REPTILES OF THE MESQUITE GRASSLANDS

OF SOUTHWEST OKLAHOMA

By

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REPTILES OF THE MESQUITE GRASSLANDS

OF SOUTHWEST OKLAHOMA

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Name: Danny Clark Overdeer Date of Degree: December, 1983

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Title of Study: REPTILES OF THE MESQUITE GRASSLANDS OF SOUTHWEST OKLAHOMA

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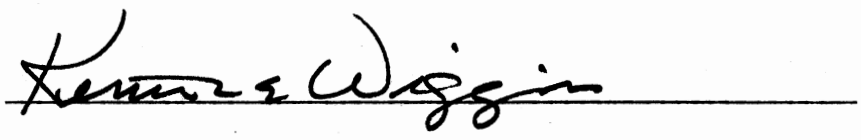
Scope of Study: This is a distributional study of reptiles in the mesquite grasslands district of extreme southwestern Oklahoma. Field studies, museum records, and literature update the distribution of species known from the area. It also considers the possibility of other species, faunal relationships, barriers, significant records, and venomous species.

Findings and Conclusions: Thirty-nine species of reptiles are known from the mesquite grassland. Five turtles, nine lizards, and twenty-five snakes have been recorded from the area. This is a transitional faunal region with the majority of the reptiles having western faunal relationships. Of 39 species, 14 (36%) have eastern faunal affinities and 25 (64%) have western faunal affinities. Twelve or more reptiles could be added to a list of species possibly occurring. Specimens collected during field study verify 10 new county records for the area. Specimens representing six additional county records were observed, but specimens were not collected. The Red River and a less defined ecological barrier function to separate reptiles north and south of the Red River. Three rattlesnakes (Crotalus atrox, Crotalus viridis viridis, and Sistrurus catenatus tergeminus) are the only dangerously venomous reptiles.

ADVISER'S APPROVAL 

CHAPTER I

INTRODUCTION

Knowing the geographic distribution of reptiles gives important information for understanding the requirements of each species. Webb's (1970) comprehensive study of Oklahoma reptiles showed the main body of the state and most of its periphery to be well studied. It also revealed a need for more information from the southwest corner of the state. The area in need of collection is the mesquite grasslands district (Blair and Hubbell, 1938) of southern Harmon and Jackson Counties in extreme southwestern Oklahoma (Figure 1).

The primary purpose of this study is to determine which reptile species occur within the area. Additional information on the natural history of reptiles is also included.

Webb (1970) discussed the possibility of the mesquite grasslands functioning as a filter barrier separating subspecies. Taxonomic status of several species is also considered in this study.

Collections are scanty for the mesquite grasslands. The first collection was by Marcy and McLellan (as cited in Baird and Girard, 1854), who explored the Red River area in southwestern Oklahoma and adjacent Texas. Baird and Girard (1854) discussed the reptiles collected during the expedition. Ortenburger and Freeman (1930) published notes on reptiles and amphibians from the western part of the state. Other papers dealing with the distribution of Oklahoma reptiles were published at

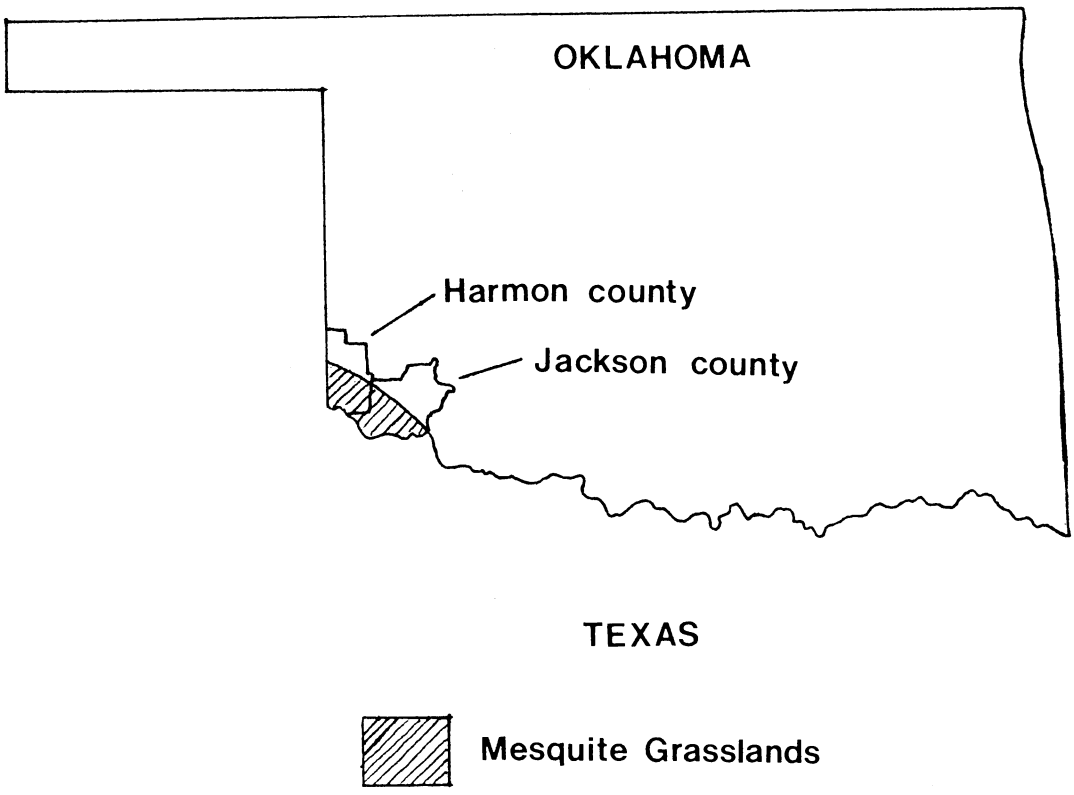


Figure 1. Location of Mesquite Grasslands in Relation to the Rest of Oklahoma

intervals (Smith and Leonard, 1934; Carpenter, 1955, 1958; McCoy, 1960; Carter, 1966). None of these papers dealt specifically with reptiles of the mesquite grasslands. Tinkle and Knopf (1964) discussed significant distribution records for reptiles in northwestern Texas.

CHAPTER II

DESCRIPTION OF STUDY AREA

The mesquite grassland of Blair and Hubbell (1938) is found in extreme southwestern Oklahoma in the southern parts of Harmon and Jackson Counties. The northern boundary of the mesquite grasslands is an outward curving imaginary line extending from the mouth of the Salt Fork of the Red River to northwest of Hollis, in Harmon County. The western boundary is the Oklahoma-Texas state line. The southern boundary is the Red River.

Topography of the mesquite grassland is diverse. The northern part of the district is flat, or gently rolling, predominantly sandy plains. Rocky canyons, small natural terraces, gypsum sinkholes caused by the collapse of solution caves, and flat lands cover the rest of the area. The lands just north of the Red River are rocky bluffs, small canyons, and stabilized dunes.

The uplands, particularly mesa caprock, are layers of sandstone, shale, gypsum, and limestone. Rocky, gravelly, and sandy soils are found near mesas. Bare clay is exposed in some heavily eroded washes.

Mesquite (Prosopsis glandulosa) is the dominant woody vegetation. Cotton wood (Populus deltoides), salt cedar (Tamarix gallica), and willows (Salix sp.) are common along waterways. Cedars (Juniperus sp.) are found on rocky mesas, river bluffs, and rocky canyons. Hackberry (Celtis sp.) is common in gypsum sinks and canyons.

The short grasses, smooth grama (Bouteloua gracilis), hairy grama (B. hirsuta), and buffalo grass (Buchloe dactyloides) are abundant on good soils.

The cacti (Echinocactus texana, Echinocerus richenbachii, and Mammillaria sp.) are found in many habitats, especially areas with thin rocky soils. Several species of Opuntia are common. One species of Opuntia with a prostrate growth form has developed dense mats in many areas of the mesquite grasslands.

Agriculture is the primary industry in the mesquite grasslands. Cattle are grazed on large tracts of untillable land. Some relatively flat land remains in mesquite and native grasses. However, most of the flat land is planted in row crops.

CHAPTER III

METHODS

Information for this study was taken from literature, museum records, several field trips from 1975 to 1982, and field study during the spring and summer of 1983.

Literature and museum records from the University of Oklahoma Stovall Museum and the Oklahoma State University Museum are used primarily to document species present. Where possible, information from these sources are also used to add insight into natural history and taxonomy.

Most information for the study was collected during field work in the spring and summer of 1983. A spring field trip was conducted from April 17 to April 26, 1983. The primary purpose of this trip was to search for the small, secretive species found under cover at the surface during spring's moist, mild days.

Collections from June 10 to June 19, 1983, were planned to take advantage of the dark phase of the moon. The dark of the moon is the best time to find nocturnal species abroad on roads at night. A cool, moist June allowed for additional collections of the small subterranean species. A short field trip from July 6 to July 9, 1983, was conducted to collect additional information on lizards of the area.

Since all areas within the mesquite grassland could not be thoroughly searched, collection sites were concentrated in areas that might be

expected to yield the most specimens. Rocky hillsides, mesas, canyons, abandoned farms, and areas with cover were searched more than areas that were barren.

Field collections were accomplished by overturning any cover that might harbor reptiles and by looking among cover for any animals that were foraging or moving about. Flat rocks and plant debris were the types of cover most often searched. Tin, boards, and trash were the cover types most often searched near abandoned farms.

Many nocturnal species were collected by cruising isolated stretches of roads from dusk until after midnight. Road kills and some live individuals were found by driving along highways during the daytime.

When possible, voucher specimens of significant records were preserved. Some live specimens were kept to get additional information on eggs, young, and food preferences. Nomenclature follows Conant (1958) and Behler and King (1979).

CHAPTER IV

RESULTS AND DISCUSSION

Verified Species

Thirty-nine species of reptiles are known to occur within the mesquite grassland (Table I). The presence of these species is verified by museum records, personal observation, or literature (particularly Webb, 1970). Major groups (Testudines, Lacertilia, and Serpentes) and families are listed phylogenetically. Species are listed alphabetically under family. Comments on the natural history are based on observations by the author unless otherwise noted.

Testudines (Turtles)

Chelydridae--Snapping Turtles

Chelydra serpentina serpentina (Common Snapping Turtle). Two individuals of this species were found dead on highways in June, 1983. Collections outside the mesquite grassland indicate snappers may be found in practically any relatively permanent waters from small creeks and ponds to large lakes and rivers.

Kinosternidae--Mud Turtles

Kinosternon flavescens flavescens (Yellow Mud Turtle). Yellow mud turtles are common in the mesquite grassland. Most individuals were

TABLE I

REPTILES KNOWN FROM THE MESQUITE GRASSLANDS

Species	Common Name
Testudines (Turtles)	
Chelydridae (Snapping Turtles)	
Chelydra serpentina serpentina[1,3]	Common Snapping Turtle
Kinosternidae (Mud Turtles)	
Kinosternon flavescens flavescens[1,2,3]	Yellow Mud Turtle
Emydidae (Sliders and Box Turtles)	
Chrysemys scripta elegans[1,3]	Red-Eared Turtle
Terrapene ornata ornata[1,2,3]	Ornate Box Turtle
Trionychidae	
Trionyx spiniferus pallidus[1,2,3]	Pallid Softshell Turtle
Lacertilia (Lizards)	
Iguanidae (Typical Lizards)	
Crotaphytus collaris collaris[1,2,3]	Eastern Collared Lizard
Holbrookia maculata[2,3,4]	Lesser Earless Lizard
Phrynosoma cornutum[1,2,3]	Texas Horned Lizard
Sceloporus undulatus consobrinus[2,3]	Southern Prairie Lizard
Uta stansburiana stejnegeri[2,3]	Desert Side-Blotched Lizard
Teiidae (Whiptails)	
Cnemidophorus gularis gularis[1,2,3,4]	Texas Spotted Whiptail
Cnemidophorus sexlineatus sexlineatus[1,2,3]	Prairie Lined Racerunner
Scincidae (Skinks)	
Eumeces obsoletus[1,2,3,4]	Great Plains Skink
Scincella lateralis[2,3]	Ground Skink
Serpentes (Snakes)	
Leptotyphlopidae (Slender Blind Snake)	
Leptotyphlops dulcis dulcis[1,2,3,4]	Plains Blind Snake
Colubridae (Typical Snakes)	
Arizona elegans blanchardi[1,2,3,4]	Kansas Glossy Snake
Coluber constrictor flaviventris[1,2,3]	Eastern Yellow-Bellied Racer
Diadophis punctatus arnyi[1]	Prairie Ringneck Snake
Elaphe guttata emoryi[1,2,3]	Great Plains Rat Snake
Elaphe obsoleta[1]	Rat Snake (Intergrade)
Heterodon nasicus nasicus[1,2,3,4]	Plains Hotnose Snake

TABLE I (Continued)

Species	Common Name
Colubridae (Typical Snakes) (Cont.)	
Heterodon platyrhinos[2,3,4]	Eastern Hognose Snake
Hypsiglena torquata jani[1,3]	Texas Night Snake
Lampropeltis calligaster calligaster[1,2]	Prairie Kingsnake
Lampropeltis getulus[1,2,3]	Kingsnake (Intergrade)
Lampropeltis triangulum gentilis[1]	Central Plains Milk Snake
Mastocophis flagellum testaceus[1,2,3,4]	Western Coachwhip
Nerodia erythrogaster transversa[1,2,3]	Blotched Water Snake
Nerodia rhombifera[1,2,3]	Diamondback Water Snake
Pituophis melanoleucus sayi[1,2,3]	Bullsnake
Regina grahami[1,3]	Graham's Crayfish Snake
Rhinocheilus lecontei tessellatus[1,2,3,4]	Texas Long-Nosed Snake
Sonora semiannulata[1,2,3]	Ground Snake
Tantilla nigriceps fumiceps[1,2,3,4]	Texas Black-Headed Snake
Thamnophis marcianus marcianus[1,2,3,4]	Checkered Garter Snake
Thamnophis proximus proximus[1,2,3]	Western Ribbon Snake
Viperidae	
Crotalus atrox[1,2,3,4]	Western Diamondback Rattlesnake
Crotalus viridis viridis[1,2,3,4]	Prairie Rattlesnake
Sistrurus catenatus tergeminus[1,3]	Western Massasauga

[1]Observed by author.

[2]Reported in Webb (1970).

[3]Recorded in University of Oklahoma Stovall Museum records.

[4]Recorded in Oklahoma State University Museum records.

found in temporary water after heavy spring rains. Some were found in rain pools in wheat fields, along intermittent streams, in water-filled roadside ditches, temporary pools near functioning windmills, and in a relatively permanent pond near the Red River.

Emydidae--Sliders and Box Turtles

Chrysemys scripta elegans (Red-Eared Turtle). Although there are no previous records of red-eared turtles from Harmon or Jackson Counties, the species is common. Several were seen with softshells in a stock pond in Jackson County in April of 1983. Three large adults were found in a small, spring-fed creek five miles northeast of Eldorado, Jackson County, in June of 1983. Several were also found dead on highways in Harmon County in the spring and summer of 1983.

Terrapene ornata ornata (Ornate Box Turtle). Ornate box turtles are common in the flat open prairies in the northern part of the mesquite grasslands. Most individuals were seen crossing roads in spring or in late afternoon of summer. One turtle was eating a grasshopper that had been killed on the road.

Trionychidae--Softshells

Trionyx spiniferus pallidus (Pallid Softshell Turtle). Softshells are probably common in the Red River and other permanent bodies of water within the mesquite grasslands. Several softshells (presumably Trionyx spiniferus) were sunning on a pond bank in Jackson County.

Lacertilia (Lizards)

Iguanidae--Common Lizards

Crotaphytus collaris collaris (Eastern Collared Lizard). "Mountain boomers" are common in the mesquite grasslands. Collared lizards are generally associated with large rocks. Individuals were observed along caprock of mesas, among large rocks in prairies, around bare washes, and among rocks associated with road cuts. Two separate females were found sunning on roads late in the day with no rocky cover nearby.

Holbrookia maculata (Lesser Earless Lizards). No earless lizards were found during field work for this study. However, there are records of several specimens from Harmon County. Earless lizards should be expected in flat, sparsely vegetated habitat. Webb (1970) shows the Northern Earless Lizard, H. m. maculata, and the Oklahoma or Eastern Earless Lizard, H. m. perspicua intergrade, in the mesquite grassland.

Phrynosoma cornutum (Texas Horned Lizard). "Horned toads" are abundant in the mesquite grasslands. They were most often seen along dirt roads in morning and late afternoon. Horned lizards were also found in sparsely vegetated places. They were often found in sand or loose soils, but were also found in rocky areas.

Sceloporus undulatus consobrinus (Southern Prairie Lizard). Sceloporus was not collected during this study. There are, however, several records from both Harmon and Jackson Counties. They should be expected among large rocks, fallen trees, and other cover.

Uta stansburiana stejnegeri (Desert Side-Blotched Lizard). Desert

side-blotched lizards were not collected druing field work for this study. Several specimens have been recorded in the Stovall Museum from seven miles southwest of Hollis on the floodplain of the Red River near the Highway 30 bridge in Harmon County.

Teiidae--Whiptails

Cnemidophorus gularis gularis (Texas Spotted Whiptail). Texas spotted whiptails are abundant in the mesquite grassland. They were found in several habitats. Individuals were most often seen along dirt roads. They were also observed among the caprock of mesas, in sparsely vegetated pastures, and under tin and boards near abandoned farm buildings. C. gularis seems to be more abundant than C. sexlineatus.

Cnemidophorus sexlineatus viridis (Prairie Lined Racerunner). C. sexlineatus is common, but less so than C. gularis, in the mesquite grasslands. They were found in the sandy areas of the Red River floodplain and in the stabilized dunes north of the river. Racerunners are probably common in the flat, sandy areas in the northern sections of the mesquite grasslands.

Scincidae--Skinks

Eumeces obsoletus (Great Plains Skink). Great plains skinks are abundant in the mesquite grasslands. They are found practically anywhere there is suitable cover. Most individuals were found under boards or tin near abandoned farms. Others were found under flat rocks, sunning on the protection of a mat of dense prostrate growing Opuntia, and in the sandy floodplain of the Red River. A female collected on June 18,

1983, laid 13 eggs on June 19, 1983. A specimen found north of Eldorado is a new record for Jackson County.

Scincella lateralis (Ground Skink). A single ground skink is recorded in the Stovall Museum from 1.5 miles southeast of Reed, in Harmon County. They should be expected in ground litter in mesic areas near streams and sink holes.

Serpentes (Snakes)

Leptotyphlopidae--Slender Blind Snakes

Leptotyphlops dulcis dulcis (Plains Blind Snake). Blind snakes are commonly found under cover after spring rains. Several individuals are often found together. Leptotyphlops were often found in the same localities as Hypsiglena. Blind snakes were found after heavy rain under flat rocks on small terraces. Nine blind snakes were examined and each had a single supralabial scale characteristic of L. d. dulcis. Webb (1970), however, indicated an area of intergradation with L. d. dissectus (New Mexico Blind Snake) in the western mesquite grasslands.

Colubridae--Typical Snakes

Arizona elegans blanchardi (Kansas Glossy Snake). Glossy snakes occur throughout the mesquite grasslands. Individuals were collected at night crossing roads between cultivated fields. Another was collected crossing a sandy road four miles north of Gould, in Harmon County. Roadkills were found on highways in sparsely vegetated habitats. One tried to swallow a dead Dipodomys ordii that was too large to swallow. Captives ate mice.

Coluber constrictor flaviventris (Eastern Yellow-Bellied Racer). Racers are fairly common in grassy areas in the mesquite grasslands. They were most often seen dead on highways or quickly crossing roads in grassy areas.

Diadophis punctatus arnyi (Prairie Ringneck Snake). A single ringneck was collected along the rocky bluffs north of the Red River southeast of Eldorado, in Jackson County. They probably occur in mesic areas throughout the mesquite grasslands.

Elaphe guttata emoryi (Great Plains Rat Snake). Great plains rat snakes are common in the mesquite grasslands. Most specimens were observed in rocky areas. They were collected under rocks on hillsides, under rusted-out metal stock tanks, in cisterns at abandoned farms, and crossing roads at dusk in sandy areas. Juveniles ate lizards. Captive adults ate mice, birds, and chicks.

Elaphe obsoleta (Rat Snake). A single specimen of Elaphe obsoleta was collected under a rotting log near an intermittent tributary of the Red River in southeastern Jackson County. The specimen was most like E. o. obsoleta (Black Rat Snake), but shows characteristics of E. o. lindheimeri (Texas Rat Snake). The snake is ligher than the typical E. o. obsoleta. The dorsum is patterned with a series of dark blotches. Spaces between blotches are lighter shades of gray with tints of red, similar to E. o. lindheimari.

Heterodon nasicus nasicus (Plains Hognose Snake). Plains hognose snakes were found in open areas with loose soils. One was collected while crossing a sandy road late in the day in October, 1975. Another

was collected under a rock along a terrace separating wheat fields in April, 1977. Road kills were found between open prairies and between cultivated fields.

Heterodon platyrhinos (Eastern Hognose Snake). No eastern hognose snakes were collected during field work for this study. There are specimens recorded from both Harmon and Jackson Counties. They are most likely to be found in vegetated areas of sandy floodplains.

Hypsiglena torquata jani (Texas Night Snake). Night snakes are apparently common in the mesquite grasslands. Literature and museum records indicate the species is rare. Twelve night snakes were collected in the spring and early summer of 1983. Three additional specimens were collected in Jackson County in previous years. Hypsiglena were collected under cover after rains. Most were collected under rocks on small terraces. They were often caught at the same locality as Leptotyphlops. Others were collected under boards and tin near abandoned farm houses. Night snakes were not often found in very rocky or dissected areas or very flat land. They seem to prefer rocky terraces and other small outcrops. Captives have eaten Leptotyphlops, Scincella, and guppies. These are new county records for Harmon and Jackson Counties.

Lampropeltis calligaster calligaster (Prairie Kingsnake). A single specimen was collected while crossing a dirt road in late afternoon in April, 1983. The area was a cultivated field on one side and a flat mesquite grassland on the other. This is a county record for Jackson County.

Lampropeltis getulus (Kingsnake). Two kingsnakes were found as road kills during the summer of 1983. One was found two miles south of Hollis, in Harmon County; the other was from five miles east of Duke, in Jackson County. They are intergrades of L. g. holbrooki (Speckled Kingsnake) and L. g. splendida (Desert Kingsnake). Webb (1970) mentioned the possibility of an intergrade population in the area. Stebbins (1966) indicated L. g. splendida occurred in southwestern Oklahoma.

Characteristics of both subspecies were noted. Both specimens have 21 scale rows at midbody and a speckled head like L. g. holbrooki. Both specimens have narrow yellow bands separating black blotches like L. g. splendida. The venter is light anteriorly and mostly black posteriorly, showing characteristics of both subspecies. The Jackson County specimen is a new record for that county.

Lampropeltis triangulum gentilis (Central Plains Milk Snake). A single specimen was collected eight miles south of Gould, in Harmon County, in June, 1983. The snake was lying on a dirt road between cultivated fields just after dark. It was a large (28 inches), relatively drab specimen. Judging from this collection and collections outside the mesquite grassland, milk snakes might be encountered in practically any habitat, but are not common anywhere. A mouse was eaten in captivity. This specimen is a new record for Harmon County.

Masticophis flagellum testaceus (Western Coachwhip). Coachwhips are common in the mesquite grasslands. These are snakes of grassy savannahs. They often attempt to escape into trees. Some move through the trees; others remain motionless. Five adults were collected under the same pile of corrugated tin near an abandoned farm north of Eldorado,

in Jackson County. An individual from Harmon County had just eaten a Perognathus hispidus.

Nerodia erythrogaster transversa (Blotched Water Snake). Blotched water snakes were observed as road kills only. They are probably common around stock ponds and the more permanent creeks.

Nerodia rhombifera (Diamondback Water Snake). Diamondback water snakes were fairly common in suitable habitat in the mesquite grasslands. One was sunning in branches above a small, intermittent creek; another was foraging along a water-filled roadside ditch. Nerodia rhombifera probably occurs near most permanent bodies of water in the area.

Pituophis melanoleucus sayi (Bullsnake). Bullsnakes are abundant in the mesquite grasslands. They are often found dead or crossing highways during the day. They occur in several habitats, from rocky dissected canyons to cultivated fields. Two adults were found together at the edge of a highway during late afternoon in June, 1983. Others were found between cultivated fields and shelter belts at dusk. Several were found in cisterns near abandoned farms in spring, summer, and winter. A road kill bullsnake was dissected and two bird eggs (probably killdeer) were removed in July, 1983.

Rhinocheilus lecontei tesselatus (Texas Long-Nosed Snake). Long-nosed snakes are fairly common in the mesquite grasslands. They seem to prefer the slightly rocky, sparsely vegetated areas. They also inhabit sandy areas. Most were seen crossing roads at night or as road kills. A juvenile was collected under a large rock after a heavy rain in April

of 1977. Another was collected in early morning on a cloudy day after a heavy rain while it was foraging on a rocky terrace. It has just eaten a Perognathus hispidus. Captives ate lizards and mice.

Sonora semiannulata (Ground Snake). Ground snakes are common in the mesquite grasslands. They were most often found under flat rocks on hillsides in association with Tantilla. None of the specimens collected was strongly patterned. One laid three eggs in June of 1983.

Tantilla nigriceps fumiceps (Texas Black-Headed Snake). Texas black-headed snakes are common under rocks and other cover in the spring. Like other small snakes, black-headed snakes seem to come to the surface after spring rains. They were often caught with Sonora on rocky hillsides. Webb (1970) indicated an area of intergradation between T. n. fumiceps and T. n. nigriceps (Plains Black-Headed Snake) in the northern part of the mesquite grasslands.

Thamnophis marcianus marcianus (Checkered Garter Snake). Checkered garter snakes are common in the mesquite grasslands. They are found away from water more often than other garter snakes. Thamnophis marcianus is often found at dusk in sandy areas with no water in sight. One was found sunning on a road in December of 1976, north of Eldorado in Jackson County, during unseasonably warm weather.

Thamnophis proximus proximus (Western Ribbon Snake). Ribbon snakes are uncommon in the mesquite grasslands. These snakes are usually found in vegetation near water. One was found in a cattail-lined pool of an intermittent creek six miles southeast of Eldorado in Jackson County, in

April of 1983. Another was a road kill near a weedy pond three miles south of McQueen in Harmon County.

Viperidae--Vipers

Crotalus atrox (Western Diamondback Rattlesnake). "Coontails" are abundant in the mesquite grasslands. In spring, diamondbacks are commonly found along rocky bluffs of the Red River, in denning areas around gypsum sinkholes, and around the large caprock of mesas. In summer, they are often found crossing dirt roads away from rocky areas.

Two diamondbacks were found mating under a large flat rock in April of 1983, three miles south of Hollis in Harmon County, on the side of a small mesa. A female collected in April of 1977, gave birth to 10 young in late August of 1977.

Crotalus viridis viridis (Prairie Rattlesnake). Prairie rattlesnakes are common in the mesquite grasslands. They prefer flat short grass prairies. They are diurnal in spring, changing to nocturnal in summer. Juveniles were found in April sunning on asphalt roads between cultivated fields in late afternoon. A large adult was found in a cultivated field north of Eldorado in Jackson County in April of 1977. Others were found on roads at night between pastures and between rocky mesquite-covered terraces. One was found within a few yards of where a diamondback was found. The habitats of C. viridis and C. atrox overlap in summer. Captives ate Dipodomys ordii, Cnemidophorus gularis, and mice. The specimen from Jackson County is a new county record.

Sistrurus catenatus tergeminus (Western Massasauga). Western massasaugas are common in the mesquite grasslands. These "sand rattlers" or

"ground rattlers," as they are locally called, are typically inhabitants of rolling grasslands. They are found in grassy, rolling pastures, and sandy, grassy areas along river floodplains. Usually considered nocturnal, three individuals were found sunning on a sandy road in late afternoon six miles northeast of Hollis in April of 1983. Two of the snakes were found within two feet of each other. The other was found within 50 yards on the same road. A fourth specimen was found at the same locality at night in June of 1983. The area was a low, sandy area in an open prairie. Others were found at night crossing roads between cultivated fields and between mesquite-covered prairies. These are new county records for both Harmon and Jackson Counties.

Recorded Species Not Observed by the Author

Five species of reptiles are reported from the mesquite grasslands but were not observed by the author. The lizards, Holbrookia maculata, Sceloporus undulatus, Uta stansburiana, and Scinella lateralis; and the snake Heterodon platyrhinos are reported from the mesquite grasslands in Webb (1970) and from the University of Oklahoma Stovall Museum records, but were not observed by the author during this study.

The absence of these forms may be explained in several ways. Holbrookia and Sceloporus are fairly common throughout western Oklahoma. Their absence is probably due to a bias in collecting techniques, collecting sites, or times of collecting. Both Holbrookia and Sceloporus would likely be found if further studies were conducted.

All records of Uta are from within a relatively short distance of each other near the Highway 30 bridge and the Red River on the same date. Their presence was considered to be due to a recent invasion from the

south side of the Red River. Their absence in this study could be because the invasion was unsuccessful and the species no longer occurs in southwest Oklahoma. Perhaps the species was simply overlooked, as is probably the case with Holbrookia and Sceloporus.

Stovall Museum records a single Scincella from 1.5 miles southeast of Reed, Harmon County. Scincella is an eastern form that should not be expected through the mesquite grasslands. Its absence in the rocky semi-arid areas that were most often searched was expected. The single specimen represents an isolated record and does not indicate the species is an important part of the herpetofauna of the mesquite grasslands.

The fact that Heterodon platyrhinos was not collected was probably due to simple chance. Additional collecting would probably reveal specimens of Heterodon platyrhinos.

Possible Species

Several species that have not yet been verified may occur in the mesquite grasslands. Some likely species that could occur are listed in Table II.

Species that could occur in the mesquite grasslands can be divided into two major groups: (1) species with eastern affinities that might be found in the mesic areas, and (2) species with western affinities that could extend their range from similar habitats in west central Texas.

The following annotated list of possible species is arranged phylogenetically, with species listed alphabetically under family. Notes under each species state nearest known verified range and habitats where the species might be found.

TABLE II

REPTILES POSSIBLY OCCURRING IN THE MESQUITE GRASSLANDS

Species	Common Name
Testudines (Turtles)	
Trionychidae (Softshells)	
Trionyx muticus muticus	Midland Smooth Softshell
Lacertilia (Lizards)	
Anguidae (Glass Lizards)	
Ophisaurus attenuatus attenuatus	Western Slender Glass Lizard
Iguanidae (Common Lizards)	
Cophosaurus texana texana	Texas Earless Lizard
Phrynosoma modestum	Round-Tailed Horned Lizard
Sceloporus olivaceus	Texas Spiny Lizard
Scincidae (Skinks)	
Eumeces septentrionalis obtusirostris	Southern Prairie Skink
Serpentes (Snakes)	
Colubridae (Typical Snakes)	
Gyalopion canum	Western Hook-Nosed Snake
Masticophis taeniatus ornatus	Central Texas Whipsnake
Opheodrys aestivus	Rough Green Snake
Salvadora grahamiae lineata	Texas Patch-Nosed Snake
Thamnophis sirtalis annectens	Texas Garter Snake
Tropidoclonion lineatum annectens	Central Lined Snake

Trionychidae

Trionyx muticus muticus (Midland Smooth Softshell). The range of this turtle is considered to be statewide by Webb (1970). It is also known from the Texas panhandle. It should be found in rivers and large permanent impoundments.

Anguidae

Ophisaurus attenuatus attenuatus (Western Slender Glass Lizard). The mesquite grassland is near the western edge of the western slender glass lizard's range. It could be found in dry, grassy areas.

Iguanidae

Cophosaurus texana texana (Texas Earless Lizard). The Texas earless lizard is known to occur in northern Texas, just south of the Red River, in Hardeman County. Their preferred habitat is rocky washes, cliffs, and sandy streambeds.

Phrynosoma modestum (Round-Tailed Horned Lizard). Round-tailed horned lizards are known from western Texas and the Oklahoma panhandle. They prefer sandy, gravelly, semi-arid areas.

Sceloporus olivaceus (Texas Spiny Lizard). This species has been reported, but not verified, from extreme southern central Oklahoma. This is an arboreal species that lives in mesquite, other trees, and man-made structures in Texas.

Scincidae

Eumeces septentrionalis obtusirostris (Southern Prairie Skink). The prairie skink is a central grassland species that occurs in parts of western Oklahoma. They might be found in vegetated areas near gypsum sinks and canyon streams.

Serpentes (Snakes)

Colubridae (Typical Snakes)

Gyalopion canum (Western Hook-Nosed Snake). This is a southwestern species that ranges into northern central Texas. They are found in mesquite and juniper associations.

Masticophis taeniatus ornatus (Central Texas Whipsnake). This is a western species with an isolated population in northern central Texas near the mesquite grasslands. Its habits are similar to that of coachwhips. It prefers grassy and brushy flatlands.

Opheodrys aestivus (Rough Green Snake). The rough green snake is an eastern species that ranges to the edge of the mesquite grasslands. Webb (1970) records a specimen from western Tillman County near the eastern edge of the mesquite grasslands. They probably occur in brushy areas along creeks in the mesquite grasslands.

Salvadora grahamiae lineata (Texas Patch-Nosed Snake). Salvadora have been reported from southern Oklahoma, but there are no specimens to verify its occurrence. The closest known specimens are from Palo Pinto County in northern central Texas. Patch-nosed snakes might be found in arid prairies or canyons where they are active by day.

Storeria dekayi texana (Texas Brown Snake). The brown snake is an eastern species that is known from isolated records in western Oklahoma and the southern Texas panhandle. If the species occurs in the mesquite grasslands, it would be found in mesic areas of canyons or sinkholes.

Thamnophis sirtalis annectens (Texas Garter Snake). This is a wide ranging species with most of its range to the east of the mesquite grasslands. The subspecies annectens is found in Texas to the Oklahoma border in southern central Oklahoma. Isolated populations in the Texas panhandle and southwestern Kansas indicate the possibility of its occurrence in southwestern Oklahoma. It is most often found among vegetation near water.

Tropidoclonion lineatum annectens (Central Lined Snake). This is a central prairie species with isolated populations in western Texas and New Mexico. They are found on grassy hillsides and often in urban lots.

Faunal Relationships

Of 39 species of reptiles in the mesquite grasslands, 14 (36%) have eastern faunal affinities (Table III) and 25 (64%) have western faunal affinities (Table IV). Five turtles occur in the area. Three (60%) have have eastern faunal affinities and two (40%) have western faunal relationships. Of nine lizards known, eight (89%) have western faunal relationships. Only one lizard (Scincella laterale) has eastern faunal affinities. Snakes represent the largest number of species. Of 25 snake species, 10 (40%) are eastern forms and 15 (60%) are western forms.

TABLE III

REPTILES FROM THE MESQUITE GRASSLANDS WITH EASTERN FAUNAL AFFINITIES

Species
Chelydra serpentina serpentina
Chrysemys scripta elegans
Trionyx spiniferus pallidus
Scincella laterale
Coluber constrictor flaviventris
Diadophis punctatus arnyi
Elaphe obsoleta
Heterodon platyrhinos
Lampropeltis calligaster calligaster
Lampropeltis getulus
Nerodia erythrogaster transversa
Nerodia rhombifera
Regina grahami
Thamnophis proximus proximus

TABLE IV

REPTILES FROM THE MESQUITE GRASSLANDS WITH WESTERN FAUNAL AFFINITIES

Species
Kinosternon flavescens flavescens
Terrapene ornata ornata
Crotaphytus collaris collaris
Holbrookia maculata
Phrynosoma cornutum
Sceloporus undulatus consobrinus
Uta stansburiana stejnegeri
Eumeces obsoletus
Cnemidophorus gularis gularis
Cnemidophorus sexlineatus viridis
Leptotyphlops dulcis
Arizona elegans blanchardi
Elaphe guttata emoryi
Heterodon nasicus nasicus
Hypsiglena torquata jani
Lampropeltis triangulum gentilis
Masticophis flagellum testaceus
Pituophis melanoleucas sayi
Rhinocheilus lecontei tessellatus
Sonora Semiannulata
Tantilla nigriceps fumiceps
Thamnophis marcianus
Crotalus atrox
Crotalus viridis viridis
Sistrurus catenatus tergeminus

Faunal Barriers

The mesquite grasslands, in conjunction with the Red River, function as a filter barrier partially isolating subspecies of several reptiles. Intergrading subspecies of Holbrookia maculata, Elaphe Obsoleta, Lampropeltis getulus, Leptotypholops dulcis, and perhaps Thamnophis marcianus and T. sirtalis are found in the mesquite grasslands.

The Red River apparently functions as a barrier to the dispersal of several species. Cophosaurus texana, Sceloporus olivaceus, Gyalopion canum, Masticophis taeniatus, and Salvadora grahamiae are known from northern Texas, but have not been reported north of the Red River.

Significant Records

As a result of field work for this study, 10 new county records not recorded in Webb (1970) have been made with specimens for verification (Table V). Another six new county records were recorded, but without specimens for verification because individuals escaped capture or were too damaged after being killed on highways (Table VI).

Venomous Species

Three rattlesnakes (Crotalus atrox, C. viridis viridis, and Sistrurus catenatus tergeminus) are the only species of dangerously venomous reptiles in the area. One or more of these rattlesnakes might be found in any habitat. C. viridis and S. catenatus are less common and both seem to prefer flatter lands than C. atrox. In summer all species' ranges overlap and any of them may be found crossing roads at night in mesquite-covered prairies.

TABLE V

SPECIES COLLECTED REPRESENTING
NEW COUNTY RECORDS

Species	County
Eumeces obsoletus	Jackson
Elaphe obsoleta	Jackson
Hypsiglena torquata jani	Harmon, Jackson
Lampropeltis calligaster calligaster	Jackson
Lampropeltis getulus	Jackson
Lampropeltis triangulum gentilis	Harmon
Crotalus viridis viridis	Jackson
Sistrurus catenatus tergeminus	Harmon, Jackson

TABLE VI

SPECIES SEEN REPRESENTING NEW
COUNTY SIGHT RECORDS

Species	County
Chrysemys scripta elegans	Harmon, Jackson
Coluber constrictor flaviventris	Harmon
Diadophis punctatus arnyi	Jackson
Elaphe guttata emoryi	Jackson
Thamnophis proximus proximus	Harmon

CHAPTER V

CONCLUSIONS

Several conclusions were made during this study. Conclusions based on analysis of data and personal observations are listed below:

1. The mesquite grasslands have a mixture of reptiles with eastern and western affinities, with a majority of species having western faunal affinities.

2. A combination of the Red River and a less defined ecological barrier within the mesquite grasslands functions as a filter barrier partially separating subspecies of several reptiles (Holbrookia maculata, Elaphe obsoleta, Lampropeltis getulus, Leptotyphlops dulcis, Tantilla nigriceps, Thamnophis marcianus, and Thamnophis sirtalis).

3. Three species of rattlesnakes (Crotalus atrox, C. viridis, and Sistrurus catenatus tergeminus) are common in the area. One or more might be expected in any habitat. C. atrox is more common than the other two species.

4. The Texas night snake (Hypsiglena torquata jani) is much more common than records indicate. Secretive rock-inhabiting behavior protects this species from would-be collectors.

5. Rain is the most important factor in bringing the small subterranean species (Hypsiglena, Leptotyphlops, and Tantilla) to the surface.

6. Biases in methods of collection are obvious. During field work in 1983, 12 Hypsiglena were collected, while no Sceloporus or Holbrookia

were collected or observed. It seems unlikely that this is a real measure of abundance.

7. The mesquite grasslands are still poorly represented in collections. Additional collecting in the area over a longer period of time and during different seasons would add other species and further clarify abundance and habitat relationships.

8. Studies on both sides of the Red River in the area would be helpful in determining what factors limit the dispersal of species and what factors serve as filter barriers.

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