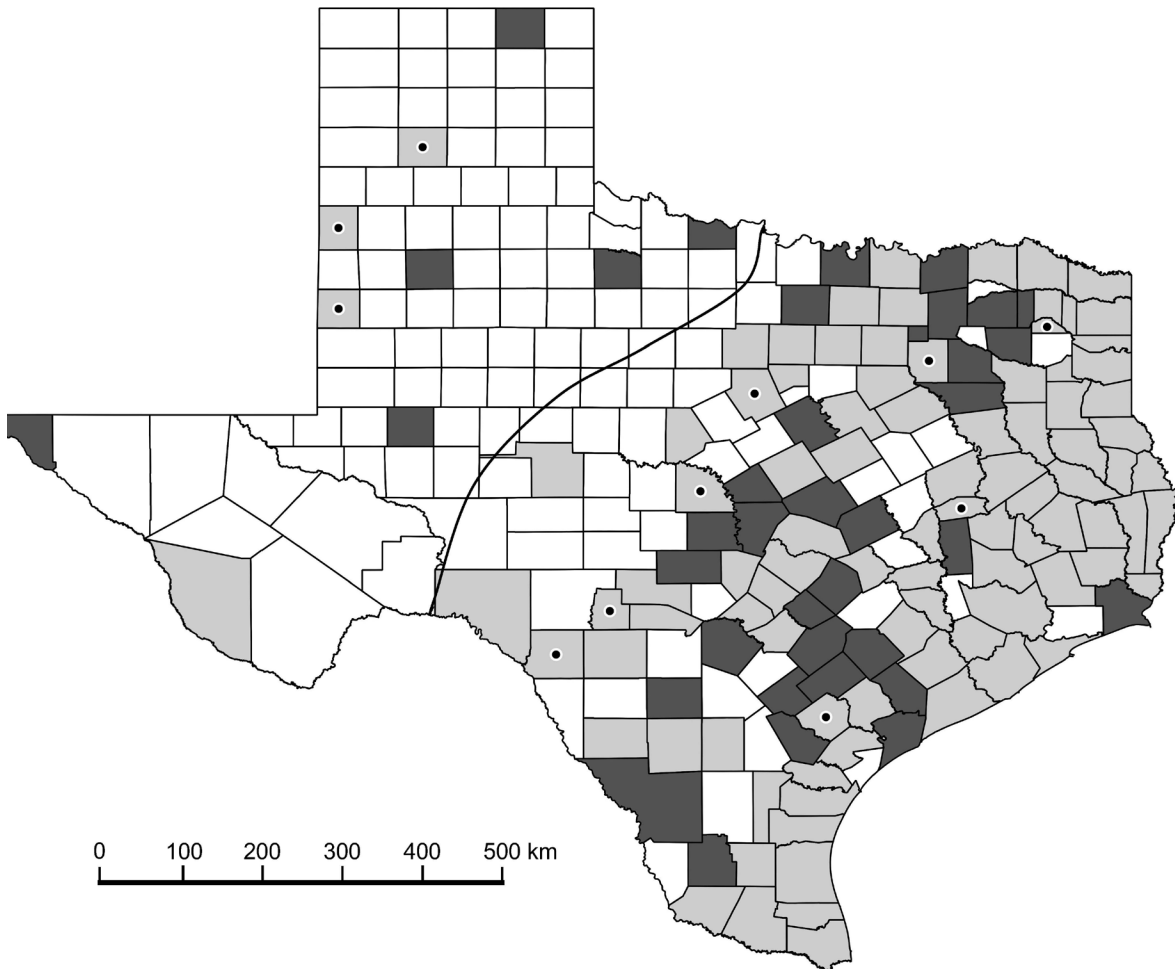


Figure 1. Distribution of *Nycticeius humeralis* in Texas. Previous county records are in light gray and new county records from this study are in dark gray. Circles within a county indicate non-vouchered records (either occurrences in the literature or historic DSHS databases). The black line indicates the previous extent of the species' distribution as depicted in Ammerman et al. (2012).

February 2013 (ASNHC 19605); female, 20 October 2015 (ASNHC 19455). Bexar County (7): female, 21 October 2014 (ASNHC 19435); male, 28 December 2015 (ASNHC 19431); male, 22 July 2016 (ASNHC 19276); two females, 6 June 2017 (ASNHC 19278, ASNHC 19280); two males, 6 June 2017 (ASNHC 19277, ASNHC 19279). Bosque County (1): male, 6 August 2019 (ASNHC 19875). Burnet County (13): male, 27 June 2012 (ASNHC 19607); male, 29 June 2012 (ASNHC 19606); two individuals of unknown sex, 2 June 2015 (ASNHC 19416, ASNHC 19430); female, 24 November 2015 (ASNHC 19445); four females, 23 June 2016 (ASNHC 19285, ASNHC 19332,

ASNHC 19333, ASNHC 19334); male, 23 June 2016 (ASNHC 19286); male, 26 January 2017 (ASNHC 19284); female, 23 January 2018 (ASNHC 19254); female, 12 June 2018 (ASNHC 19255). Caldwell County (2): male, 5 September 2012 (ASNHC 19608); female, 6 June 2016 (ASNHC 19292). Calhoun County (1): female, 19 June 2012 (ASNHC 19609). Cooke County (1): male, 28 March 2018 (ASNHC 19256). DeWitt County (3): male, 16 August 2012 (ASNHC 19610); male, 15 July 2015 (ASNHC 19418); male, 4 August 2015 (ASNHC 19423). El Paso County (1): male, 13 August 2012 (ASNHC 15837). Fannin County (1): female, 12 June 2015 (ASNHC 19461). Franklin

County (1): male, 9 November 2017 (ASNHC 19269). Frio County (1): male, 12 April 2016 (ASNHC 19291). Gillespie County (1): male, 25 February 2016 (ASNHC 19290). Gonzales County (1): male, 14 January 2014 (ASNHC 19425). Grimes County (1): female, 7 June 2017 (ASNHC 19267). Henderson County (3): male, 14 July 2016 (ASNHC 19295); female, 30 November 2018 (ASNHC 19262); male, 30 November 2018 (ASNHC 19263). Hopkins County (1): male, 14 June 2012 (ASNHC 19611). Hunt County (2): male, 17 July 2015 (ASNHC 19436); male, 19 July 2018 (ASNHC 19260). Jackson County (2): female, 1 May 2012 (ASNHC 19612); male, 11 March 2014 (ASNHC 19427). Jefferson County (2): male, 4 January 2013 (ASNHC 19613); female, 20 April 2016 (ASNHC 19293). Jim Hogg County (1): male, 21 June 2016 (ASNHC 19294). Karnes County (1): male, 28 September 2012 (ASNHC 19614). Knox County (1): female, 1 May 2018 (ASNHC 19257). Lampasas County (2): female, 28 May 2014 (ASNHC 19442); female, 8 January 2015 (ASNHC 19426). Lavaca County (4): male, 17 July 2012 (ASNHC 19616); male, 29 January 2013 (ASNHC 19617); unknown sex, 26 June 2015 (ASNHC 19429); male, 16 November 2016 (ASNHC 19241). Llano County (4): unknown sex, 22 May 2012 (ASNHC 19615); female, 6 March 2015 (ASNHC 19419); male, 9 December 2015 (ASNHC 19414); male, 31 May 2018 (ASNHC 19258). Lubbock County (2): male, 29 February 2012 (ASNHC 19618); male, 17 October 2017 (ASNHC 19691). Midland County (1): unknown sex, 19 November 2014 (ASNHC 19422). Milam County (1): male, 25 July 2017 (ASNHC 19268). Ochiltree County (1): male, 14 August 2019 (ASNHC 19893). Rockwall County (1): male, 30 July 2014 (ASNHC 19437). Van Zandt County (1): female, 26 November 2015 (ASNHC 19432). Webb County (7): female, 10 July 2015 (ASNHC 19424); two males, 16 July 2015 (ASNHC 19415, ASNHC 19417); male, 15 March 2016 (ASNHC 19622); male, 29 March 2017 (ASNHC 19273); male, 14 May 2017 (ASNHC 19274); male, 14 July 2017 (ASNHC 19275). Wichita County (7): male, 9 August 2014 (ASNHC 19421); male, 13 July 2016 (ASNHC 19282); two males, 21 December 2016 (ASNHC 19239, ASNHC 19240); female, 22 June 2017 (ASNHC 19281); male, 22 August 2017 (ASNHC 19283); male, 7 September 2018 (ASNHC 19261). Wise County (1): unknown sex, 7 August 2014 (ASNHC 19460). Wood County (2): female, 17

March 2014 (ASNHC 19434); male, 17 January 2016 (ASNHC 19289).

***Perimyotis (Pipistrellus) subflavus* (F. Cuvier, 1832)**
American Perimyotis

The American Perimyotis is a year-round resident of Texas with a wide distribution, but it is most common in the eastern half of the state (Ammerman et al. 2012). Recent records from Hutchinson, Moore, Potter, and Collingsworth counties (Demere et al. 2012, 2017) further support its distribution in the western regions of Texas and into the Panhandle. Westward expansion of the species in North America is supported by records in Nebraska (Johnson and Geluso 2017) and reproductive individuals in north-central Colorado (Adams et al. 2018). Eleven new county records of *P. subflavus* are reported herein. These documented occurrences further support distribution of the species in West Texas (Ector and Midland counties) and the Panhandle (Randall County). Twelve individuals of *Perimyotis* were captured in Randall County at Palo Duro Canyon by Riedle and Matlack (2013), but we are not aware of any vouchers for the county prior to those reported herein.

Specimens examined (15).—Collin County (2): female, 12 August 2014 (ASNHC 19438); female, 26 August 2014 (ASNHC 19446). Coryell County (1): female, 26 March 2014 (ASNHC 19457). Ector County (1): female, 21 September 2017 (ASNHC 19317). Henderson County (1): male, 8 August 2017 (ASNHC 19318). Lampasas County (1): unknown sex, 9 April 2015 (ASNHC 19459). Lavaca County (2): female, 15 August 2014 (ASNHC 19458); female, 18 July 2017 (ASNHC 19319). McLennan County (1): male, 25 August 2018 (ASNHC 19447). Midland County (1): female, 8 November 2016 (ASNHC 19313). Randall County (2): female, 31 August 2017 (ASNHC 19316); male, 20 October 2017 (ASNHC 19315). Washington County (1): male, 17 March 2016 (ASNHC 19314). Wharton County (2): female, 24 April 2014 (ASNHC 19454); female, 15 October 2019 (ASNHC 19949).

***Corynorhinus rafinesquii* (Lesson, 1827)**
Rafinesque's Big-eared Bat

Rafinesque's Big-eared Bat (*Corynorhinus rafinesquii*) is morphologically similar to Townsend's Big-

eared Bat (*Corynorhinus townsendii*), but they do not occur in sympatry (Ammerman et al. 2012); *Corynorhinus rafinesquii* is found only in the extreme eastern counties of Texas (this being the westernmost boundary of its distribution; Demere et al. 2017). *Corynorhinus rafinesquii* is listed as threatened in the state of Texas. A single record reported herein lies within the known range of the species.

Specimen examined (1).—Cass County (1): unknown sex, 13 July 2012 (ASNHC 20014).

***Antrozous pallidus* (Le Conte, 1856)**
Pallid Bat

The Pallid Bat is common in the western half of Texas. Two subspecies, *A. pallidus bunkeri* and *A. pallidus pallidus*, are recognized with the former in the Texas Panhandle and the latter occupying the Trans-Pecos region to the southern tip of the state (Ammerman et al. 2012). The records reported herein are from Webb County, which was formerly a non-vouchered DSHS occurrence record.

Specimens examined (2).—Webb County (2): unknown sex, 24 August 2012 (ASNHC 20013); male, 23 October 2015 (ASNHC 19453).

***Lasiorycteris noctivagans* (Le Conte, 1831)**
Silver-haired Bat

The Silver-haired Bat can be found statewide, but it is intermittently or erratically distributed (Ammerman et al. 2012). Relatively few vouchered records exist for *L. noctivagans*; of 254 Texas counties, only 26 have representative vouchers. In this study, we report the occurrence of *L. noctivagans* in five additional counties. The specimen in Randall County replaces the non-vouchered record in the DSHS database (Ammerman et al. 2012). Notably, Riedle and Matlack (2013) reported the capture of several *L. noctivagans* in Palo Duro Canyon in Randall County but we are not aware of any vouchers from that locality.

Specimens examined (5).—Burnet County (1): female, 19 October 2018 (ASNHC 19108). Gray County (1): male, 22 October 2019 (ASNHC 19950). Moore County (1): female, 13 October 2016 (ASNHC 19636). Randall County (1): male, 31 October 2018 (ASNHC

19110). Tarrant County (1): male, 5 November 2018 (ASNHC 19298).

***Myotis austroriparius* (Rhoads, 1897)**
Southeastern Myotis

The Southeastern Myotis is found in the southeastern United States with the westernmost part of its range extending into East Texas (Ammerman et al. 2012). One record exists as an outlier in centrally-located Comanche County (Higginbotham and Jones 2001). We report two vouchers from counties that are within the known range of *M. austroriparius*.

Specimens examined (2).—Cherokee County (1): male, 22 September 2015 (ASNHC 19118). Gregg County (1): female, 26 October 2016 (ASNHC 19637).

***Myotis californicus* (Audubon and Bachman, 1842)**
California Myotis

The California Myotis occurs in the western United States and Mexico, and in Texas it is found in the far western counties of the state. A record in the literature (Riedle and Matlack 2013) exists as an outlier in the Panhandle (Randall County), and one non-vouchered DSHS record exists in far southern Texas (Hidalgo County). We report a specimen record from Midland County, outside of the current known range of the species. This specimen represents an extension of more than 200 km east of the established distribution.

Specimen examined (1).—Midland County (1): female, 16 December 2014 (ASNHC 19439).

***Myotis occultus* Hollister, 1909**
Southwestern Little Brown Myotis

The Southwestern Little Brown Myotis in Texas is known only from a single record (NMNH 21083/36121, Hudspeth County, June 1893). Its distribution is centered in the southwestern United States and extends southward into Mexico (Reid 2006). We report (and confirm by molecular analysis) the second record of *M. occultus* in the state in more than 118 years. A *cyt-b* gene fragment (1,004 bp) from this individual was sequenced (GenBank accession number MT253730) and compared to GenBank using BLAST.

The closest match (96%) was to GenBank accession number KC747696 for a *Myotis occultus* from Catron County, New Mexico (voucher housed at the Museum of Southwestern Biology; MSB85915). This represents a southeastern range extension of approximately 250 km.

Specimen examined (1).—El Paso County (1): female, 31 August 2011 (ASNHC 14843).

***Myotis velifer* (J.A. Allen, 1890)**
Cave Myotis

The Cave Myotis is the largest of all species within the genus *Myotis* found in Texas, and it is found year-round in western and central Texas into the Panhandle (Ammerman et al. 2012). We report new occurrences of this bat in four counties. With several records in counties of northeastern Texas, the Cave

Myotis may be exhibiting a permanent eastward extension of its distribution. The record in Collin County is approximately 150 km northeast of the species' reported distribution (Ammerman et al. 2012), but it is in a county adjacent to another disparate record in Dallas County (Davis 1974). Furthermore, a specimen from Tarrant County is more than 100 km north and east of the current distribution (Ammerman et al. 2012). Previously, DSHS records existed for Guadalupe County but there was no specimen voucher.

Specimens examined (6).—Cameron County (1): male, 12 July 2017 (ASNHC 18352). Collin County (1): male, 25 September 2019 (ASNHC 19876). Guadalupe County (3): male, 1 September 2015 (ASNHC 19441); male, 20 April 2016 (ASNHC 18411); male, 30 October 2018 (ASNHC 19305). Tarrant County (1): female, 24 August 2015 (ASNHC 19444).

ACKNOWLEDGMENTS

The authors thank Bonny C. Mayes, Kenneth A. Waldrup, and others at the Texas Department of State Health Services and Lois Balin with Texas Parks and Wildlife for preliminary identification and retention of specimens and for help in coordinating the transfer of these specimens. We thank Arthur H. Harris and Vicky M. Zhuang at the University of Texas at El Paso

Biodiversity Collections for a specimen loan of the *Leptonycteris yerbabuena* voucher for identification confirmation. We thank Candace A. Frerich and T. Marie Tipps for their assistance in the molecular lab. Finally, we thank the student volunteers and workers of the Angelo State Natural History Collections for help in processing specimens for archival.

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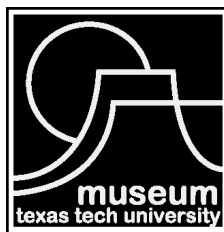
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Series Editor: Robert D. Bradley
Production Editor: Lisa Bradley
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ISSN 0149-175X

Museum of Texas Tech University, Lubbock, TX 79409-3191