

The Usual Suspects:

Potential Predators of West Texas

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Life in the desert is not for the weak. Whether you're a carnivore, omnivore or herbivore, your life's pursuit is to obtain enough food, to reproduce and to live another day. Predators make a living by killing and consuming other animals; however, predators are not created equally. Each predator species has a unique role in the ecosystem that varies by region, habitat, body size, digestive system and even by their dentition (teeth).

Mountain lions are the most formidable predator in West Texas, capable of taking the biggest of prey.



Scene of the crime: a whitetail buck taken down by a mountain lion.

Predator-prey basics

There are three simple rules that govern predator-prey dynamics. First, predators were made to kill. Second, prey were made to evade predators. And third, the number of predators on a landscape is limited by the amount of biomass and energy it produces. The first two principles are pretty straightforward, but the third requires more explanation. The analogy to the third principle is carrying capacity. Carrying capacity is the maximum number of herbivores the land can sustain. That limit is determined by the amount of forage produced for consumption. Similarly, predators are limited by the amount of forage (prey abundance) available to them. Ultimately, whether it is herbivores (prey) or carnivores (predators), they are limited by the productivity of the forage (habitat). This concept is best illustrated by the accompanying food pyramid figure.

For most of the western part of the state, six mammals are commonly implicated in most predation: grey fox, red fox, bobcat, coyote, black bear and mountain lion. Over the last 15 years, researchers at Sul Ross State University (SRSU) have



conducted a variety of studies on these “suspects” and have learned much about them. My purpose is to summarize those studies and draw conclusions on the role each of them plays in West Texas.

Admitted biases

The fox, bobcat and coyote data reported below are biased. That is, when landowners find depredated livestock, they commonly trap in the vicinity of the kill and catch the depredating (guilty) predator. Because the samples were obtained from predator trappers, there is a higher probability that the diet of these samples contains livestock or other prey species that are valuable to ranchers (e.g., deer). Thus, many of the stomach samples obtained in the grey fox, red fox, bobcat and coyote studies are biased. We would expect a lower occurrence of livestock in the diet of these species than is reported in the sidebar, “What’s on the Menu.”

The Line-up

The smallest of the suspects is the **grey fox**. Grey fox weigh in at five to 14 pounds, have litters of three to six kits, and are usually associated with woodland habitats. Grey fox occur across most of Texas, including portions of the Trans-Pecos and the Hill Country. Researchers at SRSU obtained 75 grey fox from trappers to deter-

mine their diets. Fifty samples were taken from the Trans-Pecos and 25 from the western Hill Country.

The non-native **red fox** is much larger than its native cousin the grey fox. Average weights for red fox range from six to 31 pounds. Red fox are primarily found in the Hill Country and other eastern regions of the state. Grey and red fox differ in size and color, but do prefer similar habitats (e.g., woodlands). In the same study as prior, SRSU students were also able to obtain 45 stomachs of red fox to conduct similar dietary analysis.

The biggest difference between the diets of the two fox species is that the larger red fox were more carnivorous and consumed larger prey items, including livestock. Whereas, the smaller grey fox was more omnivorous and focused on smaller prey, with a large part of their diet being plants and insects. Of the 120 fox stomachs analyzed, none contained deer, and almost all of the birds identified were song birds.

The first of our felines is the **bobcat**. Bobcats have been found in every Texas county and thrive in thick cover where they are able to stalk their prey. Bobcats can weigh from nine to 40 pounds and typically give birth to one to five kittens each spring. Similar to the fox

study, SRSU researchers obtained samples from the Hill Country and the Trans-Pecos.

Bobcats are true carnivores. Unlike the fox species, they exclusively consume meat. Bobcats are effective predators with more than 90 percent of their diet consisting of rabbits, hares and other small prey. Because of their body size and effective stalking behavior, sheep and goats are especially susceptible to bobcats. Bobcats can also take deer seasonally. In northern ranges of the United States, deer occur in the diet of bobcats in winter because of die-offs and malnourishment. In the South (including Texas), deer occur more frequently in the diets of bobcats during spring, when they are able to stalk and overcome deer fawns.

Coyotes are also ubiquitous in Texas, occurring in all ecoregions. Coyotes weigh between 17 and 50 pounds and can have litters up to six pups. Other researchers have demonstrated compensatory reproduction in coyotes, in that the more that they are removed from an area the larger the litters they produce. Using 208 coyote samples from the Hill Country and Trans-Pecos, researchers reported a high incidence of livestock in the diet of coyotes from both regions.

Big game species are especially vulnerable to coyote predation during two seasons for two different cohorts of the prey population. During spring, coyotes are effective in locating neonate fawns. Once the fawns are able to stand and effectively run with their mother, the likelihood of being preyed upon by coyotes decreases substantially. The second season that big game fall to coyote predation is following the rut. After exhausting themselves pursuing does, bucks may lose up to 25 percent of their body mass resulting in depleted nutrient reserves. This malnutrition makes them vulnerable to coyote predation.

Black bears are the largest predator of the West. Historically, black bears ranged over most of Texas, but they have been extirpated from almost all of their former range. Although black bears have been sighted in portions of the Hill Country, Trans-Pecos, and Pineywoods, black bears occur in small, isolated sky islands of far West Texas, including the Chisos, Davis, and Del Norte mountain ranges. Black bears can range from 90 to 400 pounds and have



This black bear sow and her two large cubs are signs the West’s biggest predator is making a comeback in the Trans-Pecos’ sky islands.

one to three cubs every other year, which lends to their slow population growth.

Black bears can and will kill livestock. But in our study, we found no traces of livestock in their diet. Black bears also commonly eat carrion. The traces of deer and javelina found in our study were thought to have been from carrion (e.g., road-killed). From a dietary standpoint, black bears can be equated to an overgrown raccoon. They can eat almost anything, and they gorge themselves whenever they can (including protein or corn intended for deer). Black bears are also sloppy predators. When they do kill livestock or big game, they make a huge mess of things. They overtake their prey by sheer force, many times bludgeoning them. Prey carcasses are heavily bruised when killed by bears.

Mountain lions are the Lamborghini of Texas predators: sleek and stealthy. Like many of our large predators, they once

Smaller than the non-native red fox, the little grey fox feeds on insects about as often as it does on rodents.



claimed a much broader distribution in Texas than they currently occupy. Mountain lions occurred in all 10 ecoregions on Texas, with maybe the exception of the High Plains region. Today, mountain lions are found in the Trans-Pecos, portions of the Hill Country and portions of South Texas. Sightings (and even verifiable evidence) do occur in other portions of the state, but they are extremely rare. Mountain lions weigh in at 80 to 150 pounds, but a 125-pound tom is typical for Texas. The primary habitat feature required by mountain lions is screening topographic or vegetative cover.

Like bobcats, mountain lions are strict carnivores. Several diet studies have been conducted by our researchers for mountain lions in South Texas and the Trans-Pecos.

Mountain lions are the most formidable predator that remains in Texas and are capable of taking down the largest of prey, including steers, colts, sheep, elk and deer. Fortunately, mountain lions (and all our other predator species) occur at extremely low densities compared to their prey. In a study in South Texas, we estimated there were approximately 1,300 white-tailed deer, 828 javelinas and 1,048 feral hogs for every mountain lion in our study site.

Predation occurs every day on every ranch in Texas. It's a way of life. Predator-prey interactions are just one of the checks-and-balances nature established so that healthy wildlife will continue on the landscape. Simple studies asking "What do they eat?" are one of the first steps to better understanding the mysterious predators of Texas and the roles they play. 🐾

What's on the Menu

MOUNTAIN LIONS

In South Texas, rabbits and rodents represented 33 percent of their diet, followed by feral hogs (28 percent), deer (26 percent) and javelinas (12 percent). Summarizing five studies in the Trans-Pecos, mountain lion diets typically consist of 54 percent deer, 13 percent javelina, 11 percent rabbits and rodents, 10 percent porcupine, 7 percent livestock and 5 percent other items.

BLACK BEARS

In the Big Bend, black bears were dependent on plants for food in all seasons of the year. The winter diet of black bears was almost exclusively plant matter (98 percent). In spring, their diet shifted slightly to animal matter (16 percent), but vegetation was still the dominant food stuff (82 percent). In both summer and fall, their diets were 86 percent plant matter and 11 percent animal matter. The animal foods consumed by black bears came in the form of caterpillars, insects, small mammals and a small amount of deer and javelina. The composition of plant matter changed seasonally, with more hard mast (acorns, persimmons) in the fall and more soft mass (cactus, berries) in the summer.

COYOTES

In the Hill Country, 54 coyote stomachs revealed that livestock (53 percent), rabbits (19 percent), rodents (10 percent), vegetation (10 percent) and big-game species (8 percent) were the major dietary items. From the Trans-Pecos, 154 coyote samples revealed that livestock (28 percent), rabbits (27 percent), vegetation (13 percent), big game (13 percent), other items (11 percent) and rodents (8 percent) were the dominant items.

Coyotes are extremely flexible in their diet; that is, they adjust their prey based on availability. In the Trans-Pecos, for example, coyotes consumed more rabbits (36 percent) and livestock (34 percent) in the winter, but they shifted their diet in the spring to big game (37 percent; primarily fawns), rabbits (26 percent) and livestock (22 percent). In fall, coyotes shifted to a more common prey source: vegetation (28 percent; soft and hard mast -- prickly pear fruits, mesquite beans).

BOBCATS

Using the stomachs of 67 bobcats from the Hill Country, researchers reported the diet of bobcats to consist primarily of rabbits (47 percent), livestock (29 percent), deer (10 percent), other items (10 percent) and rodents (4 percent). From the Trans-Pecos, 54 bobcat samples revealed similar trends: rabbits (38 percent), birds (14 percent), rodents (13 percent), deer (13 percent), other items (11 percent) and other items (11 percent).

RED FOX

On average, the diet of red fox in the Hill Country consisted of 43 percent rodents, 20 percent rabbits, 13 percent livestock, 11 percent birds, 7 percent other items, 4 percent insects and 2 percent vegetation.

GREY FOX

For the Trans-Pecos, grey fox primarily consumed rodents (28 percent), insects (28 percent), vegetation (22 percent), birds (11 percent), rabbits (8 percent) and other items (3 percent). For the western Hill Country, grey fox primarily consumed rabbits (23 percent), vegetation (21 percent), insects (20 percent), rodents (12 percent), other items (12 percent) and birds (6 percent).



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