

Mammalogy

Unit 16



Texas Master Naturalists
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Unit Goals



- ❧ Become familiar with the common native Texas mammals in your ecoregion
- ❧ Demonstrate knowledge about the general characteristics of the 3 major subclasses of mammals
- ❧ Discuss basic principles of mammal behavior, physiology, and ecology and relate these principles to environmental adaptations
- ❧ Demonstrate familiarity with the 10 orders of mammals found in the state
- ❧ Discuss the diversity and distribution of mammals in Texas and an understanding of the role of mammals in Texas ecosystems
- ❧ Demonstrate knowledge of estimating/measuring animal populations
- ❧ Demonstrate knowledge of methods for trapping, marking, monitoring, and observing mammal populations
- ❧ Understand threats to mammals in Texas

Mammalogy



- ❧ Natural History
- ❧ Taxonomy and Systematics
- ❧ Anatomy
- ❧ Ethology (Behavior)
- ❧ Ecology

- ❧ In Texas:
 - ❧ 97 Genera
 - ❧ 181 Species



Linnaean Classification



Classification System

Kingdom	Animalia
Phylum	Chordata
Class	Mammalia
Order	Rodentia
Family	Heteromyidae
Genus	Dipodomys
Species	compactus

Gulf Coast kangaroo rat



Dipodomys compactus

Common characteristics



- ☞ Hair/Fur- to aid in internal temperature control
- ☞ Mammary Glands- nourishment of young
- ☞ Ability to give birth to live young (Almost)
- ☞ Teeth, Four-chambered Heart

3 subclasses

☞ Monotremes

Prototheria

oviparous

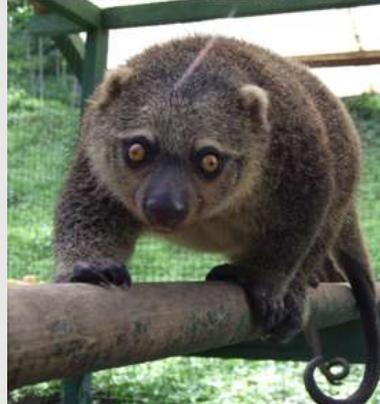
☞ Marsupials

Metatheria

marsupium

☞ Placentals

Eutheria



Major Orders of Mammals (L. “breast”) in Texas



- ❧ Didelphimorphia
 - ❧ Gk. “two” “wombs”
- ❧ Chiroptera
 - ❧ Gk. “hand” “wing”
- ❧ Xenartha
 - ❧ Gk. “strange” “joints”
- ❧ Lagomorpha
 - ❧ Gk. “hare” “from”
- ❧ Rodentia
 - ❧ L. “to gnaw”
- ❧ Carnivora
 - ❧ L. “flesh” “to devour”
- ❧ Artiodactyla (ungulates)
 - ❧ Gk. “even” “finger”
- ❧ Insectivora
 - ❧ L. “insect” “to devour”
- ❧ Sirenia
 - ❧ Gk. mythology
- ❧ Cetacea (whales)
 - ❧ L. cetus, Gk. ketos

Didelphis virginiana

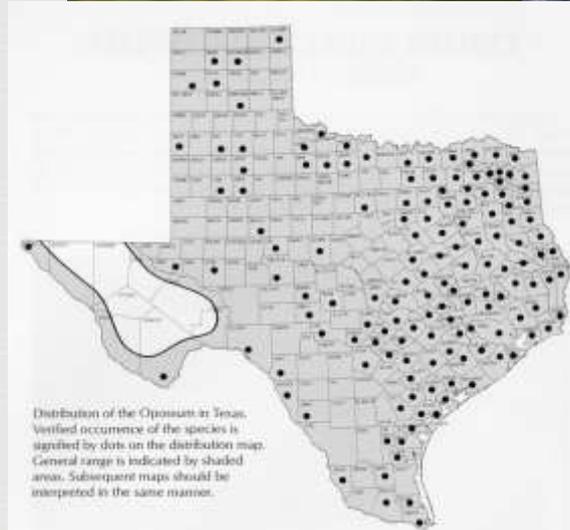
Virginia Opossum

ID: Scaly, prehensile tail; 5 toes each foot, big toe on hind foot opposable

Diet: Highly omnivorous, eat carrion and insects

Habitat: Variable, prefer wet habitats like swamps and rivers

Only marsupial north of Mexico



Distribution of the Opossum in Texas. Verified occurrence of the species is signified by dots on the distribution map. General range is indicated by shaded areas. Subsequent maps should be interpreted in the same manner.

Nine-Banded Armadillo

Dasypus novemcinctus



- ❧ Very Little Hair, Bony Carapace
- ❧ Water
 - ❧ Known to walk underneath water
 - ❧ Tires Easily when swimming
 - ❧ Inflate Themselves to increase Buoyancy
- ❧ Gives birth to identical quadruplets
 - ❧ Young are born with eyes open
 - ❧ Walking with a few hours
 - ❧ Precocial Young VS Altricial
- ❧ 30 or 32 peg like teeth
- ❧ Burrows are dependent on soil conditions
 - ❧ Sandy soils
 - ❧ Caves and Crevices
- ❧ Food: Mostly insects (some eggs)



Insectivora



- ❧ Most primitive placental mammals (170 mya)
- ❧ Shrews & moles not strictly insectivorous
- ❧ Family= Soricidae (Shrews)
 - ❧ 4 Species in Texas
 - ❧ Use burrows only for sleeping
 - ❧ Small body size -> high metabolic rate, spend much time actively foraging
 - ❧ Some species have poisonous salivary secretions to subdue prey
 - ❧ Nocturnal; most terrestrial - moist habitats
 - ❧ Front feet “normal”, not paddle shape
 - ❧ Eyes small but functional
- ❧ Family= Talpidae (moles)
 - ❧ 1 Species in Texas
 - ❧ Fossorial (L. “digger”)

Scalopus aquaticus

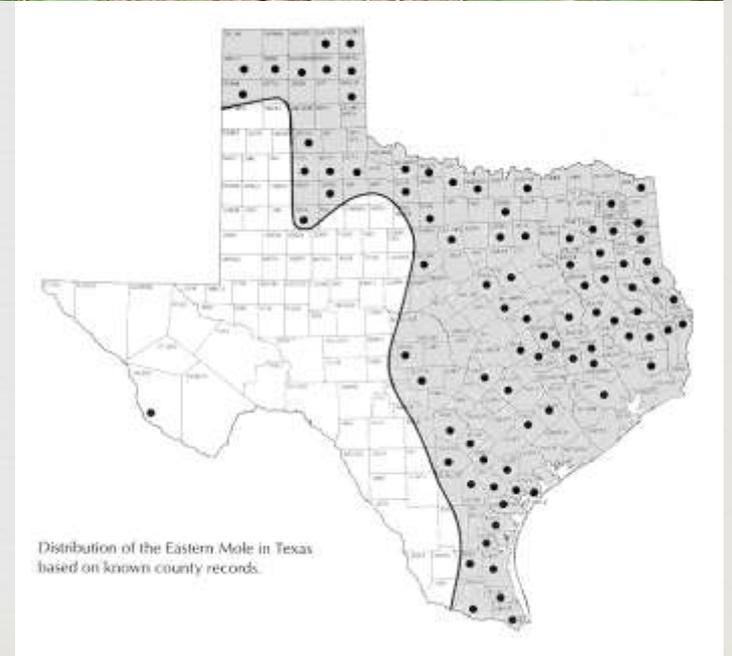
Eastern Mole

Size: 110 to 170mm

ID: Front feet broad and paddle shaped; Eyes non-functional; Short, sparsely haired tail

Diet: primarily earthworms. It also eats insects and their larvae, some vegetation, Each day this mole eats 25 to 100% of its own weight in food.

Habitat: Restricted in distribution by soil; Shallow burrows for feeding, deep for raising young



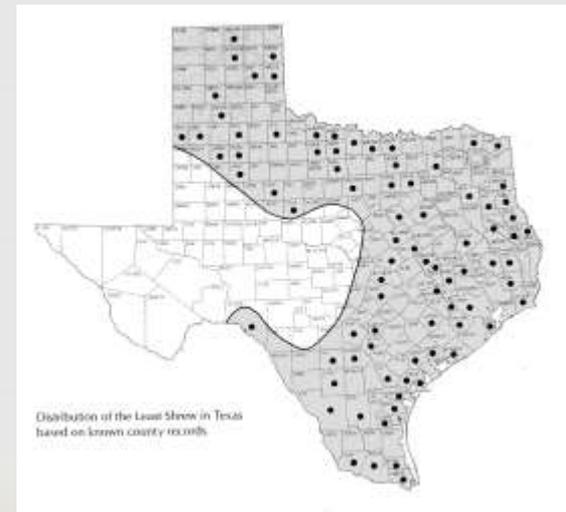
Cryptotis parva – Least Shrew



Habitat: Inhabits grasslands and fields. Uses runways of cotton rats

Diet: wide variety of invertebrates, including insects and bugs, earthworms, and snails and slugs. These animals seem to have a habit of opening the abdomens of grasshoppers and crickets and eating the internal organs. Most foraging done on surface

Sociable, in contrast to most shrews



Leptonycteris nivalis

Mexican Long-nosed Bat



- ❧ **Distribution in Texas:**
Big Bend
- ❧ **Habitat:** agave and
desert scrub-woodlands
- ❧ **Diet:** nectar, pollen of
flowers,
esp. century plant
- ❧ **Pelage:** drab brown
tipped silver-white



Endangered Species 1988

Tadarida brasiliensis

Brazilian Free-tailed Bat



Distribution: entire state,
migratory

Pelage: short, velvety, reddish
to black-colored fur.

ID:

- ❧ broad ears not joined at
midline
- ❧ 1/3 length end of its tail
free
- ❧ **Other:** tend to roost w/
Myotis velifer (cave myotis)



Spermophilus tridecemlineatus

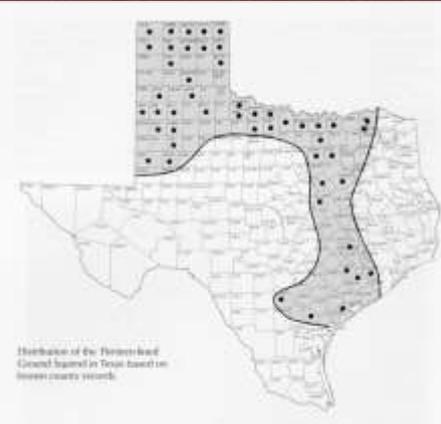
Thirteen-lined Ground Squirrel



ID: 13 alternating stripes on back; White eye ring

Diet: Omnivorous. Animal matter consumed includes insects, occasional small vertebrates, bird eggs and carrion.

Habitat: Open areas with short grass and well-drained sandy or loamy soils for burrows. Human landscapes



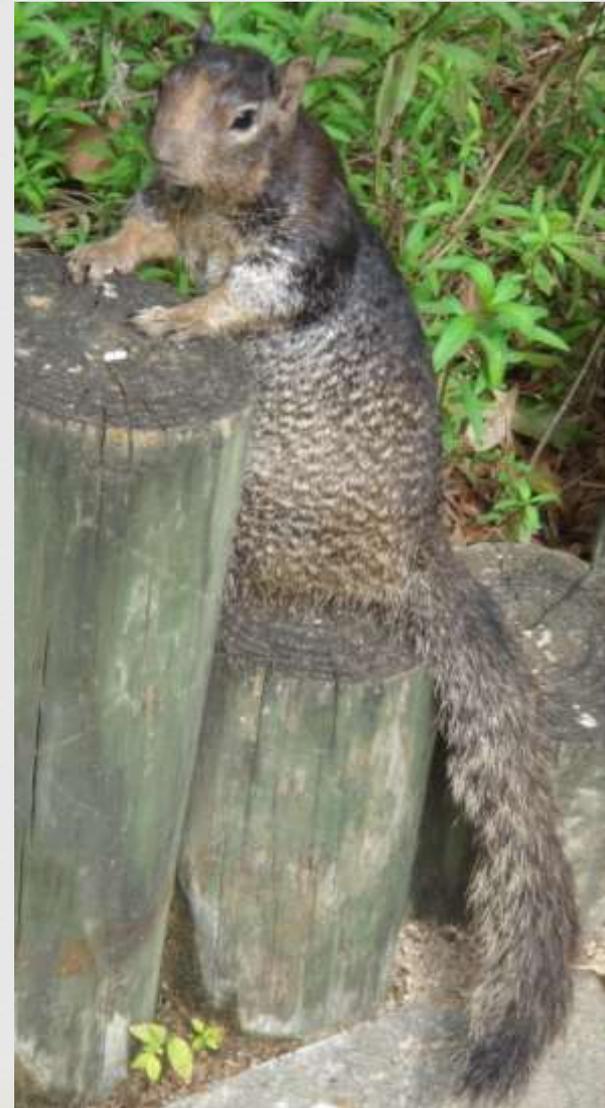
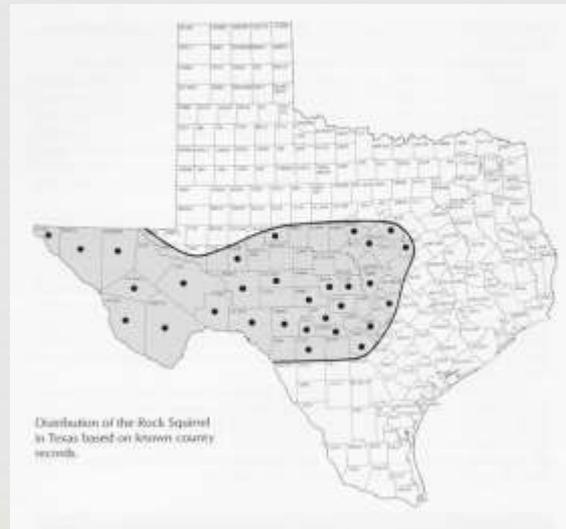
Spermophilus variegatus

Rock Squirrel

ID: Bushiest tail of any ground squirrel; Grizzled black and grey ; White crescents above and below eyes; Large head

Diet: oak acorns, wild sumac berries, cherries, wild plums, wild rye, assorted grasses, walnuts, pine nuts, mesquite, juniper berries, currants, cacti, and agave, grasshoppers, young turkey

Habitat: Rocky canyons, cliffs, hillsides



Cynomys ludovicianus

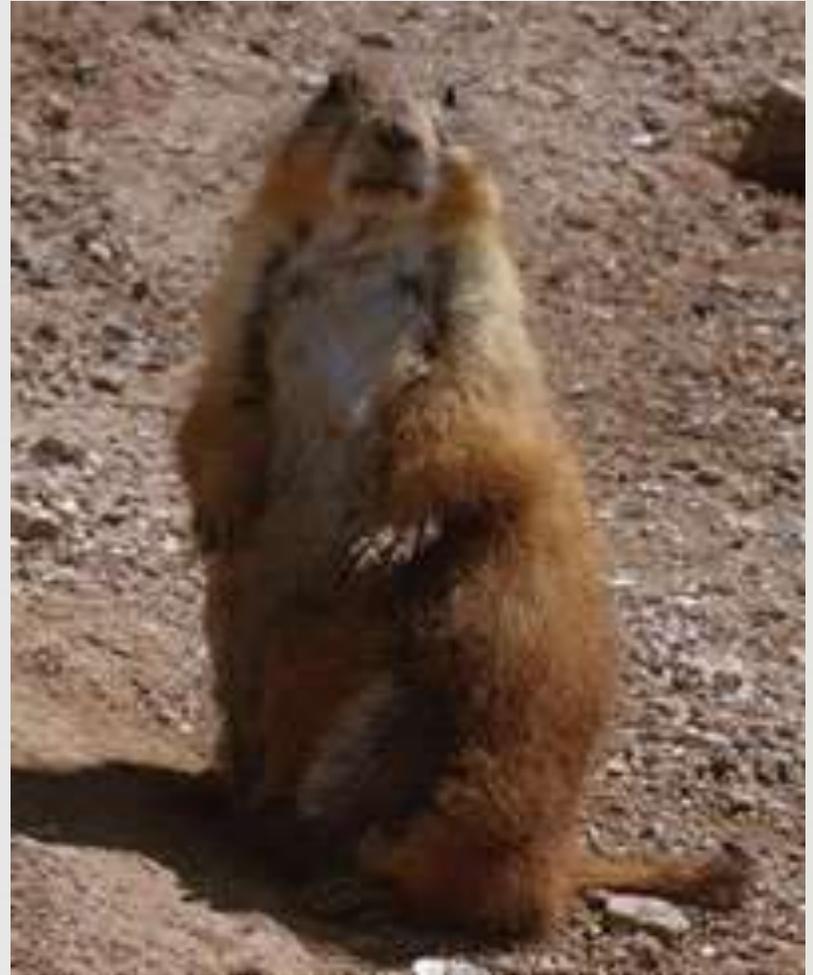
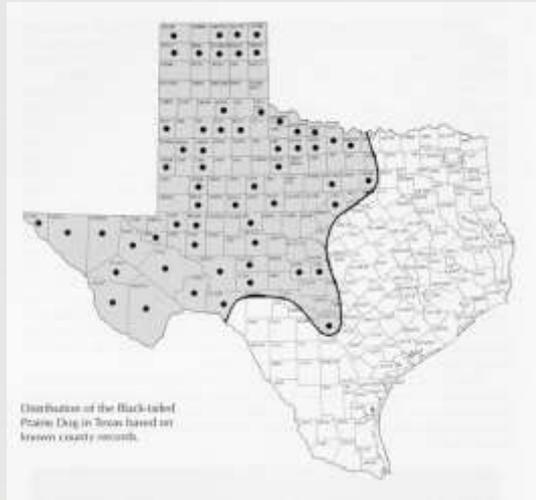
Black-tailed Prairie Dog

Size: 352-415mm

ID: Black tail tip, heavier body build than other rodents

Habitat: open, level, arid, short-grass plains. Never in moist areas

Diet: Eats weeds and grasses



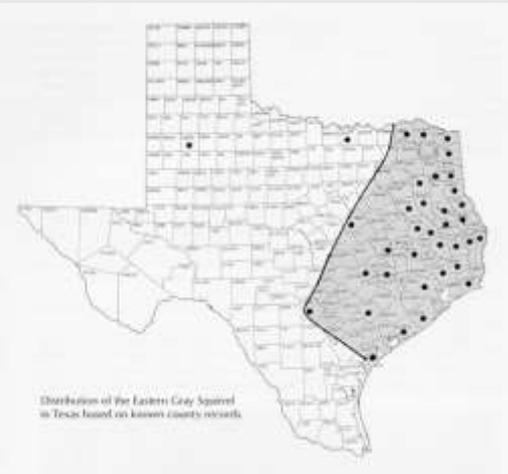
Sciurus carolinensis

Eastern Gray Squirrel

ID: Gray tone to back; Under parts are white or gray; Ears with white spot at base

Diet: nuts, flowers and buds of more than 24 species of oaks, 10 species of hickory, pecan, walnut and beech tree species

Habitat: mature continuous woodlands of greater than 40 hectares with diverse understory vegetation.



Sciurus niger

Eastern Fox Squirrel

Size:454-698mm

ID: Buff underparts; Brown-gray upperparts; Tail 1/2 of length and cinnamon with black; Feet cinnamon

Diet: vegetative matter to insects, moths, beetles, bird-eggs, and dead fish

Habitat: diverse array of deciduous and mixed forest. Use hollow trees as dens



Glaucomys volans

Eastern Flying Squirrel

Size: 212-257mm

ID: Large black eyes;
Flattened, bushy tail;
Membrane connecting
front and hind legs;
Brownish buff pelage

Diet: Omnivorous

Habitat: woodlands. They seem to prefer seed-producing hardwoods, particularly maple, beech, hickory, oak, and poplar. Live in holes in stumps



Castor canadensis

American Beaver

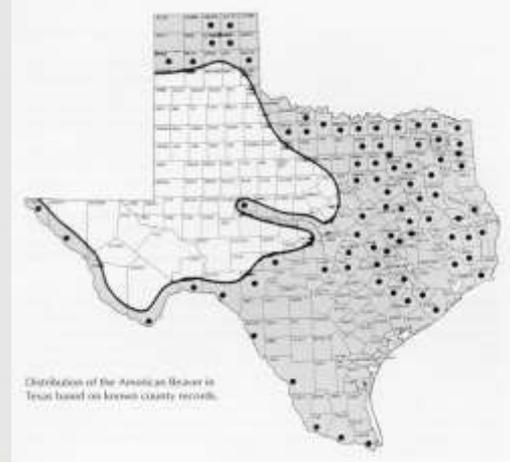
ID: Flat, paddle-shaped tail;
Pelage brown; Hind feet
are webbed; Incisor teeth
are large, orange and
ever-growing

Diet: Eat leaves and inner
bark

Habitat: Prefers Willow and
Aspen trees; Builds dams
and lodges. Lives in a
variety of rivers and
lakes - nocturnal

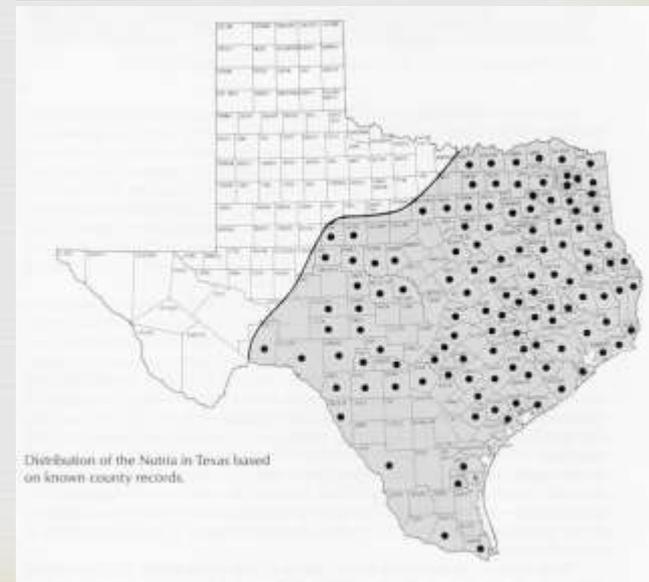
Dams and water offer
Protection

A keystone Species



Myocastor coypus - Nutria

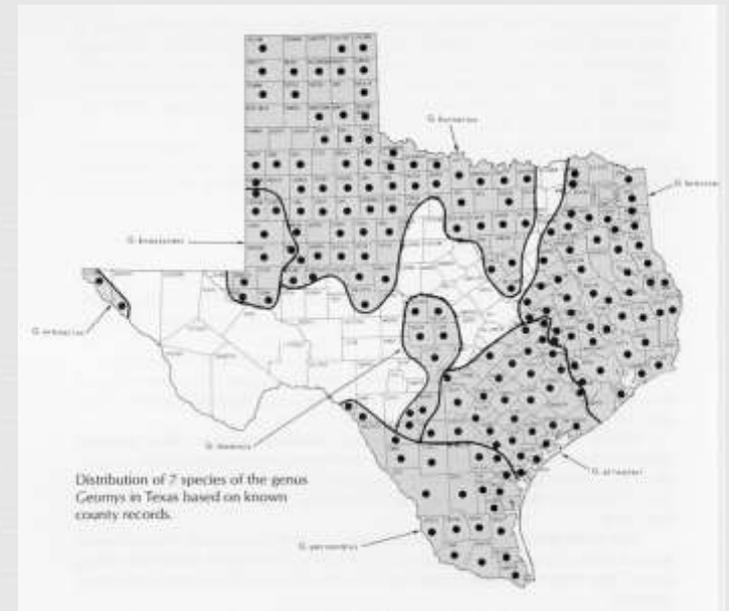
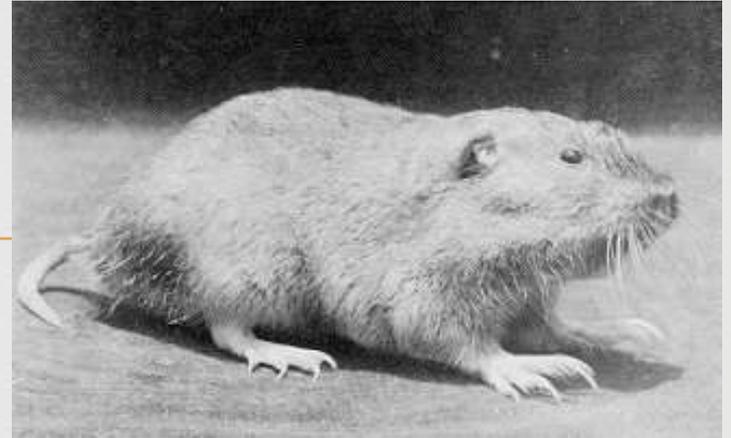
- ❧ Originally restricted to Central and Southern South America - introduced to USA
- ❧ Large rodents - aquatic lifestyle
- ❧ Ears and eyes are small
- ❧ Webbed hind feet have 5 toes
- ❧ Tail long and scantily furred - rounded
- ❧ Thick soft under fur - overlain with long coarse guard hairs
- ❧ ID: Large, brown, aquatic rodent; Rounded tail
- ❧ Habitat: inhabit marshes, lake edges, and sluggish streams, especially in areas with emergent or succulent vegetation along the banks. Burrows into banks
- ❧ Diet: Eats and rests on platforms above dense vegetation; Nocturnal feeder on plants



Geomyidae (Pocket Gophers)



- ❧ First upper cheek-tooth is constricted (hour-glass shaped)
- ❧ Last upper molar is larger than other molars
- ❧ Two grooves in incisors
- ❧ Fossorial
- ❧ Fur-line cheek pouches
- ❧ Lips close behind incisors
- ❧ Claws on forefeet (larger) and hindfeet for digging
- ❧ 9 Species in Texas



Peromyscus leucopus

White-footed Mouse

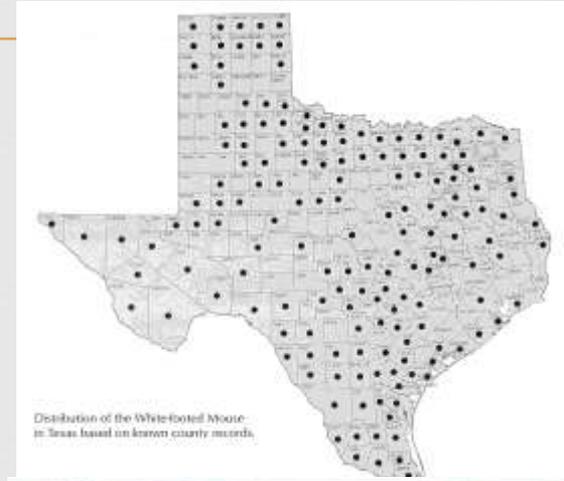


Distribution: Statewide

Size: Small

ID: Rufous mixed with grey/brown above w/ darker stripe on mid-back; sides paler and underparts and feet white. Ankle slightly brownish. Tail short and sparsely haired, indistinctly bi-colored, small tufts

Habitat: Highly variable and numerous in range. Most common and widespread of all *Peromyscus*



Roof Rat

Rattus rattus

Distribution: Found on all continents of the earth by introduction through human travel overseas

ID: Scaly tail, dark, longer than head and body. Brownish-grey above, grey belly

Habitat: Frequents urban areas



Norway Rat

Rattus norvegicus

Size: Larger than *Rattus rattus*

ID: Tail shorter than head and body. Scaly tail, different from woodrats

☞ Introduced; Widespread through U.S. in urban and field



House Mouse

Mus musculus

Distribution: Introduced and Widely distributed over Texas, particularly in human dwellings

ID: Small, nearly unicolored greyish-brown. Has distinct notch in the cutting surface of upper incisor. Ears large and mostly naked. Tail dusky and unicolored (Scaly) (might be a little paler below)



Lepus californicus
Black-tailed jackrabbit

Size:47-63cm

ID: Long eared, top of tail black

Habits:Active at twilight foraging into night

Diet:grass and herbaceous veg.

Habitat: desert scrubland, prairies, farmlands, and dunes. Many different vegetation types are used, including sagebrush-creosote bush, mesquite-snakeweed and juniper-big sagebrush.

Distribution: statewide except Big Thicket

Precocial young



HARE



Sylvilagus floridanus

Eastern Cottontail

Size: 395 to 477 mm.

ID: dense, buffy brown underfur and longer, coarser gray- and black-tipped guard hairs cover the back of the eastern cottontail. Its rump and flanks are gray, and it has a prominent brownish-red patch on its nape. The ventral surface is white.

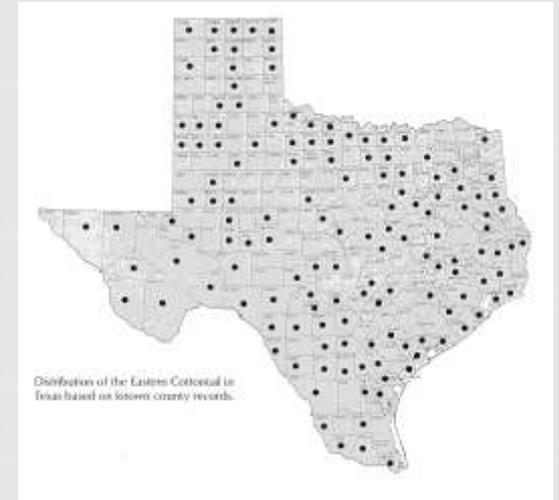
Habitat: “edge” environments, meadows, orchards, farmlands, hedgerows and areas with second growth shrubs, vines and low deciduous trees.

Diet: varies due to season

Distribution: throughout Texas

Skull: Auditory bulla small and smooth

Altricial young



Coyote *Canis latrans*

☞ Similar to red wolf but smaller, narrower muzzle and paler color

Diet :Prey mostly small birds and rodents, carrion of large game in winter, will eat vegetation

Habits: Mostly crepuscular activity

Habitat: Highly variable

Distribution: Common statewide

Top Predator??



Red Wolf, *Canis rufus*

Size: Small,

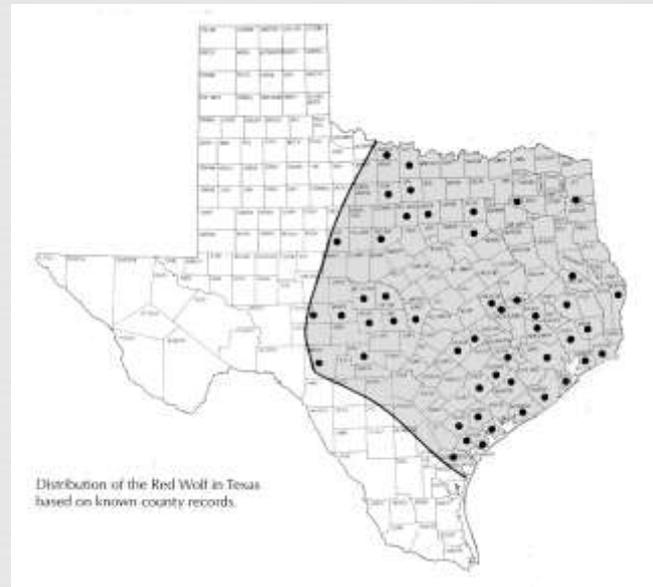
ID: slender, long-legged; resembles coyote, slightly larger and pelage more blackish and coarser

Distribution: Formerly ranged Eastern Texas

Habits: High hybridization w/ coyotes, hybrids resemble coyotes. More social and nocturnal than coyotes

Habitat: Brush, forest and coastal prairies

Notes: Extirpated in Texas; Listed as endangered both TPWD and USFWS; True red wolves now likely only exist in captivity, wild are all coyote hybrids



Former Range

Red Fox, *Vulpes vulpes*

ID:. Similar size to gray fox, but very different color and cranial traits. Thick bushy, white-tipped tail. Forelegs feet to elbow black

Diet: small rodents, rabbits, insects, fruit

Habitat: mixed woodland uplands interspersed with farms

Distribution: Relatively common throughout except extreme west and south

Notes: Introduced to state in 1895 for sport



Common Gray Fox, *Urocyon cinereoargenteus*

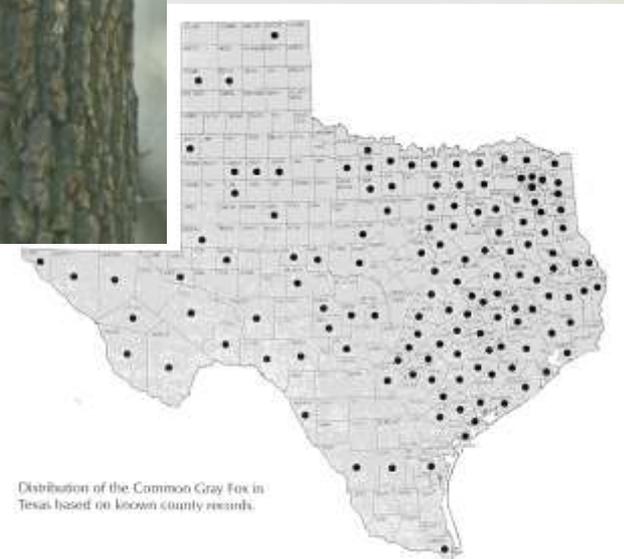
ID: Gray upper, red-brown legs.

Diet: varies seasonally, most important is small mammals

Habitat: uplands and bottomlands; edge species

Distribution: Found statewide, greater in eastern regions

Habits: Adept climbers, can leap branch to branch



Mountain Lion, *Puma concolor*

ID: unspotted body with long, black-tipped tail (>1/2 body). Small rounded ears w/ no tufts. Tawny above, whitish below

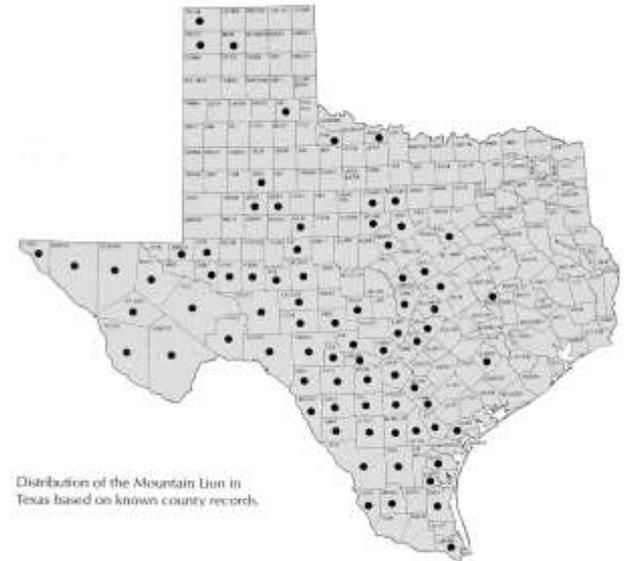
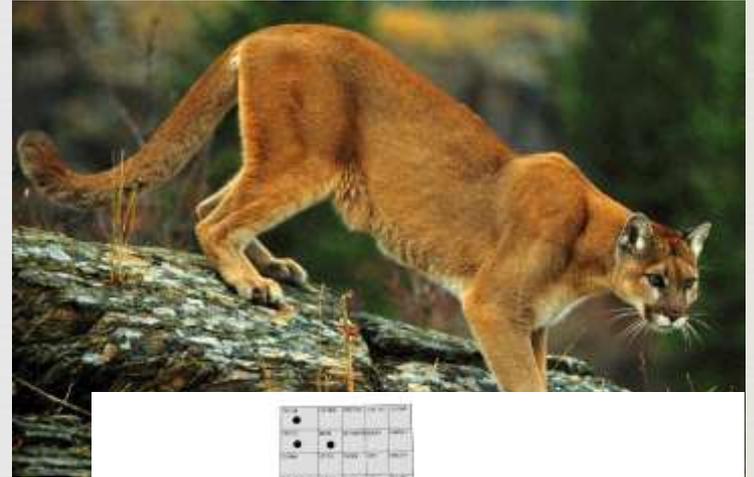
Habitat: Rocky habitats preferred (Trans Pecos, Rio Grande Plains), avoids shrubless desert & ag areas

Diet: deer and medium sized mammals

Distribution: once state-wide, now in desert regions of Trans-Pecos and some parts of Edwards Plateau

Habits: Solitary except during breeding; kits spotted. Adept climbers

Notes: TX only state not regulated; also called cougar, puma, panther, etc.



Bobcat, *Lynx rufus*

Size: Medium-sized

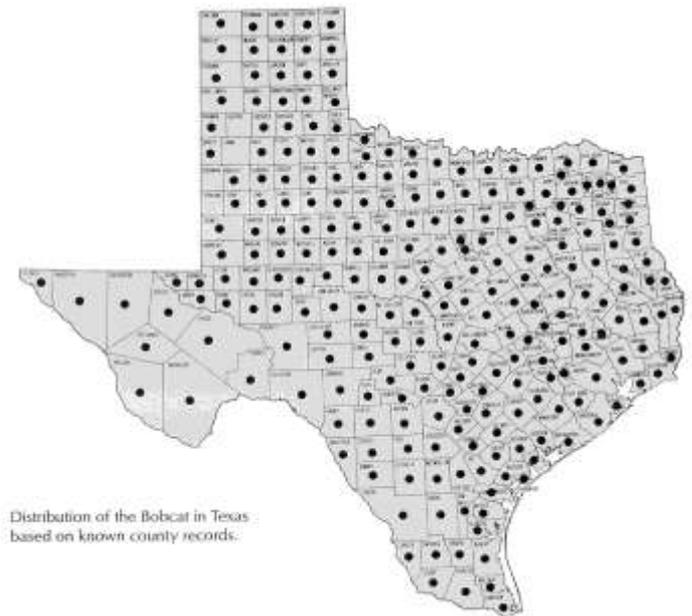
ID: tail short & black above white below. Upper reddish-brown streaked w/black; lower whitish spotted black. Ears tufted, head w/ruff

Distribution: Wide ranged U.S. & TX

Habitat: usually wooded & broken country

Habits: Primarily nocturnal. Fairly long lived, 12-13 yrs of age reported in wild. Highly adaptable

Diet: rabbits, squirrels, rats, mice



Ocelot, *Leopardis pardalis*

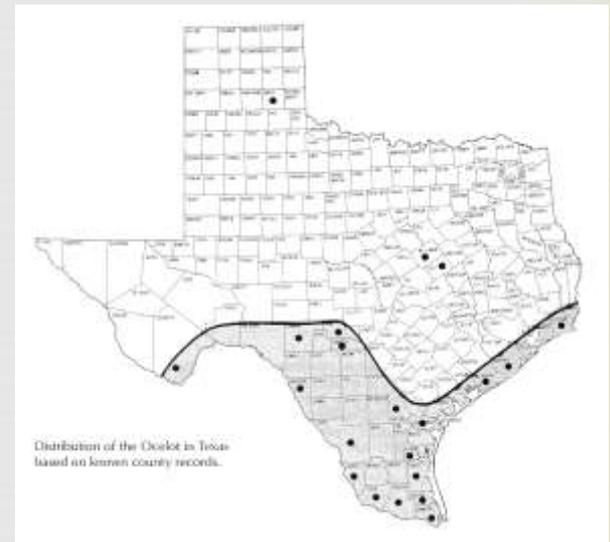
ID: spotted & blotched, smooth coat. Larger than margay w/ more robust skull

Distribution: Neotropical, once ranged through TX to AR, now only 4 counties of Rio Grande Valley

Habitat: dense shrub, mostly tropical

Habits/Diet: Nocturnal, feeds mostly rodents

Notes: endangered, listed state and federal



From records, now only found in 4 border counties

Ursidae: American Black Bear, *Ursus americanus*

- Size: Medium-sized, 100-150 kg
ID: brown or black. Face profile straight (not concave like grizzly)
Distribution: Formerly widespread through TX, now primarily Trans-Pecos, recent reports of them in Big Thicket (from LA populations)
Diet: highly varied
Habits: Exhibits winter lethargy in winter. Curved claws for climbing, though spend most time on ground
Notes: TPWD list threatened, though #'s growing



Common Raccoon

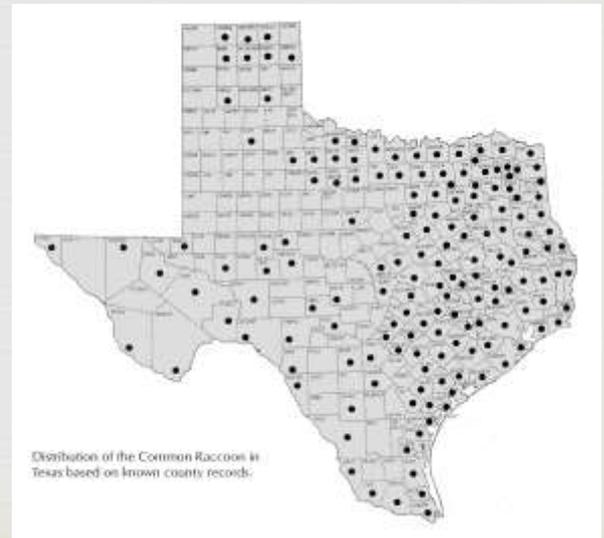
Procyon lotor

ID: Gray to blackish grizzled pelage with distinctive dark mask and ringed tail. Teeth more flattened for crushing, not for cutting as in dogs and cats

Diet: Omnivorous

Distribution: Found statewide, especially near water

Habitat: broadleaf woodlands, although they are rather common in the mixed-pine forests of southeastern Texas



Black-footed Ferret

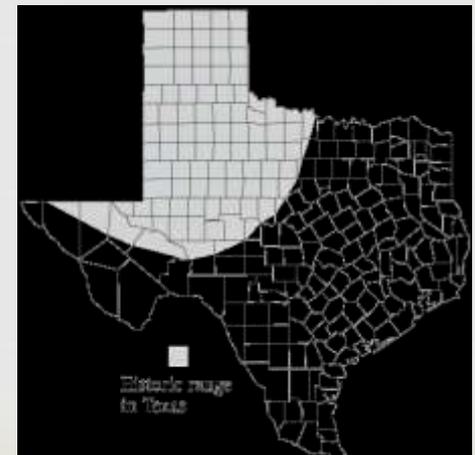
Mustela nigripes



- Historically distributed in NW 1/3 TX, Panhandle, Trans-Pecos, and part of Rolling Plains
- Now survives only in captivity and some recently reintroduced areas in western states.
- Closely associated with prairie dog towns, a main source of food.



Historic
range



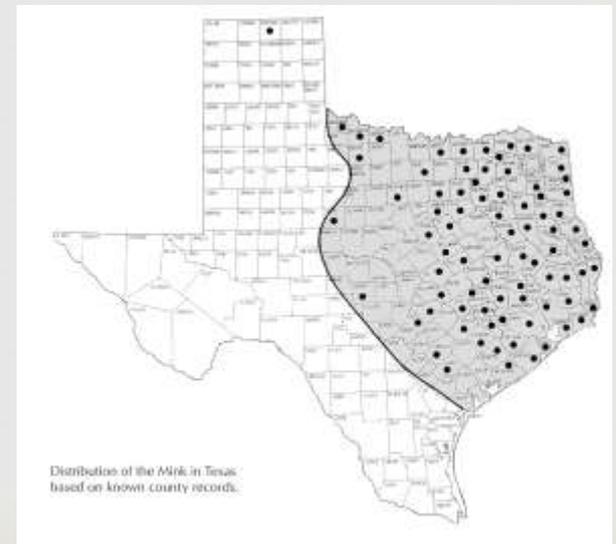
Mink - *Mustela vison*

ID: Slender, weasel-like carnivore. Dark brown, feet and tip of tail nearly black. Underparts paler and have a white chin patch. Tail long and moderately bushy

Distribution: Eastern one-half of the state.

Habits: Nocturnal, semi-aquatic

Diet: wide variety of animals which they usually capture and kill including aquatic birds, mammals, frogs, etc.



American Badger

Taxidea taxus

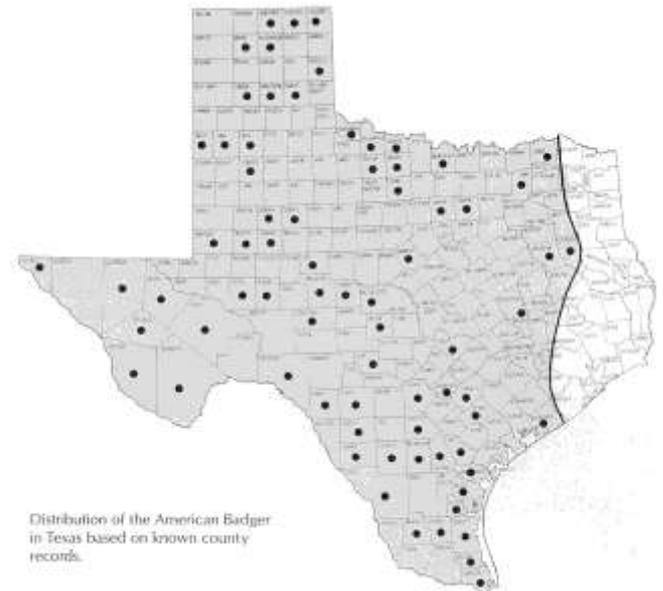
ID: Short, broad bodied carnivore with short legs and long front claws used for digging. Long pelage, grizzled grayish-yellow, distinct white stripe from nose, over head to shoulders. Underparts are yellowish-white. White crescent behind the eyes and around the ears surrounds a dark spot on the face.

Distribution: Not extreme East Texas

Habitat: Generally occur in areas inhabited by ground squirrels and prairie dogs, a main source of food.

Diet: mostly ground squirrels

Habits: Usually solitary



River Otter

Lontra canadensis

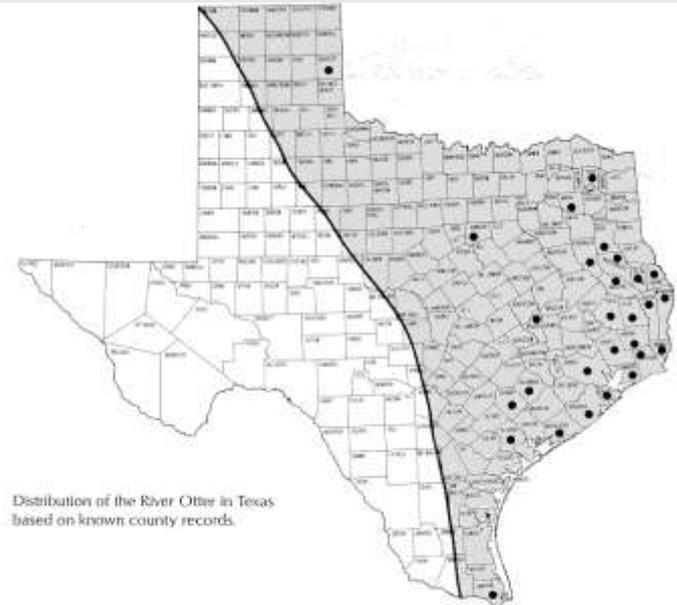
ID: Large, dark brown, slender body and long, thick tapered tail. Adapted for aquatic lifestyle: an oily, waterproof coat, webbed toes, and small external ears.



Distribution: Eastern TX near lakes, larger streams, marshes, bayous and brackish inlets.

Habits: Expert swimmers and divers

Diet: feed primarily on crayfish, fish, etc.



Eastern Spotted Skunk

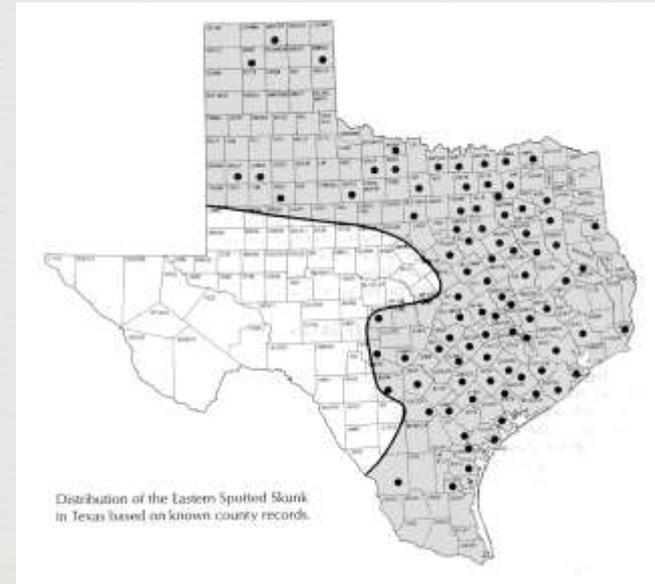
Spilogale putorius

☞ Previously one species w/ Western Spotted Skunk, Now 2 spp. based on genetics and differences in reproductive process.

ID: Black pelage more extensive than Western, w/ small white spot on forehead, one in front of each ear. Many thin white stripes on back, tail all black except small white tip.

Distribution: Eastern half of TX. Prefer areas with much cover, especially riparian woodlands.

Diet: many pests and rabbits. excellent rat-catchers and can soon rid a barn of these pests.



Striped Skunk

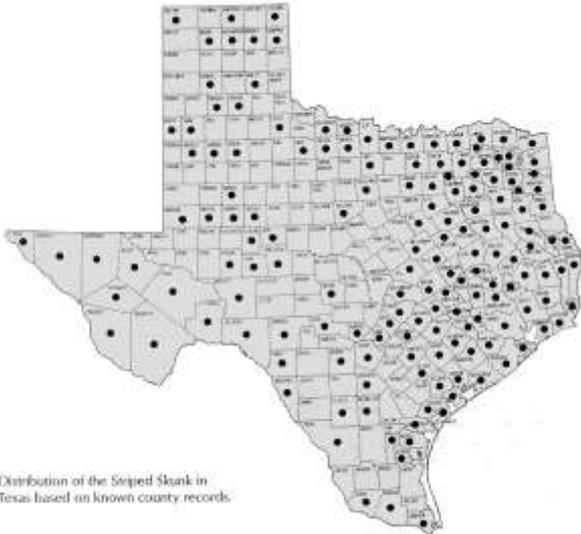
Mephitis mephitis



Size: Medium sized skunk,
ID: 2 dorsal white stripes that meet in a V on the nape. Stripes vary in size and shape; skunks may appear all white, all black or spotted. Amount of white in tail also variable.

Distribution: Most common skunk in NA, found throughout TX

Habitat: Woody or brushy areas, associated farmlands.



Distribution of the Striped Skunk in Texas based on known county records.

Sus scrofa - feral pig



Descendants of domestic stock and European wild hogs

Distribution: everywhere

Habitat: timbered areas with some clearings; areas with leaf litter for foraging

Have heavy impact on local wildlife

ID: Tail coiled or straight. Vary in color depending upon their ancestral stock: brown, black, red, white, combo, w/ or w/o spots.

❧ Skull: steeply elevated cranium, long rostrum, no bony ring around eye socket. Canines curl as they grow



Pecari tajacu - Collared Peccary

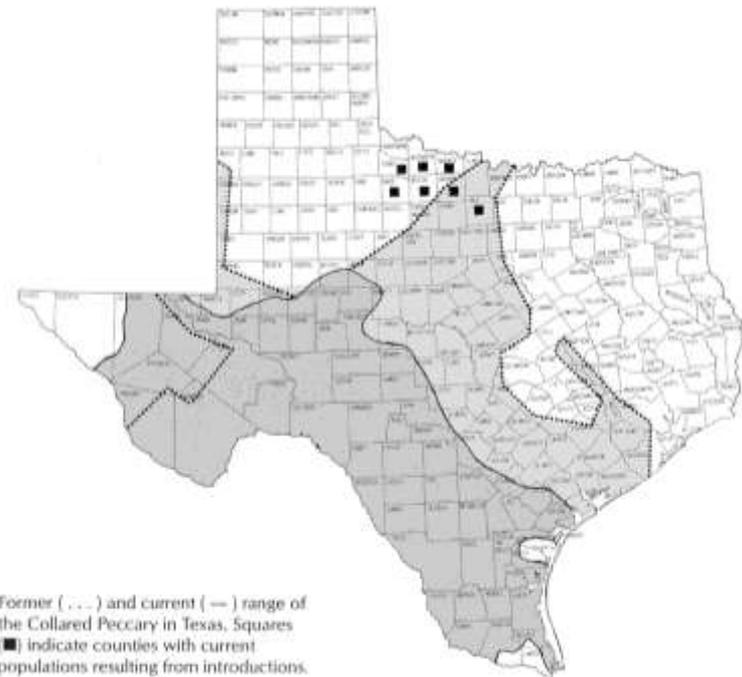


ID: Pig-like w/ 4 hoofed toes on front, 3 on hind. Relatively small hooves. Harsh pelage, grizzled gray-black, white ring around the shoulders and black dorsal stripe. Distinct scent gland on rump; Fewer tail vertebrae than pigs. Young are red-yellowish brown w/ black dorsal stripe. Canines straight in skull

Habitat: dense brushy semi-desert, chaparral

Habits: Don't usually root the ground like a pig but push around on the surface.

Diet: Herbivorous



Cervidae

- ❧ Only males have branched antlers
- ❧ Caribou the only cervids whose females have antlers
- ❧ Antlers composed entirely of bone, grow from pedicles connected to the frontal bone.
- ❧ Antlers start w/ layer of velvet that is very vascular and nested with nerves that supplies the antler with nutrients
- ❧ Shed annually
- ❧ Ruminants



Bovidae



- ❧ Largest family of artiodactyla: 137 worldwide, 5 in North America, 2 in Texas (native)
- ❧ Both males and females have horns
- ❧ Horns formed from inner core of bone derived from the frontal bone, then sheath of keratinized tissue.
- ❧ Horns usually grow continuously and never shed.
- ❧ Usually 4 toes on each foot
- ❧ Ruminants

Antilocapridae



- ❧ Pronghorn is only species in this family.
- ❧ Not a true antelope but has been placed into this family as it has characteristics of both cervids and bovids.
- ❧ Horns in both sexes, but the sheaths are shed yearly.
- ❧ Two toes on each foot, no dewclaws
- ❧ Ruminants



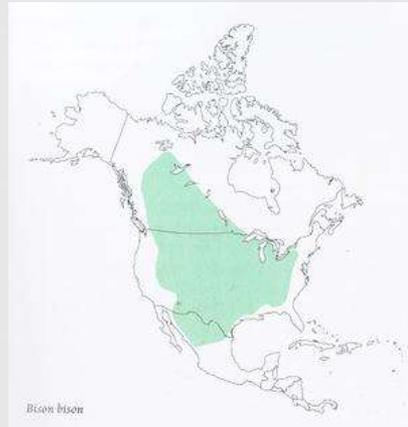
Bos bison

Distribution: Historically ranged the western 2/3 of the state.

ID: Head heavy, w/ short curved black horns.

Diet: Grazers of open prairies

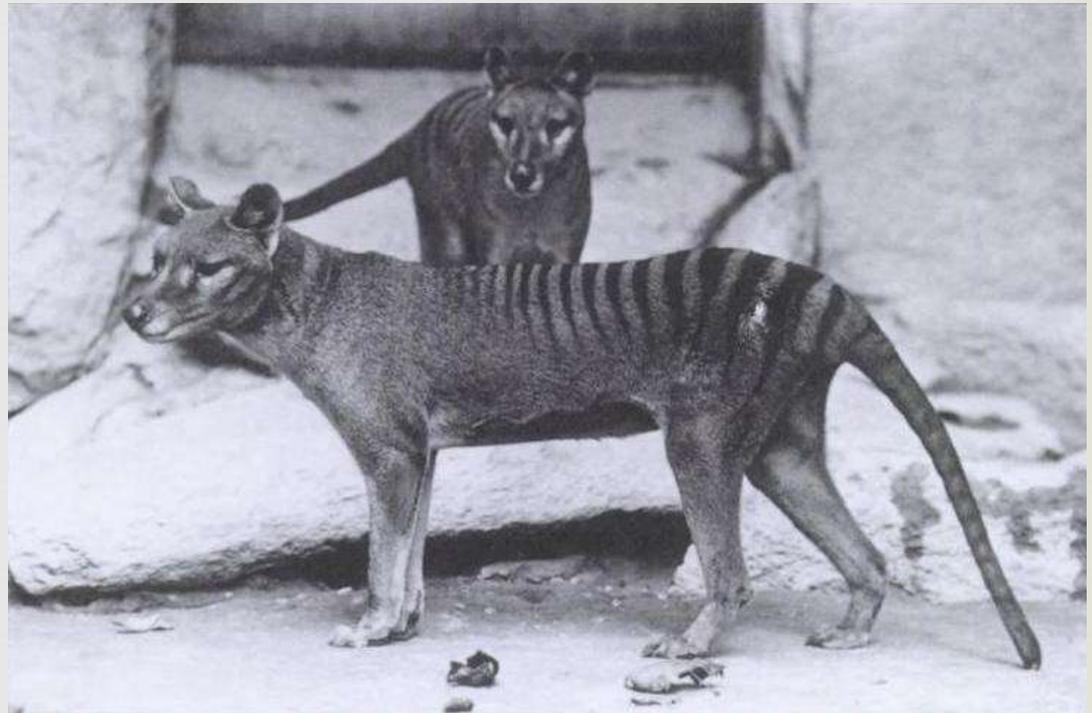
Habits: Gregarious, daily activities much like those of domestic cattle.



Thylacinus cynocephalus - Thylacine



- ❧ Carnivorous marsupial (kangaroos, rodents, birds)
- ❧ Nocturnal
- ❧ Tasmanian tiger/wolf
- ❧ Declared Extinct - 1936
- ❧ Introduction of dingos, bounty hunting





Questions

