Mammals of the Greater El Paso Region

Arthur H. Harris

Laboratory for Environmental Biology, Centennial Museum
University of Texas at El Paso

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The first definition of desert in the 10th edition of the Merriam Webster's Collegiate Dictionary is "arid barren land; *esp*: a tract incapable of supporting any considerable population without an artificial water supply...." This definition jibes well with the concept most people have of the Chihuahuan Desert but, unfortunately, many people then make the conceptual jump from "low population" to "low diversity." With mammals, as with many organisms, the desert is surprisingly varied and often richer than places that seem more favored. For example, omitting the strictly marine species, the El Paso region has about the same number of kinds of native mammals as does lush Louisiana.

There are several reasons for such diversity, including the intermediate geographic position of the Southwestern deserts between northern and southern faunas and between eastern and western faunas, partaking of a bit of each. Equally or more important is the topographic, edaphic, and floral diversity of the land, allowing organisms to sustain themselves in a wide variety of ecological niches. These factors make the land-mammal fauna of the southwestern United States the most diverse in non-tropical North America, with 162 species in California, 151 species in New Mexico, 139 in Texas, and 137 in Arizona (Frey and Yates 1993).

Without the topographic range achieved by larger geographic areas, the El Paso region has (or had historically) only about 66 native species, with several other species likely occurring within the area but not yet recorded. Such non-native species as the Virginia Opossum (*Didelphis virginiana*), Black Rat (*Rattus rattus*), House Mouse (*Mus musculus*), feral horse (*Equus caballus*), and Oryx (*Oryx gazella*) also thrive in the region.

The secretive nature of most mammals contributes to the superficial appearance of limited diversity. Most mammals are small, nocturnal, and wary, seldom affording more than a glimpse if seen at all. This, plus the journalistic shortcoming of referring to "the rat," "the mouse,"and "the bat," contribute to the idea that there are few kinds of mammals about. However, there are 8 kinds of local rodents commonly called rats, 14 whose common

names include the word “mouse,” and there are 14 species of bats recorded regionally.

Some mammals, such as the Coyote (*Canis latrans*) are almost ubiquitous within our region, but most mammals show decided preferences for particular habitats. For some species, this is obvious--for example, Beaver (*Castor canadensis*) and Muskrat (*Ondatra zibethicus*) are necessarily limited to areas of permanent water except possibly during dispersal. (The Beaver apparently is nearly or entirely extirpated from our area.) For other species, preferences are less obvious.

The type of substrate plays a role in the ecological distribution of a number of desert animals. This is clearly seen, for example, in the three species of pocket gophers in the area (though exaggerated by competition among them). The Desert Pocket Gopher (*Geomys arenarius*) occurs in areas of sandy substrate, such as along the floodplain of the Rio Grande or in the deep sands of bolson floors. The large Yellow-faced Pocket Gopher (*Cratogeomys castanops*), however, inhabits deep, heavy soils. The third species (Botta’s Pocket Gopher, *Thomomys bottae*) is limited to shallow, rocky mountain soils. The role of competition, in this case, is to limit each species to areas where competition with the other species is minimized.

Various other local species tend to divide up the habitat on the basis of substrate. Ord’s Kangaroo Rat (*Dipodomys ordii*) prefers a sandy substratum, while the similar Merriam’s Kangaroo Rat (*Dipodomys merriami*) is most often found on harder soils. Two pocket mice divide up the habitat on the basis of soft, preferably sandy, soils (Desert Pocket Mouse, *Chaetodipus penicillatus*) versus a rocky substrate (Rock Pocket Mouse, *Chaetodipus intermedius*). The preferences are so strong that identification of these very similar mice is most easily (and, by amateurs, most surely) made on the basis of where they are caught.

Other local pairs separated by substrate types include Mearn’s Grasshopper Mouse (*Onychomys arenicola*) in hard substrates and the Northern Grasshopper Mouse (*Onychomys leucogaster*) in sandy areas; and Plains Pocket Mouse (*Perognathus flavescens*) in sandy areas versus the Silky Pocket Mouse (*Perognathus flavus*) on silty soils.

Among the carnivores, the Gray Fox (*Urocyon cinereoargenteus*) and Ringtail (*Bassariscus astutus*) are limited almost entirely to rough mountainous terrain, while the Kit Fox (*Vulpes velox*) and Raccoon (*Procyon*

lotor) are bolson and valley dwellers respectively. How much this distribution of carnivores is due to the substrate and how much to topography and/or diet is unknown. The Mountain Lion (*Felis concolor*) seems limited pretty much to montane situations, but likely because of its diet of prey such as deer.

Things are not always simple, emphasizing how little we know about some of the local mammals. The Cactus Mouse (*Peromyscus eremicus*) is the common white-footed mouse on the rocky slope of desert mountains and seldom is found away from such habitat with one exception--it is common in the mesquite hummock habitat where the substratum is nearly pure sand.

Turning to mammals most apt to be seen by people within the region, the lagomorphs (a fancy name for rabbit-like creatures) are prominent, both because they often are active in daylight (usually early morning and evening) as well as at night and because they often are spooked from their daytime retreats by people walking through the desert. Their relatively large size doesn't hurt, either. We have two species locally, the Desert Cottontail (*Sylvilagus audubonii*) and the Black-tailed Jack Rabbit (*Lepus californicus*). Despite both being instantly recognizable as rabbits, they are quite different in a number of ways. The jack rabbit technically is a hare, which means that it is well developed at birth and can hop around and otherwise function within a few hours. The cottontail is not a hare; it is born almost naked, with eyes sealed, and is helpless for days. In habit, the two also differ: the cottontail usually heads for cover (a burrow or thorn thicket), while the jack rabbit depends on speed and agility to outrun and outdodge predators. Both, in our area, are most common in the bolson habitat, but the cottontail may occur at least sparsely in montane or riparian habitats.

The other group of mammals commonly seen are the ground squirrels. The main reason for this is that they are diurnal (that is, active during the day), with virtually no nocturnal activity. We have three common ground squirrels, all easily told apart by their coats and one, additionally, by size.

The Rock Squirrel (*Spermophilus variegatus*) is relatively large (about the size of a tree squirrel) with a well-haired tail and a mottled (variegated) grayish coat. As the common name implies, this squirrel generally is found in rocky areas in the mountains or, occasionally, inhabiting steep arroyo banks away from rocks. They can climb trees and sometimes occur in parts of the valley near the mountains.

Another rock dweller, the Texas Antelope Squirrel (*Ammospermophilus interpres*), is fairly common in the Franklin Mountains and other regional mountains. About the size of a chipmunk (and sometimes misidentified as such), this is a gray squirrel with a single white stripe on each side of the body.

The Spotted Ground Squirrel (*Spermophilus spilosoma*) is a bolson and valley animal. A brownish to reddish- or yellowish-brown coat with small white splotches identifies this chipmunk-sized animal. This is the squirrel that so often runs across the road in front of a car.

Mule Deer (*Odocoileus hemionus*), Coyotes, and Bobcats (*Lynx rufus*) are less common than the squirrels or rabbits, but are sometimes seen during the day. Javelina, also known as Collared Peccary (*Tayassu tajacu*), has been moving into our area in recent years and may be seen during the day. Deer, Coyotes, Bobcats, and the pig-like Javelina are all so well-known that identification is easy. Likewise, Oryx, as the only large mammal in the area with long straight horns, is easily identified and often seen during the daylight hours. Both Black Bears (*Ursus americanus*) and Mountain Lions, familiar to everyone, have been seen or captured within the El Paso/Fort Bliss complex.

A number of mammals are seldom seen, but leave easily observed traces. Most Southwesterners are familiar with pocket gopher mounds, but may be less well informed about other traces. Gnawed yucca leaves higher up the trunk than a couple feet most likely are the legacy of the White-throated Packrat (*Neotoma albigula*); large chunks from the lower leaves may be packrat or may be Desert Cottontail. Packrats also construct large piles of debris (sticks, cow patties, cactus joints, tin cans, etc.) around the base of bushes or within crevices or overhanging rocks--this helps protect the rats from predators and weather extremes (some collections of plant remains in caves are over 40,000 years old and preserve a record of plants that grew within a few hundred feet of the midden.

Mounds of dirt up to 6 feet or so across and several feet high, with several burrow openings more than 4 inches across are constructed by the relatively large Bannertail Kangaroo Rat (*Dipodomys spectabilis*). Although usually a number of such mounds occur in an area, these rodents, like the other kangaroo rats and their relatives the pocket gophers, are highly antisocial. Except during reproductive activities, they keep to themselves and will fight viciously (and often to the death) if confined together. The

other two local kangaroo rats dig their burrows near the base of bushes or other things that help prevent predators from digging them out.

The kangaroo rats as a group have some interesting adaptations. These animals forage for seeds in open areas where they are susceptible to attack by owls. Cheek pouches opening externally beside the mouth are quickly stuffed with seeds as they are found, allowing the animal to return to shelter under bushes or within a burrow before feeding. Their vulnerability to owls is lessened by auditory adaptations that require a huge middle ear chamber (bulla) that allows them to pick up the very faint sounds produced by an owl as it brakes for the kill strike.

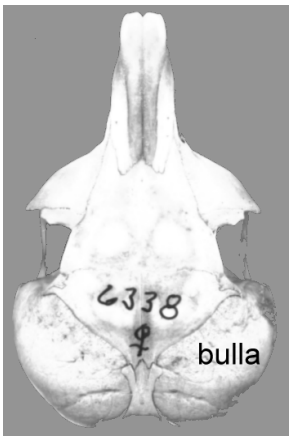

Figure 1. Dorsal view of a kangaroo rat skull showing the huge middle ear chamber.

These animals are superbly adapted for arid climates in other ways. Most notable are physiological and behavioral adaptations for water conservation that are so successful that some kinds can survive utilizing only metabolic water (water manufactured during the cellular breakdown of foodstuffs) produced from a diet of dry seeds.

With 14 species of bats recorded from the area (and likely several species have been missed), these flying mammals make up an appreciable part of the fauna. Our local species feed on insects and other arthropods but, like other mammals in the area, tend to divide up the resources by concentrating on different sized prey or foraging in different habitats. Economically, they are vital because of the huge number of insects taken.

The general public appears well aware of the fact that rabies sometimes may be carried by bats. Unfortunately, a nearly hysterical approach often is taken by journalists and some public officials, greatly inflating the danger and putting a critical natural resource at risk from well-meaning, misguided persons. People are much more apt to contract rabies from skunks, raccoons, or domestic dogs than from bats. For that matter, many more people die annually from bee stings than contract bat rabies. A few simple precautions decrease the already minute danger: treat bats as you should any wild animal by leaving them alone! Bats found on the ground or in unusual places are those most likely to be sick--keep children and pets away from them, cover them with a jar or other container, and call Animal Control.

One of the largest and most common local bats is the Pallid Bat (*Antrozous pallidus*). This blond-furred, big-eared bat frequently roosts in buildings or behind loose siding. Like many bats, it sometimes is seen in temporary night roosts as it hangs up to digest its early evening take of insects. These night roost often are porches or other sheltered places and, when the bats are not seen, fecal pellets dropped to the floor may cause puzzlement the following day. Although Pallid Bats hunt well in flight (often this is the large bat seen cruising around street lamps, feeding on insects attracted by the light), it also is known to light upon the ground and feed on larger arthropods, including scorpions.

The little Western Pipistrelle (*Pipistrellus hesperus*) is mostly limited to the mountain slopes and canyons and often is active well before dark. It roosts in rock crevices or even under rocks and, like many kinds of bats, is not colonial. A very small canyon bat with fluttering flight, active in full twilight, likely is this species.

Best known to most laypersons is the Mexican Free-tailed Bat (*Tadarida brasiliensis*), whose large maternal roosts may hold several million individuals. Less commonly known is that these fast-flying bats migrate between the southern portions of the United States and Mexico, with many passing through our region each spring and fall.

Another group of bats poorly known to the public is that of the tree bats. These are mostly solitary, well-furred animals that roost amidst the foliage of trees rather than in caves, buildings, or crevices. The Hoary Bat (*Lasiurus cinereus*) is the commonest of these in our area, passing through in its north-south migration.

Several exotics deserve further mention. Capture of young Virginia Opossums indicates successful reproduction in the area. The House Mouse is widespread among urban and suburban areas, and it is the most commonly identified mouse from dwellings. It is quite rare more than a few miles from human habitations, however. Likewise, the Black Rat is predominantly (or probably solely) associated with humans in our area. Although Black Rats were associated with bubonic plague in the Old World, no such connection has been made regionally. However, bubonic plague is endemic in much of the Southwest, usually associated with prairie dogs (the Black-tailed Prairie Dog, *Cynomys ludovicianus*, occurs in the better developed grasslands of the region). Since the bacterium responsible for bubonic plague is carried by fleas, various rodents and animals that prey on them may become infected.

There are several human cases of bubonic plague in the Southwest virtually every year.

Prairie dog numbers in the Great Plains and the Southwest have been tremendously decreased by poisoning campaigns of past years, but these are not the only mammals to have suffered at the hands of man during historic time. Grizzly Bears (*Ursus arctos*) likely were in the region, at least on occasion (the Border Survey of the 1800s found them common to the west of us). They have been hunted to extinction in the Southwest and Mexico. The Gray Wolf (*Canis lupus*) has been extirpated from most of the United States. The Mexican subspecies, which occurred in the El Paso region, was almost eradicated, but captive populations have reproduced to the point where reintroduction into the Southwest is being tried.

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