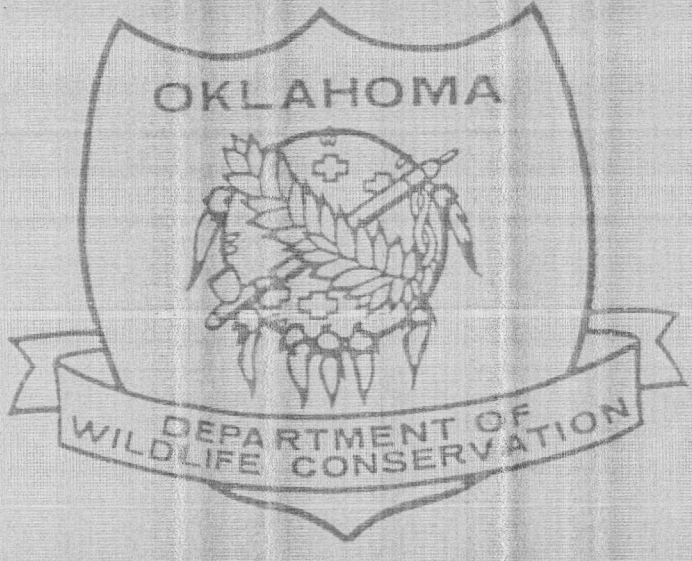
W 2800.7 F293
no. T-23-P-1 9/04-12/07 c.1

FINAL PERFORMANCE REPORT



FEDERAL AID GRANT NO. T-23-P-1

SURVEY OF MAMMALS OF SPECIAL CONCERN IN WESTERN OKLAHOMA

OKLAHOMA DEPARTMENT OF WILDLIFE CONSERVATION

September 15, 2004 through December 31, 2007

FINAL PERFORMANCE REPORT

State: Oklahoma **Grant Number:** T-23-P-1

Grant Program: State Wildlife Grants

Grant Title: Survey of mammals of special concern in western Oklahoma

Grant Period: September 15, 2004 – December 31, 2007

Project Leader: David M. Leslie

Abstract:
This report summarizes Three years of small-mammal sampling in fourteen Wildlife Management Areas (WMAs) in western Oklahoma conducted from 2004 through 2007. We surveyed all fourteen management areas for 3 nights each year resulting in 50,400 trap nights and 6,879 captures of small mammals. To maximize surveying the diversity of taxa over the three year study, we varied the time of year each WMA was surveyed between March and August. This project resulted in new county records for twenty-four species of mammals: including, for example, *Scalopus aquaticus* (Eastern Mole) from Texas County, *Tadarida brasiliensis* (Brazilian Free-tailed Bat) from Tillman County, *Lasiurus borealis* (Eastern Red Bat) from Caddo and Ellis Counties, *Perimyotis subflavus* (Eastern Pipistrelle) from Dewey County, *Corynorhinus townsendii* (Townsend's Big-eared Bat) from Beckham County. This report also includes a draft manuscript resulting from this project that is intended for scientific outlets: Appendix A, "New Records of Mammals from Western Oklahoma".

Objective:
To conduct a survey of mammals of special concern, particularly rodents, shrews, and bats, on 14 Wildlife Management Areas in western Oklahoma, documenting their presence and habitat affinities compared with historic occurrences.

Need:
Relatively little is known about the status and habitat affinities of mammals, particularly rodents, shrews, and bats, in western Oklahoma, which hampers planning for and preparation of the Oklahoma Comprehensive Wildlife Conservation Strategy. The most complete record of mammalian distributions in Oklahoma was compiled by Caire et al. (1989) using historic surveys that occurred up to 100 years ago or examination of collections at various natural history museums that reflect survey efforts conducted at specific localities in Oklahoma. Due to the lack of thorough mammalian surveys within the State, we know little about the presence, distribution, and abundance of many non-game mammals in the State. In fact, for many species, our knowledge is insufficient to accurately assess their status, and decisions as to whether a species is threatened, rare, or endangered are based largely on biological "guesswork."

Twelve mammal species in western Oklahoma are classified as species of special concern by the Oklahoma Department of Wildlife Conservation and each of these has been designated as a species of greatest conservation need in the draft Oklahoma Comprehensive Wildlife Conservation Strategy (Table 1). For example, the black-tailed prairie dog (*Cynomys ludovicianus*) and Townsend's big-eared bat (*Cornynorhinus townsendii*) are Tier I Species of Greatest Conservation Need and the desert shrew (*Notiosorex crawfordi*), swift fox (*Vulpes velox*) and the Texas kangaroo rat (*Dipodomys elator*) are examples of Tier II species. These species have globally restricted geographic ranges and/or well-documented declining population trends. Unfortunately, species of mammals in western Oklahoma have never been surveyed intensively, and therefore, it is unclear whether the rarity and apparent restricted geographic distribution of some species are reality or an artifact of insufficient surveying. Moreover, several species (e.g., *Myotis lucifugus* and *M. volans*) have been recorded from counties in the Texas Panhandle adjacent to Oklahoma (Davis and Schmidly, 1994) but have not been recorded in Oklahoma.

Public and scientific interest in mammals has increased in recent years because of their association with human health issues (rabies in several carnivores, histoplasmosis in bats, hantavirus in small rodents) and their economic impact. For example, all species of bats in western Oklahoma are insectivorous and consume tons of insects. This feeding strategy is important because it reduces the amount of pesticides needed to control insect populations and plays a pivotal role in the ecology of western Oklahoma. Where bats occur in large numbers in Oklahoma (e.g., Alabaster and Selman caves), they offer a unique opportunity for eco-tourism. The importance of such caves to the ecology of the region, as well as the eco-tourism importance, has already been noted by Oklahoma Department of Wildlife Conservation, University of Central Oklahoma, and the private landowners of the Selman bat caves.

A thorough inventory of non-game mammals throughout western Oklahoma offers a unique opportunity to evaluate presence and relative abundance of mammalian species of special concern. This type of survey will provide critical information necessary to determine not only which species are present in western Oklahoma but also which species require immediate or future conservation efforts. Information from this type of survey will permit the most thorough planning for the Oklahoma Comprehensive Wildlife Conservation Strategy.

Approach:

Specimen Collection.— Presence and relative abundance of mammals of special concern in western Oklahoma, with a particular focus on rodents, shrews, and bats, was assessed seasonally (spring, early summer, late summer) at the following fourteen WMAs: Rita Blanca (Cimarron Co.), Optima (Texas Co.), Beaver River (Beaver Co.), Cooper and Fort Supply (Harper and Woodward Cos.), Ellis County and Packsaddle (Ellis Co.), Canton (Blaine Co.), Black Kettle (Roger Mills Co.), Sandy Sanders (Beckham and Greer Cos.), Fort Cobb (Caddo Co.), Altus-Lugert and Mountain Park (Kiowa Co.), and Hackberry Flat (Tillman Co.). All management areas were surveyed for three consecutive days/nights by field crews of three to five individuals in each of the three years of the study. In an attempt to maximize surveying the diversity of taxa at each locality, timing of the survey for each WMA was varied among the three years. To survey small, non-volant mammals, each night we established eight transects of fifty Sherman

live-traps, with each trap set 5–10 m apart. Traps were baited in late afternoon with a mixture of rolled oats and scratch, left open all night, and picked-up first thing in the morning. The eight transect lines were chosen to maximize sampling the diversity of habitats within each management area, and UTM coordinates were recorded for the beginning and ending of each transect. Baker-Williams live traps and Macabee gopher traps were set when fresh gopher activity was apparent. After surveying management areas, mist nets were set over small ponds or streams with good forest canopies (if available).

After live capture, all individual species were identified and sexed. A small number of individuals were processed in the field as voucher/museum specimens, and the remaindering mammals were released at the site of capture.

Survey of Caves.—During our survey of the management areas, we searched for caves and other structures (old houses and barns, bridges, culverts) on the management areas that could be used by bats. If such caves were found, we determined the species of bats roosting in theses caves or structures.

Results and Discussion:

During the three years of this study, we surveyed all fourteen management areas for three nights each year resulting in 50,400 trap nights and 6,879 captures. To maximize surveying the diversity of taxa over the three-year study, we varied the time of year that each WMA was surveyed between March and August. Table 1 lists the management areas surveyed and the dates that each management area was surveyed during 2005, 2006, and 2007. Tables 2-15 list the species and numbers of individuals caught at each management area during each year of the study. This survey resulted in new county records for the following twenty-four species of mammals (county records are indicated by an asterisk [*] next to the taxon name in tables 2-15): *Didelphis virginiana* (Virginia Opossum) from Roger Mills County, *Dasypus novemcinctus* (Nine-banded Armadillo) from Ellis and Kiowa Counties, *Scalopus aquaticus* (Eastern Mole) from Texas County, *Tadarida brasiliensis* (Brazilian Free-tailed Bat) from Tillman County, *Lasiurus borealis* (Eastern Red Bat) from Caddo and Ellis Counties, *Perimyotis subflavus* (Eastern Pipistrelle) from Dewey County, *Corynorhinus townsendii* (Townsend's Big-eared Bat) from Beckham County, *Myotis velifer* (Cave Myotis) from Beckham and Ellis Counties, *Myotis yumanensis* (Yuman Myotis) from Cimarron County, *Mephitis mephitis* (Striped Skunk) from Kiowa County, *Procyon lotor* (Raccoon) from Ellis County, *Odocoileus virginianus* (White-tailed deer) from Beaver and Beckham Counties, *Perognathus flavescens* (Plains Pocket Mouse) from Beaver and Ellis Counties, *Perognathus flavus* (Silky Pocket Mouse) from Caddo and Texas Counties, *Microtus ochrogaster* (Prairie Vole) from Dewey County, *Microtus pinetorum* (Woodland Vole) from Dewey County, *Baiomys taylori* (Northern Pygmy Mouse) from Beckham County, *Neotoma floridana* (Eastern Woodrat) from Ellis and Roger Mills Counties, *Onychomys leucogaster* (Northern Grasshopper Mouse) from Beckham and Kiowa Counties, *Peromyscus maniculatus* (North American Deer Mouse) from Dewey County, *Reithrodontomys fulvescens* (Fulvous Harvest Mouse) from Beaver, Dewey, Ellis, Harper, Roger Mills, and Tillman Counties, *Reithrodontomys megalotis* (Western Harvest Mouse) from Kiowa County, *Reithrodontomys montanus* (Plains Harvest Mouse) from Kiowa County, and *Mus musculus* (House Mouse) from Beaver, Ellis, and Greer Counties.

The county records for the armadillo, eastern mole, raccoon, striped skunk, and white-tailed deer were obtained by collecting specimens found either dead on the road, dead in the field near where traps were set, or in owl pellets.

During our surveys of the management areas, we located caves on the Sandy Sanders WMA on the north side of Minnow Creek and detected Townsend's Big-eared bats (*Corynorhinus townsendii*) in this cave. A more complete description of the location of these caves is provided in the attached manuscript on new county records resulting from this survey.

During year three, we conducted vegetation surveys of the management areas and the summary results of these surveys are provided in Table 16.

A manuscript documenting these twenty-four new county records has been submitted to *Occasional Papers, the Museum of Texas Tech University* for publication to make these new county records easily available to the scientific community (Appendix A). This manuscript is still under review, and we have attached a copy of this manuscript as part of this report as the manuscript provides important information regarding the current distribution of small mammals in the state of Oklahoma and discusses basic characteristics of the habitats when these new county records were achieved.

Although not directly part of this project, but because of this intensive survey, we were able to obtain enough individuals to document the presence of *Perognathus merriami* in the state of Oklahoma and provide geographic boundaries for *P. flavus*, *P. flavescens*, and *P. merriami*. We are currently writing a manuscript which we plan to submit for consideration to be published in the *Journal of Mammalogy* to document the importance of surveys such as this one and to acknowledge the support of this grant for our field work.

Significant Deviations:

One of the objectives of the original study was to attempt to capture shrews. During the first year of the study, we established pitfall traps at Rita Blanca, Optima, and Beaver River WMAs. Unfortunately, we did not collect any shrews. Due to the short-time period spent at each WMA (three nights), the logistical difficulties of establishing and maintaining pitfall traps in one location for three consecutive nights combined with the lack of captures, we did not continue our attempt to capture shrews.

Literature Cited:

American Care and Use Committee. 1998. Guidelines for the capture, handling, and care of mammals as approved by the American Society of Mammalogists. Journal of Mammalogy 79:1416–1431.

Caire, W., J. D. Tyler, B. P. Glass, and M. A. Mares. 1989. Mammals of Oklahoma. University of Oklahoma Press, Norman, OK.

Davis, W. B., and D. J. Schmidly. 1994. The Mammals of Texas. Texas Parks & Wildlife, Austin, TX.

Prepared by: Ronald A. Van Den Bussche, Department of Zoology, Oklahoma State University, Stillwater, Oklahoma

David M. Leslie, Jr., Oklahoma Cooperative Fish and Wildlife Research Unit, Stillwater, Oklahoma

Date: February 15, 2008

Approved by: Alan Peaden

Wildlife Division Administration
Oklahoma Department of Wildlife Conservation

John O. Stafford

John D. Stafford
Federal Aid Coordinator
Oklahoma Department of Wildlife Conservation

Table 1. Dates that small mammals were surveyed at 14 western Wildlife Management Areas in 2005, 2006, and 2007.

WMA	2005	2006	2007
Altus-Lugert	5 – 7 June	19 – 21 May	5 – 7 May
Beaver River	18 – 20 March	7 – 9 August	21 – 23 June
Black Kettle	24 – 26 June	14 – 16 March	15 – 17 July
Canton	22 – 24 May	10 – 12 July	7 – 9 August
Cooper	19 – 21 May	16 – 18 July	4 – 6 August
Ellis County	30 June – 2 July	17 – 19 March	24 – 26 June
Fort Cobb	31 July – 2 August	7 – 9 July	31 March – 2 April
Fort Supply	16 – 18 May	13 – 15 July	1 – 3 August
Hackberry Flat	8 – 10 June	25 – 27 May	8 – 10 May
Mountain Park	28 – 30 July	22 – 24 May	14 – 16 April
Optima	15 – 17 March	4 – 6 August	18 – 20 June
Pack Saddle	27 – 29 June	11 – 13 March	12 – 14 July
Rita Blanca	12 – 14 March	1 – 3 August	15 – 17 June
Sandy Sanders	1 – 3 June	16 – 18 May	18 – 20 July

Table 2 – Small mammals collected at Altus-Lugert WMA from 5 – 7 June 2005, 19 – 21 May 2006, and 5 – 7 May 2007; 400 Sherman-live traps were set each night (total 3,600 trap nights).

Scientific Name	Common Name	2005	2006	2007	Total
Chaetodipus hispidus	Hispid Pocket Mouse	3	10	0	13
Didelphis virginiana	Virginia Opossum	0	1	0	1
Dipodomys ordii	Ord's Kangaroo Rat	2	1	0	3
**Mephitis mephitis*	Striped Skunk	0	0	1	1
**Mus musculus*	House Mouse	0	3	3	6
Neotoma floridana	Eastern Woodrat	11	0	0	11
Neotoma micropus	Southern Plains Woodrat	8	12	14	34
**Onychomys leucogaster*	Northern Grasshoper mouse	1	1	0	2
Peromyscus leucopus	White-footed Mouse	224	112	161	497
Peromyscus maniculatus	Deer Mouse	5	4	3	12
Reithrodontomys fulvescens	Fulvous Harvest Mouse	9	0	3	12
Sigmodon hispidus	Hispid Cotton Rat	206	58	33	297
Sylivlagus floridana	Eastern Cottontail Rabbit	0	1	0	1
Total		469	203	218	890

Table 3 – Small mammals collected at Beaver River WMA from 18 – 20 March 2005, 7 – 9 August 2006, and 21 – 23 June 2007; 400 Sherman-live traps were set each night (total 3,600 trap nights). Taxa indicated by an asterisk (*) represent new county records.

Scientific Name	Common Name	2005	2006	2007	Total
Chaetodipus hispidus	Hispid Pocket Mouse	0	0	3	3
Cynomys ludovicianus	Black-tailed Prairie Dog	0	1	0	1
Dipodomys ordii	Ord's Kangaroo Rat	64	15	14	93
Geomys bursarius	Plains Pocket Gopher	3	0	2	5
**Mus musculus*	House Mouse	0	0	1	1
Neotoma floridana	Eastern Woodrat	0	1	0	1
Neotoma micropus	Southern Plains Woodrat	6	4	17	22
**Odocoileus virginianus*	White-tailed Deer	0	1	0	1
Onychomys leucogaster	Northern Grasshopper Mouse	3	3	3	9
Perognathus flavus	Silky Pocket Mouse	1	0	0	1
**Perognathus flavescens*	Plains Pocket Mouse	0	0	1	1
Peromyscus leucopus	White-footed Mouse	139	2	64	205
Peromyscus maniculatus	Deer Mouse	23	0	0	23
**Reithrodontomys fulvescens*	Fulvous Harvest Mouse	1	0	0	1
Reithrodontomys megalotis	Western Harvest Mouse	14	0	0	14
Reithrodontomys montanus	Plains Harvest Mouse	11	0	0	11
Sigmodon hispidus	Hispid Cotton Rat	38	21	51	110
Sylvilagus floridanus	Eastern Cottontail Rabbit	0	0	1	1
Total		304	48	157	509

Table 4 – Small mammals collected at Black Kettle WMA from 24 – 26 June 2005, 14 – 16 March 2006, and 15 – 17 July 2007; 400 Sherman-live traps were set each night (total 3,600 trap nights). Taxa indicated by an asterisk (*) represent new county records.

Scientific Name	Common Name	2005	2006	2007	Total
Chaetodipus hispidus	Hispid Pocket Mouse	13	1	35	49
**Didelphis virginiana*	Virginia Opossum	1	0	0	1
Dipodomys ordii	Ord's Kangaroo Rat	2	0	1	3
Geomys bursarius	Plains Pocket Gopher	0	2	0	2
**Neotoma floridana*	Eastern Woodrat	2	0	1	1
Neotoma micropus	Southern Plains Woodrat	3	4	2	11
Onychomys leucogaster	Northern Grasshopper Mouse	3	6	7	16
Perognathus flavus	Silky Pocket Mouse	7	0	0	7
Perognathus flavescens	Plains Pocket Mouse	0	0	1	1
Perognathus merriami	Merriam's Pocket Mouse	0	1	0	1
Peromyscus leucopus	White-footed Mouse	73	52	49	174
Peromyscus maniculatus	Deer Mouse	15	9	4	28
**Procyon lotor*	Raccoon	0	1	0	1
**Reithrodontomys fulvescens*	Fulvous Harvest Mouse	1	3	0	4
Reithrodontomys megalotis	Western Harvest Mouse	0	4	0	4
Sigmodon hispidus	Hispid Cotton Rat	35	6	42	83
Total		155	89	142	386

Table 5 – Small mammals collected at Canton WMA from 22 – 24 May 2005, 10 – 12 July 2006, and 7 – 9 August 2007; 400 Sherman-live traps were set each night (total 3,600 trap nights). Taxa indicated by an asterisk (*) represent new county records.

Scientific Name	Common Name	2005	2006	2007	Total
Chaetodipus hispidus	Hispid Pocket Mouse	1	3	2	6
Dipodomys ordii	Ord's Kangaroo Rat	5	1	2	8
Geomys bursarius	Plains Pocket Gopher	2	0	0	2
**Microtus ochragaster*	Prairie Vole	1	0	0	1
**Microtus pinetorum*	Woodland Vole	1	0	0	1
Mus musculus	House Mouse	0	0	3	3
Neotoma floridana	Eastern Woodrat	19	7	6	32
Onychomys leucogaster	Northern Grasshopper Mouse	3	1	0	4
Perognathus flavus	Silky Pocket Mouse	5	0	0	5
Peromyscus leucopus	White-footed Mouse	90	95	73	258
**Peromyscus maniculatus*	Deer Mouse	4	1	8	13
**Perimyotis subflavus*	Eastern Pipistrelle	1	0	0	1
**Reithrodontomys fulvescens*	Fulvous Harvest Mouse	12	2	2	16
Sciurus niger	Fox Squirrel	1	0	0	1
Sigmodon hispidus	Hispid Cotton Rat	19	63	82	164
Sylvilagus floridanus	Eastern Cottontail Rabbit	2	0	0	2
Total		166	173	178	517

Table 6 – Small mammals collected at Cooper WMA from 19 – 21 May 2005, 16 – 18 July 2006, and 4 – 6 August 2007; 400 Sherman-live traps were set each night (total 3,600 trap nights). Taxa indicated by asterisk (*) represent new county records.

Scientific Name	Common Name	2005	2006	2007	Total
Chaetodipus hispidus	Hispid Pocket Mouse	0	2	1	3
Dipodomys ordii	Ord's Kangaroo Rat	26	28	6	60
Myotis velifer	Cave Myotis	1	1	0	2
Mus musculus	House Mouse	0	0	1	1
Neotoma micropus	Southern Plains Woodrat	1	5	0	6
Onychomys leucogaster	Northern Grasshopper Mouse	10	7	1	18
Perognathus flavescens	Plains Pocket Mouse	0	1	0	1
Peromyscus leucopus	White-footed Mouse	46	9	1	56
Peromyscus maniculatus	Deer Mouse	6	2	3	11
**Reithrodontomys fulvescens*	Fulvous Harvest Mouse	2	1	0	3
**Sigmodon hispidus*	Hispid Cotton Rat	33	20	10	63
Spermophilus spilosoma	Spotted Ground Squirrel	0	2	0	2
Total		125	78	23	226

Table 7 – Small mammals collected at Ellis County WMA from 30 June – 2 July 2005, 17 – 19 March 2006, and 24 – 26 June 2007; 400 Sherman-live traps were set each night (3,600 trap nights). Taxa indicated by asterisk (*) represent new county records.

Scientific Name	Common Name	2005	2006	2007	Total
Chaetodipus hispidus	Hispid Pocket Mouse	25	1	29	55
**Dasypus novemcinctus*	Armadillo	1	0	0	1
Dipodomys ordii	Ord's Kangaroo Rat	5	8	5	18
Erethrizon dorsatum	Porcupine	1	0	0	1
**Neotoma floridana*	Eastern Woodrat	2	0	0	2
Neotoma micropus	Southern Plains Woodrat	3	1	8	14
Onychomys leucogaster	Northern Grasshopper Mouse	9	10	6	25
Odocoileus virginianus	White-tailed Deer	0	1	0	1
Peromyscus leucopus	White-footed Mouse	13	74	63	150
Peromyscus maniculatus	Deer Mouse	20	15	18	53
**Reithrodontomys fulvescens*	Fulvous Harvest Mouse	5	2	0	7
Reithrodontomys megalotis	Western Harvest Mouse	0	2	0	2
Sigmodon hispidus	Hispid Cotton Rat	170	38	19	227
Total		254	152	148	554

Table 8 – Small mammals collected at Fort Cobb WMA from 31 July – 2 August 2005, 7 – 9 July 2006, and 31 March – 2 April 2007; 400 Sherman-live traps were set each night (3,600 trap nights). Taxa indicated by asterisk (*) represent new county records.

Scientific Name	Common Name	2005	2006	2007	Total
Chaetodipus hispidus	Hispid Pocket Mouse	6	7	0	13
Dipodomys ordii	Ord's Kangaroo Rat	3	3	4	10
**Lasiurus borealis*	Red Bat	5	4	0	9
Microtus pinetorum	Woodland Vole	0	0	1	1
Mus musculus	House Mouse	1	4	0	5
Myotis velifer	Cave Myotis	5	0	0	5
Neotoma floridana	Eastern Wood Rat	7	17	9	33
Onychomys leucogaster	Northern Grasshopper Mouse	4	0	0	4
**Perognathus flavus*	Silky Pocket Mouse	0	1	0	1
Peromyscus leucopus	White-Footed Mouse	82	193	178	453
Peromyscus maniculatus	Deer Mouse	3	1	2	6
Reithrodontomys fulvescens	Fulvous Harvest Mouse	2	9	11	22
Sigmodon hispidus	Hispid Cotton Rat	302	93	16	411
Sylvilagus floridanus	Eastern Cottontail Rabbit	0	2	0	2
Total		420	334	221	975

Table 9 – Small mammals collected at Fort Supply WMA from 16 – 18 May 2005, 13 – 15 July 2006, and 1 – 3 August 2007; 400 Sherman-live traps were set each night (3,600 trap nights).

Scientific Name	Common Name	2005	2006	2007	Total
Chaetodipus hispidus	Hispid Pocket Mouse	2	10	4	16
Cryptotis parva	Least Shrew	0	1	0	1
Dipodomys ordii	Ord's Kangaroo Rat	6	1	4	11
Geomys bursarius	Plains Pocket Gopher	3	0	0	3
Neotoma floridana	Eastern Woodrat	0	1	0	1
Neotoma micropus	Southern Plains Woodrat	10	4	4	18
Onychomys leucogaster	Northern Grasshopper Mouse	8	0	3	11
Perognathus flavescens	Plains Pocket Mouse	0	1	0	1
Perognathus flavus	Silky Pocket Mouse	2	0	0	2
Peromyscus leucopus	White-footed Mouse	97	47	54	198
Peromyscus maniculatus	Deer Mouse	13	3	2	18
Reithrodontomys fulvescens	Fulvous Harvest Mouse	18	0	0	18
Sigmodon hispidus	Hispid Cotton Rat	66	92	52	210
Spermophilus spilosoma	Spotted Ground Squirrel	1	0	0	1
Sylvilagus floridanus	Eastern Cottontail Rabbit	2	0	1	3
Tadarida brasiliensis	Brazilian Free-tailed Bat	0	1	0	1
Total		228	161	124	515

Table 10 – Small mammals collected at Hackberry Flat WMA from 8 – 10 June 2005, 25 – 27 May 2006, and 8 – 10 May 2007; 400 Sherman-live traps were set each night (3,600 trap nights).

Scientific Name	Common Name	2005	2006	2007	Total
Chaetodipus hispidus	Hispid Pocket Mouse	6	3	2	11
Cryptotis parva	Least Shrew	0	1	0	1
Lepus californicus	Black-tailed Jack Rabbit	0	1	0	1
Mus musculus	House Mouse	6	12	35	53
Peromyscus leucopus	White-footed Mouse	15	24	25	64
Peromyscus maniculatus	Deer Mouse	25	39	25	89
**Reithrodontomys fulvescens*	Fulvous Harvest Mouse	0	8	1	9
Sigmodon hispidus	Hispid Cotton Rat	117	65	20	202
Tadarida brasiliensis	Brazilian Free-tailed bat	0	1	0	1
Total		169	154	108	431

Table 11 – Small mammals collected at Mountain Park WMA from 28 – 30 July 2005, 22 – 24 May 2006, and 14 – 16 April 2007; 400 Sherman-live traps were set each night (3,600 trap nights).

Scientific Name	Common Name	2005	2006	2007	Total
Chaetodipus hispidus	Hispid Pocket Mouse	13	12	1	26
**Dasypus novemcinctus*	Armadillo	0	1	0	1
Microtus ochragaster	Prairie Vole	0	0	1	1
Mus musculus	House Mouse	1	3	0	4
Neotoma micropus	Southern Plains Woodrat	6	5	2	13
Peromyscus leucopus	White-footed Mouse	22	21	59	102
Peromyscus maniculatus	Deer Mouse	7	20	21	48
Reithrodontomys fulvescens	Fulvous Harvest Mouse	2	6	5	13
**Reithrodontomys megalotis*	Western Harvest Mouse	0	0	8	8
**Reithrodontomys montanus*	Plains Harvest Mouse	0	0	1	1
Sigmodon hispidus	Hispid Cotton Rat	77	108	4	189
Total		128	176	102	406

Table 12 – Small mammals collected at Optima WMA from 15 – 17 March 2005, 4 – 6 August 2006, and 18 – 20 June 2007; 400 Sherman-live traps were set each night (3,600 trap nights). Taxa indicated by asterisk (*) represent new county records. Note: we collected over 200 owl pellets. The Eastern Mole was identified from an owl pellet.

Scientific Name	Common Name	2005	2006	2007	Total
Chaetodipus hispidus	Hispid Pocket Mouse	0	10	3	13
Dipodomys ordii	Ord's Kangaroo Rat	73	13	12	98
Neotoma sp.		4	0	0	4
Neotoma albigula	White-throated Woodrat	0	4	0	4
Neotoma floridana	Eastern Woodrat	0	1	0	1
Neotoma micropus	Southern Plains Woodrat	0	7	7	14
Onychomys leucogaster	Northern Grasshopper Mouse	0	1	0	1
**Perognathus flavus*	Silky Pocket Mouse	0	1	0	1
Peromyscus leucopus	White-footed Mouse	0	19	167	186
Peromyscus maniculatus	Deer Mouse	7	2	6	15
Reithrodontomys megalotis	Western Harvest Mouse	22	0	57	79
Reithrodontomys montanus	Plains Harvest Mouse	1	0	0	1
**Scalopus aquaticus*	Eastern Mole	1	0	0	1
Sigmodon hispidus	Hispid Cotton Rat	10	13	56	79
Total		118	71	308	497

Table 13 – Small mammals collected at Pack Saddle WMA from 27 – 29 June 2005, 11 – 13 March 2006, and 12 – 14 July 2007; 400 Sherman-live traps were set each night (3,600 trap nights). Taxa indicated by asterisk (*) represent new county records.

Scientific Name	Common Name	2005	2006	2007	Total
Canis latrans	Coyote	0	1	0	1
Chaetodipus hispidus	Hispid Pocket Mouse	25	0	13	38
Dipodomys ordii	Ord's Kangaroo Rat	11	5	5	21
**Lasiurus borealis*	Red bat	0	0	1	1
**Mus musculus*	House Mouse	0	0	1	1
**Myotis velifer*	Cave Myotis	0	0	2	2
Neotoma micropus	Southern Plains Woodrat	6	1	5	12
Onychomys leucogaster	Northern Grasshopper Mouse	10	4	9	23
**Perognathus flavescens*	Plains Pocket Mouse	0	0	3	3
Perognathus flavus	Silky Pocket Mouse	4	0	0	4
Peromyscus leucopus	White-footed Mouse	10	18	32	60
Peromyscus maniculatus	Deer Mouse	2	1	2	5
**Reithrodontomys fulvescens*	Fulvous Harvest Mouse	2	12	0	14
Reithrodontomys megalotis	Western Harvest Mouse	0	3	0	3
Sigmodon hispidus	Hispid Cotton Rat	25	12	11	48
Spermophilus tridecemlineatus	13-lined Ground Squirrel	1	0	0	1
Total		96	57	84	237

Table 14 – Small mammals collected at Rita Blanca WMA from 12 – 14 March 2005, 1 – 3 August 2006, and 15 – 17 June 2007; 400 Sherman-live traps were set each night (3,600 trap nights).

Scientific Name	Common Name	2005	2006	2007	Total
Chaetodipus hispidus	Hispid Pocket Mouse	2	7	9	18
Cynomys ludovicianus	Black-tailed Prairie Dog	0	1	0	1
Dipodomys ordii	Ord's Kangaroo Rat	47	11	4	62
Microtus ochragaster	Prairie Vole	0	0	1	1
**Myotis yumanensis*	Yuma Myotis	0	0	3	3
Neotoma albigula	White-throated Woodrat	0	2	0	2
Neotoma micropus	Southern Plains Woodrat	1	0	3	4
Onychomys leucogaster	Northern Grasshopper Mouse	25	18	8	51
Perognathus flavus	Silky Pocket Mouse	11	14	2	27
Peromyscus maniculatus	Deer Mouse	25	4	8	37
Reithrodontomys megalotis	Western Harvest Mouse	15	1	0	16
Reithrodontomys montanus	Plains Harvest Mouse	14	0	0	14
Sigmodon hispidus	Hispid Cotton Rat	4	0	0	4
Spermophilus tridecemlineatus	Thirteen-lined Ground Squirrel	0	1	0	1
Total		144	59	38	241

Table 15 – Small mammals collected at Sandy Sanders WMA from 1 – 3 June 2005, 16 – 18 May 2006, and 18 – 20 July 2007; 400 Sherman-live traps were set each night (3,600 trap nights). Taxa indicated by asterisk (*) represent new county records.

Scientific Name	Common Name	2005	2006	2007	Total
**Baiomys taylorii*	Northern Pygmy Mouse	0	1	1	2
Chaetodipus hispidus	Hispid Pocket Mouse	32	11	4	47
**Corynorhinus townsendii*	Townsend's Big-eared Bat	0	0	1	1
**Myotis velifer*	Cave Myotis	3	5	0	8
Neotoma micropus	Southern Plains Woodrat	24	21	19	64
**Odocoileus virginianus*	White-tailed deer	0	0	1	1
**Onychomys leucogaster*	Northern Grasshopper Mouse	10	4	0	14
Perognathus flavus	Silky Pocket Mouse	23	24	0	47
Perognathus merriami	Merriam's Pocket Mouse	0	0	37	37
Peromyscus leucopus	White-footed Mouse	56	138	14	208
Peromyscus maniculatus	Deer Mouse	11	2	0	13
Reithrodontomys fulvescens	Fulvous Harvest Mouse	0	5	0	5
Sigmodon hispidus	Hispid Cotton Rat	30	10	7	47
Sylvilagus floridanus	Eastern Cottontail Rabbit	1	0	0	1
Total		190	221	84	495

Table 16. Summary of vegetation analysis of each trap line (A – H) for each of three consecutive days trapping at each WMA in western Oklahoma during 2007. Each trap line was surveyed for percent cover (two classes, bare and herbaceous), and estimates of the percentage of the area attributed to grass, shrubs, and overstory, independently.

WMA	Date	Trap Line	Wetland/ Upland	Soil	Bare Ground	Herbacious	Grass	Shrubs	Overstory	Grazing	Litte
Fort Cobb	30-Mar-07	A	Upland	Clay	20	80	40	0	60	1	
Fort Cobb	30-Mar-07	B	Upland	Clay	30	70	50	20	5	1	
Fort Cobb	30-Mar-07	C	Upland	Clay	25	75	70	5	40	1	
Fort Cobb	30-Mar-07	D	Upland	Clay	60	40	90	80	80	1	
Fort Cobb	30-Mar-07	E	Upland	Clay	5	95	95	0	5	1	
Fort Cobb	30-Mar-07	F	Upland	Clay	60	40	100	10	20	1	
Fort Cobb	30-Mar-07	G	Upland	Clay	25	75	50	0	10	1	
Fort Cobb	30-Mar-07	H	Upland	Clay	80	20	5	40	8	1	
Fort Cobb	31-Mar-07	A	Upland	Clay	10	90	75	20	50	1	
Fort Cobb	31-Mar-07	B	Upland	Clay/Sand	40	60	80	40	60	1	
Fort Cobb	31-Mar-07	C	Upland	Clay/Sand	40	60	80	40	60	1	
Fort Cobb	31-Mar-07	D	Upland	Clay/Sand	10	90	90	20	70	1	
Fort Cobb	31-Mar-07	E	Upland	Clay/Sand	5	95	95	20	70	1	
Fort Cobb	31-Mar-07	F	Upland	Clay/Sand	40	60	70	80	10	1	
Fort Cobb	31-Mar-07	G	Upland	Clay/Sand	90	10	5	5	75	1	
Fort Cobb	31-Mar-07	H	Upland	Clay/Sand	90	10	5	40	80	1	
Fort Cobb	1-Apr-07	A	Upland	Clay/Sand	15	85	95	1	1	1	
Fort Cobb	1-Apr-07	B	Upland	Clay/Sand	40	60	60	5	40	1	
Fort Cobb	1-Apr-07	C	Upland	Clay/Sand	10	90	95	4	8	1	
Fort Cobb	1-Apr-07	D	Upland	Clay/Sand	20	80	60	10	0	1	
Fort Cobb	1-Apr-07	E	Upland	Clay/Sand	30	70	60	30	0	1	
Fort Cobb	1-Apr-07	F	Upland	Clay/Sand	30	80	70	60	40	1	
Fort Cobb	1-Apr-07	G	Upland	Clay	75	25	15	50	75	1	
Fort Cobb	1-Apr-07	H	Upland	Clay	50	50	50	50	50	1	
Mountain Park	13-Apr-07	A	Upland	Clay	20	80	60	80	0	2	
Mountain Park	13-Apr-07	B	Upland	Clay	0	100	90	60	0	2	
Mountain Park	13-Apr-07	C	Upland	Clay	20	80	60	80	0	2	
Mountain Park	13-Apr-07	D	Upland	Clay	20	80	60	60	0	2	

Mountain Park	13-Apr-07	E	Upland	Clay	20	80	60	80	0	1
Mountain Park	13-Apr-07	F	Upland	Clay	20	80	20	10	0	30
Mountain Park	13-Apr-07	G	Upland	Clay	0	100	80	30	0	1
Mountain Park	13-Apr-07	H	Upland	Clay	10	90	70	20	0	1
Mountain Park	14-Apr-07	A	Upland	Clay	30	70	50	5	0	1
Mountain Park	14-Apr-07	B	Upland	Clay	5	95	20	0	20	1
Mountain Park	14-Apr-07	C	Upland	Clay	40	60	70	10	0	1
Mountain Park	14-Apr-07	D	Upland	Clay	40	60	70	10	0	1
Mountain Park	14-Apr-07	E	Upland	Clay	20	80	70	5	0	1
Mountain Park	14-Apr-07	F	Upland	Clay	15	85	90	10	0	1
Mountain Park	14-Apr-07	G	Upland	Clay	10	90	10	20	60	1
Mountain Park	14-Apr-07	H	Upland	Clay	30	70	5	0	25	1
Mountain Park	15-Apr-07	A	Upland	Clay	5	95	95	40	0	2
Mountain Park	15-Apr-07	B	Upland	Clay	0	100	98	4	0	1
Mountain Park	15-Apr-07	C	Upland	Clay	60	40	50	5	0	1
Mountain Park	15-Apr-07	D	Upland	Clay	1	99	99	5	0	1
Mountain Park	15-Apr-07	E	Upland	Clay	5	95	98	0	0	1
Mountain Park	15-Apr-07	F	Upland	Clay	20	80	70	0	0	1
Mountain Park	15-Apr-07	G	Upland	Clay	0	100	98	5	0	1
Mountain Park	15-Apr-07	H	Upland	Clay	40	60	60	40	0	2
Altus-Lugert	4-May-07	A	Upland	Clay	20	80	80	0	10	1
Altus-Lugert	4-May-07	B	Upland	Sand	40	60	50	40	10	1
Altus-Lugert	4-May-07	C	Upland	Clay	70	30	10	70	70	1
Altus-Lugert	4-May-07	D	Upland	Sand	90	10	0	10	90	1
Altus-Lugert	4-May-07	E	Upland	Sand	40	60	50	40	20	1
Altus-Lugert	4-May-07	F	Upland	Sand	40	60	50	40	20	1
Altus-Lugert	4-May-07	G	Upland	Clay/Sand	40	60	0	50	10	1
Altus-Lugert	4-May-07	H	Upland	Clay/Sand	40	60	70	50	10	1
Altus-Lugert	5-May-07	A	Upland	Clay	20	80	50	50	30	1
Altus-Lugert	5-May-07	B	Upland	Clay/Sand	20	80	60	50	10	1
Altus-Lugert	5-May-07	C	Upland	Clay/Sand	40	60	80	50	0	1
Altus-Lugert	5-May-07	D	Upland	Sand	40	60	60	40	0	1
Altus-Lugert	5-May-07	E	Upland	Clay/Sand	30	70	70	70	10	1
Altus-Lugert	5-May-07	F	Upland	Clay/Sand	40	60	80	50	20	1

Altus-Lugert	5-May-07	G	Upland	Clay/Sand	30	70	70	60	20	1
Altus-Lugert	5-May-07	H	Upland	Clay/Sand	40	60	70	60	20	1
Altus-Lugert	6-May-07	A	Upland	Clay	10	90	70	50	0	1
Altus-Lugert	6-May-07	B	Upland	Clay/Sand	10	90	60	40	0	1
Altus-Lugert	6-May-07	C	Upland	Clay	10	90	70	50	10	1
Altus-Lugert	6-May-07	D	Upland	Clay/Sand	15	85	85	5	5	1
Altus-Lugert	6-May-07	E	Upland	Clay/Sand	10	90	65	30	0	1
Altus-Lugert	6-May-07	F	Wetland	Clay	50	50	70	60	0	1
Altus-Lugert	6-May-07	G	Upland	Clay	30	70	70	30	0	1
Altus-Lugert	6-May-07	H	Upland	Clay/Sand	40	60	45	15	0	1
Hackberry Flat	7-May-07	A	Upland	Clay	40	60	50	0	0	1
Hackberry Flat	7-May-07	B	Upland	Clay	40	60	50	0	0	1
Hackberry Flat	7-May-07	C	Upland	Clay	40	60	50	0	0	1
Hackberry Flat	7-May-07	D	Upland	Clay	60	40	50	0	0	1
Hackberry Flat	7-May-07	E	Upland	Clay	20	80	50	0	0	1
Hackberry Flat	7-May-07	F	Upland	Clay	50	50	40	0	0	1
Hackberry Flat	7-May-07	G	Upland	Clay	40	60	50	0	0	1
Hackberry Flat	7-May-07	H	Upland	Clay	40	60	60	0	0	1
Hackberry Flat	8-May-07	A	Upland	Clay	50	50	80	0	0	1
Hackberry Flat	8-May-07	B	Upland	Clay	50	50	70	0	0	1
Hackberry Flat	8-May-07	C	Upland	Clay	40	60	60	0	0	1
Hackberry Flat	8-May-07	D	Upland	Clay	50	50	80	0	0	1
Hackberry Flat	8-May-07	E	Upland	Clay	40	60	50	0	0	1
Hackberry Flat	8-May-07	F	Upland	Clay	40	60	50	0	0	1
Hackberry Flat	8-May-07	G	Upland	Clay	40	60	50	0	0	1
Hackberry Flat	8-May-07	H	Upland	Clay	40	60	50	0	0	1
Hackberry Flat	9-May-07	A	Upland	Clay	40	60	70	0	0	1
Hackberry Flat	9-May-07	B	Upland	Clay	60	40	50	2	0	1
Hackberry Flat	9-May-07	C	Upland	Clay	30	70	60	0	0	1
Hackberry Flat	9-May-07	D	Upland	Clay	40	60	70	0	0	1
Hackberry Flat	9-May-07	E	Upland	Clay	20	80	90	0	0	1
Hackberry Flat	9-May-07	F	Upland	Clay	40	60	60	0	0	1
Hackberry Flat	9-May-07	G	Upland	Clay	40	60	50	0	0	1
Hackberry Flat	9-May-07	H	Upland	Clay	30	70	50	0	0	1

Rita Blanca	14-Jun-07	A	Upland	Clay/Sand	40	60	50	5	0	2	
Rita Blanca	14-Jun-07	B	Upland	Clay/Sand	90	10	85	1	0	2	
Rita Blanca	14-Jun-07	C	Upland	Clay/Sand	20	80	90	0	0	1	
Rita Blanca	14-Jun-07	D	Upland	Clay/Sand	30	70	60	5	0	1	
Rita Blanca	14-Jun-07	E	Upland	Clay/Sand	10	90	80	1	0	1	
Rita Blanca	14-Jun-07	F	Upland	Clay/Sand	40	60	50	5	0	1	
Rita Blanca	14-Jun-07	G	Upland	Clay/Sand	10	90	85	1	0	1	
Rita Blanca	14-Jun-07	H	Upland	Clay/Sand	40	60	50				
Rita Blanca	15-Jun-07	A	Upland	Clay/Sand	10	90	90	3	0	2	
Rita Blanca	15-Jun-07	B	Upland	Clay/Sand	40	60	50	5	0	2	
Rita Blanca	15-Jun-07	C	Upland	Clay	2	98	70	0	0	1	
Rita Blanca	15-Jun-07	D	Upland	Clay	30	70	60	0	0	1	
Rita Blanca	15-Jun-07	E	Upland	Clay	40	60	60	0	0	2	
Rita Blanca	15-Jun-07	F	Upland	Clay	20	80	90	0	0	2	
Rita Blanca	15-Jun-07	G	Upland	Clay	30	70	80	0	0	2	
Rita Blanca	15-Jun-07	H	Upland	Clay	40	60	60	0	0	2	
Rita Blanca	16-Jun-07	A	Upland	Clay	30	70	90	0	0	2	
Rita Blanca	16-Jun-07	B	Upland	Clay	30	70	60	0	0	2	
Rita Blanca	16-Jun-07	C	Upland	Clay	30	70		0	0	2	
Rita Blanca	16-Jun-07	D	Upland	Clay	20	80	90	0	5	1	
Rita Blanca	16-Jun-07	E	Upland	Clay	30	70	85	0	0	1	
Rita Blanca	16-Jun-07	F	Upland	Clay	50	50	50	0	0	1	
Rita Blanca	16-Jun-07	G	Upland	Clay	30	70	60	0	0	1	
Rita Blanca	16-Jun-07	H	Upland	Clay	50	50	90	0	0	1	
Optima	17-Jun-07	A	Upland	Sand	5	95	90	1	5	1	
Optima	17-Jun-07	B	Upland	Sand	40	60	50	20	20	1	
Optima	17-Jun-07	C	Upland	Sand	20	80	70	20	40	1	
Optima	17-Jun-07	D	Upland	Sand	40	60	95	0	80	1	
Optima	17-Jun-07	E	Upland	Sand	20	80	70	50	20	1	
Optima	17-Jun-07	F	Upland	Sand	40	60	95	2	0	1	
Optima	17-Jun-07	G	Upland	Clay/Sand	65	35	50	30	0	1	
Optima	17-Jun-07	H	Upland	Clay/Sand	40	60	50	0	0	1	
Optima	18-Jun-07	A	Upland	Clay/Sand	40	60	95	5	1	1	
Optima	18-Jun-07	B	Upland	Clay/Sand	40	60	60	5	0	1	

Optima	18-Jun-07	C	Upland	Sand	10	90	95	0	5	1	
Optima	18-Jun-07	D	Upland	Sand	20	80	70	0	0	1	
Optima	18-Jun-07	E	Upland	Sand	20	80	90	25	50	1	
Optima	18-Jun-07	F	Upland	Sand	20	80	60	0	10	1	
Optima	18-Jun-07	G	Upland	Sand	10	90	60	0	40	1	
Optima	18-Jun-07	H	Upland	Sand	50	50	50	10	20	1	
Optima	19-Jun-07	A	Upland	Clay/Sand	50	50	50	40	0	1	
Optima	19-Jun-07	B	Upland	Clay/Sand	45	55	80	35	0	1	
Optima	19-Jun-07	C	Upland	Clay/Sand	30	70	80	10	0	1	
Optima	19-Jun-07	D	Upland	Clay/Sand	80	20	5	60	0	1	
Optima	19-Jun-07	E	Upland	Clay/Sand	20	80	90	8	0	1	
Optima	19-Jun-07	F	Upland	Clay/Sand	30	70	50	10	0	1	
Optima	19-Jun-07	G	Upland	Clay/Sand	30	70	50	10	0	1	
Optima	19-Jun-07	H	Upland	Clay/Sand	15	85	90	5	0	1	
Beaver River	20-Jun-07	A	Wetland/ Upland	Clay	15	85	85	80	0	1	
Beaver River	20-Jun-07	B	Wetland/ Upland	Clay	50	50	90	60	0	1	
Beaver River	20-Jun-07	C	Wetland/ Upland	Sand	30	70	60	70	0	1	
Beaver River	20-Jun-07	D	Wetland/ Upland	Sand	50	50	50	50	0	1	
Beaver River	20-Jun-07	E	Upland	Sand	30	70	10	70	1	1	
Beaver River	20-Jun-07	F	Upland	Sand	30	70	10	70	0	1	
Beaver River	20-Jun-07	G	Upland	Sand	30	70	10	60	0	1	
Beaver River	20-Jun-07	H	Upland	Sand	30	70	20	60	5	1	
Beaver River	21-Jun-07	A	Upland	Sand	20	80	80	0	0	1	
Beaver River	21-Jun-07	B	Upland	Sand	15	85	70	20	0	1	
Beaver River	21-Jun-07	C	Upland	Sand	25	75	80	30	0	1	
Beaver River	21-Jun-07	D	Upland	Sand	40	60		30	0	1	
Beaver River	21-Jun-07	E	Upland	Clay	30	70	80	30	0	1	
Beaver River	21-Jun-07	F	Upland	Sand	40	60	60	60	0	1	
Beaver River	21-Jun-07	G	Upland	Sand	30	70	85	40	0	1	
Beaver River	21-Jun-07	H	Upland	Clay/Sand	40	60	50	20	0	1	
Beaver River	22-Jun-07	A	Upland	Clay	30	70	50	20	0	2	
Beaver River	22-Jun-07	B	Upland	Sand	10	90	70	5	0	1	
Beaver River	22-Jun-07	C	Upland	Sand	30	70	90	5	0	1	
Beaver River	22-Jun-07	D	Upland	Clay/Sand	30	70	20	0	0	2	

Beaver River	22-Jun-07	E	Upland	Clay/Sand	20	80	30	0	0	1	
Beaver River	22-Jun-07	F	Upland	Sand	30	70	45	0	0	2	
Beaver River	22-Jun-07	G	Upland	Sand	40	60	60	0	1	1	
Beaver River	22-Jun-07	H	Upland	Sand	50	50	50	30	0	1	
Ellis County	23-Jun-07	A	Upland	Sand	60	40	50				
Ellis County	23-Jun-07	B	Upland	Clay/Sand	50	50	70	10	2	1	
Ellis County	23-Jun-07	C	Upland	Clay/Sand	50	50	50	20	5	1	
Ellis County	23-Jun-07	D	Upland	Clay/Sand	60	40	40	5	1	1	
Ellis County	23-Jun-07	E	Upland	Clay/Sand	50	50	70	0	0	1	
Ellis County	23-Jun-07	F	Upland	Clay/Sand	20	80	50	10	40	1	
Ellis County	23-Jun-07	G	Upland	Clay/Sand	70	30	50	50	50	1	
Ellis County	23-Jun-07	H	Upland	Sand	30	70	75	0	20	1	
Ellis County	24-Jun-07	A	Upland	Sand	10	90	80	10	0	1	
Ellis County	24-Jun-07	B	Upland	Clay/Sand	20	80	70	20	0	1	
Ellis County	24-Jun-07	C	Upland	Clay/Sand	30	70	70	20	10		
Ellis County	24-Jun-07	D	Upland	Sand	5	95	75	30	0	1	
Ellis County	24-Jun-07	E	Upland	Sand	10	90	80	30	0	1	
Ellis County	24-Jun-07	F	Upland	Clay/Sand	20	80	70	30	20	1	
Ellis County	24-Jun-07	G	Upland	Clay/Sand	15	85	75	30	0	1	
Ellis County	24-Jun-07	H	Upland	Clay/Sand	30	70	70	20	0	1	
Ellis County	25-Jun-07	A	Upland	Sand	15	85	60	20	0	1	
Ellis County	25-Jun-07	B	Upland	Sand	15	85	50	60	20	1	
Ellis County	25-Jun-07	C	Upland	Sand	50	50	20	70	50	1	
Ellis County	25-Jun-07	D	Upland	Sand	10	90	60	30	30	1	
Ellis County	25-Jun-07	E	Upland	Sand	30	70	80	20	0	1	
Ellis County	25-Jun-07	F	Upland	Sand	40	60	80	20	0	1	
Ellis County	25-Jun-07	G	Upland	Sand	50	50	50	10	0	1	
Ellis County	25-Jun-07	H	Upland	Sand	25	75	65	25	0	1	
Packsaddle	11-Jul-07	A	Upland	Clay/Sand	20	80	50	40	0	1	
Packsaddle	11-Jul-07	B	Upland	Sand	30	70	20	25	0	1	
Packsaddle	11-Jul-07	C	Upland	Clay	45	55	80	1	0	1	
Packsaddle	11-Jul-07	D	Upland	Clay	40	60	70	0	0	1	
Packsaddle	11-Jul-07	E	Upland	Sand	40	60	50	10	0.5	1	
Packsaddle	11-Jul-07	F	Upland	Sand	15	85	80	2	0	1	

Packsaddle	11-Jul-07	G	Upland	Clay/Sand	5	95	20	0	70	1
Packsaddle	11-Jul-07	H	Upland	Clay/Sand	50	50	50	10	0	1
Packsaddle	12-Jul-07	A	Upland	Clay/Sand	15	85	85	20	15	1
Packsaddle	12-Jul-07	B	Upland	Clay/Sand	40	60	50	30	5	1
Packsaddle	12-Jul-07	C	Upland	Clay/Sand	30	70	60	85	15	1
Packsaddle	12-Jul-07	D	Upland	Clay/Sand	30	70		50	10	1
Packsaddle	12-Jul-07	E	Upland	Sand	60	40	60	70	10	1
Packsaddle	12-Jul-07	F	Upland	Sand	40	60	40	60	10	2
Packsaddle	12-Jul-07	G	Upland	Sand	30	70	70	10	15	1
Packsaddle	12-Jul-07	H	Upland	Sand	10	90	30	15	70	1
Packsaddle	13-Jul-07	A	Upland	Clay/Sand	10	90	90	15	0	1
Packsaddle	13-Jul-07	B	Upland	Clay/Sand	40	60	50	50	5	2
Packsaddle	13-Jul-07	C	Upland	Sand	50	50	70	50	5	2
Packsaddle	13-Jul-07	D	Upland	Sand	20	80	60	60	5	1
Packsaddle	13-Jul-07	E	Upland	Clay	30	70	80	0	2	1
Packsaddle	13-Jul-07	F	Upland	Clay	40	60	60	10	0	1
Packsaddle	13-Jul-07	G	Upland	Sand	20	80	90	60	0	1
Packsaddle	13-Jul-07	H	Wetland/ Upland	Sand	60	40	70	30	5	2
Black Kettle	14-Jul-07	A	Upland	Clay/Sand	2	98	93	20	10	1
Black Kettle	14-Jul-07	B	Upland	Clay/Sand	30	70	70	30	15	1
Black Kettle	14-Jul-07	C	Upland	Clay/Sand	10	90	90	35	0	1
Black Kettle	14-Jul-07	D	Upland	Clay/Sand	50	50	50	70	0	1
Black Kettle	14-Jul-07	E	Upland	Clay/Sand	60	40	50	70	10	1
Black Kettle	14-Jul-07	F	Upland	Clay/Sand	8	92	80	40	2	1
Black Kettle	14-Jul-07	G	Upland	Clay/Sand	30	70	70	40	10	1
Black Kettle	14-Jul-07	H	Upland	Clay/Sand	10	90	80	30	0	1
Black Kettle	15-Jul-07	A	Upland	Clay/Sand	20	80	30	50	0	1
Black Kettle	15-Jul-07	B	Upland	Sand	10	90	70	30	0	1
Black Kettle	15-Jul-07	C	Upland	Sand	20	80	70	30	1	1
Black Kettle	15-Jul-07	D	Upland	Clay	40	60	60	10	0	2
Black Kettle	15-Jul-07	E	Upland	Clay	30	70	70	40	10	1
Black Kettle	15-Jul-07	F	Upland	Sand	5	95	75	70	0	1
Black Kettle	15-Jul-07	G	Upland	Clay	20	80	50	50	0	1
Black Kettle	15-Jul-07	H	Upland	Sand	5	95	95	5	0	1

Black Kettle	16-Jul-07	A	Upland	Clay/Sand	5	95	85	55	0	1	
Black Kettle	16-Jul-07	B	Upland	Clay/Sand	30	70	70	50	0	1	
Black Kettle	16-Jul-07	C	Upland	Clay	30	70	60	10	0	1	
Black Kettle	16-Jul-07	D	Upland	Clay	5	95	50	20	2	1	
Black Kettle	16-Jul-07	E	Upland	Clay/Sand	50	50	70	90	20	1	
Black Kettle	16-Jul-07	F	Upland	Clay/Sand	5	95	40	90	10	1	
Black Kettle	16-Jul-07	G	Upland	Clay/Sand	50	50	70	70	30	2	
Black Kettle	16-Jul-07	H	Upland	Clay/Sand	15	85	90	70	0	1	
Sandy Sanders	17-Jul-07	A	Upland	Clay	40	60	80	0	2	1	
Sandy Sanders	17-Jul-07	B	Upland	Clay	40	60	40	30	1	2	
Sandy Sanders	17-Jul-07	C	Upland	Clay	30	70	70	20	5	2	
Sandy Sanders	17-Jul-07	D	Wetland/ Upland	Clay	60	40	90	5	1	1	
Sandy Sanders	17-Jul-07	E	Upland	Clay	30	70	70	40	10		
Sandy Sanders	17-Jul-07	F	Upland	Clay	5	95	85	10	5	1	
Sandy Sanders	17-Jul-07	G	Upland	Clay	10	90	90	20	40	1	
Sandy Sanders	17-Jul-07	H	Upland	Clay	30	70		60	30	1	
Sandy Sanders	18-Jul-07	A	Upland	Clay	60	40	70	20	15	1	
Sandy Sanders	18-Jul-07	B	Upland	Rock	35	65	50	35	15	1	
Sandy Sanders	18-Jul-07	C	Upland	Clay	40	60	70	15	15	1	
Sandy Sanders	18-Jul-07	D	Upland	Rock	30	70	50	0	20	1	
Sandy Sanders	18-Jul-07	E	Upland	Rock	45	55	60	10	20	1	
Sandy Sanders	18-Jul-07	F	Upland	Clay/Sand	25	75	40	10	0	1	
Sandy Sanders	18-Jul-07	G	Upland	Clay	60	40		30	10	1	
Sandy Sanders	18-Jul-07	H	Upland	Clay	20	80	85	15	20	1	
Sandy Sanders	19-Jul-07	A	Upland	Clay	50	50	70	0	0	1	
Sandy Sanders	19-Jul-07	B	Upland	Clay/Rock	30	70	0	0	0	1	
Sandy Sanders	19-Jul-07	C	Upland	Clay/Rock	30	70	80	15	0	1	
Sandy Sanders	19-Jul-07	D	Upland	Clay	15	85	80	5	0	1	
Sandy Sanders	19-Jul-07	E	Upland	Clay	20	80	70	10	5	1	
Sandy Sanders	19-Jul-07	F	Upland	Clay	10	90	90	10	5	1	
Sandy Sanders	19-Jul-07	G	Upland	Clay/Rock	20	80	50	20	40	1	
Sandy Sanders	19-Jul-07	H	Upland	Clay	30	70	0	15	5	1	
Fort Supply	31-Jul-07	A	Wetland/ Upland	Sand	5	95	85	25	15	1	
Fort Supply	31-Jul-07	B	Upland	Sand	50	50	40	70	10	1	

Fort Supply	31-Jul-07	C	Upland	Sand	25	75	75	25	1	1
Fort Supply	31-Jul-07	D	Upland	Clay/Sand	40	60	40	20	0	1
Fort Supply	31-Jul-07	E	Upland	Clay/Sand	30	70	90	5	40	1
Fort Supply	31-Jul-07	F	Upland	Sand	5	95	90	0	1	1
Fort Supply	31-Jul-07	G	Upland	Clay	50	50	70	0	0	2
Fort Supply	31-Jul-07	H	Upland	Sand	5	95	85	20	1	2
Fort Supply	1-Aug-07	A	Upland	Sand	40	60	50	50	1	1
Fort Supply	1-Aug-07	B	Upland	Sand	60	40	75	75	0	1
Fort Supply	1-Aug-07	C	Upland	Clay/Sand	40	60	60	30	10	1
Fort Supply	1-Aug-07	D	Upland	Sand	60	40	80	60	0	1
Fort Supply	1-Aug-07	E	Upland	Sand	25	75	90	30	0	1
Fort Supply	1-Aug-07	F	Upland	Sand	30	70		50	5	1
Fort Supply	1-Aug-07	G	Upland	Sand	40	60	90	40	0	1
Fort Supply	1-Aug-07	H	Upland	Sand	70	30	90	5	80	1
Fort Supply	2-Aug-07	A	Upland	Sand	40	60	60	50	20	1
Fort Supply	2-Aug-07	B	Upland	Clay/Sand	20	80	50	50	115	1
Fort Supply	2-Aug-07	C	Upland	Sand	30	70	90	40	5	1
Fort Supply	2-Aug-07	D	Upland	Sand	40	60	20	40	0	1
Fort Supply	2-Aug-07	E	Upland	Sand	15	85	50	50	10	1
Fort Supply	2-Aug-07	F	Wetland/ Upland	Sand	60	40	30	50	50	1
Fort Supply	2-Aug-07	G	Upland	Sand	20	80	50	30	0	1
Fort Supply	2-Aug-07	H	Upland	Sand	20	80	85	40	0	1
Cooper	3-Aug-07	A	Upland	Clay/Sand	40	60	60	40	0	2
Cooper	3-Aug-07	B	Upland	Sand	20	80	40	30	0	2
Cooper	3-Aug-07	C	Upland	Sand	40	60	60	40	0	2
Cooper	3-Aug-07	D	Upland	Sand	40	60	60	50	0	2
Cooper	3-Aug-07	E	Upland	Sand	40	60	60	40	0	2
Cooper	3-Aug-07	F	Upland	Sand	40	60	60	50	0	2
Cooper	3-Aug-07	G	Upland	Sand	20	80	90	20	1	2
Cooper	3-Aug-07	H	Upland	Clay/Sand	30	70	70	20	1	2
Cooper	4-Aug-07	A	Upland	Sand	60	40	85	15	2	2
Cooper	4-Aug-07	B	Upland	Sand	60	40	20	30	0	2
Cooper	4-Aug-07	C	Upland	Sand	70	30	60	10	0	2
Cooper	4-Aug-07	D	Upland	Sand	30	70	70	40	0	2

Cooper	4-Aug-07	E	Upland	Sand	60	40	80	10	1	1	
Cooper	4-Aug-07	F	Upland	Sand	30	70		50	0	1	
Cooper	4-Aug-07	G	Upland	Sand	40	60	40	5	0	1	
Cooper	4-Aug-07	H	Upland	Sand	30	70	70	40	0	1	
Cooper	5-Aug-07	A	Upland	Sand	25	75	80	20	0	2	
Cooper	5-Aug-07	B	Upland	Sand	50	50	40	40	0	2	
Cooper	5-Aug-07	C	Upland	Sand	30	70	40	5	0	1	
Cooper	5-Aug-07	D	Upland	Sand	30	70	20	50	0	1	
Cooper	5-Aug-07	E	Upland	Sand	70	30	60	5	2	1	
Cooper	5-Aug-07	F	Upland	Sand	40	60	60	40	1	2	
Cooper	5-Aug-07	G	Upland	Sand	15	85	90	3	1	1	
Cooper	5-Aug-07	H	Upland	Sand	30	70	50	40	5	1	
Canton	6-Aug-07	G	Upland	Sand	50	50	50	50	20	1	
Canton	6-Aug-07	H	Upland	Clay/Sand	40	60	90	60	25	1	
Canton	7-Aug-07	A	Wetland/ Upland	Sand	60	40	20	10	10	3	
Canton	7-Aug-07	B	Upland	Clay	40	60	70	0	30	1	
Canton	7-Aug-07	C	Upland	Sand	10	90	85	0	10	1	
Canton	7-Aug-07	D	Upland	Sand	30	70	60	0	30	1	
Canton	7-Aug-07	E	Upland	Sand	80	20	98	0	0	1	
Canton	7-Aug-07	F	Upland	Sand	75	25	20	0	0	1	
Canton	7-Aug-07	G	Upland	Sand	15	85	80	0	5	1	
Canton	7-Aug-07	H	Wetland/ Upland	Loam	40	60	70	1	0	1	
Canton	8-Aug-07	A	Upland	Sand	20	80	80	0	50	1	
Canton	8-Aug-07	B	Upland	Clay	40	60	20	30	50	1	
Canton	8-Aug-07	C	Upland	Sand	70	30	60	25	55	1	
Canton	8-Aug-07	D	Upland	Sand	40	60	40	40	50	1	
Canton	8-Aug-07	E									
Canton	8-Aug-07	F									
Canton	8-Aug-07	G	Upland	Sand	20	80	50	5	0	1	
Canton	8-Aug-07	H	Upland	Sand	20	80	60	0	0	1	

New Records of Mammals from Western Oklahoma

Zachary P. Roehrs, Brandi S. Coyner, Kimberly N. King, Deanna L. Martinez, Janet K. Braun, Meredith J. Hamilton, David M. Leslie, Jr, and Ronald A. Van Den Bussche

Abstract

We report new locality records for 23 species of mammals from western Oklahoma collected during spring and summer 2005, 2006, and 2007. Specimens were collected as part of a survey of 14 western Oklahoma Wildlife Management Areas. These records enhance our understanding of the distribution and natural history of mammalian fauna on the southern Great Plains.

Key words: mammals, county records, western Oklahoma, Wildlife Management Areas

Introduction

Despite extensive treatment of the mammals of Oklahoma by Caire et al. (1989) and the literature that has followed on the natural history and distribution of mammals in the state (Dalquest et al. 1990; Girard et al. 1990; Gettinger 1991; Clark and Tumlison 1992; Stangl et al. 1992, 2004; Tappe et al. 1994; Stancampiano and Caire 1995; Taulman and Robbins 1996; Tyler and Donelson 1996; Stangl and Carr 1997; Choate and Jones 1998; Nisbett et al. 2001; Lomolino and Smith 2003; McCaffrey et al. 2003; Wallace and Stangl 2003; Stancampiano and Schnell 2004; Thill et al. 2004; Braun and Revelez 2005; McDonald et al. 2006), further basic knowledge of mammalian natural history is necessary and will enhance the Oklahoma Comprehensive Wildlife

Conservation Strategy (Oklahoma Department of Wildlife Conservation 2005). Natural history data are necessary before scientists can elucidate fundamental ecological principles and parameters that, along with natural history information, are essential to detect changes in an organism's distribution, density and demography, community-level interactions, or in the underlying processes that have shaped ecosystems in Oklahoma. Furthermore, natural history information is the foundation of biological sciences, even those fields further removed from this basic knowledge including agriculture research, behavior, cellular biology, ecotoxicology, evolution, genetics, and proteomics (Bartholomew 1986, Schmidly 2005). It is this basic natural history information about Oklahoma mammals (or any organism) that is required to develop a sound foundation for sustainable economic development, resource management, and responsible conservation of the states resources into the future (Wilcove and Eisner 2000; Schmidly 2002, 2005).

We report new county records for 23 species of mammals represented by 95 specimens collected from 12 counties in western Oklahoma. These specimens were collected from March through August 2005, 2006, and 2007 as part of a survey of the following 14 western Oklahoma Wildlife Management Areas (WMA): Altus-Lugert, Beaver River, Black Kettle, Canton, Cooper, Ellis County, Fort Cobb, Fort Supply, Hackberry Flat, Mountain Park, Optima, Packsaddle, Rita Blanca, and Sandy Sanders (Fig. 1). These WMAs are located within the Southern High Plains (Panhandle) and Central Rolling Red Plains (western one-fourth of state excluding Panhandle) Major Land Resource Areas of Oklahoma (Natural Resources Conservation Service 2006). In this part of Oklahoma, three level III ecoregions can be found including the High Plains, Southwestern Tablelands, and Central Great Plains Ecoregions (Woods et al. 2005). We

include several mammal records that were reported previously from owl pellets (McDonald et al. 2006) to provide further support for these occurrence records with complete vouchers specimens (skin and skeleton) from a location of habitation, under specific conditions, and on a specific date; these data are unattainable from owl pellet specimens.

Methods

All specimens were collected under guidelines of the American Society of Mammalogists (Gannon et al. 2007), and collection protocols were approved by the Oklahoma State University Institutional Animal Care and Use Committee and the Oklahoma Department of Wildlife Conservation. Specimens were collected using mist nets (Avinet, Inc., Dryden, NY) over pools and Sherman live traps (H.B. Sherman Traps, Tallahassee, FL) set in transects. Voucher specimens (including tissues and embryonic material) for all county records reported herein were deposited in the Oklahoma State University Collection of Vertebrates (OSU for specimens; OK for tissues and embryological materials). Parasites (mainly ectoparasites) were deposited in the University of Nebraska State Museum, Harold W. Manter Laboratory of Parasitology. Specific locality information originally was recorded in miles and has been converted to kilometers. Locality coordinates were recorded as uncorrected Universal Transverse Mercator (UTM) units with Garmin GPS 12XL handheld receivers (Olathe, KS) using the World Geodetic System of 1984 Geodetic Reference System. Localities are listed from north to south then west to east in "speciemens examined" sections. Taxonomy and common names follows Wilson and Reeder (2005) except where noted.

Species Accounts

ORDER DIDELPHIMORPHIA

Family Didelphidae

Didelphis virginiana Kerr, 1792

(Virginia Opossum)

The Virginia opossum is the only marsupial in Oklahoma and is ubiquitous in a variety of habitats across the state. However, over one-quarter of counties lack specimen records (Caire et al. 1989; Braun and Revelez 2005), despite being one of the most harvested furbearers in Oklahoma (Hatcher 1986). A new county record for Roger Mills County was recovered on 28 June 2005 from a salvaged road kill adult.

Specimens examined (1).—Roger Mills Co.: 1.29 km W Cheyenne on Hwy. 47A, UTM 14-3941665N-0437815E, 609 m, 1 male (OSU–12995).

ORDER CINGULATA

Family Dasypodidae

Dasypus novemcinctus Linnaeus, 1758

(Nine-banded Armadillo)

The nine-banded armadillo has the most extensive range of any dasypodid (Taulman and Robbins 1996). It was first reported in the United States in 1849 and has since rapidly expanded its range north and east (Taulman and Robbins 1996). Range expansion is due to landscape changes, particularly increases in woody vegetation caused by suppression of fire and cattle grazing, and climate change (Taulman and Robbins 1996). The nine-banded armadillo was first reported in Oklahoma in 1932 in Rogers County (Tyler and Donelson 1996). Its current distribution is reported to include all of

Oklahoma, but records are lacking for more than one-half the counties (Caire et al. 1989; Braun and Revelez 2005). The following records are of a salvaged road kill adult collected on 26 June 2005 in Ellis County and skeletal remains of an adult recovered from granite bolder strewn mixedgrass prairie on 22 May 2006 in Kiowa County.

Specimens examined (2).—Ellis Co.: 29.61 km S, 3.70 km E Arnett on Hwy. 283 at north end of Canadian River bridge, UTM 14-3969975N-0434421E, 489 m, 1 male (OSU–12996). Kiowa Co.: 5.79 km N, 6.12 km W Mountain Park in Mountain Park WMA, UTM 14-3845039N-0498705E, 451 m, 1 sex unknown (ZPR060522:684).

ORDER SORICOMORPHA

Family Talpidae

Scalopus aquaticus (Linnaeus, 1758)

(Eastern Mole)

The eastern mole is a fossorial insectivore found predominately in loamy and moist sandy soils of Oklahoma (Caire et al. 1989). Dalquest et al. (1990) documented the first record of this species in the Oklahoma Panhandle. A second record for the Oklahoma Panhandle is reported herein from Texas County obtained from an owl pellet collected on 16 March 2005 below an active barn owl (*Tyto alba*) roost in the limestone wall of a rocky ravine. The locality of this roost is approximately 79 km from the nearest point on the Cimarron County border; 32.5 km from the Kansas border; 22.5 km from the Texas border, and 18 km from the Beaver County border. Based on reported home ranges for barn owls from Texas (355 ha; Byrd 1982) and Nebraska (198 ha; Gubanyi

1989), we feel confident that this record came from Texas County in the area surrounding Optima WMA.

Specimens examined (1).—Texas Co.: 29.45 km E Guymon in Optima WMA, UTM 14-4063803N-0307865E, 851 m, 1 sex unknown (OSU–12997).

ORDER CHIROPTERA

Family Molossidae

Tadarida brasiliensis (I. Geoffroy-Saint-Hilaire, 1824)

(Brazilian Free-tailed Bat)

A trogloxene, the Brazilian free-tailed bat is a resident of the gypsum cave region of western Oklahoma where large maternity colonies reside generally from May to October (Caire et al. 1989). Scattered records of mostly single individuals roosting in anthropogenic structures have been documented across the state. One such record reported here, was found roosting under a covered porch of the Hackberry Flat WMA maintenance shop by the area biologist Kelvin Schoonover in the first week of May 2006. Sex determination of this specimen was not possible because of its condition. Because these bats are capable of long-distance flights each night while foraging (Best and Geluso 2003) and migrate south into Texas and Mexico in the winter (for Oklahoma populations; Glass 1982), it is unclear whether this record is of a resident roosting at this locality, a resident that did not return to its usual day roost, or a migrant utilizing a transient roost on its return to its summer roost.

Specimens examined (1).—Tillman Co.: 11.91 km S, 5.15 km E Frederick (county seat) in Hackberry Flat WMA, UTM 14-3793942N-0503425E, 359 m, 1 sex unknown, (no number OSU–?).

Family Vespertilionidae

Lasiurus borealis (Müller, 1776)

(Eastern Red Bat)

A foliage rooster, the eastern red bat is associated with eastern deciduous forest in North America. In Oklahoma, it was believed to be historically uncommon in the western one-half of the state, but it likely is increasing in abundance due to increased woody vegetation. The eastern red bat is the most common summer bat in central Oklahoma (Caire et al. 1989). Six new records are reported here for Caddo County captured in mist nests over Cobb Creek on 31 July 2005 (OK9510, OK9512 – OK9514) and 6 July 2006 (OK9791, OK9792). Eastern red bats caught in 2005 included one female flying young-of-the-year (FYOY; OK9512), and an adult male with black, descended testes (OK9510). In 2006, a male FYOY (OK9791) and one adult female (OK9792) were captured. A male FYOY (OK11453) also was collected from Ellis County on 13 July 2007 over West Creek.

Specimens examined (7).—Caddo Co.: 7.40 km S, 18.67 km W Binger in Fort Cobb WMA on Cobb Creek, UTM 14-3899498N-0541084E, 418 m, 1 female (OK9512), 1 male (OK9510); 7.89 km S, 18.83 km W Binger in Fort Cobb WMA on Cobb Creek, 14-3899523N-0541052E, 408 m, 1 female (OK9792), 1 male (OK9791). Ellis Co.: 27.20 km S, 4.18 km E Arnett in Packsaddle WMA on West Creek, UTM 14-3971864N-0434908E, 635 m, 1 male (OK11453).

Perimyotis subflavus (F. Cuvier, 1832)

(Eastern Pipistrelle)

Recent molecular work by Hoofer and Van Den Bussche (2003) and Hoofer et al. (2006) on vespertilionid bats supported previous studies (bacula, Hamilton 1949; chromosomes, Baker and Patton 1967) documenting polyphyly of the genus *Pipistrellus* with respect to New World pipistrelles. We follow Menu (1984) in placing this species in the genus *Perimyotis* rather than the genus *Pipistrellus*. The eastern pipistrelle has been recorded across Oklahoma, excluding the Panhandle; however, new records in western Texas (including the Panhandle), Colorado, and Union County, New Mexico (west adjacent Cimarron Co., Oklahoma; Geluso et al. 2005) make it plausible that *P. subflavus* is distributed statewide. These western range expansions are hypothesized to be the result of *P. subflavus* exploiting the wooded riparian corridors that are expanding across the Great Plains (Sparks and Choate 2000; Geluso et al. 2005). Caves are used as winter hibernacula and caves and trees as spring, summer, and autumn roosts (Caire et al. 1989). One new record of an adult female was collected on 22 May 2005 in a mist net over an oxbow of the Canadian River, Dewey County.

Specimens examined (1).—Dewey Co.: 10.62 km N, 14.00 km W Canton in Canton WMA on oxbow of Canadian River, UTM 14-4000922N-0522639E, 504 m, 1 female (OK9262).

Corynorhinus townsendii (Cooper, 1837)

(Townsend's Big-eared Bat)

Corynorhinus townsendii pallescens (western Oklahoma subspecies) inhabits gypsum and granite outcrops of western Oklahoma (Caire et al. 1989). These outcrops of interstratal gypsum karst cover approximately 4% of the state in three principle outcroppings: Cimarron, Weatherford, and Mangum Gypsum Hills (Johnson 1972, 2003). Most accounts describe *C. townsendii* as a sedentary species mainly foraging in riparian areas around day roosts. Movements from and between maternity colonies and hibernacula average 1.0 – 11.6 km (Humphrey and Kuntz 1976; Kuntz and Martin 1982). Significant morphological variation exists among populations in close proximity from Kansas, Oklahoma, and Texas that discriminate function analysis associated >90% of all specimens to the correct locality of collection, possibly reflecting restricted interpopulation gene flow or differential selection pressures for each subpopulations (Smith and Tumlison 2004). Females appear to be philopatric based on observational studies (Pearson et al. 1952) and molecular data (Smith et al., *in prep*); males, however, may travel longer distances (Smith et al., *in prep*). On 17 July 2007, *C. townsendii* was observed roosting in two caves on the north side of Minnow Creek. The first cave was about 50 m downstream from the locality listed below, ranged from 0.6–1.5 m in height and width, was approximately 75–100 m long, and had multiple openings. One *C. townsendii* was observed in this cave. The second cave had a larger openings along the creek (~ 3 m diameter) and had side tunnels that tapered to a size similar to the first cave. Four *C. townsendii* were observed in this cave, and one was collected by hand from the ceiling of the cave.

Specimens examined (1).—Beckham Co.: 16.58 km S, 2.57 km E Erick in Sandy Sanders WMA, UTM 14-3880494N-0423387E, 588 m, 1 male (OK11530).

Myotis velifer (J. A. Allen, 1890)

(Cave Myotis)

The cave myotis is one of the largest members of the genus, and as its common name implies is another trogloxene (Caire et al. 1989). However, it has been recorded roosting in man-made structures in the state (Stangl et al. 1992; Wallace and Stangl 2003). The distribution of the species in Oklahoma is centered on the gypsum cave region of the western one-half of the state (Caire et al. 1989). We report eight new records of adults from Beckham County captured in mist nests over Minnow Creek on 1 June 2005 (OK9271, OK9272, DLM-067), 15 May 2006 (OK9653–OK9655), and 18 July 2007 (OK11546, OK11547). Two males were also collected in Ellis County over West Creek on 13 July 2007 (OK11451, OK11452).

Specimens examined (10).—Beckham Co.: 16.42 km S, 1.29 km E Erick Post Office (PO) in Sandy Sanders WMA along Minnow Creek, UTM 14-3880433N-0422149E, 548 m, 6 females (OK9271, OK9272, DLM-067, OK9653, OK9655, OK11546), 2 male (OK9654, OK11547). Ellis Co.: 27.20 km S, 4.18 km E Arnett in Packsaddle WMA over West Creek, UTM 14-3971864N-0434908E, 635 m, 2 males (OK11451, OK11452).

Myotis yumanensis (H. Allen, 1864)

(Yuma Myotis)

The Yuma myotis has been recorded only from the Black Mesa region of the northwestern corner of Cimarron County (Caire et al. 1989; Dalquest et al. 1990). On 16

June 2007, we caught three *Myotis yumanensis* in nets set over a stock tank. Of these three adult females, two were pregnant each with one fetus (preserved; OK11237, OK11237). The area was dominated by shortgrass prairie with a slightly irregular relief, different from the topography and piñon-juniper (*Pinus* subsection *Cembroides-Juniperus*) vegetation of the mesa and canyon lands of northwestern Cimarron County. Findley et al. (1975) and Caire et al. (1989) noted that Yuma myotis roost in anthropogenic structures. This stock tank is about 0.16 km to the southwest of a farmyard with an old wooden barn and various other builds, and about 0.80 km to the southeast of the town of Felt, Oklahoma. The closest trees are in the farmyard and a picnic area about 0.16 km to the northwest of the stock tank. Aqua Fria Creek is an intermittent creek about 0.48 km to the south of the stock tank and has a limestone outcrop on the south side, without substantial (>1 m wide or deep) crevices or caves. These specimens are not new county records but do expand the range of this species in Oklahoma. These records confirm the predictions of Caire et al. (1989) that the Yuma myotis should be found in southwestern Cimarron County, and expand our knowledge of the ecology of this bat on the margins of its distribution.

Specimens examined (3).—Cimarron Co.: 1.29 km S, 0.64 km E Felt in Rita Blanca WMA, UTM 13-4048061N-0697913E, 1351 m, 3 females (OK11235–OK11237).

ORDER CARNIVORA

Family Mephitidae

Mephitis mephitis (Schreber, 1776)

(Striped Skunk)

The striped skunk is common across Oklahoma and can be found in all types of habitat including crop fields, farmyards, towns, and cities. These omnivores are well known for their odor that they use as a defense mechanism to ward off predators. We collected the skull of a striped skunk on 5 May 2007 in Kiowa County. Caire et al. (1989) recorded *M. mephitis* as occurring in Kiowa County, but the specimen reported herein constitutes the first specimen collected in this county.

Specimens examined (1).—Kiowa Co.: 6.12 km N, 5.15 km E Granite in Altus-Lugert WMA, UTM 14-3874798N-0470434E, 482 m, 1 sex unknown (ZPR070504:904).

Family Procyonidae

Procyon lotor (Linnaeus, 1758)

(Raccoon)

This resourceful omnivore is found across Oklahoma (Caire et al. 1989) and is one of the most important furbearers in the state (Hatcher 1986). In western Oklahoma, it is most commonly associated with riparian habitat and anthropogenic environments including towns and farms. We collected a skull salvaged from a road kill in the northbound lane of Hwy. 283 on 15 March 2006.

Specimens examined (1).—Ellis Co.: 22.53 km N, 11.43 km W Strong City on Hwy. 283 north of Canadian River bridge, UTM 14-3970133N-0434368E, 622 m, 1 female (OK9580).

ORDER ARTIODACTYLA

Family Cervidae

Odocoileus virginianus (Zimmermann, 1780)

(White-tailed Deer)

The white-tailed deer was nearly extirpated in Oklahoma (Caire et al. 1989), but populations recovered though appropriate management and reintroduction programs. Caire et al. (1989) noted that white-tailed deer were present across most of Oklahoma, but in western Oklahoma were restricted to the wooded riparian habitats of river drainages. This preferred edge type habitat is no longer restricted only to these river drainages providing white-tailed deer more available habitat in western Oklahoma and allowing for increased population levels. Today, white-tailed deer are harvested across Oklahoma at record levels, but actual scientific specimens documenting the distribution of this species in the state are limited. We collected a skull and antler sheds in Beaver County on 6 August 2006, and antler sheds in Beckham County on 19 July 2007. Caire et al. (1989) reported white-tailed deer as occurring in Beckham County, but these records are the first specimens collected from this county.

Specimens examined (3).—Beaver Co.: 2.41 km N, 11.27 km W Beaver in Beaver River WMA, UTM 14-4077786N-0353398E, 756 m, 1 male (ZPR060807:690); 0.16 km S, 18.02 km W Beaver in Beaver River WMA, UTM 14-4075888N-0346990E, 761 m, 1 female (ZPR060806:693). Beckham Co.: 16.74 km S, 0.16 km E Erick in Sandy Sanders WMA, UTM 14-3880194N-0420897E, 584 m, 1 male (ZPR070719:916).

ORDER RODENTIA

Family Heteromyidae

Perognathus flavescens Merriam, 1889

(Plains Pocket Mouse)

Current distribution of the plains pocket mouse in Oklahoma encompasses the area west of the 98th meridian (Caire et al. 1989). However, studies of the distributional boundaries of this species and those of *P. flavus* and *P. merriami* in Oklahoma are in need of clarification. Based on Caire et al. (1989), the congeneric *P.flavus* has a sympatric distribution with *P. flavescens*. All recent studies concerning systematics, taxonomy, and biogeography of these species have not included Oklahoma specimens. Recent molecular analysis focused on Oklahoma populations of *Perognathus* supports parapatry (Coyner et al., *in prep*), documenting potential problems with current identification of these species from Oklahoma and a need for biogeographic, morphologic, and taxonomic reassessment.

Despite one record from Harmon County (Martin and Preston 1970), most specimen records are from northwestern Oklahoma (Caire et al. 1989; Stangl et al. 1992). This species usually is found in areas with sandy to sandy-loam soils and grassland vegetation, often including a shrubby component (Jones et al. 1983; Caire et al. 1989; Choate and Jones 1998). These conditions aptly describe the habitat in which we collected specimens in Beaver County on 19 March 2005 and in Ellis County on 27 (OK9411), 28 (OK9423, OK9424) and 29 June 2005 (OK9447) and 13 July 2007 (OK11423, OK11424, OK11427).

Specimens examined (8).—Beaver Co.: 3.62 km N, 6.60 km W Beaver in Beaver River WMA, UTM 14-4078048N-0348941E, 767 m, 1 male (OK9140). Ellis Co.: 26.23 km S, 5.63 km E Arnett in Packsaddle WMA, UTM 14-3972864N-0436753E, 686 m, 1 female (OK11423); 26.55 km S, 2.57 km E Arnett in Packsaddle WMA, UTM 14-

3972784N-0433194E, 693 m, 1 male (OK9447); 26.55 km S, 10.14 km E Arnett in Packsaddle WMA, UTM 14-3972624N-0440073E, 687 m, 1 female (OK11424), 1 male (OK11427); 27.68 km S, 6.92 km E Arnett in Packsaddle WMA, UTM 14-3971402N-0437369E, 648 m, 2 females (OK9423, OK9424); 27.84 km S, 10.94 km E Arnett in Packsaddle WMA, UTM 14-3971262N-0441177E, 676 m, 1 male (OK9411).

Perognathus flavus Baird, 1855

(Silky Pocket Mouse)

The silky pocket mouse has a distribution encompassing the western one-third of Oklahoma and the Panhandle (Caire et al 1989). Since Caire et al. (1989), *P. merriami* has been re-elevated to specific status based on karyotype (Lee and Engstrom 1991) and morphology (Brant and Lee 2006). As detailed above, further research will be necessary to elucidate biogeographic, morphologic, and taxonomic issues in this genus. Two new county records for the silky pocket mouse are documented here. The first was collected on 7 July 2006 in Caddo County, but we caution that the specimens collected in Caddo County may be reidentified as *P. merriami* pending results of Coyner et al. (*in prep*). The second was collected on 6 August 2006 in Texas County, and although Caire et al. (1989) reported *P. flavus* as occurring in Texas County this record constitutes the first specimen record for the county.

Specimens examined (2).—Caddo Co.: 10.14 km S, 12.23 km W Binger in Fort Cobb WMA, UTM 14-3897999N-0548178E, 421 m, 1 female (OK9786). Texas Co.: 19.47 km S, 1.13 km E Hooker in Optima WMA, UTM 14-4061935N-0303608E, 849 m, 1 female (OK11014).

Family Cricetidae

Microtus ochrogaster (Wagner, 1842)

(Prairie Vole)

Tall to mixedgrass prairies with thick layers of duff are the preferred habitat of the prairie vole (Jones 1983). Nevertheless, voucher specimens have been collected in the Oklahoma and Texas Panhandles (Poole and Matlack 2007) in upland shortgrass habitats (Clark and Tumlison 1992), lowland shortgrass prairie adjacent to playas (McCaffrey et al. 2003), riparian habitat along rivers, fallow fields (Reed and Choate 1988), fence rows (Manning and Jones 1988), and towns (Choate and Killebrew 1991). One specimen was even caught in a pitfall in the middle of a prairie dog town in shortgrass prairie (McCaffrey et al. 2003). We report a new record from Dewey County based on a specimen collected on 22 May 2005 in a fallow field dominated by sparse annual grasses and forbs with no duff layer. The specimen was a juvenile that could have emigrated from its natal home range or been feeding in the field. The area surrounding the field was forested on three sides, with an agricultural field to the north. The only established grassland habitat in the area was in ditches along roads and between fields.

Specimens examined (1).—Dewey Co.: 10.30 km N, 8.37 km W Canton in Canton WMA, UTM 14-4000407N-0529058E, 495 m, 1 male (OK9233).

Microtus pinetorum (Le Conte, 1830)

(Woodland Vole)

The woodland vole is an eastern forest species preferring sites with well-drained soils and a well-developed layer of leaf litter and duff (Smolen 1981). It is a gregarious burrowing species living in small populations often distributed sparsely in its preferred habitat (Jones 1983). Several new distributional records for this species have been reported previously in western Oklahoma (Clark and Tumlison 1992; Braun and Revelez 2005). We obtained a new record for Dewey County on 22 May 2005, which was outside of its formerly known distribution, and constitutes the westernmost record in northern Oklahoma. We hypothesize that this and other recent records document a westward movement of the species along now woody riparian corridors associated with major waterways not historically heavily wooded.

Specimens examined (1).—Dewey Co.: 9.01 km N, 7.72 km W Canton in Canton WMA, UTM 14-3999278N-0529504E, 499 m, 1 female (OK9245).

Baiomys taylori (Thomas, 1887)

(Northern Pygmy Mouse)

The northern pygmy mouse has a well documented record of northward range expansions in Texas and Oklahoma (Diersing and Diersing 1979; Stangl et al. 1983; Austin and Kitchens 1986; Cleveland 1986; Stangl and Dalquest 1986; Hollander et al. 1987; Choate et al. 1990; Caire 1991; Tumlison et al. 1993; Brant and Dowler 2002). It was first recoded in Oklahoma by Stangl and Dalquest (1986), and since has been found in three other counties (Cotton, Greer, and Harmon). Here we report the northern most record for this species from Beckham County on 17 May 2006 (OK9669) and 20 July 2007 (OK11559). Although found in a variety of habitats (Eshelman and Cameron

1987), these recent expansion records from Oklahoma and Texas have certain habitat similarities. Typically, these specimens were collected in areas with a densely vegetated microhabitat (often road-side ditches) in shortgrass or mixedgrass prairie with some mesquite (*Prosopis glandulosa*) present. *Opuntia* sp. is often present, which has been suggested as important for *B. taylori* (Eshelman and Cameron 1987). Establishment and expansion of mesquite prairie with dense *Opuntia* caused by heavy grazing and reduced fire frequency may be causing these range expansions.

Specimens examined (2).—Beckham Co.: 18.67 km S, 6.44 km E Erick in Sandy Sanders WMA, UTM 14-3878352N-0427794E, 546 m, 1 female (OK11559); 19.79 km S, 7.24 km E Erick in Sandy Sanders WMA, UTM 14-3877319N-0428331E, 541 m, 1 female (OK9669).

Neotoma floridana (Ord, 1818)

(Eastern Woodrat)

The eastern woodrat is an eastern deciduous forest species recognized for its construction of middens (Rainey 1956). This species prefers woody vegetation and woody edge habitats including upland and riparian forests, shelter belts, and shrubby areas with dense overhead cover (Rainey 1956; Caire et al. 1989). Historically, this species would have been absent from counties in western Oklahoma but it is expanding westward with the increase of woody vegetation due to fire suppression and plantings. New county records were obtained in Ellis County on 29 (OK9440) and 30 June 2005 (OK9461) and Roger Mills County on 26 June 2005 (OK9391, OK9392). These records represent the westernmost records of *N. floridana* in Oklahoma.

Specimens examined (5).—Ellis Co.: 8.21 km S, 13.52 km W Arnett in Ellis County WMA, UTM 14-3991055N-0417190E, 683 m, 1 male (OK9461); 25.91 km S, 1.29 km E Arnett in Packsaddle WMA, UTM 14-3972933N-0431879E, 647 m, 1 female (OK9440). Roger Mills Co.: 2.09 km S, 1.61 km E Cheyenne in Black Kettle WMA, UTM 14-3938784N-0440744E, 651 m, 2 females (OK9391, OK9392).

Onychomys leucogaster (Wied-Neuwied, 1841)
(Northern Grasshopper Mouse)

The northern grasshopper mouse is found in the western one-half of Oklahoma and reaches its eastern distributional limit in Canadian, Grant, and Kingfisher counties. It often is associated with sandy soils and is known for its carnivorous diet and high-pitched vocalizations (Ruffer 1964; Caire et al. 1989). We obtained new records on 2–3 June 2005 (OK9279, OK9282, OK9288, OK9290) and 16 May 2006 (OK9644) in Beckham County and on 21 May 2006 (OK9706) in Kiowa County.

Specimens examined (6).—Beckham Co.: 14.08 km S, 3.22 km W Erick PO in Sandy Sanders WMA, UTM 14-3882169N-0417421E, 636 m, 1 female (OK9290), 1 male (OK9288); 14.89 km S, 2.74 km E Erick PO in Sandy Sanders WMA, UTM 14-3881003N-0423855E, 620 m, 1 female (OK9279) 1 male (OK9644); 16.58 km S, 2.09 km E Erick PO in Sandy Sanders WMA, UTM 14-3879274N-0422735E, 614 m, 1 male (OK9282). Kiowa Co.: 7.40 km N, 5.31 km E Granite in Altus-Lugert WMA, UTM 14-3876283N-0470814E, 483 m, 1 male (OK9706).

Peromyscus maniculatus (Wagner, 1845)

(North American Deermouse)

The North American deermouse is the smallest representative of this genus in Oklahoma and is common across the state (Caire et al. 1989). It is found most commonly in grasslands and other open habitats; as shrubby or woody vegetative components increase, its congener *Peromyscus leucopus* tends to replace it in dominance. Specimens reported here were trapped in an old food plot overgrown with forbs and grasses of generally short stature. Although Caire et al. (1989) recorded *P. maniculatus* in Dewey County, our records collected on 22 May 2005 (OK9234–OK9236) and 8 August 2007 (OK11630, OK11632, OK11633, OK11641, OK11644) represent the first specimens of this species collected from this county.

Specimens examined (8).—Dewey Co.: 10.30 km N, 8.37 km W Canton in Canton WMA, UTM 14-4000407N-0529058E, 495 m, 1 female (OK9235), 2 males (OK9234, OK9236); 0.32 km S, 14.97 km E Seiling in Canton WMA, UTM 14-4000050N-0521544E, 500 m, 1 female (OK11641), 1 male (OK11644); 0.48 km S, 18.35 km E Seiling in Canton WMA, UTM 14-3999809N-0524780E, 500 m, 1 female (OK11633), 2 males (OK11630, OK11632).

Reithrodontomys fulvescens J. A. Allen, 1894

(Fulvous Harvest Mouse)

The fulvous harvest mouse was thought to be restricted to the eastern one-half of Oklahoma; however, specimens have been collected in Caddo, Comanche, and Jefferson counties (Caire et al. 1989). Since Caire et al. (1989), its western distributional limits have expanded to include much of southwestern Oklahoma (Clark and Tumlison 1992; Stangl et al. 1992; Braun and Revelez 2005). New records were obtained for Beaver (19

March 2005), Dewey (22–23 May 2005, 10 July 2006, and 8 August 2007), Ellis (29 June–1 July 2005, 18–19 March 2006), Harper (19 May 2005), Roger Mills (15 March 2006), and Tillman (26 May 2006, 9 May 2007) counties, extending its distribution into northwestern Oklahoma including the Panhandle. We propose that the westward expansion of *R. fulvescens* is due in part to the suppression of fire and the resultant encroachment of shrubby and woody vegetation into historically prairie habitats. However, it should be noted that this species was conspicuously absent from our captures from most of these localities in 2007, possibly suggesting drought (occurring in 2006) as a limiting factor for this species in western portions of its range.

Specimens examined (22).—Beaver Co.: 3.62 km N, 6.60 km W Beaver in Beaver River WMA, UTM 14-4078048N-0348941E, 767 m, 1 male (OK9141). Dewey Co.: 10.62 km N, 12.71 km W Canton in Canton WMA, UTM 14-4001020N-0524393E, 496 m, 1 male (OK9258); 10.62 km N, 6.76 km W Canton in Canton WMA, UTM 14-4000411N-0530047E, 498 m, 1 male (OK9830); 0.32 km S, 14.97 km E Seiling in Canton WMA, UTM 14-4000050N-0521544E, 500 m, 1 male (OK11646); 9.25 km N, 7.89 km W Canton in Canton WMA, UTM 14-3999829N-0529262E, 496 m, 1 female (OK9240); 9.17 km N, 7.56 km W Canton in Canton WMA, UTM 14-3999304N-0529674E, 494 m, 1 male (OK9825); 9.01 km N, 7.72 km W Canton in Canton WMA, UTM 14-3999278N-0529504E, 499 m, 1 female (OK9244), 1 male (OK9243). Ellis Co.: 6.28 km S, 16.25 km W Arnett in Ellis County WMA, UTM 14-3993175N-0414278E, 715 m, 1 male (OK9621); 8.05 km S, 14.65 km W Arnett in Ellis County WMA, UTM 14-3990831N-0416384E, 697 m, 1 female (OK9456), 1 male (OK9459); 8.21 km S, 11.75 km W Arnett in Ellis County WMA, UTM 14-3991336N-0418954E, 695 m, 1

female (OK9616); 9.09 km S, 15.45 km W Arnett in Ellis County WMA, UTM 14-3990142N-0415350E, 700 m, 1 female (OK9469); 9.66 km S, 15.77 km W Arnett in Ellis County WMA, UTM 14-3989867N-0414980E, 679 m, 1 male (OK9472); 26.55 km S, 2.57 km E Arnett in Packsaddle WMA, UTM 14-3972784N-0433194E, 693 m, 1 male (OK9446); 27.84 km S, 6.44 km E Arnett in Packsaddle WMA, UTM 14-3972265N-0436031E, 688 m, 1 female (OK9448). Harper Co.: 3.86 km N, 2.90 km E Fort Supply in Cooper WMA, UTM 14-4052082N-0450191E, 640 m, 1 male (OK9208). Roger Mills Co.: 18.02 km N, 14.16 km W Cheyenne in Black Kettle WMA, UTM 14-3959526N-0425393E, 689 m, 2 females (OK9576, OK9577), 1 male (OK9578). Tillman Co.: 11.43 km S, 6.44 km E Frederick in Hackberry Flat WMA, UTM 14-3794356N-0504683E, 354 m, 1 male (OK11177); 14.32 km S, 5.63 km E Fredrick (county seat) in Hackberry Flat WMA, UTM 14-3791198N-0503871E, 357 m, 1 male (OK9757).

Reithrodontomys montanus (Baird, 1855)

(Plains Harvest Mouse)

The plains harvest mouse is known from throughout Oklahoma but is more common in the shorter and medium grass prairies of the west. *R. montanus* prefers habitats described as "open grassy areas" and has been collected in Oklahoma in habitats ranging from sumac (*Rhus* spp.) to grazed fields (Goertz 1963:124; Schnell et al. 1980). *R. montanus* appears to be ecologically separate in habitat preference from the other species of *Reithrodontomys* in Oklahoma, *R. fulvescens* (prefers shrubby grasslands) and *R. megalotis* (more dense grasslands), with which it is sympatric with in the state (Hill and Hibbard 1943; Goertz 1963; Peterson 1975). New county records were obtained in

Kiowa County corresponding to five specimens collected over three consecutive trapping nights (14–16 April 2007).

Specimens examined (1).—Kiowa Co.: 11.43 km N, 5.47 km W Mountain Park in Mountain Park WMA, UTM 14-3850730N-0499328E, 456 m, 1 female (OK11107); 9.50 km N, 6.44 km W Mountain Park in Mountain Park WMA, UTM 14-3848958N-0498271E, 451 m, 2 males (OK11088, OK11090); 9.50 km N, 5.63 km W Mountain Park in Mountain Park WMA, UTM 14-3848969N-0499082E, 438 m, 1 male (OK11084); 7.89 km N, 8.21 km W Mountain Park in Mountain Park WMA, UTM 14-3847347N-0496657E, 425 m, 1 male (OK11115).

Family Muridae

Mus musculus Linnaeus, 1758

(House Mouse)

The house mouse presumably was introduced into North America from ships of early European explores, fur trades, and settlers, and has since become naturalized (Caire et al. 1989; Long 2003). The species currently can be found in human commensal and feral populations across Oklahoma (Schnell et al. 1980; Caire et al. 1989; Clark et al. 1996; Payne et al. 2001). Commensal populations occur in cities, towns, farm yards, silos and abandoned buildings, whereas most feral populations are still related to human disturbed habitats such as roadsides, crop, and fallow fields, but they also have been recorded in more native microhabitats. Competition may occur between *M. musculus* and native *Peromyscus* species (Caldwell 1964; King 1957); however, due to the relation of house mice to anthropogenic habitats it is believed that they have little impact on wild

populations (Kaufman and Kaufman 1990). We report specimen records for Greer County (OK11152, OK11160) obtained 7 May 2007 from a mesquite and cheat grass dominated prairie, Beaver County (OK11342) obtained 23 June 2007 from sparsely vegetated sand dune, and Ellis County (OK11416) obtained 12 July 2007 from a mixedgrass prairie near an abandoned school house and small cattle pen.

Specimens examined (4).—Beaver Co.: 1.45 km N, 16.58 km W Beaver in Beaver River WMA, UTM 14-4077030N-0348264E, 773 m, 1 male (OK11342). Ellis Co.: 28.32 km S, 13.68 km E Arnett in Packsaddle WMA, UTM 14-3970961N-0444133E, 676 m, 1 male (OK11416). Greer Co.: 1.61 km N, 2.41 km E Granite in Altus-Lugert WMA, UTM 14-3870220N-0467984E, 489 m, 1 males (OK11152); 0.64 km N, 2.41 km E Granite in Altus-Lugert WMA, UTM 14-3869622N-0467929E, 489 m, 1 female (OK11160)

Acknowledgments

Financial support for this project was provided by State Wildlife Grant T-23-P of the Oklahoma Department of Wildlife Conservation and Oklahoma State University, administered through the Oklahoma Cooperative Fish and Wildlife Research Unit (Oklahoma State University, Oklahoma Department of Wildlife Conservation, U.S. Geological Survey, Wildlife Management Institute, and U.S. Fish and Wildlife Service cooperating). This project could not have been accomplished with out the field assistance of Fred Z. Brown, Nevin D. Durist, Colter D. Fluman, Tasha M. Forman, Ashley A. Foster, Sherry J. James, Justin B. Lack, Dustin G. Loftis, Meredith A. Magnuson, Bradley A. McNutt, David M. Miller, Christopher L. Roy, Cybil N. Smith, Curtis R. Tackett, Justin W. Timmerman, and Thomas B. L. Wilson. We would also like to thank the U.S. Corps of Engineers at Canton and Fort Supply, and the Fort Cobb, Great Plains

and Quartz Mountain State Parks for the use of their facilities. The wildlife managers, conservation officers, and biologists from the Forest Service and Oklahoma Department of Wildlife Conservation deserve special thanks for all their helpfulness, facilities and interest. Finally, we would like to thank Bill and Joan Keeton and Steve Conrady (Senior Biologists, Canton WMA) for their friendly and unselfish assistance in our time of need.

Literature Cited

Austin, T. A., and J. A. Kitchens. 1986. Expansion of *Baiomys taylori* into Hardeman County, Texas. Southwestern Naturalist 31:547–548.

Baker, R. J., and J. L. Patton. 1967. Karyotypes and karyotypic variation of North American vespertilionid bats. Journal of Mammalogy 48:270–286.

Bartholomew, G. A. 1986. The role of natural history in contemporary biology. BioScience 36:324–329.

Best, T. L., and K. N. Geluso. 2003. Summer foraging range of Mexican free-tailed bats (*Tadarida brasiliensis mexicana*) from Carlsbad Cavern, New Mexico. Southwestern Naturalist 48:590–596.

Brant, J. G., and R. C. Dowler. 2002. Reexamination of the range for the northern pygmy mouse, *Baiomys taylori* (Rodentia: Muridae), in northeastern Texas. Texas Journal of Science 54:189–192.

Brant, J. G., and T. E. Lee, Jr. 2006. Morphological analysis of *Perognathus flavus* and *P. merriami* (Rodentia: Heteromyidae). Southwestern Naturalist 51:79–86.

Braun, J. K., and M. A. Revelez. 2005. Distribution records and comments on Oklahoma Mammals. Texas Journal of Science 57:3–24.

Byrd, C. L. 1982. The home range, habitat and prey utilization of the barn owl (*Tyto alba*) in South Texas. Masters Thesis. Texas A&I University. Kingsville.

Caire, W. 1991. A breeding population of the northern pygmy mouse, *Baiomys taylori*, in southwestern Oklahoma. Southwestern Naturalist 36:364–365.

Caire, W., J. D. Tyler, B. P. Glass, and M. A. Mares. 1989. Mammals of Oklahoma. University of Oklahoma Press. Norman.

Choate, L. L., and C. Jones. 1998. Annotated checklist of recent land mammals of Oklahoma. Occasional Papers, Museum of Texas Tech University 181:1–13.

Choate, L. L., J. K. Jones, Jr., R. W. Manning, and C. Jones. 1990. Westward ho: continued dispersal of the pygmy mouse, *Baiomys taylori* on the Llano Estacado and in adjacent areas of Texas. Occasional Papers, The Museum of Texas Tech University 134:1–8.

Choate, L. L., and F. C. Killebrew. 1991. Distributional records of the California myotis and the prairie vole in the Texas panhandle. Texas Journal of Science 43:214–215.

Caldwell, L. D. 1964. An investigation of competition in natural populations of mice. Journal of Mammalogy 45:12–30.

Clark, B. K., B. S. Clark, W. E. Munsterman, and T. R. Homerding. 1996. Differential use of roadside fencerows and contiguous pastures by small mammals in southeastern Oklahoma. Southwestern Naturalist 41:54–59.

Clark, B. K., and R. Tumlison. 1992. New records of mammals from Washita County, Oklahoma. Proceedings of the Oklahoma Academy of Science 72:37–38.

Cleveland, A. G. 1986. First record of *Baiomys taylori* north of the Red River. Southwestern Naturalist 31:547.

Coyner, B. S., T. E. Lee, D. S. Rogers, and R. A. Van Den Bussche. *in prep.* Taxonomic status and species limits of *Perognathus* in the southern Great Plains. Journal of Mammalogy.

Dalquest, W. W., F. B. Stangl, Jr., and J. K. Jones, Jr. 1990. Mammalian zoogeography of a Rocky Mountain – Great Plains interface in New Mexico, Oklahoma, and Texas. Special Publications, The Museum, Texas Tech University 4:1–78.

Diersing, V. E. and J. E. Diersing. 1979. Additional records of *Baiomys taylori taylori* (Thomas) in Texas. Southwestern Naturalist 24:707–708.

Eshelman, B. D., and G. N. Cameron. 1987. *Baiomys taylori*. Mammalian Species 285:1–7.

Findley, J. S., A. H. Harris, D. E. Wilson, and C. Jones. 1975. Mammals of New Mexico. University of New Mexico Press. Albuquerque.

Gannon, W. L., R. S. Sikes, and the Animal Care and Use Committee of the American Society of Mammalogists. 2007. Guidelines of the American Society of Mammalogists for the use of wild mammals in research. Journal of Mammalogy 88:809–823.

Geluso, K., T. R. Mollhagen, J. M. Tigner, and M. A. Bogan. 2005. Western expansion of the eastern Pipistrelle (*Pipistrellus subflavus*) in the United States, including new records from New Mexico, South Dakota, and Texas. Western North American Naturalist 65:405–409.

Gettinger, D. 1991. New distributional records for rice rats (*Oryzomys palustris*) in Oklahoma. Proceedings of the Oklahoma Academy of Science 71:53.

Girard, B., V. Paul, and J. D. Tyler. 1990. The status of *Rattus rattus* and *Rattus norvegicus* in southwestern Oklahoma. Proceedings of the Oklahoma Academy of Science 70:43–44.

Glass, B. P. 1982. Seasonal movements of Mexican free-tailed bats *Tadarida brasiliensis mexicana* banded in the Great Plains. Southwestern Naturalist 27:127–133.

Goertz, J. W. 1963. Some biological notes on the plains harvest mouse. Proceedings of the Oklahoma Academy of Sciences 43:123–125.

Gubanyi, J. A. 1989. Habitat use and diet analysis of breeding common barn-owls in western Nebraska. Masters Thesis. University of Nebraska. Lincoln.

Hamilton, W. J., Jr. 1949. The bacula of some North American vespertilionid bats. Journal of Mammalogy 30:97–102.

Hatcher, R. T. 1986. Oklahoma's Fur Harvest: a fifty year review. Oklahoma Department of Wildlife Conservation, Oklahoma City.

Hill, J. E., and C. W. Hibbard. 1943. Ecological differentiation between two harvest mice (*Reithrodontomys*) in western Kansas. Journal of Mammalogy 24:22–25.

Hollander, R. R., J. K. Jones, Jr., R. W. Manning, and C. Jones. 1987. Noteworthy records of mammals from the Texas panhandle. Texas Journal of Science 39:97–102.

Hoofer, S. R., and R. A. Van Den Bussche. 2003. Molecular phylogenetics of the chiropteran family Vespertilionidae. Acta Chiropterologica 5(supplement):1–63.

Hoofer, S. R., R. A. Van Den Bussche, and I. Horáček. 2006. Generic status of the American pipistrelles (Vespertilionidae) with description of a new genus. Journal of Mammalogy 87:981–992.

Humphrey, S. R., and T. H. Kunz. 1976. Ecology of a Pleistocene relict, the western big-eared bat (*Plecotus townsendii*), in the southern Great Plains. Journal of Mammalogy 57:470–494.

Johnson, K. S. 1972. Mineral resources map of Oklahoma. Pp. 6 in Geology and earth resources of Oklahoma: an atlas of maps and cross sections (K. S. Johnson, C. C. Branson, N. M. Curtis, Jr., W. E. Ham, W. E. Harrison, M. V. Marcher, and J. F. Roberts, eds.). Oklahoma Geological Survey, Educational Publication Number 1. University of Oklahoma, Norman.

Johnson, K. S. 2003. Evaporite karst in the Permian Blaine Formation and associated strata of western Oklahoma. Pp. 41–55 in Evaporite karst and engineering / environmental problems in the United States (K. S. Johnson, and J. T. Neal, eds.). Oklahoma Geological Survey, Circular 109. University of Oklahoma, Norman.

Jones, J. K., Jr. 1983. Mammals of the Northern Great Plains. University of Nebraska Press. Lincoln.

Jones, J. K., Jr., R. W. Manning, C. Jones, and R. R. Hollander. 1983. Mammals of the northern Texas panhandle. Occasional Papers, Museum of Texas Tech University 126:1–54.

Kaufman, D. W., and G. L. Kaufman. 1990. House mice (*Mus musculus*) in natural and disturbed habitats in Kansas. Journal of Mammalogy 71:428–432.

King J. A. 1957. Intra- and interspecific conflict of *Mus* and *Peromyscus*. Ecology 38:355–357.

Kunz, T. H., and R. A. Martin. 1982. *Plecotus townsendii*. Mammalian Species 175:1–6.

Lee, T. E., and M. D. Engstrom. 1991. Genetic variation in the silky pocket mouse (*Perognathus flavus*) in Texas and New Mexico. Journal of Mammalogy 72:273–285.

Lomolino, M. V., and G. A. Smith. 2003. Prairie dog towns as islands: applications of island biogeography and landscape ecology for conserving nonvolant terrestrial vertebrates. Global Ecology and Biogeography 12:275–286.

Long, J. L. 2003. Introduced mammals of the world: Their history, distribution and influence. Csiro Publishing. Collingwood, Australia.

Manning, R. W., and J. K. Jones, Jr. 1988. A specimen of the prairie vole, *Microtus ochrogaster*, from the northern Texas panhandle. Texas Journal of Science 40:463–464.

Martin, R. E., and J. R. Preston. 1970. The mammals of Harmon County, Oklahoma. Proceedings of the Oklahoma Academy of Science 49:42–60.

McCaffrey, R. E., M. C. Wallace, J. F. Kamler, and J. D. Ray. 2003. Noteworthy distributional records of the prairie vole in the Texas and Oklahoma panhandles. Southwestern Naturalist 48:717–719.

McDonald, B. K., P. W. Wilson, and W. Caire. 2006. New county records of Oklahoma mammals based on remains identified in owl pellets. Proceedings of the Oklahoma Academy of Science 86:47–52.

Menu, H. 1984. Révision du statut de *Pipistrellus subflavus* (F. Cuvier, 1832). Proposition d'un taxon générique nouveau: *Perimyotis* nov. gen. Mammalia 48:409–416.

Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. AH–296. United States Department of Agriculture, Natural Resources Conservation Service. Washington, DC. (http://soils.usda.gov/survey/geography/mlra/).

Nisbett, R. A., W. Caire, M. D. Stuart, G. M. Caddell, J. M. Crutcher, and C. H. Calisher. 2001. Serologic survey of Oklahoma rodents: evidence for the presence of a Hantavirus and an Arenavirus. Proceedings of the Oklahoma Academy of Science 81:53–66.

Oklahoma Department of Wildlife Conservation. 2005. Oklahoma Comprehensive Wildlife Conservation Strategy. Oklahoma Department of Wildlife Conservation. Oklahoma City.

Payne, T., and W. Caire. 1999. Species diversity of small mammals in the Tallgrass Prairie Preserve, Osage County, Oklahoma. Proceedings of the Oklahoma Academy of Science 79:51–59.

Payne, T., S. Stevens, and W. Caire. 2001. Annotated checklist of the mammals of the Tallgrass Prairie Preserve, Osage County, Oklahoma. Proceedings of the Oklahoma Academy of Science 81:41–51.

Pearson, O. P., M. R. Koford, and A. K. Pearson. 1952. Reproduction of the lump-nosed bat (*Corynorhinus rafinesquei*) in California. Journal of Mammalogy 33:273–320.

Peterson, M. K. 1975. An analysis of multiple captures in several rodents from Durango, Mexico. Journal of Mammalogy 56:703–705.

Poole, M. W., and R. S. Matlack. 2007. Prairie vole and other small mammals from the Texas panhandle. Southwestern Naturalist 52:442–445.

Rainey, D. G. 1956. Eastern woodrat, *Neotoma floridana*: life history and ecology. University of Kansas Publications, Museum of Natural History 8:535–646.

Reed, M. P., and J. R. Choate. 1988. Noteworthy southwestern records of the prairie vole. Southwestern Naturalist 33:495–496.

Ruffer, D. G. 1964. Studies on the ethology of the northern grasshopper mouse (*Onychomys leucogaster*). Doctoral Dissertation. University of Oklahoma, Norman.

Schmidly, D. J. 2002. Texas natural history: a century of change. Texas Tech University Press. Lubbock.

Schmidly, D. J. 2005. What is means to be a naturalist and the future of natural history at American universities. Journal of Mammalogy 86:449–456.

Schnell, G. D., R. D. Owen, R. K. Chesser, and P. G. Risser. 1980. Populations of small mammals in north-central Oklahoma. Southwestern Naturalist 25:67–80.

Smith, S. J., D. M. Leslie, Jr., M. J. Hamilton, J. B. Lack, and R. A. Van Den Bussche. *in prep*. Subspecific affinities and conservation genetics of western big-eared bats (*Corynorhinus townsendii pallescens*) at the edge of their distributional range. Journal of Mammalogy.

Smith, T., and R. Tumlison. 2004. An evaluation of geographic variation within an isolated population of big-eared bats (*Corynorhinus townsendii*) in Oklahoma, Kansas and Texas. Proceedings of the Oklahoma Academy of Science 84:1–7.

Smolen, M. J. 1981. *Microtus pinetorum*. Mammalian Species 147:1–7.

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, ed.). Fort Hays Studies, Special Issue 1. Hays, Kansas.

Stancampiano, A. J., and W. Caire. 1995. Food habits of *Peromyscus* and *Reithrodontomys* in the Wichita Mountains Wildlife Refuge, Oklahoma. Proceedings of the Oklahoma Academy of Science 75:45–49.

Stancampiano, A. J., and G. D. Schnell. 2004. Microhabitat affinities of small mammals in southwestern Oklahoma. Journal of Mammalogy 85:948–958.

Stangl, F. B., Jr., and C. B. Carr. 1997. Status of *Blarina hylophaga* (Insectivora: Soricidae) in north Texas and southern Oklahoma. Texas Journal of Science 49:159–162.

Stangl, F. B., Jr., and W. W. Dalquest. 1986. Two noteworthy records of Oklahoma mammals. Southwestern Naturalist 31:123–124.

Stangl, F. B., Jr., W. W. Dalquest, and R. J. Baker. 1992. Mammals of southwestern Oklahoma. Occasional Papers, The Museum of Texas Tech University 151:1–47.

Stangl, F. B., Jr., J. R. Goetze, and K. D. Spradling. 2004. Historical zoogeography and taxonomic status of the prairie vole (*Microtus ochrogaster*) from the southern

plains of Texas and Oklahoma. Occasional Papers, The Museum of Texas Tech University 235:1–12.

Stangl, F. B., Jr., B. F. Koop, and C. S. Hood. 1983. Occurrence of *Baiomys taylori* (Rodentia: Cricetidae) on the Texas high plains. Occasional Papers, The Museum of Texas Tech University 85:1–4.

Tappe, P. A., R. E. Thill, J. J. Krystofik, and G. A. Heidt. 1994. Small mammal communities of mature pine hardwood stands in the Ouachita Mountains. General Technical Report, SO–112. US Department of Agriculture, Forest Service, Southern Forest Experiment Station. Asheville, North Carolina.

Taulman, J. F., and L. W. Robbins. 1996. Recent range expansion and distributional limits of the nine-banded armadillo (*Dasypus novemcinctus*) in the United States. Journal of Biogeography 23:635–648.

Thill, R. E., R. W. Perry, N. E. Koerth, P. A. Tappe, and D. G. Peitz. 2004. Initial small mammal responses to alternative pine regeneration methods in Arkansas and Oklahoma: preliminary findings. General Technical Report, SRS–74. US Department of Agriculture, Forest Service, Southern Research Station. Asheville, North Carolina.

Tumlison, R., V. R. McDaniel, and J. G. Duffy. 1993. Further extension of the northern pygmy mouse, *Baiomys taylori*, in southwestern Oklahoma. Southwestern Naturalist 38:285–286.

Tyler, J. D., and S. L. Donelson. 1996. Noteworthy mammal records for western Oklahoma. Proceedings of the Oklahoma Academy of Science 76:103–104.

Wallace, D. B., and F. B. Stangl, Jr. 2003. Records for seven species of mammals from Jackson County, Oklahoma. Proceedings of the Oklahoma Academy of Science 83:87–88.

Webster, W. D., and J. K. Jones, Jr. 1982. *Reithrodontomys megalotis*. Mammalian Species 167:1–5.

Wilcove, D. S., and T. Eisner. 2000. The impending extinction of natural history. The Chronicle Review, 15 September 2000. (http://chronicle.com/weekly/v47/i03/03b02401.htm).

Wilson, D. E., and D. M. Reeder (eds.). 2005. Mammal species of the world: a taxonomic and geographic reference. Johns Hopkins University Press. Baltimore, Maryland.

Woods, A. J., J. M. Omernik, D. R. Butler, J. G. Ford, J. E. Henley, B. W. Hoagland, D. S. Arndt, and B. C. Moran. 2005. Ecoregions of Oklahoma. U.S. Geological Survey. Reston, Virginia. Map scale 1:1,250,000.

Addresses of authors:

Zachary P. Roehrs
Oklahoma State University
Department of Zoology and Collection of Vertebrates
Stillwater, OK 74078
e-mail: zac.roehrs@okstate.edu

Brandi S. Coyner
Oklahoma State University
Department of Zoology
Stillwater, OK 74078
e-mail: Brandi.Coyner@okstate.edu

Kimberly N. King*
Oklahoma State University
Department of Zoology
Stillwater, OK 74078

Deanna L. Martinez§
Oklahoma State University
Department of Zoology
Stillwater, OK 74078

Janet K. Braun
Sam Noble Oklahoma Museum of Natural History
University of Oklahoma
Norman, OK 73072
e-mail: jkbraun@ou.edu

Meredith J. Hamilton
Oklahoma State University
Department of Zoology
Stillwater, OK 74078
e-mail: meredith.hamilton@okstate.edu

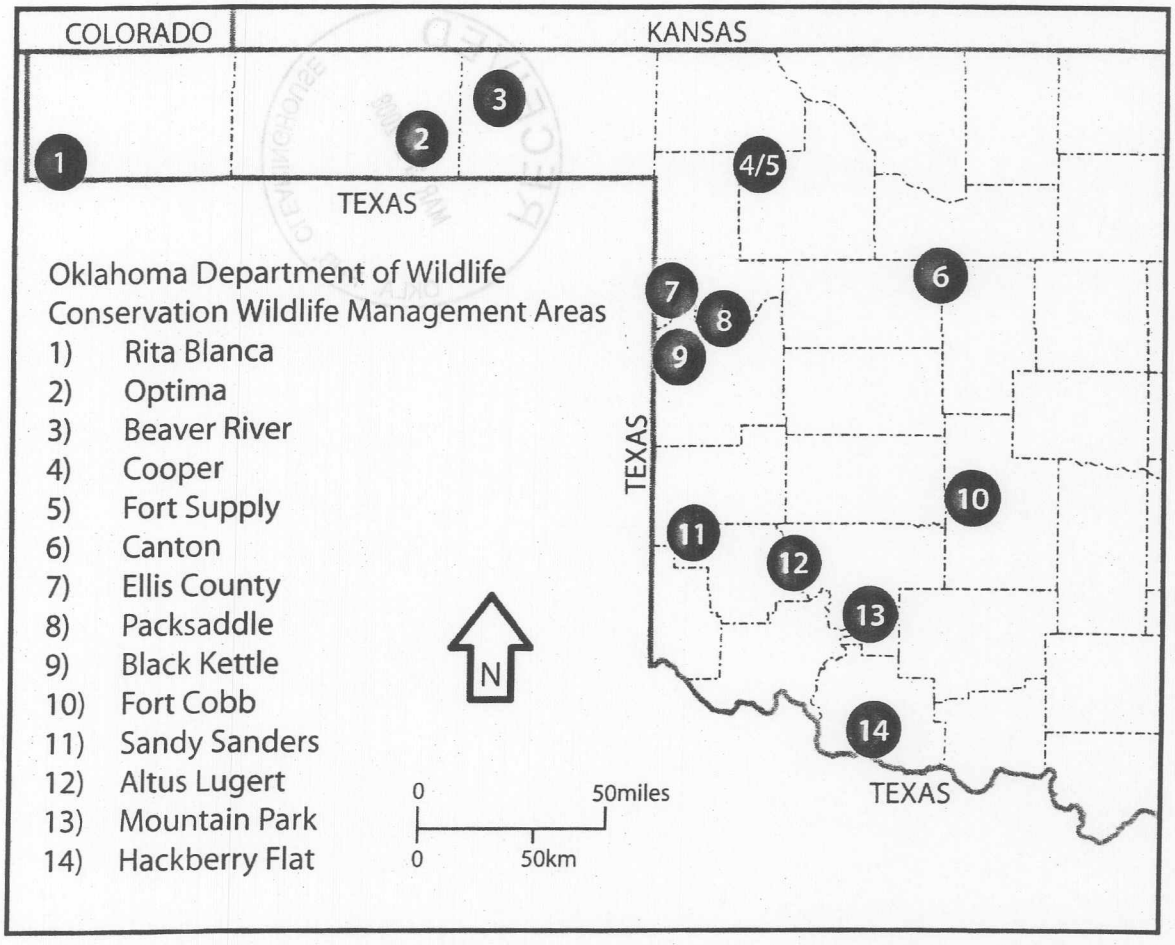
David M. Leslie, Jr.
U.S. Geological Survey
Oklahoma Cooperative Fish and Wildlife Research Unit
Oklahoma State University
Stillwater, OK 74078
e-mail: cleslie@usgs.gov

Ronald A. Van Den Bussche
Oklahoma State University
Department of Zoology and Collection of Vertebrates
Stillwater, OK 74078
e-mail: ron.van_den_bussche@okstate.edu

* Current address:
University of Arkansas at Little Rock
Biology Department
Little Rock, AR 72204-1099
e-mail: knking@ualr.edu

§ Current address:
University of North Texas
Department of Biological Sciences
Denton, TX 76203-5220
e-mail: dlm0001@unt.edu

Figure 1.—Location of the 14 state Wildlife Management Areas from western Oklahoma surveyed in this study: 1) Rita Blanca; 2) Optima; 3) Beaver River; 4/5) Fort Supply and Cooper; 6) Canton; 7) Ellis County; 8) Packsaddle; 9) Black Kettle; 10) Fort Cobb; 11) Sandy Sanders; 12) Altus-Lugert; 13) Mountain Park; 14) Hackberry Flat.



RECEIVED
MAR 31 2008
OKLA. PUB. CLEARINGHOUSE