TEXAS TECH UNIVERSITY
Natural Science Research Laboratory

# Occasional Papers

Museum of Texas Tech University Number 267 15 June 2007

# Report on a Mammal Survey at Camp Maxey, Lamar County, Texas (Texas Army National Guard facility)

*Cody W. Edwards and Sarah A. Johnson*

## Abstract

A mammal survey was conducted of Camp Maxey (Texas Army National Guard training site), Lamar County, Texas, from October 2002 through June 2004. This military installation is located in eastern Texas and is situated at the gradational boundary between the Pineywoods (east) and Blackland Prairies (west). Sherman traps, snap traps, pitfall traps, mist nets, DK-1 and Macabee gopher traps, and Tomahawk live traps were used to collect specimens. Thirty-one species of mammals were documented during this survey. Of these, 20 were collected and 11 were observed. Of the specimens collected, six species (*Cryptotis parva*, *Tadarida brasiliensis*, *Glaucomys volans*, *Chaetodipus hispidus*, *Peromyscus gossypinus*, and *Sylvilagus aquaticus*) represent collection records for Lamar County.

Key words: Camp Maxey, county record, East Texas, Lamar County, mammals

## Introduction

Camp Maxey (2,600 ha) is a Texas Army National Guard (TXARNG) training site located in north central Lamar County, Texas. Camp Maxey is situated in the Post Oak Savannah vegetation area at the gradational boundary between the Pineywoods (east) and Blackland Prairies (west). To our knowledge, only one effort has been made to describe the mammalian fauna of this area (Farquhar et al. 1996). These authors suggested the presence of 27 mammal species. No formal surveys were conducted and all observations were incidental to other surveys in the area. Further, much of the information on mammals was based on published distribution maps for species. Historically, this area of Texas has been poorly studied and the content and distribution of mammals is not well documented (Schmidly 1983, 2004; Edwards et al. 2000).

This study surveyed the major habitat types at Camp Maxey for mammals. The data collected should prove useful in establishing baseline information on species present, their habitat associations, and relative densities.

## METHODS

Sampling sites were selected based on preliminary descriptions of plant communities (Farquhar et al. 1996) and represent the major habitat types present in the area (Fig. 1). Localities of all sampling sites (Fig. 2) were acquired using a hand held global positioning system (GPS). Each locality was based on Universal Transverse Mercator (UTM) coordinates.

Mammals were surveyed using standard techniques for the sampling of small to medium-sized species (Jones et al. 1996). These techniques included the use of Sherman live traps and snap traps for rodents, mist nets for bats, Tomahawk live traps for medium-sized species, specialty traps (e.g. Macabee and DK-1 gopher traps) for pocket gophers, and pitfall traps (array of four drift fences with five-gallon buckets on each end) for shrews. Spotlighting was utilized to allow for night observations of some medium and large species that are difficult to sample by trapping.

Trap arrays were transects established at each of the sampling sites. Relative abundances of species within habitats were assessed by comparison of captures per trapping effort (Edwards 2004). Relative abundance of bat species was estimated by the number of individuals captured per net night. Relative abundance of rodent species was estimated by the number of individuals captured per 100 trap nights (Edwards 2004).

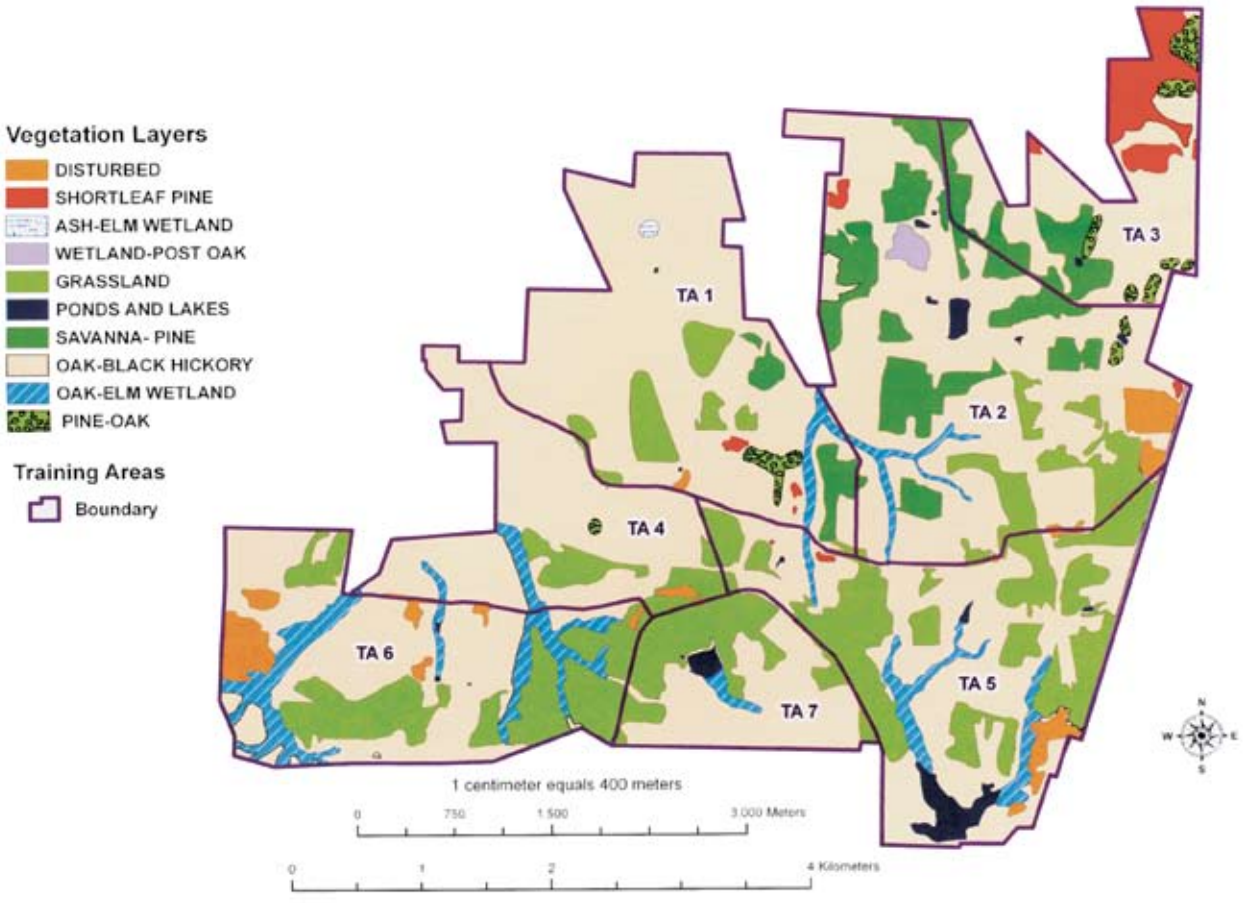


Figure 1. Map showing vegetation and training areas at Camp Maxey, Lamar County, Texas (Texas Army National Guard facility).

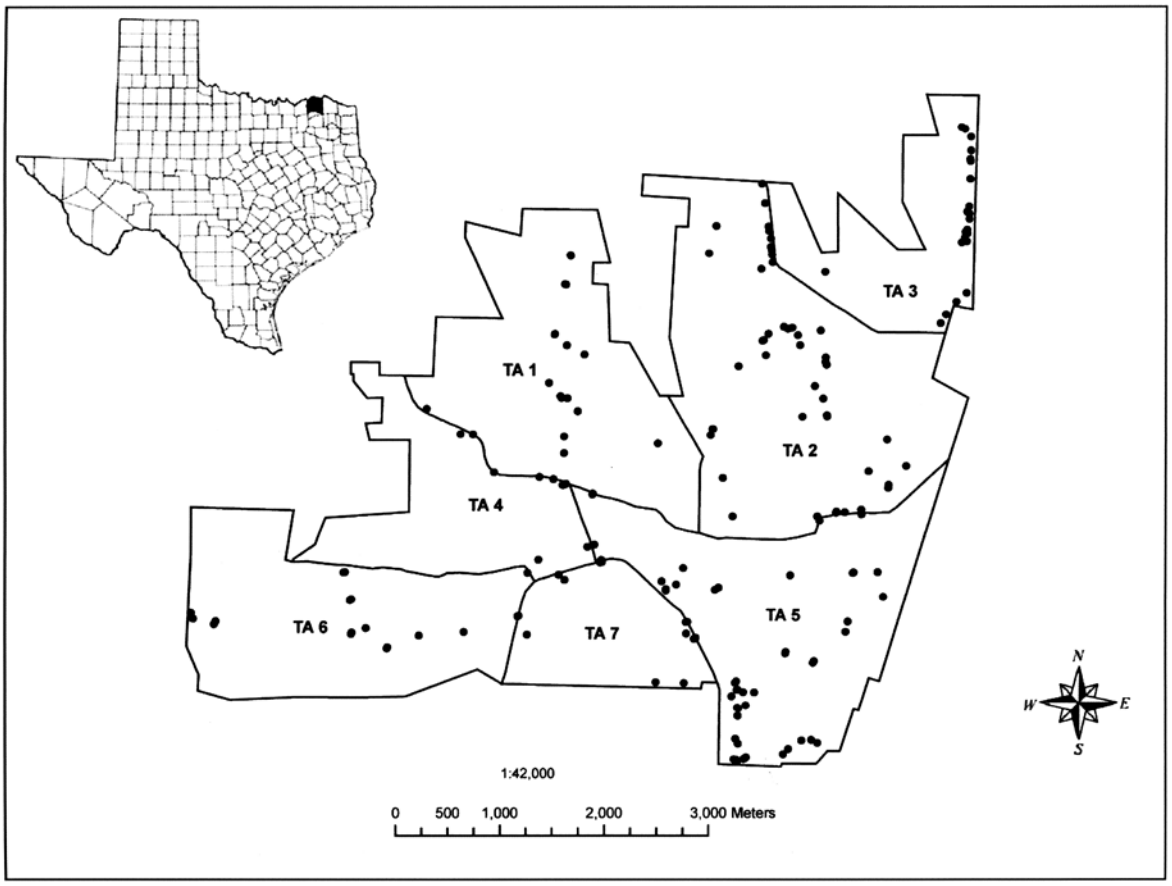


Figure 2. Map showing training areas at Camp Maxey, Texas Army National Guard facility (Lamar County, Texas). Black dots indicate position of sampling transects. Shaded area on map of Texas indicates location of Lamar County.

Voucher specimens of mammals were taken (when allowed) to verify field identifications and to serve as a permanent record documenting the occurrence, seasonal reproductive condition, and morphological and genetic variation of the species at Camp Maxey. All voucher material (skins, skulls, post-cranial skeletons, and tissues) was deposited in either the Stephen F. Austin State University Vertebrate Natural History Collection (SFA) or the Angelo State University Natural History Collections (ASNHC). Every attempt was made to collect voucher material for each species reported herein; however, restrictions (per TXARNG) on the use of certain sampling techniques (e.g. firearms, leg-hold traps, etc.) made this practice difficult. We have included observations from "non-voucher" species (however, only those accounts where identification was certain, i.e. multiple observations of the species, were included), but agree that any "official" documentation would need a corresponding catalogued museum voucher. All county records reported have voucher material.

Sampling began in October of 2002 and was completed in June of 2004. The months of December and February were not sampled. However, additional surveys were conducted in January to address the loss of winter sampling effort. All surveys consisted of a three-day sampling effort. All sampling materials including traps and pitfall arrays were removed from the site by July 2004.

## RESULTS AND SPECIES ACCOUNTS

Mammal sampling efforts included 8,682 total trap nights with 760 mammal captures (8.75% trap success). For Sherman live traps, we had 8,420 trap nights and 698 captures (8.29% trap success). For the larger cage traps (Tomahawk live traps) for medium-sized mammals, we had 234 total trap nights and 36 captures (15.38% trap success). Sampling efforts for bats involved 92 mist net hours with 19 bats captured. Highest success for mammal sampling was achieved in March, May, and August with 103, 105, and 112 captures, respectively. Highest bat captures occurred in May and July (seven and six captures, respectively). Total trapping effort for two pitfall arrays included 168 hours with three captures. Two species (*Cryptotis parva* and *Peromyscus leucopus*) were recorded in the arrays. Array I recorded two captures while array II recorded one capture.

This study recorded the presence of eight orders and 17 families of mammals at Camp Maxey (TXARNG; Lamar County, Texas). The following accounts treat 31 species documented at Camp Maxey and consider both native and introduced species. The phylogenetic order conforms to Nowak (1999) for mammals. Scientific names of mammals follow Wilson and Reeder (2005) and the common names follow Schmidly (2004). Museum acronyms used in species accounts are as follows: SFA (Stephen F. Austin State University Vertebrate Natural History Collection) and ASNHC (Angelo State University Natural History Collections). An asterisk (*) at the beginning of a species account indicates a county record.

ORDER DIDELPHIMORPHIA
Family Didelphidae
**Virginia Opossum**
*Didelphis virginiana virginiana*

Opossums inhabit woodlands, but can also be found in marshlands, prairies, or farmlands. They prefer hollow trees and logs for dens, but will use woodpiles, rock piles, crevices, old buildings, or underground burrows when available. They are opportunistic foragers, feeding on insects, small mammals, reptiles, and mollusks. Opossums are found statewide, with a gap in the xeric habitats of the Trans-Pecos and Llano Estacado (Schmidly 2004). *D. virginiana* was the most common medium-sized mammal species documented at Camp Maxey with 14 captures. This species was documented in training areas 1, 2, 3, and 5 during March - May, July, October, and November. Two females were collected as voucher material.

*Specimens examined* (2).—Lamar County, Camp Maxey TXARNG (SFA 3178, 6 April 2003, female; ASNHC 13228, 20 September 2003, female).

ORDER INSECTIVORA
Family Soricidae
**Least Shrew**
**Cryptotis parva parva*

The least shrew is a common inhabitant of grasslands, seldom occurring in forested areas though occasionally individuals have been found in the moist leaf litter or under logs of wooded areas. Least shrews forage on the surface of the ground, utilizing surface runways of other grassland rodents. These tiny shrews occasionally tunnel through loose soil in search of snails, insects, and other small invertebrates (Schmidly 2004). These shrews are found in the eastern and central portions of the state, in the Panhandle, and along the Rio Grande from Val Verde County to the coast (Schmidly 2004). One male was collected (pitfall array; training area 2) as a voucher specimen.

*Specimens examined* (1).—Lamar County, Camp Maxey TXARNG (SFA 3151, 1 November 2003, male).

ORDER XENARTHRA
Family Dasypodidae
**Nine-banded Armadillo**
*Dasypus novemcinctus mexicanus*

The nine-banded armadillo occurs throughout much of Texas, absent only from the western Trans-Pecos (Schmidly 2004). They can be found in a variety of habitats, but most often concentrate along small streams and ponds (Schmidly 2004). Armadillos have been documented numerous times and are

common over much of Camp Maxey. We encountered armadillos in training areas 3, 4, and 6 during our March - November sampling periods. Although fragmented skeletal material was collected, we were unable to capture a voucher specimen.

ORDER CHIROPTERA
Family Vespertilionidae
**Eastern Red Bat**
*Lasiurus borealis borealis*

The eastern red bat is a forest-dwelling species that occurs throughout Texas, but is most common in the forested regions of eastern Texas (Schmidly 1991; Edwards et al. 2000). These solitary bats roost in the open in trees and shrubs concealing themselves among foliage and Spanish moss (Schmidly 1991). Six eastern red bats were collected over ponds in training area 3 at Camp Maxey during May and July. Four males were collected as voucher material.

*Specimens examined* (4).—Lamar County, Camp Maxey TXARNG (SFA 3122, 16 July 2003, male; SFA 3135, 15 July 2003, male; SFA 3137, 13 August 2003, male; SFA 3138, 18 September 2003, male).

**Evening Bat**
*Nycticeius humeralis humeralis*

The evening bat typically is found in forested areas and watercourses. These bats utilize hollow trees and even attics as roosts. They feed on insects such as bugs, flying ants, June beetles, spittle bugs, moths, and pomace flies. *N. humeralis* is found in the eastern portion of the state, with Clay County as the northwestern limit and Val Verde County as the southwestern limit (Schmidly 2004). Twelve *N. humeralis* were captured over ponds in training areas 1, 2, and 3 during May, June, and September. Four males and two females were collected as voucher material.

*Specimens examined* (6).—Lamar County, Camp Maxey TXARNG (SFA 3121, 15 July 2003, female; SFA 3131, 15 July 2003, male; SFA 3155, 11 May 2003, male; SFA 3156, 12 May 2003, male; SFA 3157, 12 May 2003, female; SFA 3158, 13 May 2003, male).

Family Molossidae
**Brazilian Free-tailed Bat**
**Tadarida brasiliensis cynocephala*

The Brazilian free-tailed bat has a statewide distribution and is probably the most common bat species in Texas (Schmidly 1991). They are primarily a cave-dwelling bat in areas of suitable habitat, but have been known to use old wells, hollow trees, human habitations, and bridges (Schmidly 1991). One Brazilian free-tailed bat was collected over a pond in training area 3 at Camp Maxey during May. This female was collected as a voucher specimen.

*Specimens examined* (1).—Lamar County, Camp Maxey TXARNG (SFA 3179, 11 May 2003, female).

ORDER CARNIVORA
Family Canidae
**Coyote**
*Canis latrans frustror*

Coyotes have a statewide distribution and have been documented from most counties in Texas, including Lamar (Schmidly 2004). Coyotes were sighted at Camp Maxey in all training areas and during all seasons surveyed. Due to their primarily nocturnal nature, coyotes usually were seen during spotlight surveys, though occasional sightings occurred during daytime surveys. No voucher specimens were obtained during our sampling of Camp Maxey.

**Red Fox**
*Vulpes vulpes fulva*

Introduced for sporting purposes, the red fox now occurs throughout most of the state, from eastern Texas to the central Trans-Pecos region. They prefer mixed woodland uplands, and although active at night, can be seen in the daylight hours (Schmidly 2004). They den in underground burrows or cavities. Red foxes previously have been recorded in Lamar County, and although not captured in Camp Maxey, were observed while spotlighting in training area 6.

**Common Gray Fox**
*Urocyon cinereoargenteus floridanus*

This medium-sized fox is an inhabitant of wooded areas. As with *V. vulpes*, gray foxes can be observed in the daylight hours. They den in rock crevices, underground burrows, and hollow logs or trees. Gray foxes are distributed statewide, with a previous record in Lamar County (Schmidly 2004). Gray fox were observed while spotlighting in training areas 2, 3, and 7; however, no voucher specimens were collected.

Family Procyonidae
**Common Raccoon**
*Procyon lotor fuscipes*

The raccoon ranges throughout Texas and generally is associated with woodlands near water sources. Den sites are usually hollow logs or trees, but in western Texas they also utilize rock crevices and caves (Schmidly 2004). Twelve raccoons were captured (training areas 1-7) during January, March, May, September, and November. In addition, we saw tracks at many of the ponds, streams, and lakes. This species was second in total captures among medium-sized mammal species.

Family Mephitidae
**Striped Skunk**
*Mephitis mephitis mesomelas*

The striped skunk ranges throughout the state and usually is associated with wooded or brushy habitats. Preferred den sites are rocky outcroppings but armadillo burrows are frequently utilized (Schmidly 2004). *M. mephitis* was common at Camp Maxey. We captured three individuals (no vouchers prepared) in training areas 5 and 7 during the March survey. In addition, we recorded numerous sightings while spotlighting (all training areas).

Family Felidae
**Bobcat**
*Lynx rufus texensis*

The bobcat is distributed throughout Texas and has been documented in all but four counties (Schmidly 2004). It occurs primarily in wooded habitat and is common throughout eastern Texas. One bobcat was observed in training area 4 at Camp Maxey during May.

ORDER ARTIODACTYLA
Family Suidae
**Feral Pig**
*Sus scrofa*

Descended from introduced European wild hogs for sporting purposes, or escaped domestic swine, feral pigs have established free-ranging populations throughout the state (Schmidly 2004). They proliferate in forested areas with a good leaf litter layer to support soil invertebrates and ground vegetation affording roots and tubers. Presence of feral pigs readily is detectable through disturbed soil and vegetation. Feral pigs were observed in all training areas at Camp Maxey.

Family Cervidae
**White-tailed Deer**
*Odocoileus virginianus texana*

This species ranges throughout the state. The preferred habitat is wooded areas with suitable brush cover. White-tailed deer are abundant at Camp Maxey and we observed them or their tracks in all training areas.

ORDER RODENTIA
Family Sciuridae
**Eastern Gray Squirrel**
*Sciurus carolinensis carolinensis*

This medium-sized squirrel is distributed in the eastern third of the state and is a common inhabitant in areas with dense hammocks of live oak and water oak (Schmidly 2004). These squirrels den in hollow trees and feed on mast crops. Bexar County represents the western most range, with incidental occurrences in Lubbock and Cooke counties. *S. carolinensis* was observed in all training areas, but was not collected at Camp Maxey.

**Eastern Fox Squirrel**
*Sciurus niger ludovicianus*

Eastern fox squirrels are adaptable to many forested habitats; however, areas with open upland

forests harbor the largest populations (Schmidly 2004). These squirrels den in hollow trees when available and secondarily build leaf nests. They feed on mast in the wild and visit cultivated corn crops and feeders opportunistically. The eastern fox squirrel is found in the eastern two thirds of the state with some introductions outside of its normal range. *S. niger* was observed in all training areas, but no voucher material was collected.

**Eastern Flying Squirrel**
**Glaucomys volans texensis*

This small squirrel is recognizable by its membrane connecting front and hind legs, used for gliding between trees. These squirrels inhabit forested areas with suitable den sites. Large dry cavities, such as holes in stumps or woodpecker nests, are preferred, but when cavities are not available, external nests may be constructed of Spanish moss. Eastern flying squirrels feed on nuts and acorns, insect larvae, eggs and hatchlings of birds, and cultivated corn. These squirrels are found in the eastern third of the state (Schmidly 2004). One male was collected (training area 5) as voucher material.

*Specimens examined* (1).—Lamar County, Camp Maxey TXARNG (SFA 3134, 2 March 2003, male).

Family Geomyidae
**Baird's Pocket Gopher**
*Geomys breviceps sagittalis*

This gopher inhabits sandy soils where the topsoil is at least 10 cm in depth. More clayey soils are avoided and travel over land seldom occurs. They chiefly feed on the roots and stems of grasses and weeds while digging and produce mounds of excavated dirt on the surface along the tunnel system. *Geomys breviceps* occurs in the eastern portion of the state, with Falls County representing the westward limit of their range (Schmidly 2004). Three males and one female were collected (training areas 1 and 2) as voucher material.

*Specimens examined* (4).—Lamar County, Camp Maxey TXARNG (SFA 3180, 23 November 2002, female; SFA 3181, 23 November 2002, male; SFA 3182, 23 November 2002, male; SFA 3183, 23 November 2002, male).

Family Heteromyidae
**Hispid Pocket Mouse**
**Chaetodipus hispidus spilotus*

The hispid pocket mouse is the most widely distributed heteromyid rodent in Texas. It is found statewide with the exception of extreme southeastern Texas (Schmidly 2004). These mice prefer areas of sparse herbaceous vegetation growing in sandy or friable soil and can often be found along the margins of brush fields or fence rows (Schmidly 2004). One male was collected (training area 1) as voucher material.

*Specimens examined* (1).—Lamar County, Camp Maxey TXARNG (SFA 3152, 14 June 2003, male).

Family Castoridae
**American Beaver**
*Castor canadensis texensis*

Beaver occur throughout most of the state where suitable habitat is available (Schmidly 2004). Though reduced in numbers and range during the late 19th century by over harvesting, strict harvest regulations and restocking efforts have resulted in their widespread recovery (Schmidly 2004). Beavers were documented in several ponds and streams within Camp Maxey. Although no voucher specimens were collected during our survey, this species is common throughout Camp Maxey.

Family Muridae
**Marsh Rice Rat**
*Oryzomys palustris texensis*

As their name suggests, these rats typically inhabit marshy areas, but can be found where grasses provide adequate food supply and protection. Marsh rice rats are omnivorous and their surface runways resemble those of cotton rats. Marsh rice rats are distributed in the eastern portion of the state, west to Brazos County and south to Cameron County (Schmidly 2004). Three males and one female were collected (training area 2) as voucher material.

*Specimens examined* (4).—Lamar County, Camp Maxey TXARNG (ASNHC 13224, 20 September 2003, male; ASNHC 13225, 20 September 2003, female; ASNHC 13226, 20 September 2003, male; ASNHC 13227, 20 September 2003, male).

**Eastern Woodrat**
*Neotoma floridana osagensis*

The eastern woodrat, *Neotoma floridana*, is a common inhabitant of timbered regions of eastern Texas. *N. floridana* inhabit a wide variety of habitats including forested uplands, swamp lands, and river bottoms and commonly are associated with dense, riparian growth in hardwood bottomlands (Schmidly 2004). These rodents are omnivorous with diets of nuts and leaves of available plants and the occasional snail or insect. The distribution of *N. floridana* seems to be linked to the availability of cover and the presence of necessary "building materials" for construction of surface houses or nests. Twenty-three eastern woodrats were captured in training areas 1, 2, 3, 5, and 6 at Camp Maxey during January, March - June, and September - November. Two males and one female were collected as voucher material.

*Specimens examined* (3).—Lamar County, Camp Maxey TXARNG (SFA 3114, 26 October 2002, female; SFA 3117, 26 October 2002, male; SFA 3119, 26 October 2002, male).

**Cotton Mouse**
**Peromyscus gossypinus megacephalus*

Cotton mice primarily occur in woodlands found within the eastern one-fourth of Texas (Schmidly 2004). They are most common in bottomland forests where stumps and downed logs provide refuge, but occasionally are found in upland timber and woodlands bordering open fields (Wolfe and Linzey 1977). Eighty-four cotton mice were captured at Camp Maxey (training areas 1-7) during April - July and September. These individuals represent the northern-most account of this species in Texas. This species was among the most common species encountered during this study. Three females and one male were collected as voucher material.

*Specimens examined* (4).—Lamar County, Camp Maxey TXARNG (SFA 3107, 1 March 2003, female; SFA 3108, 1 March 2003, female; SFA 3109, 2 March 2003, female; SFA 3133, 14 June 2003, male).

**White-footed Mouse**
*Peromyscus leucopus leucopus*

The white-footed mouse has a statewide distribution and is found in a variety of habitats. This species occurs most often in woodlands along creeks and river bottoms (Schmidly 2004). In eastern Texas, where they are sympatric with cotton mice, white-footed mice generally are excluded from lowland habitats and found only in upland mesic woodlands (McCarley 1963). The white-footed mouse was the most common species documented at Camp Maxey with 305 individuals captured. Specimens were collected in every month except December and February and in all training areas. Fifteen males and nine females were collected as voucher material.

*Specimens examined* (24).—Lamar County, Camp Maxey TXARNG (SFA 3184, 23 November 2002, female; SFA 3185-3190, 24 November 2002, male; SFA 3191-3192, 25 January 2003, male; SFA 3193, 1 March 2003, female; SFA 3194-3197, 1 March 2003, male; SFA 3198, 2 March 2003, female; SFA 3199, 5 April 2003, female; SFA 3200, 6 September 2003, male; SFA 3201-3202, 26 October 2003, male; SFA 3203-3207, 26 October 2003, female).

**Deer Mouse**
*Peromyscus maniculatus pallescens*

Deer mice occupy a variety of habitats, including mixed forests, sparsely vegetated deserts, and grasslands. They usually inhabit open brush areas or grasslands where grasses or weeds offer concealment or sources of food. Deer mice are poor climbers and live close to or on the ground. These mice have a statewide distribution (Schmidly 2004). One female and one male were collected as voucher material.

*Specimens examined* (2).—Lamar County, Camp Maxey TXARNG (SFA 3208, 14 May 2003, male; SFA 3209, 17 July 2003, female).

**Fulvous Harvest Mouse**
*Reithrodontomys fulvescens aurantius*

These mice occur in weedy or grassy areas, sparsely dotted with shrubs, or in creek bottoms with vines, bushes, and grasses. They feed on seeds, grasses, and sedges, and occasionally invertebrates. Fulvous harvest mice are found in the eastern two-thirds of the state, absent from the western Panhandle and central Edwards Plateau (Schmidly 2004). One hundred and fifty-seven harvest mice were collected. Three males and one female were collected as voucher material.

*Specimens examined* (4).—Lamar County, Camp Maxey TXARNG (SFA 3125, 24 November 2002, male; SFA 3146, 23 November 2002, male; SFA 3159, 26 October 2004, female; SFA 3175, 27 October 2004, male).

**Hispid Cotton Rat**
*Sigmodon hispidus texianus*

This rat typically occupies areas with tall grasses or sedges that provide a protective canopy. They can be found in natural prairies, old fields, and highway right of ways. They feed almost exclusively on plant material. Hispid cotton rats are prolific breeders and have a statewide distribution (Schmidly 2004). One hundred and twenty-four cotton rats were collected. Seven males and one female were collected as voucher material.

*Specimens examined* (8).—Lamar County, Camp Maxey TXARNG (SFA 3105, 5 June 2003, male; SFA 3106, 1 March 2003, female; SFA 3111-3113, 3115-3116, 3118, 26 October 2002, male).

**Woodland Vole**
*Microtus pinetorum nemoralis*

The woodland vole occurs throughout the eastern and central portions of the state, reaching its western limit in Callahan and Kerr Counties. This species is found in wooded areas where leaf litter and ground cover are abundant (Schmidly 2004). Due to its subterranean habits this species is difficult to capture and has been documented in only 17 of approximately 100 counties found within its range (Edwards et al. 2000; Schmidly 2004). Three woodland voles were captured from April - June 2003 in training areas 1, 2, and 3. One male was collected as a voucher specimen.

*Specimens examined* (1).—Lamar County, Camp Maxey TXARNG (SFA 3132, 14 June 2003, male)

**House Mouse**
*Mus musculus brevirostris*

The house mouse is an introduced species that has become widespread throughout the United States. House mice are commensal with humans and usually are found in close association with houses, outbuildings, and other structures (Schmidly 2004). Two males were collected as voucher material.

*Specimens examined* (2).—Lamar County, Camp Maxey TXARNG (SFA 3210-3211, 2 November 2003, male).

ORDER LAGOMORPHA
Family Leporidae
**Swamp Rabbit**
**Sylvilagus aquaticus aquaticus*

The swamp rabbit inhabits coastal marshes and poorly drained river bottoms. They rely on thickets and briar for protection from pursuers. It is believed grasses, forbs, and other succulent vegetation make up their diet. They make nests composed of vegetation in holes in logs or stumps, or on the surface. They are distributed in the eastern third of the state (Schmidly 2004). One female was collected (training area 7) as a voucher specimen.

*Specimens examined* (1).—Lamar County, Camp Maxey TXARNG (SFA 3153, 1 March 2003, female).

**Eastern Cottontail**
*Sylvilagus floridanus alacer*

Eastern cottontails are seldom found away from brushy cover. They frequent pastures, brushy fields, well-drained streamsides, and the occasional bottomland (Schmidly 2004). Eastern cottontails are distributed throughout the eastern three-fourths of the state and in some areas of the Trans-Pecos (Schmidly 2004). Eastern cottontails were observed in training areas 1, 2, and 5, but were not collected at Camp Maxey.

## ACKNOWLEDGMENTS

This research was completed under contract with Texas Army Reserve National Guard. This project would not have been possible without the considerable support and assistance received from Dr. Dawn Johnson, Natural Resource Manager, and her staff in Austin, Texas. At Camp Maxey, SFC Linda Surber was instrumental in providing access to study areas, providing storage areas for equipment, and securing barracks for members of the survey team. I thank Dr. Neil Ford (University of Texas, Tyler) for providing data from his informal mammal survey and Dr. Robert C. Dowler (Angelo State University) for field assistance in September 2003. Andy P. Bradstreet was instrumental in the formation of this report and in all phases of project implementation. We thank Laried Oates for map construction, Mike Hitchcock for data compilation, and Tammy Henry for providing helpful comments on a previous version of this manuscript. Finally, we extend thanks to Robert Allen, Jestin Clark, Shaun Crook, Jason Paul, Bobby Tolar, and Steve Williams for their help with field surveys.

## LITERATURE CITED

Edwards, C. W., et al. 2000. Records of mammals from the northeast and south Texas. Occasional Papers, Museum of Texas Tech University 200:1-8.

Edwards, C. W. 2004. Mammal survey at a Texas Army National Guard (TXARNG) facility (Camp Maxey, Lamar County, Texas). Technical Report for the Adjutant General's Department, Austin, Texas.

Farquhar, C. C., et al. 1996. Biological inventory of Texas Army National Guard Training Areas. Texas Parks and Wildlife Department, Resource Protection Division, Austin, Texas.

Jones, C., W. J. McShea, M. J. Conroy, and T. H. Kunz. 1996. Capturing mammals. Pp. 115-155 in Measuring and monitoring biological diversity: standard methods for mammals (D. E. Wilson, F. R. Cole, J. D. Nichols, R. Rudran, and M. S. Foster, eds.). Smithsonian Institution Press, Washington, D. C.

McCarley, W. H. 1963. Distributional relationships of sympatric populations of *Peromyscus leucopus* and *Peromyscus gossypinus*. Ecology 44:784-788.

Nowak, R. M. (ed.). 1999. Walker's mammals of the world, 6th edition. The Johns Hopkins University Press, Baltimore, Maryland.

Schmidly, D. J. 1983. Texas mammals east of the Balcones Fault Zone. Texas A&M University Press, College Station, Texas.

Schmidly, D. J. 1991. The bats of Texas. Texas A&M University Press, College Station, Texas.

Schmidly, D. J. 2004. The mammals of Texas, revised edition. Bulletin of the Texas Parks and Wildlife Department, Austin, Texas.

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

Wolfe, J. L., and A. V. Linzey. 1977. *Peromyscus gossypinus*. Mammalian Species 70:1-5.

*Addresses of authors:*

**CODY W. EDWARDS**

*Department of Environmental Science and Policy*
*George Mason University*
*Fairfax, VA 22030 USA*
*cedward7@gmu.edu*

**SARAH A. JOHNSON**

*Department of Environmental Science and Policy*
*George Mason University*
*Fairfax, VA 22030 USA*
*sjohnsop@gmu.edu*

**Publications of the Museum of Texas Tech University**

Institutional subscriptions are available through the Museum of Texas Tech University, attn: NSRL Publications Secretary, Box 43191, Lubbock, TX 79409-3191. Individuals may also purchase separate numbers of the Occasional Papers directly from the Museum of Texas Tech University.


**ISSN 0149-175X**

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