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HERPETOLOGY OF THE GILA AND SAN FRANCISCO RIVER DRAINAGES OF SOUTHWESTERN NEW MEXICO

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INTRODUCTION

Southwestern New Mexico provides a rich assemblage of reptiles and amphibians with at least 75 species known from the area drained by the Gila and San Francisco rivers. This report summarizes the distribution of these species and provides a bibliography of over 540 literature citations pertinent to their systematics, life histories, and ecology.

This study was initiated to gain an insight into the diversity of the herpetological community of southwestern New Mexico which is surpassed by few regions of equal size in the United States. Given the remoteness and vastness of much of this region and the rarity of some species which occur there, the biology of several species, e.g., Rana yavapaiensis, R. chiricahuensis, Gyalopion canum, and Elaphe triaspis, has not been studied adequately to provide herpetologists with the basic life history information to assist in management programs. Such studies as would provide this information need to be initiated.

Additional recommendations for future research include the need to study: (1) distribution, systematics, and ecology of the members of the genus Cnemidophorus which occur within the study area; (2) distribution of some of the more secretive burrowing species using pit-fall trapping; (3) status of each endangered or threatened species in order to make management decisions and recommendations; (4) the possibilty of deleterious effects from environmental pollutants; and (5) the importance of native riparian areas as critical habitat.

BRIEF HISTORY OF HERPETOLOGY IN SOUTHWESTERN NEW MEXICO

The earliest herpetological explorations of southwestern New Mexico occurred with the United States and Mexican Boundary Survey (ca. 1845) under the direct leadership of William Hemsley Emory. The majority of specimens collected along this route were accessioned into the vertebrate collections of the Smithsonian Institution where they were studied by Spencer Fullerton Baird, Charles Frederic Girard, and Robert Kennicott, among others. From these collections, Baird and his associates described and named a large portion of the reptiles and amphibians of the West, particularly the lizards and snakes (Adler 1979).

Baird (1859) published a treatise on reptiles [which also included amphibians] of the boundary. Cope (1883) subsequently published a series of notes on the geographical distribution of various amphibians and reptiles of western North America which includes data from specimens taken in southwestern New Mexico. J. Eugene Law collected herpetological specimens in Grant and Catron counties of southwestern New Mexico during 1917. His collections are now in the vertebrate collections at the Museum of Vertebrate Zoology at the University of California, Berkeley. Van Denburgh synthesized the exploration and work done by naturalists over the preceding century and later published his monumental two-volume work, The Reptiles of Western North America (Van Denburgh 1922a, 1922b).

Various major collections from southwestern New Mexico have been amassed by university and museum collectors during recent times. Notable herpetologists who have worked in the area include Charles Cole (AMNH), William Degenhardt (UNM), Jim Dixon (TCWC), Jack McCoy (CM), and John Wright (LACM). Jim Findley and Clyde Jones (UNM) have also surveyed parts of the region for reptiles and amphibians. Hayward and Hunt (1972) collected in areas of the Gila National Forest. Johnson (1978) explored the lower Gila River Valley and reported on a collection of 36 species known from the area.

Presently various species of the genera Cnemidophorus, Rana, and Thamnophis, are being studied by Charles Cole (AMNH), Randy Jennings (UNM), and Lee Fitzgerald (UNM), respectively.

METHODS

Between January and December 1984, reptiles and amphibians were collected in the Gila-San Francisco river drainages (Fig. 1). Accumulation of this collection was accomplished while under contract to the New Mexico Department of Game and Fish to study the distribution and status of the fishes of these river systems. Authorization to collect specimens for use in this study was granted by the New Mexico Department of Game and Fish, permit number 1571M issued to Dr. David L. Propst.

Pit-fall trapping and road cruising were used to obtain specimens throughout the drainages while active search was concentrated primarily along the waterways of the area. Pit-falls, as described by Campbell and Christman (1982), were constructed in a variety of habitats. Most amphibians were collected by seining or electrofishing.

Specimens were preserved in 10% formalin and stored in ISOH or 5% buffered formalin (tadpoles only) in the herpetological collection of the Museum of Southwestern Biology at the University of New Mexico. Most specimens were opened by a ventral incision and data taken on reproductive condition, food habits, and parasites. All measurements were taken with a meter stick or vernier calipers. Usually only a subsample of each tadpole collection was measured.

To supplement distributional data accumulated during this study, the herpetology collections at the University of New Mexico (MSB), New Mexico State University (NMSU), and Western New Mexico University (WNMU) were examined for specimens collected within the study area. These specimens are included on the distribution maps.

Figure 1. Map of the Gila and San Francisco drainage basin with localities mentioned in the text.

SPECIES KNOWN TO OCCUR IN THE GILA-SAN FRANCISCO RIVER DRAINAGES

AMPHIBIA

CAUDATA

Ambystomatidae

Ambystoma tigrinum	-	Tiger salamander

SALIENTIA

Bufonidae

Bufo cognatus	-	Great Plains toad
* *Bufo debilis*	-	Green toad
Bufo microscaphus	-	Southwestern toad
* *Bufo punctatus*	-	Red-spotted toad
Bufo woodhouseii	-	Woodhouse's toad

Hylidae

Hyla arenicolor	-	Canyon treefrog
* *Hyla eximia*	-	Mountain treefrog
* *Pseudacris triseriata*	-	Striped chorus frog

Pelobatidae

Scaphiopus bombifrons	-	Plains spadefoot
Scaphiopus couchii	-	Couch's spadefoot
Scaphiopus multiplicatus	-	Western spadefoot

Ranidae

Rana catesbeiana	-	Bullfrog
Rana chiricahuensis	-	Chiricahua leopard frog
Rana yavapaiensis	-	Lowland leopard frog

REPTILIA

SAURIA

Anguidae

Elgaria kingii	-	Arizona alligator lizard

Gekkonidae

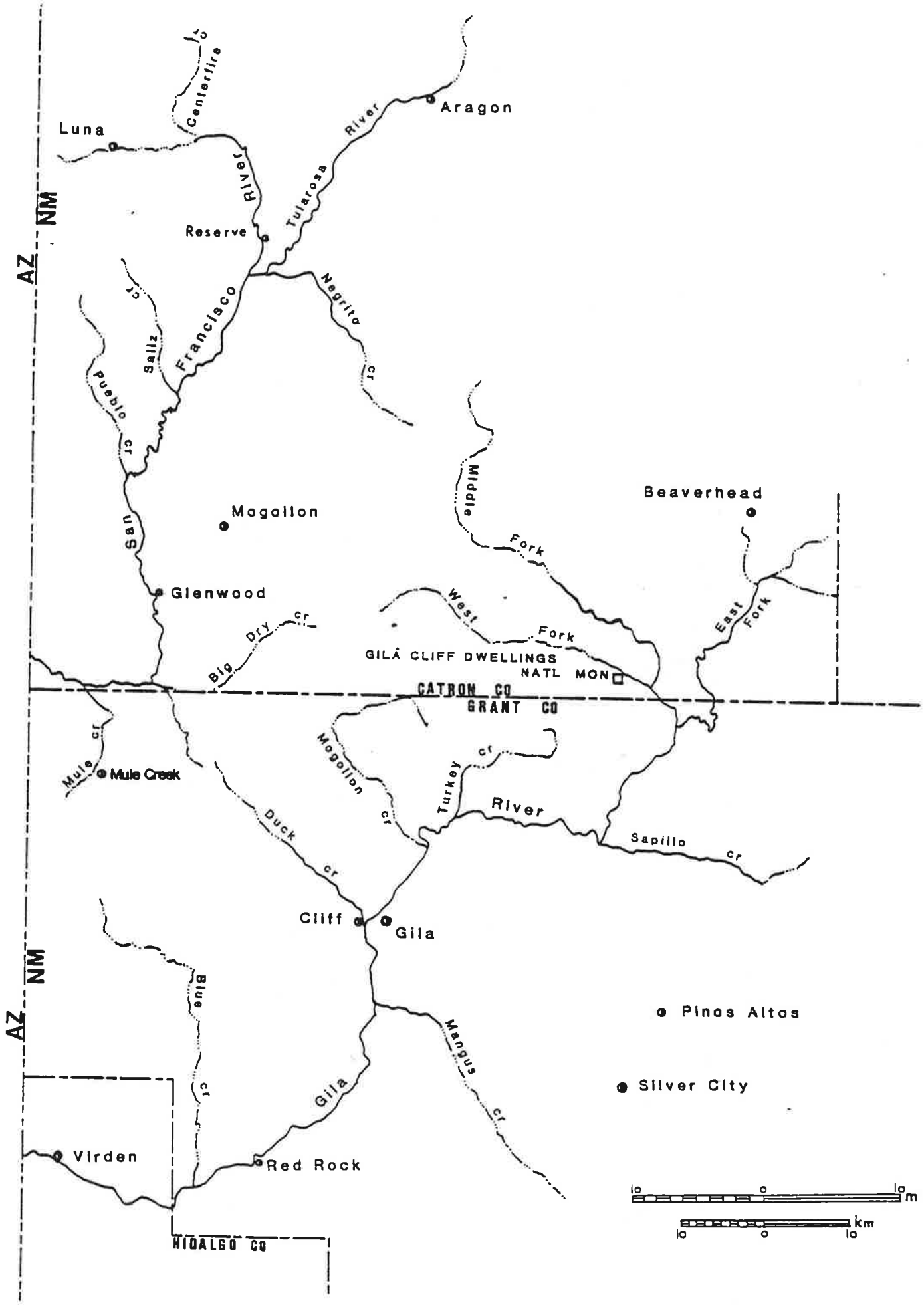
Coleonyx variegatus	-	Western banded gecko

Helodermatidae

+ *Heloderma suspectum*	-	Gila monster

Scincidae

* *Eumeces multivirgatus*	-	Many-lined skink
Eumeces obsoletus	-	Great Plains skink


Centerfire cr
Luna
Aragon
Tularosa River
River
Reserve
AZ NM
Francisco
Negrito cr
Sallz cr
Pueblo cr
San
Mogollon
Middle Fork
Beaverhead
Glenwood
West Fork
East Fork
Dry cr
Big
GILA CLIFF DWELLINGS NATL MON
CATRON CO
GRANT CO
Mule cr
Mule Creek
Mogollon cr
Turkey cr
River
Duck cr
Sapillo cr
Cliff
Gila
Blue cr
Pinos Altos
Silver City
Mangus cr
Gila
Virden
Red Rock
AZ NM
HIDALGO CO
lo o lo m
lo o lo km

Iguanidae

	Cophosaurus texanus	-	Greater earless lizard
	Crotaphytus collaris	-	Collared lizard
*	Gambelia wislizenii	-	Longnose leopard lizard
	Holbrookia maculata	-	Lesser earless lizard
*	Phrynosoma cornutum	-	Texas horned lizard
	Phrynosoma douglassii	-	Short-horned lizard
	Phrynosoma modestum	-	Roundtail horned lizard
	Sceloporus clarkii	-	Clark's spiny lizard
*	Sceloporus magister	-	Desert spiny lizard
	Sceloporus poinsettii	-	Crevice spiny lizard
	Sceloporus undulatus	-	Eastern fence lizard
	Urosaurus ornatus	-	Tree lizard
	Uta stansburiana	-	Side-blotched lizard

Teiidae

	Cnemidophorus exsanguis	-	Chihuahuan spotted whiptail
	Cnemidophorus flagellicaudus	-	Gila spotted whiptail
*	Cnemidophorus inornatus	-	Little striped whiptail
*	Cnemidophorus neomexicanus	-	New Mexico whiptail
*	Cnemidophorus tesselatus	-	Colorado checkered whiptail
	Cnemidophorus tigris	-	Western whiptail
	Cnemidophorus uniparens	-	Desert grassland whiptail
	Cnemidophorus velox	-	Plateau whiptail

SERPENTES

Leptotyphlopidae

	Leptotyphlops dulcis	-	Texas blind snake
	Leptotyphlops humilis	-	Western blind snake

Colubridae

*	Arizona elegans	-	Glossy snake
*	Coluber constrictor	-	Racer
	Diadophis punctatus	-	Ringneck snake
*+	Elaphe triaspis	-	Green rat snake
	Gyalopion canum	-	Western hooknose snake
	Heterodon nasicus	-	Western hognose snake
*	Hypsiglena torquata	-	Night snake
*	Lampropeltis getulus	-	Common kingsnake
	Lampropeltis pyromelana	-	Sonoran mountain kingsnake
	Masticophis flagellum	-	Coachwhip
	Masticophis taeniatus	-	Striped whipsnake
	Pituophis melanoleucus	-	Gopher snake
	Rhinocheilus lecontei	-	Longnose snake
	Salvadora deserticola	-	Big Bend patchnose snake
	Salvadora grahamiae	-	Mountain patchnose snake
*	Sonora semiannulata	-	Ground snake
*	Tantilla hobartsmithi	-	Southwestern blackhead snake
	Tantilla nigriceps	-	Plains blackhead snake
	Thamnophis cyrtopsis	-	Blackneck garter snake
	Thamnophis elegans	-	Western terrestrial garter snake
*+	Thamnophis eques	-	Mexican garter snake

*	Thamnophis marcianus	-	Checkered garter snake
+	Thamnophis rufipunctatus	-	Narrowhead garter snake
*	Trimorphodon biscutatus	-	Lyre snake
	Elapidae		
	Micruroides euryxanthus	-	Arizona coral snake
	Viperidae		
	Crotalus atrox	-	Western diamondback rattlesnake
*	Crotalus lepidus	-	Rock rattlesnake
	Crotalus molossus	-	Blacktail rattlesnake
	Crotalus viridis	-	Western rattlesnake
*	Sistrurus catenatus	-	Massasagua
	TESTUDINES		
	Emydidae		
	Terrapene ornata	-	Western box turtle
	Kinosternidae		
*	Kinosternon sonoriense	-	Sonoran mud turtle
	Trionychidae		
	Trionyx spiniferus	-	Spiny softshell

* Indicates species known to occur in the area but not encountered during the 1984 field season.

+ Indicates species considered to be endangered by the New Mexico Department of Game and Fish (1985).

SPECIES ACCOUNTS

AMBYSTOMATIDAE

Ambystoma tigrinum - Tiger salamander

Distribution.—*Ambystoma tigrinum* ranges from the eastern to western coasts of North America, southern Canada to Puebla, Mexico. Collections are absent from most of the Great Basin, most of the Pacific coast, the Mojave and Colorado deserts, the Appalachian region, and south Florida (Stebbins 1985). Distribution in Arizona is discussed by Lowe (1964), Colorado (Hammerson 1981, 1982), and Texas (Raun and Gehlbach 1972). Specimens from New Mexico are discussed in Gehlbach (1965). Mexican distribution is discussed in the literature provided by Smith and Smith (1976b). Map 1.

Recognition.—The tiger salamander is the only salamander known to occur in southwestern New Mexico. Terrestrial forms can be recognized by the following characteristics: (1) slimy skin, (2) long tail, (3) four toes on each front foot, (4) broad head with small dorsally placed eyes, and (5) yellowish bars or spots on a dark background. Aquatic adults and larvae have three pairs of long plume-like gills and well-developed tail fins.

Size.—Maximum total length of terrestrial adults is about 345 mm (Smith and Reese 1968). Aquatic adults may reach 400 g or more in weight (Snow 1978) and 385 mm in total length (Smith 1949, Larson 1974).

During this study, four males and four females were collected. The females averaged 107 mm SV (range 103-116 mm SV); males averaged 95 mm SV (range 53-115 mm SV). An adult terrestrial female measured 125 mm SV. A series of eight larval specimens, MSB 42832, averaged 20.5 mm TL (range 15-25 mm TL).

Habitat Use.—Tiger salamanders occupy a wide variety of habitats in southwestern New Mexico provided there is nonflowing water close-by for breeding. Specimens have

been taken from the spruce-fir zone of the Mogollon Mountains at 2,600 m elevation to Prosopis-Acacia desert areas near Red Rock at 1,200 m elevation.

Temporary rain ponds, stock tanks, and deep clear lakes are utilized for breeding although bodies of water inhabitated by predatory fish are usually avoided. Aquatic vegetation may or may not be present. In optimal habitat, aquatic tiger salamanders may be very abundant with hundreds of individuals found in the same pond. During dry periods, the terrestrial adults remain underground in rodent burrows or take shelter under rocks, boards, or debris. Wet or rainy weather stimulates terrestrial wanderings.

Only one terrestrial adult A. tigrinum was collected during this study. This active specimen, MSB 42833, was found 17 November during a light rainfall on a sidewalk in downtown Silver City. Three series of aquatic forms were seined from stock tanks. MSB 42827-42831 were taken out of a small pond near Red Rock which had a soft mud bottom with no vegetation present. This pond was badly polluted with cow manure. MSB 42834-42835 are from a relatively clear ca. 0.2 hectare stock tank which had a firm bottom and was choked with aquatic vegetation. MSB 42836-42837 were also found in a relatively clear tank where aquatic vegetation was present. Webb (1969) reports A. tigrinum from similar situations in the Chihuahuan desert.

Food Habits.—Stomach contents of the eight specimens collected during this study are identified in Table 1. Most taxa from Table 1 were included in the diet of A. tigrinum larvae studied by Dodson and Dodson (1971) although there are some noteworthy differences. Notonectidae was the most commonly observed prey item in the specimens examined during this study, although Dodson and Dodson (1971) reported notonectids were rarely, if ever, eaten. Also they do not report on vertebrates or scorpions. Both were found in MSB 42835. Holomuzki (1983) reports predation on caddisfly larvae by larval Ambystoma. Hammerson (1982) and Collins (1982) report the larger larvae will eat most any animal they can catch and swallow, including snails, leeches, earthworms, tadpoles, amphibian eggs, and mice. Smith and Reese (1968) discuss an adult feeding on a

Table 1. Stomach contents and percent frequency occurrence of food items found in Ambystoma tigrinum examined during this study. N = 8, 100% contained food items.

Food Item	Percent Frequency Occurrence
Notonectidae	75%
Odonata	63%
Corixidae	12%
Hemiptera	12%
Ephemeroptera	12%
Trichoptera	12%
Culicidae	12%
Chironomidae	12%
Vertebrate (fish?)	12%
Scorpion	12%

smaller larva. Cannibalism occurs frequently among the larvae (Rose and Armentrout 1976).

Reproduction.—Ambystoma tigrinum breeds from early spring to middle summer depending upon elevation, temperature, and rainfall. A terrestrial adult, MSB 42833, collected on 17 November was found to have well-developed eggs. The aquatic series from near Red Rock, MSB 42827-42831, was neotenic (Peters 1964). Included in this series collected 11 May is a female that appears to have laid eggs just prior to capture. MSB 42832 is a series of eight larval specimens with an average snout-vent length of only 20.5 mm (range 15-25 mm). These recently hatched specimens could represent young of the year and the eggs may have been laid in February or March.

Remarks.—Gehlbach (1967) reports the subspecies A. t. nebulosum from southwestern New Mexico although MSB 42833 agrees more closely with his description of A. t. mavortium. Perhaps this is related to the idea presented by Lowe (1955a) and Hammerson (1982) that subspecies are occasionally found outside their native range as a result of being transported around the state for use as fish bait. Color photographs of both subspecies are provided by Hammerson (1982).

BUFONIDAE

Bufo cognatus - Great Plains toad

Distribution.—Bufo cognatus ranges over the Mexican Plateau into the deserts of Arizona and New Mexico and northward throughout the central grasslands to western Minnesota and southern Canada (Blair 1972). Conant (1965) reports on this species from Mexico. This species is common throughout the lower elevations of the Gila-San Francisco river drainages. Map 2.

Recognition.—The Great Plains toad can be recognized by the following combination of characters: (1) skin covered with numerous, uniform small warts; (2) prominent cranial crests which contact the paratoid glands; (3) large dark blotches which

may be greenish or dark gray and bordered by light pigment; (4) spade-like tubercles under each hind foot; and (5) males with a sausage-shaped vocal sac when inflated. The tadpoles are described by Bragg (1936, 1937), Smith (1964), and Altig (1970). Blair (1963), Cole et al. (1968), Rogers (1972), and Martin (1973) discuss relationships of B. cognatus with other species of the genus. Stebbins (1951) describes the voice.

Habitat Use.—All specimens examined during this study come from areas less than 1,830 m elevation. Habitat normally used includes prairie grasslands, creosote-bush desert, mesquite woodland, sagebrush plains, river bottoms, and flood plains. McCoy (1964) mentions active sand dunes as habitat occupied by this species.

Five specimens were collected during this study. All came from pitfall traps located in the following habitat types: (1) Yucca-Nolina foothills, (2) Atriplex-Muhlenbergia grasslands, and (3) Acacia flood plain. Soil type ranged from rocky through sand and clay.

Food Habits.—Stomach contents were not examined for specimens collected during this study. Food items reported in the literature include beetles (Eleodes sp.), ants, flies, moths, caterpillars, cutworms, seeds, and other small arthropods (Little and Keller 1937, Hammerson 1982). Bufo cognatus is an opportunistic breeder with rainfall. Cochran and Goin (1970) report breeding occurs from April to September. Bragg (1936) found pairs in amplexus on 18 April in shallow temporary rainpools. In the Organ Mountains of southcentral New Mexico, Lewis (1950) found gravid females as late as 7 September. He observed breeding in May and July and found metamorphosing tadpoles and adults in ponds in late September and early October. One female (MSB 42813, 79.4 mm SV) collected during this study on 3 November was gravid.

Size.—Bragg (1950) measured 702 adults from Oklahoma and found males were 63-103 mm SV and females 49-112 mm SV. Conant (1975) gives an average range of 48-89 mm SV and a record size of 114 mm SV. Collins (1982) reports on an individual from

south-central Kansas with a total length of 102 mm. Specimens collected during this study ranged from 42.3-80.3 mm SV with a mean of 62.5 mm SV.

Remarks.—Although several lots of Bufo tadpoles were collected, none were definitely assigned to this species. Photographs appear in Collins (1982) and Hammerson (1982). No subspecies are recognized.

Bufo debilis - Green toad

The range of this species may include the Gila-San Francisco river drainage (Stebbins 1951, 1985; Blair 1972; Conant 1975) although no specimens were collected during this study. Blair (1972) presents data on chromosomal studies, osteology, hybridization, and relationships to other Bufo. McCoy (1964) and Riemer (1955) report on this species from Mexico. Little and Keller (1937) report on general habitat and food habits. Bragg (1955) and Zweifel (1970) describe the tadpole of B. debilis and Altig (1970) presents a key to separate tadpoles of this species from all other North American Bufo. Bogert (1962) describes the mating call. Savage (1954) presents a taxonomic revision of the B. debilis complex (B. debilis, B. retiformis, and B. kelloggi), a distribution map, and a key to the subspecies of B. debilis and related species. Photographs of B. debilis are found in Behler and King (1979) and Hammerson (1982). The subspecies B. d. insidior occurs in southwestern New Mexico (Stebbins 1985). No specimens of B. debilis from the Gila-San Francisco river drainages are catalogued into the vertebrate collections of MSB, NMSU, or WNMU.

Bufo microscaphus - Southwestern toad

Distribution.—Bufo microscaphus is found in isolated populations from southwestern Utah and southeastern Nevada southward into western Chihuahua and western New Mexico (Blair 1972). The species is common along the rivers and lakes of the higher elevations of the Gila-San Francisco river drainages. Map 3.

Recognition.—The southwestern toad may be recognized by the following combination of characteristics: (1) cranial crests weak or absent; (2) widely separated oval parotoid glands; (3) pale light colored stripe across the head, including the eyelids; (4) brown, blunt-edged inner metatarsal tubercle; and (5) ventral surface unspotted. Tadpoles are described by Stebbins (1951) and Altig (1970). Cole et al. (1968) illustrate the karyotype and discuss relationships of B. microscaphus with other Bufo. Blair (1957) analyzes the mating call and discusses the relationships of B. microscaphus with B americanus and B. woodhouseii. Martin (1973) illustrates the skull. Smith (1978) presents a key.

Size.—Adults range from 51-77 mm SV (Stebbins 1966). Four adults collected during this study range from 53.7-69.4 mm SV ($\bar{x}$ = 61.3 mm); three juveniles range from 22.9-27.0 mm SV ($\bar{x}$ = 25.3 mm).

Habitat Use.—Bufo microscaphus is less likely to be found along agricultural fields, irrigation ditches, or river bottoms than most other species of Bufo in southwestern New Mexico. In Arizona, New Mexico, and Mexico this species is normally found along rocky streams of the pine-oak belt (Riemer 1955, Stebbins 1966). During this study, all specimens collected were found along rocky streams in pinon-juniper or pine-oak associations. All of my locality data are between 1,829 m and 2,591 m.

Food Habits.—Food reported in the literature includes a sand cricket (Stenopelmatidae), beetles (Carabidae, Elateridae, Staphylinidae, and Tenebrionidae), true bugs (Pentatomidae), ants, bees, Lepidoptera, snails, and plant fragments (Stebbins 1951). Four adult specimens were examined for stomach contents. All stomachs contained food items with beetles of various families found in 100% of the stomachs.

Reproduction.—Unlike many other southwestern desert anurans, B. microscaphus does not depend directly upon rainfall to stimulate breeding (Stebbins 1966). This is probably a result of breeding in streams and arroyos where there is usually permanent water. Photoperiod and temperature seem to be the cues which stimulate breeding.

Stebbins (1951) presents the most comprehensive information on reproduction, although his information refers to B. m. californicus. Riemer (1955) found larvae and newly metamorphosed young between 29 June and 2 July in Chihuahua.

During this study, two gravid females (MSB 42806, 61.2 mm SV, MSB 42807, 69.4 mm SV) were collected on 2 July. Although several lots of Bufo tadpoles were collected during this study none were definitely assigned to this species.

Remarks.—Bufo microscaphus was once considered a subspecies of B. woodhouseii (Shannon 1949) although Stebbins (1951) and Blair (1955) considered microscaphus and woodhouseii to be distinct species which may show evidence of hybridization in areas of sympatry. This nomenclatural usage is accepted today (Collins et al. 1982). Stebbins (1951) maps (with query) a single location for B. microscaphus from New Mexico, Grant Co., Mimbres. Subsequently, Findley (1964) examined specimens from Catron Co. in the Museum of Southwestern Biology and verified the existence of the species in New Mexico.

The subspecies B. m. microscaphus occurs in southwestern New Mexico. Photographs appear in Wauer (1964) and Blair (1972).

Bufo punctatus - Red spotted toad

The range of this species may include the Gila-San Francisco river drainages (Blair 1972, Conant 1975, Stebbins 1985), although no specimens were collected during this study. Blair (1972) presents data on hybridization, osteology, and biogeography. Stebbins (1951) describes food habits, general habitat, eggs, tadpoles, and the mating call. Smith (1934) presents more detailed information on food habits. Wright and Wright (1949) present a distribution map and provide color notes on both male and female specimens. Altig (1970) provides a key to the tadpoles. Photographs of B. punctatus are found in Hammerson (1982), Collins (1982), and Behler and King (1979). No subspecies are recognized. Map 4.

Bufo woodhouseii - Woodhouse's toad

Distribution.—Bufo woodhouseii ranges from the Imperial Valley of California and the Columbia River valley of Washington and Oregon eastward to the Atlantic coast and northward to southern New Hampshire (Blair 1972). The range of B. w. australis, the subspecies occurring in southwestern New Mexico, is confined to southern Arizona, southern New Mexico, southwestern Texas, and into northern Mexico adjacent to these states (Shannon and Lowe 1955). Bufo woodhouseii appears to be common at the lower elevations of the Gila-San Francisco river drainages. Map 5.

Recognition.—Bufo woodhouseii may be distinguished from other Bufo in southwestern New Mexico by the following combination of characteristics: (1) cranial crests prominent, forming right angles at back of orbit; (2) light middorsal stripe which usually does not involve the snout; (3) paratoid glands approximately twice as long as wide; (4) larger warts of dorsum set in well-developed black blotches; and (5) well-developed, small, black spots on the venter. Tadpoles are described by Stebbins (1951) and Altig (1970). Cole et al. (1968) and Martin (1973) discuss relationships with other Bufo. Martin (1973) illustrates the skull. Smith (1978) presents a key.

Size.—Adult B. woodhouseii normally grow to 62-100 mm in total length. Record length is 127 mm (Conant 1975). Other maximum lengths reported include Shannon and Lowe (1955) a 102 mm SV male from south-central Arizona and Collins (1982) a 120 mm SV female from northeastern Kansas.

Three males collected during this study averaged 65.8 mm SV (range 63.7-68.1 mm), four females averaged 57.7 mm SV (range 53.3-63.2 mm), and three immature specimens averaged 29.5 mm SV (range 24.4-32.1 mm).

Habitat Use.—Woodhouse's toad commonly inhabits sagebrush flats, grasslands, river valleys, flood plains, and irrigated agricultural areas. Five of 11 specimens collected during this study were taken in pitfall traps sent in Atriplex-Muhlenbergia

grassland and mesquite desert. All specimens examined occurred below 2,000 m elevation.

Food Habits.—Bufo woodhouseii is an opportunistic feeder. Stebbins (1951) reports the following as food items: sowbugs, scorpions, centipedes, spiders, Orthoptera, Lepidoptera, Diptera, Hemiptera, Coleoptera, Hymenoptera, and plant material (probably accidentally ingested). Little and Keller (1937) report beetles and ants from specimens examined from the Mesilla Valley of south-central New Mexico.

Stomach contents of eight specimens were examined during this study; six of these contained food items. Beetles were the most commonly encountered food item, followed by spiders and ants.

Reproduction.—Commonly used breeding sites include slow moving or still water of irrigation ditches, rivers, or ponds. Breeding usually occurs in April, May, or June often after rain when the air temperature is 12°C or higher (Hammerson 1982). Minton ("1958" 1959) reports calling males on 25 April. Blair (1972) provides an illustration of a sound spectogram of the male breeding call. The voice is described by Wright and Wright (1949), Stebbins (1951), and Conant (1975). McAlister (1961) describes the mechanics of sound production.

In this toad, the male differs from the female in being smaller in size and in having a dark throat and horny growths (nuptial pads) on the upper surfaces of the inner fingers.

No reproductive data were taken from specimens collected during this study.

Remarks.—Where sympatric with B. microscaphus, B. woodhouseii tends to breed in larger rivers while B. microscaphus usually breeds in the smaller tributary streams (Blair 1972). Bufo woodhouseii often hybridizes with other species (Thornton 1955, Volpe 1956, Ballinger 1966).

Wassersug (1973) discusses the growth-inhibiting effect crowding has on the tadpoles of B. woodhouseii.

Photographs appear in Blair (1972), Collins (1982), and Hammerson (1982). The subspecies B. woodhousei australis occurs in southwestern New Mexico (Stebbins 1985).

HYLIDAE

Hyla arenicolor - Canyon treefrog

Distribution.—Hyla arenicolor ranges from western Colorado and southern Utah to Northern Oaxaca, Mexico; from west Texas to the Colorado River in northwestern Arizona. Isolated populations occur in the Mogollon highlands of Arizona, on the Canadian and upper Pecos River in northeastern New Mexico, in the Big Florida Mountains, and in the Cooke's Peak area of Luna Co. in southwestern New Mexico. It also occurs in the Davis and Chisos mountains of west Texas (Stebbins 1985). Duellman (1970) defines the range in Mexico as including the Mexican Plateau and associated mountain ranges, southward to Michoacan, Guerrero, and western Oaxaca. Distribution in Arizona is discussed by Lowe (1964), Colorado (Finley 1953, Hammerson 1982), and Texas (Raun and Gehlbach 1972). Map 6.

Recognition.—The canyon treefrog may be distinguished from other frogs which occur in southwestern New Mexico by the following combination of characters: (1) toe tips expanded into adhesive discs; (2) dark-edged, light spot under the eye; (3) body plump, skin warty; (4) concealed surfaces of hind limbs orange-yellow; (5) dorsal markings varying from brown to greenish; and (6) maximum size ca. 57 mm SV. Males often have a dark throat. Duellman (1970) provides a complete description of the adults. Tadpoles have been described and illustrated by Zweifel (1961) and Duellman (1970). Altig (1970) presents a key.

Size.—Maximum size of females is 57.1 mm SV and males 51.2 mm SV (Duellman 1970). Wright and Wright (1949) give a size range of 30-54 mm SV for females and 29-53 mm SV for males. Stebbins (1985) gives an adult size range of 31-56 mm SV.

Four specimens collected during this study averaged 40.2 mm SV (range 33.3 mm-43.2 mm). A series of 16 tadpoles, collected in Sapillo Creek in Grant Co. on 9 July, averaged 15.5 mm BL and 25.7 mm TL (range 10.7-17.5 mm BL and 23.9-51.6 mm TL).

Habitat Use.—Hyla arenicolor is most often found closely associated with small rocky streams of ravines and canyons (Wright and Wright 1949, Duellman 1970). In Mexico, Duellman (1970) found this species in mesquite-grasslands, dense thorn forest, pine-oak forest, and scrub-oak forest.

Specimens collected during this study were found in the pinyon-juniper belt along rocky streams surrounded by thick riparian deciduous forest.

Food Habits.—Hyla arenicolor is known to eat beetles, ants, caterpillars, bugs, centipedes, and spiders (Hammerson 1982).

Stomach contents of those specimens examined during this study included Coleoptera, Hemiptera, Trichoptera, and an anellid worm.

Reproduction.—Zweifel (1961) observed egg laying in pools on 12 or 13 July. He estimated 50-60 days from ovipostion to metamorphosis and found newly metamorphosed young to be 15 mm SV. Hammerson (1982) reports metamorphosis in late July to early August in Colorado.

A single female (MSB 42798) collected 18 June along the lower Gila River near Red Rock contained mature eggs.

Remarks.—An analysis of the mating call of specimens from the Chiricahua Mountains of Arizona and from the Peloncillo Mountains of New Mexico show slightly different call characteristics (Duellman 1970).

On the basis of call structure, Blair (1958) placed H. arenicolor in the H. versicolor group and arenicolor is most closely related to H. femoralis of the southeastern United States.

Photographs of H. arenicolor appear in Behler and King (1979) and Hammerson (1982). No subspecies are recognized.

Hyla eximia - Mountain treefrog

The range of this species includes the Gila-San Francisco river drainages (Stebbins 1962, 1985; Duellman 1970), although no specimens were collected during this study. Duellman (1970) presented evidence for the synonymy of H. eximia and H. wrightorum. In addition, Duellman (1970) describes the mating call, tadpoles, and adults. Wright and Wright (1949) provide general habitat notes, descriptions of adults, eggs, and tadpoles and breeding season. Lowe (1964) discusses habitat requirements for H. wrightorum (= eximia) in Arizona. Stebbins (1962) provides a distribution map. Zweifel (1961) compares larval development of H. arenicolor with that of H. wrightorum (= eximia). Altig (1970) provides a key to the tadpoles. Photographs appear in Wright and Wright (1949) and Behler and King (1979). No subspecies are recognized. Map 7.

Pseudacris triseriata - Western chorus frog

The range of this species includes the Gila-San Francisco river drainage (Wright and Wright 1949; Stebbins 1951, 1985) although no specimens were collected during this study. Behler and King (1979), Collins (1982), and Hammerson (1982) provide data on habitat, activity periods, distribution, and breeding habits. Additional reproductive data are found in Pettus and Angleton (1967) and Hoppe and Pettus (1984). Food habits are in Hartman (1906), Smith (1934), and Christian (1976). Altig (1970) includes P. triseriata in his key to tadpoles of the U.S. and Canada. Predation pressure is discussed by Wassersug and Sperry (1977). A calling male is illustrated in Hammerson (1982). The subspecies P. t. triseriata occurs in southwestern New Mexico (Stebbins 1985). Map 8.

PELOBATIDAE

Scaphiopus bombifrons - Plains spadefoot

Distribution.—Scaphiopus bombifrons ranges along the eastern and southern outwash plains of the Rocky Mountains from southern Alberta, Saskatchewan, and

Manitoba to northwestern Texas and Chihuahua, then east to Missouri and eastern Oklahoma, westward through New Mexico and into eastern Arizona. Isolated populations occur in extreme south Texas and Nuevo Leon, Mexico (Conant 1975, Stebbins 1985). Distribution in Arizona is discussed by Shannon (1953b), Duellman (1955), and Lowe (1964); Colorado (Hammerson 1981, 1982); Texas (Raun and Gehlbach 1972); Kansas (Collins 1982); and New Mexico (Gehlbach 1965). Range maps are presented by Zweifel (1956), Conant (1975), and Stebbins (1985). Map 9.

Recognition.—The plains spadefoot may be distinguished from other anurans occurring in southwestern New Mexico by the following combination of characteristics: (1) pupils vertical in bright light, round at night; (2) a single, black, sharp-edged "spade" on each hind foot; (3) prominent boss between the eyes; (4) usually with four light stripes of irregular outline, the middle pair often setting off an hourglass shape in the middle of the back; and (5) maximum size ca. 62 mm SV. The tadpoles have been described by Bragg (1941), Bragg and Bragg (1958), and Altig (1970).

Size.—Collins (1982) reports adult S. bombifrons normally grow to 36-50 mm SV. He records the largest specimen from Kansas as 64 mm SV. Whitaker et al. (1977) measured 25 individuals and found the average to be 37 mm SV (range 29.2-51.6 mm SV). Woodward (1982) measured 24 males which ranged from 48-64 mm SV. Stebbins (1985) reports adults range between 37-62 mm SV.

Four specimens, MSB 42858-42861, collected during this study averaged 46.5 mm SV (range 44.0-50.9 mm SV).

Habitat Use.—Scaphiopus bombifrons usually occurs in mixed grass prairies, desert grasslands, or plains grasslands (Lowe 1964, Conant 1975). Hammerson (1982) reports sandhills and semidesert shrublands are utilized habitat in Colorado. Stebbins (1954) says this species occurs primarily where there are low rolling hills with soil which is a mixture of sand, gravel, and loam.

Specimens collected during this study were found in a flooded roadside ditch in pinon-juniper association. Specimens were also observed, but not collected, in a permanent catch basin pond.

Food Habits.—Whitaker et al. (1977) found the most important foods of S. bombifrons were adult and larval lepidopterans, carabid beetles, grasshoppers, flies, and sowbugs. In addition to these prey items, Bragg (1944) includes hymenopterans, hemipterans, and spiders. Considering these food items, Whitaker et al. (1977) suggests surface rather than subterranean feeding of S. bombifrons.

Bragg (1962) reports tadpoles of S. bombifrons feeding on fairy shrimp. Stebbins (1962) includes insect larvae as prey, and Bragg and Bragg (1958) and Bragg (1964) discuss cannibalism in certain morphotypes.

During this study, the four adults examined all contained food items. These included grasshoppers, ants, beetles of several species, and a single solpugid.

Reproduction.—Scaphiopus bombifrons is an explosive breeder (Wells 1977), appearing suddenly after heavy rains. In Colorado, Hammerson (1982) reports rains of at least 18 mm and temperatures of 10° or higher are necessary to initiate breeding and that those conditions may be met at any time from May to August. Reported dates of breeding include 28 June (this study, New Mexico), 4 July (Duellman 1955, Arizona), and 22 July (Woodward 1982, New Mexico). Mating and egg-laying may be completed in 2-3 days although in some cases both may occur during the same day. Females may lay several egg masses of 10-250 eggs each. Eggs hatch in 2-3 days and the larvae complete metamorphosis in 36-40 days or less (Hammerson 1982).

Remarks.—Within North American forms of the genus Scaphiopus, there are two rather distinct groups of species which has lead some workers to refer the groups to two genera, Scaphiopus and Spea. Among recent workers, Stebbins (1954, 1962, 1985) Bragg (1944), Bragg and Bragg (1958), Lowe (1964), and Sattler (1980) have treated the two

groups as subgenera, while Smith (1978) and Brown (1950) have recognized Spea as a distinct genus.

Zweifel (1956) discusses similarities and differences of these two genera. He presents a comparison of skeletal characteristics and other structural and ecological features that have been used to separate the two genera. He concludes that although Scaphiopus and Spea show morphological differences, they are relatively slight and not clearly correlated with any major ecological differences between the species involved. He, therefore, proposes that Spea be maintained as a subgenus and not be accepted as a distinct genus. Collins et al. (1982) agree.

Photographs of S. bombifrons appear in Hammerson (1982) and Behler and King (1979). No subspecies are recognized.

Scaphiopus couchii - Couch's spadefoot

Distribution.—Scaphiopus couchii ranges from southwestern Oklahoma westward through Texas, southern New Mexico, and southern Arizona to southeastern California and southward in Mexico to San Luis Potosi, Nayarit, and the southern tip of Baja California (Wasserman 1970). Distribution in Arizona is discussed by Lowe (1964), Colorado (Hammerson 1981, 1982), Texas (Raun and Gehlbach 1972), and New Mexico (Little and Keller 1937, Woodward 1980). Mexican distribution records are in Bogert and Oliver (1945), Smith et al. (1963), and Hardy and McDiarmid (1969). Additional literature records from Mexico are found in Smith and Smith (1976b). Range maps are found in Stebbins (1984), Wasserman (1970), and Zweifel (1956). Map 10.

Recognition.—Couch's spadefoot may be distinguished from all other anurans which occur in southwestern New Mexico by the following combination of characteristics: (1) pupils vertical in bright light, round at night; (2) a single black, sharp-edged "spade" on each hind foot; (3) no boss between the eyes; (4) dorsum with an irregular network of black, brown, or dark green; and (5) maximum size ca. 87 mm SV. Stebbins (1962, 1985) describes the eggs and tadpoles.

Size.—Conant (1975) reports adult S. couchii normally grow to 57-73 mm SV. He records the record size as 89 mm SV. Woodward (1980) measured 256 reproductive males which ranged 52-80 mm SV.

The single specimen, MSB 42862, collected during this study measured 65.6 mm SV.

Habitat Use.—Scaphiopus couchii in Arizona lives in a wide variety of habitats. Lowe (1964) states that it lives in desert and grassland habitats where it frequents rocky canyons and bajadas of desert ranges as well as open plains and valley bottomlands. It occurs in paloverde, creosotebush, tarbush, and mesquite communities. McCoy (1964) and Stroud (1949) report S. couchii from active sand dunes. Hardy and McDiarmid (1969) include thorn woodland, tropical semiarid forest, and tropical dry as habitat occupied by S. couchii. Hammerson (1982) says plains grasslands are most commonly frequented in Colorado.

The single specimen collected during this study was found in a pit-fall trap in Atriplex-grasslands. The nearest water was approximately 0.8 km away.

Food Habits.—Whitaker et al. (1977) examined stomach contents of 83 specimens and found termites formed the major food items. They also encountered beetles, ants, lepidopteran larvae, crickets, and spiders in the stomach samples. Dimmitt and Ruibal (1980b) found similar results. They examined 74 stomach samples from southwestern New Mexico and southeastern Arizona and found termites made up 92% of the total volume of food taken by S. couchii. Taxa of lesser importance they encountered included beetles, ants, crickets, spiders, centipedes, scorpions, and mites. Little and Keller (1937) collected one adult specimen which contained 10 spiders and one centipede.

Reproduction.—Scaphiopus couchii, like other spadefoots, is an explosive breeder (Wells 1977), appearing suddenly after heavy rains. Reported dates of breeding include 4 July, 24 July, 25 July, 11 August (Woodward 1980, New Mexico); 24 July (Stebbins 1982, Arizona); 5 July (Bogert and Oliver 1945, Sonora); 18-20 August (Hardy and McDiarmid 1969, Sinaloa); and 2 September (Smith et al. 1963, Chihuahua). Mating and egg laying

may be completed in 2-3 days. Each female lays several clusters of 6-145 eggs. Each female may lay a total of 350-500 eggs which hatch in 1-2 days. Larvae may metamorphose and leave the pool in as few as 10 days (Hammerson 1982).

A single female collected near Red Rock on 27 June contained fully pigmented eggs.

Remarks.—Refer to the species account of S. bombifrons for a discussion of the Scaphiopus-Spea controversy. In extreme southwestern New Mexico, Dimmitt and Ruibal (1980a) demonstrated that less than 0.5 mm rain elicited 95% emergence of S. couchii from shallow summer retreat burrows. They state that sound (and/or vibration) of the rainfall, not the associated ground wetting, is the primary emergence cue for S. couchii.

Photographs appear in Hammerson (1982) and Behler and King (1979). No subspecies are recognized.

Scaphiopus multiplicatus - New Mexico spadefoot

Distribution.—The range of Scaphiopus multiplicatus includes southwestern Utah and southern Colorado south to Guerrero and Oaxaca, Mexico; from western Arizona to western Oklahoma and Texas (Stebbins 1985). Distribution in Arizona is discussed by Lowe (1964), Texas (Raun and Gehlbach 1972), Colorado (Hammerson 1981, 1982), and New Mexico (Little and Keller 1937, Lewis 1950). Smith and Smith (1976b) provide literature concerning distribution in Mexico. Range maps are presented by Zweifel (1956), Brown (1976), Conant (1975), and Stebbins (1985). Map 11.

Recognition.—The New Mexico spadefoot may be distinguished from all other anurans which occur in southwestern New Mexico by the following combination of characteristics: (1) pupils vertical in bright light, round at night; (2) a single black, sharp-edged "spade" on each hind foot; (3) no boss between the eyes; (4) usually with four light strips of irregular outline, the middle pair often setting off an houglass shape in the

middle of the back; and (5) maximum size ca. 64 mm SV. The tadpoles have been described by Bragg (1941) and Altig (1970).

Size.—Brown (1976) measured snout-vent length of 25 males from southeastern Arizona which averaged 46.9 mm. Anderson and Lidicker (1963) report on seven specimens with an average of 50.1 mm SV. Woodward (1982) measured 238 reproductive males which ranged from 38 to 58 mm SV. Conant (1975) reports the record size as 64 mm SV.

During this study, 10 specimens, MSB 42863-42872, were measured. They averaged 44 mm SV (range 32.6-48.7 mm SV).

Habitat Use.—In Arizona, Lowe (1964) reports S. multiplicatus from a wide variety of habitats including desert and grasslands upward through chaparral and woodland into pine forest. Stebbins (1962) lists breeding sites as intermittent and permanent pools of water, irrigation canals, reservoirs, edges of streams, and rain pools.

Specimens collected during this study were found in a flooded roadside ditch in pinon-juniper association. Individuals were also observed, but not collected, in a permanent catch-basin pond.

Food Habits.—Whitaker et al. (1977) examined stomach contents of 295 S. multiplicatus from northern Texas. The most commonly encountered prey items include lepidopteran larvae, beetles, ants, dipteran larvae, and earthworms. Stebbins (1962) includes ants, beetles, grasshoppers, an ichneumonid wasp, and crickets. Tadpoles are known to eat algae, small crustaceans, insects, and tadpoles of the same species.

Of 10 specimens examined during this study, nine contained food. Prey items included beetles, ants, wasps, and grasshoppers.

Reproduction.—Scaphiopus multiplicatus, like other spadefoots, is an explosive breeder (Wells 1977), appearing suddenly after heavy rains. Reported dates of breeding include 23 May, 24 July, and 26 August (Little and Keller 1937, New Mexico); 16 July and 21 July (Anderson and Lidicker 1963, Mexico); 28 June (this study, New Mexico); and

May-September, whenever temporary rain pools formed (Lewis 1950, New Mexico). Mating and egg-laying may be completed in 2-3 days. Females lay several egg masses of 10-42 eggs. Each female may lay 300-500 eggs. Eggs hatch in about two days and larvae complete metamorphosis in approximately 30 days (Hammerson 1982). Metamorphosing S. multiplicatus have been found in Colorado in mid-August (Hammerson 1982).

Remarks.—Much of the literature concerning S. multiplicatus is included under the name S. hammondii (see discussion below).

Scaphiopus multiplicatus was once considered conspecific with S. hammondii. Zweifel (1956) discusses the lack of significant differences in skull morphology between the two species and treats them as a single species, S. hammondii. However, Brown (1976) analyzed male mating calls, adult morphology, breeding behaivor, and physiological temperature adaptations from widely separated populations. On the basis of data collected from his study, he concluded the name S. hammondii should be retained for the California populations and S. multiplicatus should be applied to the eastern populations of Arizona, New Mexico, and Texas. Hammerson (1981), like most other herpetologists (Sattler 1980, Collins et al. 1982), agrees with Brown's (1976) revision although he feels as though Brown's work is unconvincing as stated and that additional studies should be initiated to clarify the status of the species. Sattler (1980) provides electrophoretic data which proves genetic similarity of the two species.

See the species account of S. bombifrons for a discussion of the Scaphiopus-Spea controversy.

Photographs of S. multiplicatus appear in Hammerson (1982) and Behler and King (1979). No subspecies are recognized.

RANIDAE

Rana catesbeiana - Bullfrog

Distribution.—Rana catesbeiana is widely distributed in North America. Native range includes that area east of the Rocky Mountains chiefly east of longitude 98°W

although it is introduced at numerous localities in the west, in Jamaica (Mahon and Aiken 1977), and in the Hawaiian Islands (McKeown 1978). It is also introduced in British Columbia, Canada, and in the western United States: Washington, Idaho, Nevada, Utah, Colorado, Arizona, New Mexico, and California. It also ranges into northern Mexico in the states of Nuevo Leon, Tamaulipas, and probably Sonora (Stebbins 1962). See Stebbins (1985) for an up-to-date distribution map. Map 12.

Recognition.—The bullfrog may be distinguished from other frogs which occur in southwestern New Mexico by the following combination of characters: (1) dorsolateral folds absent, (2) a fold of skin extending from the eye around the eardrum, (3) tympanic membrane conspicuous and as large as or larger than the eye, (4) dorsum green to olive or brown, grading to green towards the head, and (5) large size, maximum ca. 200 mm SV. Males may be distinguished from females by the yellow throat, a swollen and darkened thumb base, and a tympanum much larger than the eye. The tadpoles are marked with numerous minute black specks on body, tail fin, and tail musculature. Females are larger than the males (Shine 1979, Howard 1981).

Size.—Wright and Wright (1949) give an average size of 85-180 mm SV for males and 89-184 mm SV for females. They state the females may reach 200 mm SV. Stebbins (1985) gives an adult size of 8.7-20 cm SV. Conant (1975) gives a record size of 20.3 cm SV.

During this study 58 females and 51 males were measured. Both males and females averaged 76.1 mm SV. Range of females was 38.3-138.1 mm SV, males 33.4-162.3 mm TL. To determine if this sample of bullfrogs exhibited sexual dimorphic characters in morphology, three ratios were established, head width/ SV, jaw length/SV, and tibiofibula length/SV. No differences were observed between 50 males and 58 females although considering these were mostly subadults it might not be expected that sexually dimorphic characters would appear.

Habitat Use.—The bullfrog is highly aquatic, usually remaining in or near permanent water. It is generally found in prairie, woodland, chaparral, forest, desert oases, and farmlands (Stebbins 1985). Conant (1975) says small streams are used where better habitats are lacking. Generally, in the arid southwest, bullfrogs are found in most aquatic situations where there is permanent or semi-permanent water. In Gunnison Co., Colorado, bullfrogs are found in the mountains as high as 2,743 m where warm water from hot springs enable them to reproduce in areas that otherwise would be much too cold (Hammerson 1982).

During this study, bullfrogs were collected along the mainstem Gila River and its tributaries. In the Rio San Francisco, they were encountered only in a small side channel just upstream of the Frisco Hot Springs, although conversation with some of the local people indicates the range is much more extensive than observed during this study.

Food Habits.—The voracious feeding habits of the bullfrog are well-documented (Frost 1935, Stebbins 1962). Hammerson (1982) sums up the diet of the bullfrog with his statement, "Bullfrogs will eat any animal that can be captured and swallowed, including each other." Clarkson and de Vos (1986) include a muskrat, a diamondback rattlesnake, and a softshell turtle as food items.

During this study, 108 stomachs were examined, 88 or 81% of these contained food items. Coleoptera was most commonly encountered, being found in 68% of the stomachs examined. Data on stomach contents of these 108 specimens are presented in Table 2.

Reproduction.—Bullfrogs breed in permanent bodies of water which typically contain thick growths of algae and rooted aquatic plants. Calling in Colorado is most vigorous in June and July (Hammerson 1982). Males establish territories and defend these against conspecifics by stereotyped postures, vocalizations, and physical combat. Females select mates and oviposit in the males' territory (Ryan 1980) which may be as large as 9-25 m of shoreline (Wiewandt 1969). In 36 egg masses measured, Ryan (1980)

Table 2. Stomach contents and percent frequency occurrence of food items found in Rana catesbeiana examined during this study. N = 108 stomachs examined, 81% contained food items.

Food Item	Percent Frequency Occurrence
Coleoptera	68%
Diptera	37.5%
Araneida	34%
Lepidoptera (larvae)	19%
Hemiptera	17%
Hymenoptera	15%
Isopoda	14%
Odonata	12.5%
Gastropoda	9%
Orthoptera	9%
Homoptera	3.4%
Plecoptera	2.3%
Isoptera	2.3%
Ephemeroptera	1.1%
Lepidoptera (adult)	1.1%
Neuroptera	1.1%
Annelida	1.1%
Chilpoda	1.1%
Rana sp.	1.1%
Vertebrate (fish)	1.1%
Peromyscus sp.	1.1%
detritis	9%

found a mean of 7,360 eggs per mass. Tadpoles may reach 16 mm TL (Wright and Wright 1949) or larger (pers. observ.). Altig (1970) provides a key and describes the tadpole.

Remarks.—Bury and Whelan (1984) summarize and review information on the biology of the bullfrog relative to its ecology, present status, culture, and management. They present an extensive literature review through 1982 representing the most recent biological and economic features of the bullfrog.

Fritts et al. (1984) present a review of the relationships of bullfrogs with the native Rana of New Mexico. They point out that comprehensive studies of the interactions of bullfrogs and leopard frogs are needed before it can be conclusively demonstrated that bullfrogs (through predation and competition) are the ultimate causitive factor in the decline of the leopard frog. Mahon and Aiken (1977) report on the introduction and spread of bullfrogs in Jamaica.

Bullfrogs often coexist with warmwater game fishes which apparently are adverse to eating the tadpoles. Kruse and Francis (1977) found largemouth bass, Micropterus salmoides, given no other food option, would only "maintenance feed" on the tadpoles. The black bullhead, Ictalurus melas, choose to starve rather than feed on the tadpoles.

Wright and Wright (1949) present photographs of the egg mass, a tadpole, and male and female bullfrogs. Hammerson (1982) and Behler and King (1979) provide color photographs.

Rana chiricahuensis - Chiricahua leopard frog

Distribution.—The known range of Rana chiricahuensis is divisible into two primary segments. One of these extends from montane central Arizona east and south along the Mogollon Rim to montane parts of western and southwestern New Mexico. The other includes the southeastern montane sector of Arizona and adjacent Sonora, the extreme southwestern corner of New Mexico, and parts of Mexico southward along the eastern base of the Sierra Madre Occidental through Chihuahua to northern Durango (Platz and

Mecham 1979, 1984). Range maps are provided by Stebbins (1985) and Platz and Mecham (1979, 1984). Platz and Mecham (1979) present a gazetteer of known localities. R. Jennings (UNM-MSB) is presently compiling a data set of New Mexican locality records obtained from major vertebrate collections of the United States. This data set will more completely describe the distribution of Rana chiricahuensis in New Mexico. Map 13.

Recognition.—The Chiricahua leopard frog may be distinguished from other frogs which occur in southwestern New Mexico by a combination of the following characters: (1) hind feet fully webbed, (2) dorsum with well-defined oval or round dark spots, (3) dorsolateral folds usually broken into short segments toward the rear and angled inward, (4) rear of thigh with small light dots, each with a tubercle, scattered over a dark ground color, and (5) maximum size ca. 13.5 cm SV. Fritts et al. (1984) provide a thorough description of R. chiricahuensis. Platz and Mecham (1979) present a formal description of the holotype. Mecham et al. (1973) and Frost and Bagnara (1976) present tables in which leopard frogs (including the "southern" type = R. chiricahuensis) are compared with respect to dorsolateral folds, ventral color, supralabial stripe, and oviduct condition in males. The posterior thigh pattern described by Fritts et al. (1984) is helpful in identification. Scott and Jennings (1985) describe the tadpole.

Size.—Published size ranges of adults include 57-95 mm SV (Platz and Mecham 1984) and 50-135 mm SV (Stebbins 1985). Fritts et al. (1984) found males to be smaller than females. Males had a mean body length of 64.3 mm and females had a mean of 76.9 mm.

During this study, 24 R. chiricahuensis were measured. These specimens averaged 56.0 mm SV (range 32.4-83.5 mm). The largest specimen, MSB 41842, examined was a female 83.5 mm SV.

Habitat Use.—This species occurs over a wide range of altitudes (1,000-2,600 m) and in a variety of permanent aquatic habitats where adequate depth provides escape from predators. These habitats include montane streams, ponds, lakes, and marshes, and,

at intermediate elevations, stock ponds and plunge pools of canyon streams (Platz and Mecham 1984). Stebbins (1985) says it is also found in oak, mixed oak, and pine woodlands in rocky streams with deep rock-bound pools.

Specimens were found in stock tanks, tule marshes, woodland streams, and along the mainstem Gila River during this study. Along Turkey Creek in Grant Co., R. chiricahuensis was collected sympatrically with R. catesbeiana.

Food Habits.—No studies concerning food habits of this frog have been published, however, they undoubtedly feed on a wide variety of invertebrates.

One specimen, MSB 43135, examined during this study, contained 4 caterpillars, 1 grasshopper, and 1 small beetle.

Reproduction.—In Arizona, R. chiricahuensis found above 1,800 m breed during June, July, and August. Those below 1,800 m breed from spring to late summer but largely prior to June (Frost and Platz 1983). Mecham (1968) reported pigmented eggs ready for laying in June.

During this study an egg mass was collected at Turkey Creek on 14 April. Also on 14 April, two specimens, a male and female, were collected and confined in a bucket. On 16 April, these specimens, MSB 41841-41842, were observed in amplexus and on 17 April an egg mass was found in the bucket. These eggs were hatched and raised until 7 May. A subsample, MSB 41865, of this series was preserved each day for growth measurements. Additional series of tadpoles were collected from March to September, exclusive of August.

Several series of these tadpoles were measured for body length and total length. Average body length varied from 14.3 mm in September to 29.6 mm in April. Measurements of those specimens collected in September probably reflect growth since spring of the same year; those from April suggest overwintering.

Data from specimens collected during this study indicate size at metamorphosis, Gosner stage 45, is 32–43 mm SV.

Remarks.—This frog was previously confused with other members of the Rana pipiens complex, and as a result, much of the pertinent literature appears under other names (Platz and Mecham 1979).

Frost and Platz (1983) compare life history data and mating calls of this species and three congeners in Arizona.

Platz and Mecham (1984) provide a photograph of R. chiricahuensis. Stebbins (1985) provides a color plate.

Rana yavapaiensis – Lowland leopard frog

Distribution.—Rana yavapaiensis occurs in the Colorado River drainage from the Virgin River in extreme northwestern Arizona and the Hoover Dam area to Yuma and Somerton; west and central Arizona below around 1,460 m south of the Mogollon Rim; southwestern New Mexico; northern Sonora and northwestern Chihuahua. There is an isolated population at San Felipe Creek, southwest of the Salton Sea in Imperial Co., California (Platz and Frost 1984, Stebbins 1985). Range maps are provided by Platz and Frost (1984) and Stebbins (1985). Platz and Frost (1984) present a gazetteer of known localities. R. Jennings (UNM-MSB) is presently compiling a data set of locality records for New Mexico obtained from major vertebrate collections of the United States. This data set will more completely describe the distribution of Rana yavapaiensis in New Mexico. Map 14.

Recognition.—The lowland leopard frog may be distinguished from other frogs which occur in southwestern New Mexico by a combination of the following characteristics: (1) hind feet fully webbed; (2) dorsum with well-defined oval or round dark spots; (3) dorsolateral folds usually broken into short segments toward the rear and angled inward; (4) rear of thigh reticulated with light or dark markings fused into a network or irregular elongate blotches; and (5) maximum size ca. 79 mm SV. Platz and Frost (1984) present a formal description of the holotype. Mecham et al. (1973) and

Frost and Bagnara (1976) present tables in which leopard frogs (including the "lowland" type = R. yavapaiensis) are compared with respect to dorsolateral folds, ventral color, supralabial stripe, and oviduct condition in males. The posterior thigh pattern described by Fritts et al. (1984) is helpful in identification. Scott and Jennings (1985) describe the tadpole.

Size.—Fritts et al. (1984) measured eight R. yavapaiensis. The single adult male measured 56.5 mm SV. Seven females averaged 57.3 mm SV (range 43.1-78.7 mm). Platz and Frost (1984) provide measurements of paratypes which include seven adult females and six adult males. The females averaged 63.5 mm SV (range 58.6-71.9 mm), the males 54.7 mm SV (range 50.0-57.0 mm). No tadpoles were available for measurement.

Three specimens, MSB 41843-41844 and 43132, collected during this study averaged 30.9 mm SV (range 30.5-31.4 mm).

Habitat Use.—Platz and Frost (1984) indicate most specimens are found at less than 1,000 m elevation in ponds and stream pools. Stebbins (1985) states this species frequents desert, grassland, oak, and oak-pine woodland.

The specimens collected during this study were found in an overflow stream from the Frisco Hot Springs. Pinon-juniper association was nearby.

Food Habits.—No studies of the food habits of this species are available, although they undoubtedly feed on a wide variety of invertebrates.

Reproduction.—In Arizona, egg masses and newly hatched tadpoles were found in spring and fall from late February to late April and during October (Collins and Lewis 1979, Frost and Platz 1983). Platz and Frost (1984) describe the mating call.

Additional data on the reproduction of R. yavapaiensis are lacking.

Remarks.—This frog was formerly confused with other members of the Rana pipiens complex, and as a result, much of the pertinent literature appears under other names (Platz and Frost 1984).

A color illustration appears in Stebbins (1985). Platz and Frost (1984) provide a photograph of the holotype.

ANGUIDAE

Elgaria kingii - Arizona alligator lizard

Distribution.—Stebbins (1985) gives the range of Elgaria kingii as the southern edge of the central plateau of Arizona southward in the Sierra Madre to Jalisco. He also includes the Huachuca, Santa Rita, Pajarito, and Chiricahua mountains of Arizona and southwestern New Mexico east to the Florida Mountains of Luna Co., New Mexico. Arizona distribution is reported by Lowe (1964). The species has been recorded from the Mexican states of Chihuahua (Bogert and Oliver 1945), Sinaloa (Hardy and McDiarmid 1969), Durango (Webb 1962a), and Jalisco (Zweifel 1954). A specimen in the University of New Mexico collection (MSB 31877) is from Nayarit. Range maps are found in Fitch (1938), Smith (1946), Webb (1970a), and Stebbins (1985). Map 15.

Recognition.—Elgaria kingii may be separated from all other lizards in southwestern New Mexico by the following combination of characters: (1) slim body with distinct lateral folds on each side of the body, (2) strip of granular scales along the lateral folds which separate the large squarish scales on back and belly, (3) conspicuous black and white spots on upper jaw, (4) 8-15 distinct wavy crossbars on the body, and (5) maximum size ca. 125 mm SV. No sexually dimorphic characters are evident. The young resemble adults although the wavy crossbars may be more distinct.

Size.—Smith (1946) reports a maximum size of 100 mm SV although Webb (1970a) reports the species reaches 125 mm SV. Stebbins (1985) gives a size range of 75 to 125 mm SV.

The single male collected during this study measured 83 mm SV.

Habitat Use.—Lowe (1964) records the habitat in Arizona as evergreen woodland, coniferous forest, and broadleaf riparian woodland along major drainageways in desert

and grassland. General habitats are high dry grasslands, open woods of fir, pine, or chaparral (Behler and King 1979), and chaparral, oak woodland, and pine-fir forest in rocky places near permanent or temporary streams (Stebbins 1985). Medica (1965) collected a specimen at 2,690 m elevation in the Chiricahua Mountains of southeastern Arizona.

The single specimen collected during this study was found beside the Middle Fork Gila River in the forest litter. Dominant vegetation was Platanus wrighti, various shrubs, and grasses.

Food Habits.—Food habit data are scarce for this species. Stebbins (1985) mentions insects and scorpions as prey items. Stomach analysis of the specimen collected during this study (MSB 42826) yielded Mollusca, Orthoptera, and Coleoptera.

Reproduction.—Relatively little is known concerning reproduction in this species (Smith 1946, Fitch 1970). Published accounts of egg number include 9-12 (Stebbins 1985); 9, 12 (Cunningham 1958); 15 (Stebbins 1958); and 9-12 (Behler and King 1979). Eggs are laid in June and July (Behler and King 1979). Webb (1962a) reports a hatchling 34 mm SV collected 23 July.

Remarks.—The Elgaria-Gerrhonotus controversy is discussed by Tihen (1949), Stebbins (1958), and Smith and Brodie (1982). Tihen (1949) includes kingii in the genus Elgaria although Stebbins (1958) abolishes the name on the basis of ecology and morphology. Smith and Brodie (1982) again use the name Elgaria and separate it from Gerrhonotus on the basis of certain head scales. (Gerrhonotus have a median postrostral, and the nasals are separated from the rostral. Elgaria lack the median postrostral and the nasal contacts the rostral.) Collins et al. (1982) agree with Smith and Brodie (1982) and include kingii under the genus Elgaria although Stebbins (1985) still considers Elgaria to be invalid. Webb (1970a) discusses relationships of the three recognized subspecies of E. kingii. Fitch (1938) considers relationships with other alligator lizards.

Smith (1946) illustrates an adult from Pinos Altos, New Mexico. Additional photographs appear in Stebbins (1958) and Behler and King (1979).

The subspecies Elgaria kingii nobilis occurs in southwestern New Mexico (Stebbins 1985).

GEKKONIDAE

Coleonyx variegatus - Western banded gecko

Distribution.—Coleonyx variegatus ranges from southwestern Utah and southern Nevada, southwestward to coastal California and both coasts of Baja California, eastward to central Arizona and southwestern New Mexico, and southward to extreme southern Sinaloa and western Durango, Mexico (Dixon 1970b). Conant (1965) reports on this species from Mexico. Lowe (1955b) and Dixon and Medica (1965) report on the eastern range of this species in New Mexico. Map 16.

Recognition.—Western banded geckos may be distinguished from other lizards occurring in southwestern New Mexico by the following combination of characters: (1) soft skin with fine grandular scales, (2) large eyes with vertical pupils, (3) tail constricted at base and easily lost, (4) plain white venter, (5) chocolate brown bands on body and tail which tend to break up into a variegated pattern with age, and (6) maximum size ca. 76 mm. Males have a prominent spur on each side of the vent which is weak or absent in females. Young individuals usually have well-defined, unbroken brown bands. Coleonyx variegatus may squeak when captured. Klauber (1945) and Dixon (1970a) provide a key and range map for all known species and subspecies.

Size.—Smith (1946) gives a maximum size for males as 68 mm SV and females as 75 mm SV. Stebbins (1966) gives a size range of adults as 64-76 mm. Klauber (1945) measured 83 specimens of C. v. bogerti from Tucson. The largest specimen was a female measuring 69 mm SV. The largest male was 64 mm SV. Vitt (1977) gives the maximum SV as 72 mm.

During this study, two males were collected, the largest was 55 mm SV, the smallest 49 mm SV.

Habitat Use.—Within its range Coleonyx variegatus is found in most every desert habitat and plant association (Klauber 1945, Pianka 1966), although it is generally a rock dweller (Stebbins 1966). Lowe (1964) states the species is common on sandy and gravelly soils with abundant rodent burrows and is only occasionally found in desert-grasslands. Smith (1946) reports several individuals found in close proximity and assumed they live in colonies near the tops of low rolling desert hills. This idea was reinforced by Evans (1967) who noticed there was a pronounced tendency for captive animals to aggregate in certain shelters. Cooper et al. (1985) statiscally confirmed the idea of aggregation.

Individuals have been found under a wide variety of debris including stones, cow dung, and the dried carcass of a steer (Klauber 1945). Night driving along blacktop roads in suitable habitat often yields specimens (Klauber 1939). Both specimens collected during this study were taken in pitfall traps. One was found on a talus slope in a canyon bottom with an intermittent stream nearby. Vegetation included Acacia, Celtis, Platanus, and Opuntia. The other specimen was taken on a dry rocky slope from Acacia-Opuntia-Juniperus association.

Klauber (1945) reported on seasonal activity of C. variegatus in the Colorado Desert.

Food Habits.—Coleonyx variegatus is an opportunistic feeder as shown by seasonal changes in diet composition (Parker and Pianka 1974). Food items reported include spiders, scorpions, solpugids, pseudoscorpions, wasps, ants, Orthoptera, Coleoptera, Isoptera, Hemiptera, shed skin, and vegetation (Klauber 1945, Stebbins 1966, Parker and Pianka 1974, Behler and King 1979). The specimens collected during this study were not examined for stomach contents.

Reproduction.—Fitch (1970) summarized Parker's 1972 reproductive data gathered near Phoenix, Arizona. Parker found females containing eggs from May through

September and found hatchlings from July through November. Frequency of gravid females was highest in May and June. Incubation lasts about 45 days. Normally there are three clutches per year on the average in fully adult females. Vitt (1977) gives the average clutch size as only two eggs.

Two males (MSB 42883-42884) collected during this study had testes that measured 5.4 x 1.5/5.8 x1.1 mm and 5.2 x 1.5/5.1 x 1.6 mm, respectively.

Remarks.—Tail waving behavior has been reported in Coleonyx by several authors, e.g., Klauber (1945), Stebbins (1966), and Behler and King (1979). Parker and Pianka (1974) speculate this may be a predator-escape mechanism as Coleonyx resembles the scorpion Hadrurus by arching its tail over its back. This mimicry may cause hesitation of mammalian predators thus allowing a percentage of Coleonyx to escape.

Vance (1973) presents data on temperature preferences of C. variegatus under experimental conditions.

The subspecies C. v. bogerti occurs in southwestern New Mexico (Dixon 1970b). All scale characters of specimens collected during this study agree with those for the subspecies except that one specimen has only six preanal pores, two less than the minimum recorded by Klauber (1945).

Photographs of Coleonyx variegatus appear in Van Denburgh (1922a), Smith (1946), and Behler and King (1979).

HELODERMATIDAE

Heloderma suspectum - Gila monster

Distribution.—Heloderma suspectum ranges from extreme southwestern Utah to northern Sinaloa, southwestern New Mexico to the Colorado River. In California it occurs in the Piute, Clark, and Kingston Mountains of San Bernardino Co. There are old records for the Providence mountains and Imperial Dam (Stebbins 1985). It may occur as far east in New Mexico as the Kilbourne Hole-Aden Crater area of Dona Ana Co. (Dixon

and Medica 1965). Distribution in Arizona is discussed by Lowe (1964) and Funk (1966) and in New Mexico by Koster (1951), Campbell (1976), Belfit (1978), and New Mexico Department of Game and Fish (1985a). Specimens from the northern Mojave Desert are reported by Bradley and Deacon (1966). Hardy and McDiarmid (1969) report on sympatry of H. suspectum and H. horridum in Sinaloa, Mexico. Range maps are in Bogert and Martin Del Campo (1956) and Stebbins (1985). Map 17.

Recognition.—The Gila monster may be separated from all other lizards occurring in southwestern New Mexico by the following combination of characters: (1) large stout body with short tail, (2) small bead-like scales on back, (3) belly scales squarish, (4) fourth toe nearly the same length as third toe, and (5) maximum size ca. 35 cm SV. Tinkham (1971b) reports on the following sexually dimorphic characteristics: (1) males larger than female, (2) preanal scales 4 in male, 2 in female, and (3) claws of forefeet slightly longer in females than in males. Bogert and Martin Del Campo (1956) illustrate the ontogenetic changes in pattern from the simple barred condition of juvenile to the mottled, reticulated pattern of the adult.

Size.—Of 93 specimens of H. suspectum suspectum measured by Bogert and Martin Del Campo (1956), the largest male was 349 mm SV and 520 mm TL, largest female 325 mm SV and 485 mm TL, the smallest specimen was 120 mm SV and 170 mm TL. They reported on a specimen at the American Museum of Natural History from Post Office Canyon in the Peloncillo Mountains of Hidalgo Co., New Mexico, that measured 546 mm TL.

The single specimen collected during this study (MSB 43448) measured 123 mm SV and 194 mm TL. Two other specimens were observed near Red Rock although these were not collected. The first specimen (372 mm SV, 481 mm TL) was found active on the surface during a light rain. The second (175 mm SV, 230 TL) was collected in a pit-fall trap. Both specimens were marked and released.

Habitat Use.—Semi-arid rocky areas in or near foothills of mountains is the most common habitat associated with Heloderma (Bogert and Martin Del Campo 1956). Koster (1951) mentions cultivated river bottoms and desert grasslands as habitat. Alton Ford (pers. comm.) says Gila monsters in the Red Rock, New Mexico, area are usually associated with canyons or arroyos with intermittent streams. Jones (1983) studied a population of Heloderma in an area characterized by gradual sloping hills with intermittent washes of mesquite and burrobush. Soils in his study area were shallow and rocky and elevation ranged from 975-1143 m). Funk (1966) found Heloderma in the Larrea-Franseria-Ephedra association. Tinkham (1971b) states they prefer the Carnegeia-Cercidium-Larrea association and are usually found in the bajadas or on the slopes of desert mountains. He provides photographs of typical habitat in Arizona.

Specimens collected or observed during this study were found in either Pinus-Juniperus-Acacia-Opuntia associations or Platanus-Celtis-Acacia-Opuntia associations. Habitat included rocky foothill slopes and along an intermittent rocky stream.

Food Habits.—Food habits of Heloderma suspectum are fairly well-known in spite of the fact that there have been no attempts at an exhaustive study. Jones (1983) studied the foraging ecology of Heloderma and found them feeding on Gambel's quail and mourning dove eggs and small mammals. He records seasonal shifts in movement associated with prey availability. Reported native foods include Sylvilagus (Hensley 1949), ground nesting birds' eggs and nestlings, young chipmunks, and rabbits (Stahnke 1950), Citellus (Stahnke 1952), lizards, mice, and carrion (Kauffeld 1954), and Lepus (Tinkham 1971a). Bogert and Martin Del Campo (1956) report on a captive H. suspectum feeding on Crotaphytus and speculate that diurnal lizards, immobilized by low nighttime temperatures that would be readily tolerated by Heloderma, could easily be preyed upon. Campbell (1976) found a Crotalus molossus which had eaten a Gila monster.

Reproduction.—Gates (1956b) provides a pen-and-ink drawing of a copulating pair of captive H. suspectum. He reports copulation occurred on 4 and 9 June and 30

September. Bogert and Martin Del Campo (1956) mention an observation of a copulating pair on 14 July. Egg deposition dates are late July to August (Bogert and Martin Del Campo 1956). Tinkham (1971a) reports clutch sizes range from 3-11; however, Bogert and Martin Del Campo (1956) seem to think 4-7 is a more accurate estimate of clutch size. Funk (1966) mentions a female which laid six eggs. Eggs measure ca. 66 x 33 mm when laid (Bogert and Martin Del Campo 1956). Fitch (1970) summarizes reproduction.

Remarks.—Shaw (1950) first reported H. suspectum from New Mexico and provided numerous letters stating the species was common from the Red Rock area southward.

Tinkham (1971b) and Russell and Bogert (1981) illustrated the dentition and histology of the venom sacs.

Shannon (1953a) reported on a drunk Army officer who was bitten by a Gila monster. Other case histories of bites by H. suspectum are in Duellman (1950) and Bogert and Martin Del Campo (1956).

Photographs of H. suspectum are in Bogert and Martin Del Campo (1956) and Behler and King (1979). The subspecies H. s. suspectum occurs in southwestern New Mexico (Stebbins 1985). This species is listed as a state endangered species by the New Mexico Department of Game and Fish.

SCINCIDAE

Eumeces multivirgatus - Many-lined skink

The range of this species includes the Gila-San Francisco River drainages (Mecham 1980, Stebbins 1985), although no specimens were collected during this study. Mecham (1957) discusses the taxonomy of E. multivirgatus and places E. taylori and E. gaigei in synonymy with E. multivirgatus. Taylor (1936c) presents a key and line drawings of head scalation. Legler and Webb (1960) report on this species from northwestern Mexico. Dixon and Medica (1965) report on this species from New Mexico. Van Devender and Van Devender (1975) summarize information on clutch size, eggs, and hatchlings. Fitch

(1970) presents additional data on reproduction. Everett (1971) describes courtship and mating behavior. Photographs of this species appear in Taylor (1936c), Mecham (1957), and Hammerson (1982). The subspecies E. m. gaigaea occurs in southwestern New Mexico (Stebbins 1985). Map 18.

Eumeces obsoletus – Great Plains skink

Distribution.—Eumeces obsoletus is widely distributed in the central and southern plains region of the U.S. and Mexico. Northern limits of the range are in southwestern Iowa, central Nebraska, and north-central Colorado, possibly extending into extreme southeastern Wyoming. The southern boundary of the range extends through northern parts of the Mexican states of Tamaulipas and Nuevo Leon, into Coahuila, Chihuahua, and Durango, and westward to northern Sonora. It is found westward from western Missouri, eastern Oklahoma, and east Texas to central Arizona, northwestern New Mexico, and Colorado east of the Rocky Mountains (Fitch 1955, Hall 1976). Distribution in Arizona is discussed by Lowe (1964); New Mexico (Mosauer 1932, Little and Keller 1937, Lewis 1950, Gehlbach 1965, Tanner 1975); Texas (Raun and Gehlbach 1972); Colorado (Hammerson 1982); Oklahoma (Webb 1970a); and Kansas (Collins 1982). Conant (1965) reports on this species from Mexico. Distribution maps are presented in Stebbins (1985), Conant (1975), and Taylor (1935). Map 19.

Recognition.—The Great Plains skink may be separated from other lizards which occur in southwestern New Mexico by the following combination of characters: (1) smooth shiny scales; (2) lateral scale rows oblique to the dorsal rows; (3) the grayish brown ground color is broken by black on the free edges of the scales, sometimes producing indistinct dorsolateral lines; and (4) maximum size ca. 142 mm SV. The juveniles are black with gold-colored spots on the dorsal surface of the head, large white spots on each labial scale, and an iridescent blue tail.

Size.—Fleet and Hall (1969) report a record size male from northeastern Kansas with a 143 mm SV length. Collins (1982) reports the largest specimen from Kansas is a female from northwestern Kansas with a SV length of 133 mm. Reported size ranges are 103-142 mm SV (Hall 1976) and 87-141 mm SV (Stebbins 1985).

Three specimens were collected during this study. Two were immature with SV lengths of 39 mm and 47 mm. The third was a female which measured 96 mm SV and 190 mm TL.

Habitat Use.—Eumeces obsoletus frequents both grasslands and woodlands from the plains into the mountains. In the west, it enters semiarid environments of canyons, mesas, and mountains, usually where there is grass and low shrubby growth. Rocky outcrops near thickets along permanent or intermittent streams are especially favored (Stebbins 1985). Additional habitat data are found in Lowe (1964), Collins (1982), and Hammerson (1982). Conant (1965) states that all Mexican localities are along a river or closely associated with mesic habitats.

The three specimens taken during this study were captured in pitfall traps either in Acacia thickets or Opuntia sandy areas. In both associations, permanent water occurred within 0.4 km.

Food Habits.—Fitch (1955) and Hall (1972) describe the food habits of E. obsoletus. Little and Keller (1937) list spiders, beetles, and small insects as prey items. Stebbins (1985) includes insects, spiders, mollusks, and lizards as food items.

Stomach contents of the specimens collected during this study were not examined.

Reproduction.—Fitch (1970) summarizes reproductive data from a northeastern Kansas population. He found breeding occurs in May with eggs laid in late June, July, or August. The smallest fecund female was 105 mm SV. Males are sexually mature in their second or third year. In 12 egg-bearing females, the number of eggs varied from 7-17 and averaged 11.0. Hall (1976) reports hatchlings average 36 mm SV. Parker (1973) includes a hatchling 38 mm SV. Eggs measure ca. 11 x 16 mm (Stebbins 1954).

Remarks.—The young of E. obsoletus were originally described as E. guttulatus. It was not until Burt (1929) that the name guttulatus was formally synonymized with obsoletus.

Fitch (1955) provides much additional information on habitat, behavior, reproduction, growth, food habits, and predation.

Etheridge (1958) and Brattstrom (1964) report on Pleistocene cave faunas which include E. obsoletus.

Photographs of the young and adult specimens appear in Smith (1946) and Hammerson (1982). Taylor (1935) illustrates head scalation.

IGUANIDAE

Cophosaurus texanus - Greater earless lizard

Distribution.—Cophosaurus texanus ranges from central Arizona, New Mexico, and north Texas south to San Luis Potosi and southern Tamaulipas; central Texas west to the eastern edge of the Mojave Desert in central Arizona (Stebbins 1966). Raun and Gehlbach (1972) offer a range map for Texas. Lowe (1964) discusses distribution in Arizona. Map 20.

Recognition.—Cophosaurus texanus may be distinguished from other lizards occurring in southwest New Mexico by the following combination of characteristics: (1) external ear openings absent, (2) black crossbars under the tail, (3) tail slightly flattened, (4) smooth granular scales on back, and (5) maximum size 18.4 mm SV. Males have each side of the belly, posterior to the midline, marked with two black bars set in a blue patch. These black bars may continue well up onto the dorsal surface. Females lack this coloration.

Size.—Smith (1946) reports 70 mm SV for males and 63 mm for females. The largest specimen Lewis (1950) found in the Guadalupe Mountains was 74 mm SV. Cagle (1950) measured 35 specimens and found the largest male to be 79 mm SV; the largest

female 75 mm SV. Conant (1975) gives a maximum size of 83 mm SV for males and 70 mm SV for females. During this study 28 specimens were measured. Females averaged only slightly larger (N = 8, $\bar{x}$ = 51.6 mm SV, range 34-62 mm SV) than males (N = 20, $\bar{x}$ = 55.1 mm SV, range 31-75 mm SV).

Habitat Use.—Reported habitats are roadsides and arid canyon bottoms (Mosauer 1932); rocky areas and catclaw-creosote bush (Jameson and Flury 1949); dry streambeds and rocky areas at base of mesa slopes (Ramsey 1949, Milstead et al. 1950); rocky foothills and alluvial fans (Lewis 1950); open rocky desert flats with scattered greasewood and creosote bush (Peters 1951); and flat areas with sparse ground cover (Degenhardt 1966).

All 28 specimens taken during this study occurred in rocky areas with scattered bushes such as Acacia, Larrea, or Opuntia or in bare rocky areas along water courses. Sixteen specimens were taken in pitfall traps. The first collection date was 14 March; the last was 27 June. Monthly totals are March (8), April (5), May (10), and June (6).

Food Habits.—Stebbins (1954) mentions grasshoppers, beetles, termites, lepidopterous larvae and other insects as food items. Jameson and Flury (1949) report C. texanus eating winged termites. Other authors report Cophosaurus to be "insectivorous" (Stebbins 1966, Behler and King 1979). Twenty-six specimens were examined for stomach contents during this study, 81% of these contained food items. Beetles were the most frequently encountered prey item found in 47.6% of the stomach samples (Table 3).

Reproduction.—Cagle (1950) observed courtship behavior during June and July. Johnson (1960) examined 208 females and found the mean number of eggs to be five. Other clutch sizes reported are 8-12 (Smith 1946), 6-8 (Cagle 1950), 5.0-5.3 (Tinkle et al. 1970), and 4.0 (Parker 1973). Smith (1946) reports that C. texanus deposit their eggs 5-6 inches below ground although Cagle (1950) and Johnson (1960) report the difficulty of finding nests, and Johnson (1960) speculated that the females have elminated the problem of juvenile dispersal by not laying the entire clutch in one spot. Johnson (1960) reported

Table 3. Stomach contents and percent frequency occurrence of food items found in Cophosaurus texanus examined during this study. N = 26, 81% contained food items.

Food Item	Percent Frequency Occurrence
Coleoptera	47.6%
Hemiptera	38%
Hymenoptera	19%
Formicidae	14.2
Araneida	9%
lizard skin	9%
Lepidoptera (adult)	4.7%
Lepidoptera (larvae)	4.7%
Diptera	4.7%

eggs 13-14 mm in length when laid. Reported first appearances of hatchlings are 1 August (Ramsey 1949), first week of July (Cagle 1950), 25 July (Lewis 1950), 1 July (Johnson 1960), and 26 July (Parker 1973).

Tinkle et al. (1970) state the age at first breeding is 12 months, however, Johnson (1960) says C. texanus can lay during their first season. He collected three females on 9 August with five-six large oocytes. These females were 48 mm SV thus he speculates they were that summer's hatch. Hatchling size has been reported as 23.5 mm SV (Ramsey 1949) and 20.3-20.5 mm SV (Cagle 1950). Tinkle et al. (1970), Johnson (1960), and Cagle (1950) all report C. texanus to be multiple brooded with as many as five broods per season.

Four females (MSB 42999, 43002, 43004, 43013) collected during this study contained enlarged oocytes although none contained shelled eggs. Volume of the testes from 12 males were measured ($\bar{x}$ = 0.13 cc, range = 0.02-0.26 cc), MSB 42998, collected 2 May, had the largest total volume of 0.26 cc.

Remarks.—Troschel (1852) first described Cophosaurus texanus as a new genus and species. Concurrently Baird and Girard (1852) placed the species in the genus Holbrookia which remained widely accepted until Clarke (1965) reinstated the genus Cophosaurus, based on behavioral information. Collins et al. (1982) currently accept the name Cophosaurus.

Various authors have discussed the relationship of Holbrookia (= Cophosaurus) with other iguanid genera. Most notable of these are Peters (1951), Earle (1961), and Zug (1971). It is generally agreed that the sand lizards Holbrookia, Callisaurus, and Uma evolved from a single prototype. Also, it appears the "earless" condition evolved twice in the sand lizard group and Holbrookia (= Cophosaurus) texana actually represents an earless Callisaurus (Earle 1961).

Dawson (1967) and Milstead (1959) both state that C. texanus has a higher activity temperature range than most other lizards except Dipsosaurus dorsalis and Uma ornata.

They define "activity temperature" as mean body temperature of lizards which are abroad and active.

Creusere and Whitford (1982) discuss activity patterns of this species in a Chihuahuan Desert creosotebush community in south-central New Mexico.

Photographs of C. texanus appear in Behler and King (1979) and Smith (1946). The subspecies C. texanus scitulus occurs in southwestern New Mexico (Conant 1975).

Crotaphytus collaris - Collared lizard

Distribution.—Crotaphytus collaris ranges from eastern Utah, western and southwestern Colorado, east to extreme southwest Illinois, south through central Texas, New Mexico, and Arizona to central Sonora and Zacatecas (Stebbins 1985). Also occurs on Angel de la Guarda (Soule and Sloan 1966) and Tiburon (Stebbins 1985) islands in the Gulf of California. Range maps occur in Stebbins (1985), Behler and King (1979), and Conant (1975). Distribution in Arizona is discussed by Lowe (1964), Arkansas (Dowling 1957), Kansas (Collins 1982), Colorado (Hammerson 1982), Texas (Raun and Gehlbach 1972), Illinois (Smith 1961), and Oklahoma (Webb 1970b). Map 21.

Recognition.—Collared lizards may be distinguished from other lizards in southwestern New Mexico by the following combination of characters: (1) large broad head, especially evident in adult males; (2) conspicuous black-and-white collar markings; (3) tail long, often twice as long as body length; (4) smooth granular scales on back; and (5) maximum SV length 11.4 cm, TL 35.6 cm (Conant 1975). Postnuptial females may have orange-red spots or bars on body and sides of neck.

Size.—Fitch (1956) reported 106 mm SV for males and 103 mm SV as the maximum length of adults. Collins (1982) reports on a specimen from southeastern Kansas 110 mm SV. Stebbins (1985) gives a range of 7.5-11.2 cm SV and Conant (1975) gives a maximum size of 11.4 cm SV.

During this study, 3 males, 5 females, and 1 immature specimen were collected. The males averaged slightly longer (N = 3, $\bar{x}$ = 95.6 mm SV, range 68.5-113 mm) than females (N = 5, $\bar{x}$ = 89.7 mm SV, range 85.5-95 mm). The immature specimen was 55.4 mm SV.

Habitat Use.—Reported habitat for C. collaris includes rocky canyons, slopes, gullies, exposures of bedrock, and other rocky areas (Hammerson 1982); rocky areas both on plains and in open woodlands (Collins 1982); and canyons, rocky gullies, limeston ledges, mountain slopes, and boulder strewn alluvial fans, usually where vegetation is sparse (Stebbins 1985).

Specimens collected during this study were found along boulder-strewn gravel roads and along a rocky beach of the San Francisco River.

Food Habits.—Although the food consists predominantly of arthropods (Fitch 1956), various authors have reported predation on smaller lizards: Cnemidophorus tigris (Cowles 1920), Uta stansburiana (Johnson et al. 1948), Sceloporus (Klauber 1939), Phrynosoma modestum (Little and Keller 1937), and Lygosoma (= Leiolopisma) (Webb 1970b). Stebbins (1985) reports they occasionally eat berries, leaves, and flowers.

Grasshoppers and beetles were the most commonly encountered prey item in nine stomachs examined during this study.

Reproduction.—Reproduction in C. collaris is best known from Fitch (1956). In his study area in northeastern Kansas, breeding occurs in May and June and eggs are deposited in June or early July. Young attain sexual maturity by the following spring. For 13 first-year females (77-87 mm SV) the clutch averaged 3.7 eggs, for 11 second-year females (90-97 mm SV) the clutch averaged 6.1, and for 9 adults over 2 years of age (98-108 mm SV) the clutch averaged 8.3. Some females produced two clutches per year. Incubation period varied from 51-94 days. Hatchlings were ca. 40 mm SV.

Five females examined during this study contained eggs. Clutch size ranged from 5-29 (N = 5, $\bar{x}$ = 16.4, range 5-29). Two clutches were measured: MSB 41730, N = 8, $\bar{x}$ =

19.5 mm x 11.6 mm; and MSB 41731, N = 5, $\bar{x}$ = 21.1 mm x 12.2 mm. This size range closely agrees with those measured by Fitch (1956). Testes volume was measured for three males collected 3 May. Volume ranged from 1.6 cc (MSB 41726, 105.2 mm SV) to 0.06 cc (MSB 41723, 68.5 mm SV).

Remarks.—Legler and Fitch (1957) reported on the hibernaculum and nests of C. collaris. Cole (1966) presents hypotheses concerning the function of the femoral pores.

Although Burt (1928) synonymized the subspecies baileyi with C. c. collaris, most herpetologists have continued to regard baileyi as a valid subspecies (Fitch and Tanner 1951, Collins et al. 1982). Stebbins (1985) considers specimens from southwestern New Mexico to be intergrades between C. collaris baileyi and C. c. fuscus. Smith (1946) illustrates an adult from Glenwood, NM. Additional photographs appear in Collins (1982) and Hammerson (1982).

Gambelia wislizenii.– Longnose leopard lizard

The range of this species includes the Gila-San Francisco river drainages (Smith 1946, Stebbins 1985) although no specimens were collected during this study. Montanucci (1965, 1967) and McCoy (1967) present information on reproduction, food habits, seasonal activity, and foraging habits. Turner et al. (1969) provide additional data on fecundity, sex ratio, and survivorship of hatchlings. Smith (1946) describes the female in breeding coloration. Robison and Tanner (1962) and Tanner and Banta (1963) provide papers on the systematics of the genus Crotaphytus. Montanucci (1969) presents remarks on the Crotaphytus-Gambelia controversy. Photographs appear in and Hammerson (1982). Smith (1946) illustrates a specimen from Lordsburg, New Mexico. The subspecies G. w. wislizenii occurs in southwestern New Mexico (Stebbins 1985). Map 22.

Holbrookia maculata - Lesser earless lizard

Distribution.—Holbrookia maculata ranges from extreme southern South Dakota through Kansas and Nebraska in the northeast to northern and western Texas, westward into eastern and southern Colorado, southeastern Utah, and northern and central Arizona. Also ranges into Mexico along the central Mexican plateau to Guanajuato (Clarke 1965, Stebbins 1985). Distribution in Arizona is reported by Lowe (1964), Texas (Raun and Gehlbach 1972), Colorado (Hammerson 1982), Oklahoma (Webb 1970b), and Kansas (Smith 1956, Collins 1982). In Mexico it is reported from Sinaloa by Hardy and McDiarmid (1969) and Sonora (Bogert and Oliver 1945). Range maps are provided by Clarke (1965) and Stebbins (1985). Map 23.

Recognition.—The lesser earless lizard may be separated from other lizards in southwestern New Mexico by the following combination of characters: (1) external ear openings absent, (2) underside of tail without markings, (3) belly markings at or anterior to midpoint of body, and (4) maximum size ca. 62 mm SV. The males usually have belly markings which are darker than in the female and are set off by blue borders. Hatchlings resemble the adults.

Size.—Hardy and McDiarmid (1969) give the following measurements for a series of 45 H. maculata from Sinaloa: males, N = 27, $\bar{x}$ = 48.2 mm SV, range = 27–66 mm; females, N = 18, $\bar{x}$ - 50.4 mm SV, range = 29–61 mm SV. Clarke (1965) states the average SV is 55 mm–60 mm. Other reported lengths include Smith (1946) 61 mm SV, Smith (1956) 52 mm SV, and Stebbins (1985) 5.0–6.25 cm.

Five specimens (MSB 42895–42899) collected during this study averaged 49.0 mm SV, range 40–55 mm.

Habitat Use.—Clarke (1965) summarizes habitat data by saying ". . . soil types preferred vary from loose dune sand through cultivated fields, eroded clay soils, to gravelly, flat desert. Soils must be friable enought to allow these lizards to bury themselves and the vegetation must be scant." Other authors, e.g., Smith (1946, 1956),

Hardy and McDiarmid (1969), and Gennero (1972), agree. Zweifel and Norris (1955) found H. maculata in mesquite-grass association.

All specimens collected during this study came from desert grassland association. Soils were sandy with only a few scattered rocks.

Food Habits.—Smith (1946) reports H. maculata feeds on insects, chiefly ants and grasshoppers. In Kansas, Smith (1956) reported 75% of the diet was made up of grasshoppers and true bugs. Dixon and Medica (1966) examined 82 stomachs of H. maculata and reported the following prey items: Coleoptera, Hymenopter, Hemiptera, Lepidoptera, Isoptera, Orthoptera, Neuroptera, Diptera, Arachnida, other lizards, and sand. Collins (1982) discusses the beneficial aspects of the insectivorous diet of H. maculata.

Reproduction.—Fitch (1970) offers the most complete summary of reproduction in H. maculata. He studied a series of 219 specimens from southern Arizona and Mexico and presented the following data: the breeding season lasts from April to September, the average clutch size was 7.0 (range 4-10) eggs for 21 egg-bearing females. In the southern part of their range, H. maculata females averaged larger than the more northern females. Also, the number of eggs per clutch was closely associated with the size of the female.

Smith (1946) observed copulation on 2 July. Smith (1956) states that mating in Kansas occurs in late July and early August with 6-8 eggs laid in August. Hardy and McDiarmid (1969) collected females which contained eggs between 3 July and 19 July, hatchlings were collected on 15 August. Bogert and Oliver (1945) report hatchlings 17-25 mm SV.

Three males (MSB 42896, 42898-42899) collected during this study in mid-June had testicular volumes of 0.45 cc, 0.17 cc, and 0.03 cc, respectively. One female (MSB 42895) contained oviducal eggs.

Remarks.—Sena (1978) studied temperature relations of H. maculata in eastern New Mexico. He found basking occurred in lizards having cloacal temperatures of 29°C and below, whereas foraging occurred at temperatures of 30°C to 39°C. Mean body temperature of 17 cloacal temperatures sampled from March to August was 34.3°C (range 20°C-43°C).

Gennaro (1972) marked 222 lizards in a home-range study and found males with a home range of ca. 0.10 hectare and females 0.06 hectares.

Stebbins (1954) states, "Differences currently used in separating the subspecies are vague; zones of intergradation are poorly known. The form ruthveni . . . is the only one readily identified. The entire group is in need of careful study. At the present time, little is to be gained by recognizing the inadequately defined subspecies." Subsequently Stebbins (1966, 1985) did not recognize any subspecies and considered H. maculata to be monotypic. Various authors disagree with Stebbins, e.g., Conant (1975), Behler and King (1979), Smith and Brodie (1982), and Collins et al. (1982). Schmidt (1922) originally included H. lacerata, of central and southern Texas, with H. maculata.

Photographs of H. maculata appear in Smith (1946, 1956), Behler and King (1979), and Hammerson (1982). The subspecies H. m. approximans occurs in southwestern New Mexico (Conant 1975).

Phrynosoma cornutum - Texas horned lizard

The range of this species includes the Gila-San Francisco river drainage (Smith 1946, Stebbins 1985) although no specimens were collected during this study. Two adults were observed and photographed on the Lordsburg Mesa ca. 16 km S Red Rock, however these specimens were not collected. Reeve (1952) presented the most comprehensive treatment of the taxonomy and distribution of the genus Phrynosoma. Ethridge (1964) and Presch (1969) provide data on evolution, osteology, and relationship to other members of the genus. Smith (1946) provides a key. Reproductive data are in Lewis

(1950), Fitch (1970), Ballinger (1974), Vitt (1977), and Collins (1982). Food habits and foraging activity are discussed in Smith (1946), Hammerson (1982), and Collins (1982). Little and Keller (1937) mention parasites found in P. cornutum. Lynn (1965) discusses display behavior. Fossil P. cornutum are discussed in Ethridge (1958). Photographs are in Smith (1946), Collins (1982), and Hammerson (1982). No subspecies are recognized. Map 24.

Phrynosoma douglassii - Short-horned lizard

Distribution.—The range of Phrynosoma douglassii includes extreme southern Canada to southern Durango; western Arizona and the Cascade crest in Oregon and Washington to the western Dakotas, eastern Colorado, and the Texas panhandle. There is an isolated population at Wadsworth, Washoe Co., Nevada (Stebbins 1985). Distribution in Arizona is reported by Lowe (1964), Colorado (Hammerson 1982), and Texas (Raun and Gehlbach 1972). Specimens from Mexico are discussed in Smith and Smith (1976a). Range maps are provided by Reeve (1952) and Stebbins (1985). Map 25.

Recognition.—The short-horned lizard may be distinguished from other lizards in southwestern New Mexico by the following combination of characters: (1) body flattened dorso-venterally, (2) short spines at back of head, (3) single row of lateral abdominal scales, (4) throat scales all small, and (5) maximum length ca. 108 mm SV. The males have enlarged postanal scales, a broader tail base, and slightly larger femoral pores than the females. Hatchlings resemble the adults. Reeve (1952) and Smith (1946) offer a key to the genus Phrynosoma.

Size.—Kerfoot (1962) reports on a specimen from Colorado with a SV length of 104 mm. Stebbins (1985) gives a size range of 44-108 mm SV for adults. Smith (1946) records a maximum size of 96 mm SV.

Four specimens collected during this study averaged 50.9 mm SV (range 32.8-83.3 mm).

Habitat Use.—Smith (1946) states that P. douglassii is usually found in the pinon-juniper spruce-pine associations of mountains and plateaus. In Colorado, Hammerson (1982) found that these lizards range from grasslands and semidesert shrublands in the lowlands to open conifer forest in the mountains. Stebbins (1954) says they frequent semiarid flats such as the shadscale, greaswood, sagebrush country of Utah and the short-grass prairies east of the Rockies.

Specimens collected during this study were found in ponderosa pine and pinon-juniper associations.

Food Habits.—Phrynosoma douglassii is primarily myrmecophagus (Reeve 1952, Fitch 1970, Behler and King 1979). Other prey items include grasshoppers, homoptera, ground beetles, chrysomelid beetles, spiders, moths, and Hymenoptera (Knowlton and Janes 1934, Knowlton and Thomas 1936), snails and young of its own species (Smith 1946), and a small garter snake (Stebbins 1954).

Stomach contents of four specimens were examined during this study. All were empty except one (MSB 42878) which contained ants, moths, bugs, beetles, and an earwig.

Reproduction.—In conformance with a trend in reptiles of high altitudes and northern climates, P. douglassii has assumed viviparous habits (Fitch 1970). In Arizona breeding takes place in late winter to early spring. The young are born in late July to early August after a gestation period of about three months. The females average 16.7 young. The minimum snout-vent length of gravid females is 65 mm; young average 25 mm SV at birth (Goldberg 1971). Stebbins (1954) wrote that 13 females from Arizona, New Mexico, and Oregon contained 8-31, average 16-17, eggs. Dammann (1949) records the birth of 18 young in early July. Gehlbach (1965) reports on the birth of 10 young ($\bar{x}$ = 24.8 mm SV, range 24-26 mm SV) on 14 August. Van Denburgh (1922a) discusses a female 143 mm TL which produced 30 young on 27 July ($\bar{x}$ = 36 mm TL). Other birth dates (20 July, 7 August, 27 August) and mean hatchling size (12 mm SV, 17.7 mm SV, 25 mm SV)

are presented by Stebbins (1954). Hammerson (1982) found adults reach sexual maturity at 22 months in Colorado. Fitch (1970) summarizes reproduction.

Remarks.—Gehlbach (1965) collected P. douglassii as high as 11,300 ft on Mount Taylor in northwestern New Mexico. Also, Lowe (1964) states they may reach 10,400 ft in the San Francisco Mountains of Arizona. In light of the altitudes reached by this species, Gehlbach (1965) considers it to be probably the most eurytopic reptile in New Mexico.

Many authors (Van Denburgh 1922a, Smith 1946, Gehlbach 1965, Hammerson 1982) have questioned the validity of the subspecies of the douglassii "complex." At present, Collins et al. (1982) recognize five subspecies although Stebbins (1985) and Hammerson (1981, 1982) failed to recognize any subspecies for P. douglassii and simply included all subspecies under the name P. douglassii.

Photographs of P. douglassii appear in Smith (1946), Reeve, (1952), and Hammerson (1982).

Phrynosoma modestum - Roundtail horned lizard

Distribution.—Phrynosoma modestum ranges from northern New Mexico to San Luis Potosi, Mexico; northern Texas to southeastern Arizona. An isolated population occurs in the panhandle of western Oklahoma in Cimarron Co. (Stebbins 1985). Distribution in Arizona is reported by Lowe (1964), Texas (Raun and Gehlbach 1972), Oklahoma (Webb 1970b), and New Mexico (Little and Keller 1937, Lewis 1950). Specimens from Mexico are discussed in Smith and Smith (1976). Range maps are provided by Smith (1946), Reeve (1952), and Stebbins (1985). Map 26.

Recognition.—The roundtail horned lizard may be distinguished from other lizards in southwestern New Mexico by the following combination of characters: (1) body flattened dorso-venterally, (2) short spines at back of head, (3) rows of lateral abdominal

scales absent, (4) slender rounded tail, and (5) maximum length ca. 69 mm SV. Smith (1946) and Reeve (1952) present a key to the genus Phrynosoma.

Size.—The largest of 12 specimens from Texas measured by Axtell (1959) was a male-58.3 mm SV and 100.3 mm TL. Pianka and Parker (1975) give a range of 43-61 mm SV for males and 50-61 mm SV for females. Smith (1946) gives a maximum SV of ca. 68 mm. Stebbins (1985) reports a range of 37 mm to 69 mm for adults.

Two specimens (MSB 42876-42877) collected during this study measured 48 and 51 mm SV, respectively.

Habitat Use.—Stebbins (1954) reports P. modestum from Texas in the following plant associations: cedar-ocotillo, cedar-oak, mesquite-creosote brush, mesquite-sumac-condalia, and cedar savannah. In additional studies (Minton 1958, Axtell 1959) in Texas, roundtail horned lizards have been reported from the floodplain of rivers, low limestone gravel hills, and in extremely arid and barren situations in Big Bend. Nickerson and Mays (1970) and Lowe (1964) report the habitat in Arizona as Prosopis-Acacia, Larrea, desert grassland, and Chihuahuan Desert, usually on sandy or gravelly soil with or without rocks and scattered desert shrubs. Little and Keller (1937) report that they are absent from sandy soil and in the foothills.

Both specimens collected during this study were trapped in pitfall traps in Atriplex-grasslands.

Food Habits.—Pianka and Parker (1975) examined 130 stomachs of P. modestum and found ants comprised 66.1% of the total diet by volume and 86.1% of the total number of prey items. Other authors (Little and Keller 1937, Smith 1946, Stebbins 1954) who have examined stomach contents found P. modestum to be insectivorous, feeding extensively on ants and beetles.

Reproduction.—Parker (1973) found that the testes of males were largest in May and June. He also found oviducal eggs on 14 June and 26 July. Clutch size of two females, 58 mm and 61 mm SV, was 8 and 11, respectively. Bundy et al. (1955) reported

a clutch of nine eggs laid on 21 July. Pianka and Parker (1975) found the average clutch was 10.6, period of oviposition was May-June, the maximum testes size was reached in May and June, and the minimum SV at maturity was 50 mm for males and females. Vitt (1977) reported maximum clutch size as 19, with an average of 12.2 eggs. Minton (1958) reported copulation on 13 May and found hatchlings which measured 21 mm SV on 3 July.

Remarks.—Presch (1969) discusses the evolutionary osteology and relationships of the genus Phrynosoma.

Anderson and Ogilvie (1957) report find P. modestum in owl-pellets from northeastern Chihuahua.

Smith (1946) illustrates a female from Deming, New Mexico. Additional photographs appear in Behler and King (1979) and Van Denburgh (1922a). No subspecies of P. modestum are recognized.

Sceloporus clarkii – Clark's spiny lizard

Distribution.—Sceloporus clarkii ranges from central Arizona and southwestern New Mexico southward into Mexico to northern Jalisco. In Arizona, it ranges west to Kitt Peak, Ajo, and Puerto Blanco Mountains, Pima County, and north to Valentine, Mohave County (Stebbins 1985). Distribution in Arizona is discussed by Lowe (1964). Specimens from New Mexico and Mexico are reported by Smith (1939). Range maps are in Stebbins (1985) and Smith (1939). Map 27.

Recognition.—Clark's spiny lizard may be distinguished from other lizards occurring in southwestern New Mexico by the following combination of characters: (1) large dorsal scales keeled and pointed, (2) black wedge-shaped mark on each side of the neck, (3) dusky or black bands on wrists and forearms, (4) dorsal ground color bluish-green to grayish, (5) usually three ear scales, and (6) maximum length ca. 130 mm SV. The males have enlarged postanal scales and a swollen tail base; there is a blue throat patch and

lateral blue patches on the belly. In the female, these blue markings are weak or absent. The young have dark crossbands on the body and tail.

Size.—Smith (1939) reports the maximum size for this species as 130 mm SV. Stebbins (1985) reports adult size as 71-125 mm SV. Cole (1970) measured 34 S. clarkii from southern Arizona and found the average to be 89.0 mm SV (range 43-114 mm SV).

Eighteen males collected during this study averaged 97.3 mm SV (range 70-108 mm SV); 10 females averaged 74.7 mm SV (range 52-100 mm SV). One immature specimen was 39 mm SV.

Habitat Use.—Sceloporus clarkii inhabits arid and semiarid regions usually in rocky, wooded areas. Several authors (Smith 1939, Stebbins 1954, Hulse 1973) have reported trees as the most commonly used perch site. Van Denburgh (1922a) reports S. clarkii may climb to a height of 30-40 ft. He collected specimens from willows, mesquite, oaks, and pine. Stebbins (1954, 1985) states that rocks and boulders are also frequented.

Most specimens collected during this study were found on trees along major drainageways in well-developed riparian woodland. Other specimens were taken in pit-fall traps set in areas of scrub oak and cactus. One individual was collected on a talus slope.

Food Habits.—Stebbins (1954) reports beetles, ants, crickets, lepidopteran larvae, and plant material in the diet of S. clarkii. Van Denburgh (1922a) reports one caterpillar and several beetles eaten by one specimen.

During this study, stomach contents of 28 specimens were examined. Of these, 23 or 82% contained food items (Table 4). Beetles were most frequently encountered (69%) followed by ants (52%), and true bugs (42%). A desert shrew, Notiosorex crawfordi, was eaten by a 101 mm SV male which was confined in a pit-fall trap with the shrew.

Reproduction.—Stebbins (1954) recorded 8-14 ($\bar{x}$ = 11) large ova in four females collected on 15, 16 July. He also reports a female from southeastern Arizona which laid 22 eggs on 3 September. Hulse (1973) reports nine females with an average of 14.1 eggs

Table 4. Stomach contents and percent frequency occurrence of food items found in Sceloporus clarkii examined during this study. N = 28, 82.1% contained food items.

Food Item	Percent Frequency Occurrence
Coleoptera	69.5%
Formicidae	52%
Hemiptera	48%
Lepidoptera	30%
Araneida	22%
Orthoptera	22%
Acarina	4%
Odonata	4%
Hymenoptera	4%
sticks	4%
rocks	4%
Notiosorex crawfordi	4%

per clutch (range 9-19 eggs/clutch). Fitch (1970) examined 97 specimens from northern Mexico. He found the period of egg laying extended from May to November and speculated females may lay more than one clutch per season. The smallest gravid female he found was 73 mm SV. Clutch size varied from 4-10 eggs. Vitt (1977) reported an average clutch of 21 eggs.

During this study, testes size and volume was measured for 18 males. Maximum testes volume was 1.4 cc from a 101 mm SV male collected 26 May; minimum volume was 0.1 cc from a 90 mm SV male collected 18 June.

Average clutch size for specimens collected during this study was 19 (range 16-24). Average egg size for one clutch of 18 shelled eggs was 15.6 mm x 9.7 mm (range 15.0 x 9.7-16.3 x 10.0). The smallest gravid female was 92 mm SV.

Remarks.—Fourteen of the lizards examined internally were infested with nematodes. Iverson (1982) discusses the significance of nematodes as possible commensalistic aids in digestion in herbivorous iguanas. More research would need to be completed on the population of S. clarkii in southwestern New Mexico to determine why they were so heavily infested with nematodes relative to other species examined during this study.

Photographs of male and female S. clarkii appear in Behler and King (1979). Smith (1946) illustrates a male from Grant County, New Mexico. Although Stebbins (1985) does not recognize any subspecies of S. clarkii, Smith (1946), Behler and King (1979), and Collins et al. (1982) seem to recognize S. c. clarkii as the subspecies occurring in southwestern New Mexico.

Sceloporus magister - Desert spiny lizard

The range of this species includes the Gila-San Francisco river drainages (Parker 1982b, Stebbins 1985) although no specimens were collected during this study. Raun and Gehlbach (1972) and Parker (1982b) provide an extensive bibliography. Data on food

habits are presented in Smith (1946), Johnson (1966), and Hammerson (1982). Reproduction is summarized in Fitch (1970). Aspects of the ecology of S. magister are in Pianka (1966, 1967, 1973), Parker and Pianka (1973), Vitt and Ohmart (1974), Tinkle (1976), and Vitt et al. (1981). Zoogeography is discussed in Savage (1960) and Morafka (1977). Phelan and Brattstrom (1955) discuss geographic variation. Habitat utilization is discussed in Smith (1939) and Lowe (1964). Smith (1939) also discusses distribution in Mexico, scutellation, and predators. Aggressive behavior of males is treated in Vitt et al. (1974). McGinnis and Falkenstein (1971) present data on thermoregulatory behavior obtained from a radiotelemetric study. Photographs of an adult and juvenile appear in Van Denburgh (1922a). Additional photographs are in Smith (1938), Conant (1975) male and female, and Hammerson (1982). The subspecies, S. m. bimaculosus, occurs in southwestern New Mexico (Parker 1982b). No specimens of S. magister from the Gila-San Francisco river drainages are represented in the vertebrate collections of MSB, NMSU, or WNMU.

Sceloporus poinsettii – Crevice spiny lizard

Distribution.—Sceloporus poinsettii ranges from the Edwards Plateau of central Texas to southwestern New Mexico; southward into Chihuahua and southern Coahuila (Conant 1975). Distribution in Texas is discussed by Minton (1958), Axtell (1959), and Raun and Gehlbach (1972). Records of specimens from New Mexico and Mexico are discussed in Smith (1939). Additional records of specimens from Mexico are found in the literature contained in Smith and Smith (1976a). Range maps are in Smith (1939), Ballinger (1973), Conant (1975), and Stebbins (1985). Map 28.

Recognition.—The crevice spiny lizard may be distinguished from other lizards which occur in southwestern New Mexico by the following combination of characters: (1) large dorsal scales keeled and pointed, (2) conspicuous dark bands on the tail, (3) broad black collar bordered in front and back with white, (4) dorsal coloration gray or greenish

gray to orange or reddish, and (5) maximum size ca. 117 mm SV. The males have a blue throat and belly patches. In addition the base of the tail is often conspicously swollen. The females tend to retain the bold crossbands on the body which are evident in the young.

Size.—Smith (1939) reports the maximum size for this species as about 120 mm SV. Stebbins (1985) reports maximum adult size as 99-116 mm SV. Ballinger (1973) believes adult S. poinsettii reach 125 mm SV. The range of 66 adults collected in May and June by Ballinger (1973) was 61-128 mm SV.

The single specimen collected during this study was a male 101 mm SV.

Habitat Use.—Sceloporus poinsettii is primarily a rock-dwelling lizard inhabiting granite, limestone, and other rock outcrops in arid and semiarid regions. It is found in mesquite grassland, creosote bush desert, and arid woodland (Stebbins 1954, 1985). In Big Bend, Texas, Minton (1958) found they usually occupied cliffs and other massive rock formations although they were occasionally found in trees and on the ground. Other researchers (Smith and Milstead 1971, Ballinger 1973) have also found them most commonly on rock outcroppings.

The single specimen collected during this study was found in the pinon-juniper association on large boulders.

Food Habits.—Smith and Milstead (1971) examined stomach contents of 21 S. poinsettii from Big Bend, Texas. The most frequently encountered prey items were orthopterans and hymenopterans. Other prey items included spiders, beetles, true bugs, lepidopterans, and a milliped. They also found a large amount of plant material (26% of the total volume of food from the 21 stomachs examined). Knowlton (1948) and Stebbins (1954) include ants, ant lion larvae, wasps, bugs, flies, beetles, mantids, grasshoppers, caterpillars, moths, termites, leaves, and buds as food items for S. poinsettii. Ramsey and Donlon (1949) fed captive young specimens flies, grasshoppers, and ants.

The specimen collected during this study contained bees, ants, caterpillars, beetles, grasshoppers, and leaves. A single nematode was found in the stomach.

Reproduction.—Ballinger (1973), in a comparative study of S. poinsettii and S. jarrovii, found that mating occurred in the fall with parturition the following June. A single litter was produced each year. Females attained sexual maturity during the second mating season or at 16-17 months. They produced an average of 10.4 young (range 6-23) which measured 29-35 mm SV at birth. Ramsey and Donlon (1949) observed seven young which measured 30-32 mm SV born 6 June to a female 105 mm SV. Minton (1958) first observed young in Big Bend, Texas, on 16-18 July. Smith and Milstead (1971) report a 36 mm SV specimen young collected in late July.

Remarks.—Photographs of a male, female, and the young are in Smith (1946). Additional photographs are in Behler and King (1979). The subspecies, S. p. poinsettii, occurs in southwestern New Mexico (Stebbins 1985).

Sceloporus undulatus - Eastern fence lizard

Distribution.—Sceloporus undulatus ranges from Delaware to Florida and west to New Mexico and Arizona (Conant 1975). Stebbins (1985) defines the range to include central South Dakota, southern Illinois, and southeastern New York to central Florida, the Gulf Coast and into Zacatecas, Mexico; westward to southwestern Utah and northwestern Arizona (including the Hualapai Mountains). Distribution in Arizona is discussed by Lowe (1964), Texas (Raun and Gehlbach 1972), New Mexico (Van Denburgh 1922a, Smith 1938, Gehlbach 1965). Range maps appear in Smith (1946) and Stebbins (1985). Map 29.

Recognition.—The eastern fence lizard may be distinguished from other lizards occurring in southwestern New Mexico by the following combination of characters: (1) dorsal scales keeled and pointed, relatively smaller than other Sceloporus occurring in the Gila-San Francisco drainage; (2) dorsal pattern of lengthwise stripes although in some

individuals these may be lacking; (3) blue on throat usually divided, often separated into two widely spaced patches; (4) sides of belly blue; and (5) maximum size ca. 61 mm SV. The blue on the ventral surface of the male tends to be brighter than in the female. The blue belly patches of the female are often absent or indistinct.

Size.—Smith (1946) reports 61 mm SV as maximum size for the males and 64 mm SV for females. Stebbins (1985) records adult size as 40-81 mm SV. Conant (1975) lists maximum adult size as 54 mm.

Fourteen males collected during this study averaged 54.1 mm SV (range 47-62 mm SV); 12 females averaged 55.9 mm SV (range 39-64 mm SV).

Habitat Use.—Tinkle and Ballinger (1972) studied four separate populations of S. undulatus. The population in Texas occupied rolling hills with scattered rock outcroppings. The vegetation was almost exclusively mesquite with a few scattered juniper. Smith (1946) records rocky terrain as favored habitat although he states where trees are scarce it is primarily a ground dweller. Stebbins (1985) includes a wide variety of habitats including forest, woodland, prairie, shrubby flatlands, sand dunes, rocky hillsides, and farmlands.

Specimens collected during this study were found in rocky grasslands, shrub-oak forest, pinon-juniper association, yucca-Nolina association, ponderosa pine forest, and riparian deciduous forest. Individuals were found on rocks, trees, and on the ground.

Food Habits.—Stebbins (1985) reports this species to feed on insects, spiders, ticks, millipeds, snails, and small lizards.

During this study, stomach contents of 26 S. undulatus were examined. Of these, 21 or 81% contained food (Table 5). Beetles and true bugs were most commonly encountered, 65% and 38% respectively. Other prey items included spiders, grasshoppers, lepidopteran larvae, ants, and dragonflies.

Reproduction.—Tinkle (1972) and Tinkle and Ballinger (1972) studied five populations of S. undulatus. The following data are taken from their population in west-

Table 5. Stomach contents and percent frequency occurrence of food items found in Sceloporus undulatus examined during this study. N = 26, 81% contained food items.

Food Item	Percent Frequency Occurrence
Coleoptera	65%
Hemiptera	38%
Araneida	19%
Orthoptera	15%
Lepidoptera (larvae)	11%
Formicidae	4%
Odonata	4%

central Texas. Hatchlings appeared from mid-June to mid-August with a peak in early July. The females may lay as many as four clutches per season although three is closer to the average. The minimum size of a reproductive female was 47 mm SV, N = 46, $\bar{x}$ = 57 mm SV. In 46 clutches measured, average clutch size was 9.5. Hatchlings mature in only three months, thus they reproduce before they are one year old. Stebbins (1954) reports average clutch size of seven females from Utah, New Mexico, and Arizona to be 8.5 eggs (range 7-13, N = 3). Average and range of egg size for three clutches was 11.6 x 7.2 mm (range 12.1 x 7.4-10.7 x 7.1 mm, N = 13), 10.4 x 5.8 mm (range 11.2 x 5.1-9.0 x 6.1 mm, N = 12), and 13.3 x 7.0 (range 13.6 x 7.1-12.9 x 7.1 mm, N = 7). Snout-vent length and date of collection for females which contained these clutches are as follows, 64 mm SV, 10 May; 71 mm SV, 18 June; and 56 mm SV, 11 June, respectively.

Testes size and volume was measured for 15 males collected during this study. Maximum testes volume was 0.31 cc from a 62 mm SV male collected 31 May; minimum volume was 0.05 cc from a 51 mm SV male collected 1 July.

Remarks.—This species shows a considerable degree of morphological differentiation with eight currently recognized geographic races (Collins et al. 1982). The subspecies S. undulatus consobrinus occurs in southwestern New Mexico (Smith 1938, Stebbins 1985). Photographs of a male and female of this subspecies are in Smith (1946). Additional photographs are in Hammerson (1982) and Behler and King (1979).

Urosaurus ornatus - Tree lizard

Distribution.—Urosaurus ornatus ranges from southwestern Wyoming to southern Sinaloa and northern Coahuila, Mexico, also along the lower Colorado River to central Texas (Stebbins 1985). Distribution in Arizona is reported by Lowe (1964), Colorado (Hammerson 1981, 1984), Texas (Raun and Gehlbach 1972), and New Mexico (Gehlbach 1965). Mexican distribution is discussed in literature found in Smith and Smith (1976a). Range maps are in Smith (1946) and Stebbins (1985). Map 30.

Recognition.—The tree lizard may be separated from other lizards in southwestern New Mexico by the following combination of characteristics: (1) band of enlarged scales down the middle of back, separated into two or more parallel rows by a center strip of small scales; (2) often a rusty area at the base of the tail; (3) dorsum usually blotched or crossbarred with dusky markings; (4) small grandular scales; and (5) maximum size ca. 56 mm SV. The males have vivid blue or blue-green belly patches, while the females lack these patches. Hatchlings resemble the adults. Mittleman (1942) and Smith (1946) report on scalation.

Size.—Conant (1975) gives adult size as 100-137 mm SV. Behler and King (1979) list adult size as 114-156 mm SV. Smith (1946) gives average adult size as 46 mm SV with a maximum of 56 mm SV.

During this study 47 specimens were measured. Twenty-three males averaged 50.7 mm SV (range 42-57 mm SV) and 24 females averaged 45.3 mm SV (range 27-53 mm SV).

Habitat Use.—Urosaurus ornatus is mostly arboreal and generally restricted to large boulders and trees (Smith 1946, Hulse 1973). Minton (1958) found them most often in mountainous regions. Milstead (1970) found them most abundantly on boulders and rocky canyon walls of steep sided canyons. Stebbins (1985) notes that although they range from desert to the lower edge of spruce-fir they appear to be especially attracted to riparian habitats.

Most specimens collected during this study were found on rocks and trees along riparian habitat within the pinon-juniper association.

Food Habits.—Reported prey items of U. ornatus include insects, spiders, centipeds, flies, beetles, and other arthropods (Smith 1946, Behler and King 1979). Minton (1958) reports seeing them feed on insects attracted to lights. Jameson and Flury (1949) include termites in the diet. Axtell (1959) found that winged Hymenoptera made up a large percentage of the food found in five stomachs.

During this study, 42 stomachs were examined for food items. Of these, 41 contained food (Table 6). Ants (57%) and beetles (48%) were the most frequently observed prey.

Reproduction.—Michel (1976) studied reproduction in a population of U. ornatus in Hidalgo County in southwestern New Mexico. He found reproductively active males from early June through late August. Testes reached maximum size in late August and September. Average testes length was 2.62 mm. Average length for males was 51.6 mm SV. The smallest reproductive male was 47 mm SV. The females first reproduced at 42 mm SV. Ninety percent of the females produced two separate clutches which averaged 10.9 eggs and 7.5 eggs, respectively. Date of first clutch deposition was around 27 June; the second was 2-9 August. Clutch size ranged from 5-16. Average egg length was 8.6 mm. Hatchlings first appeared 9 September and averaged 24.5 mm SV. Additional dates for hatchling appearance are 31 July (Minton 1958) and early August (Smith 1946). Milstead (1970) reported that male Urosaurus exhibit strong home range and territorial behavior.

Zuker and Guillette (1985) report a female from the Organ Mountains of New Mexico which contained 17 oviducal eggs. Fitch (1970) summarizes reproduction.

Testis size for 19 males was measured during this study. Average size was 5.3 x 3.3/5.3 x 3.2 mm. One female, MSB 42968 collected 31 March, contained seven shelled eggs which averaged 6.4 x 5.6 mm.

Remarks.—Much of the early literature pertinent to the genus Urosaurus is found under the name Uta (Murray 1953) although Fanghella et al. (1975) and Purdue and Carpenter (1972) present a history of the confusion surrounding the separation of Uta and Urosaurus. Fanghella et al. (1975) separate the two genera based on osteological and myological characteristics found in the head and throat anatomy. Carpenter (1962) presents additional evidence that enough significant behavioral differences exist between the display patterns of the two to warrant separation into two genera. Lowe (1955c) and Etheridge (1964) support the separation.

Table 6. Stomach contents and percent frequency occurrence of food items found in Urosaurus ornatus examined during this study. N = 42, 98% contained food items.

Food Item	Percent Frequency Occurrence
Formicidae	57.1%
Coleoptera	47.6%
Hemiptera	33.3%
Diptera	26.1%
Araneida	21.4%
Lepidoptera (larvae)	11.9%
Homoptera	9.5%
Hymenoptera	9.5%
Orthoptera	9.5%
Lepidoptera (adult)	7.1%
unidentified	7.1%

Mittleman (1942) divides U. ornatus into 10 subspecies; Collins et al. (1982) recognize six. Stebbins (1985) does not recognize any subspecies. Smith (1946) believes that the subspecies U. ornatus linearis occurs in southwestern New Mexico.

Banta (1957) observed captive U. ornatus being eaten by a scorpion.

Smith (1946) illustrates an adult specimen from Pinos Altos. Additional photographs appear in Mittleman (1942) and Hammerson (1982).

Uta stansburiana - Side-blotched lizard

Distribution.—Uta stansburiana ranges from central Washington south to the tip of Baja California Sur, northern Sinaloa, and northern Zacatecas. It also occurs from the Pacific coast to western Colorado and western Texas (Stebbins 1985). The range in Arizona is reported by Lowe (1964), Colorado (Hammerson 1981, 1982), and Texas (Raun and Gehlbach 1972). Specimens from New Mexico are discussed in Gehlbach (1965). Mexican distribution is discussed in the literature found in Smith and Smith (1976a). Range maps are in Stebbins (1985) and Smith (1946). Map 31.

Recognition.—The side-blotched lizard may be distinguished from other lizards which occur in southwestern New Mexico by the following combination of characteristics: (1) a single dark spot on each side behind foreleg; (2) venter whitish to bluish-gray sometimes with orange to reddish-orange on throat and sides of belly; (3) gular fold present; (4) dorsal scales small and smooth, without spines at end; and (5) maximum size ca. 59 mm SV. The male has slightly enlarged postanal scales and a swollen tail base. In the females the side-blotch is usually less well-defined than in the male. Hatchlings resemble the adults. Smith (1946) discusses and illustrates scalation.

Size.—Stebbins (1985) gives an adult size of 3.7-5.9 cm SV. The single specimen collected during this study was a female 49 mm SV.

Habitat Use.—Tinkle (1967) states that U. stansburiana occupies hillsides and boulders desert washes, sand dune areas, sagebrush flats, and areas of sparse grass

cover. Tinkle (1967) found that Uta reached its greatest density in sandy areas of west Texas and on certain sandy beaches in the Gulf of California. Gehlbach (1965) reported New Mexico specimens from relatively open grassland with sandy soil, rabbitbush, snakeweed, and scattered one-seed juniper.

The single specimen collected during this study was found in a pit-fall trap in an open sandy area dominated by Atriplex and various forbs.

Food Habits.—Tinkle (1967) includes 10 arthropod orders which are known prey items of Uta. Hammerson (1982) states that Uta probably feeds on a variety of small arthropods such as grasshoppers, beetles, crickets, and ants. Pianka (1970) discusses the importance of grasshoppers as a summer food source of Uta.

Reproduction.—Tinkle (1961) found that sexual maturity is attained in the first year of life, and that almost all lizards are reproductive in the mating season. Tinkle (1967), with data from over 3,700 Uta, found they lay at least three clutches of four eggs each in Texas and a maximum of three clutches of three eggs each in Colorado. In both populations, clutches are largest in larger females and larger early in the season than late. Over a period of six summers, hatchlings first appeared in Texas between 17-23 June and in Colorado, they hatch one month later. Sexual maturity is reached about four months after hatching. Bakewell et al. (1983) report on reproduction in Idaho. Fitch (1970) summarizes reproduction.

The female, MSB 42885, collected on 10 May during this study, contained six eggs which averaged 10.0 x 6.4 mm (range 10.8 x 6.9-8.8 x 6.2).

Remarks.—Fitch (1970) states that "through the studies of Tinkle and his associates in Texas, the brown shouldered lizard is one of the best known lizards ecologically."

Ballinger and Tinkle (1972) discuss the systematics and evolution of the genus Uta. They felt as though Uta evolved through Petrosaurus-like lizards from Sceloporus.

Hardy (1947) reports a captive Uta eaten by a scorpion, Hadrurus.

Photographs appear in Smith (1946) and Hammerson (1982). The subspecies U. stansburiana stejnegeri occurs in southwestern New Mexico (Smith 1946) although Stebbins (1985) does not include subspecies in his field guide.

TEIIDAE

Cnemidophorus sp. - Whiptails

Species within the genus Cnemidophorus have not been treated individually within this paper. Correct identification of the 86 individual specimens collected during this study presents a extremely difficult taxonomic problem. Meristic and mensural data and tentative identifications are presented elsewhere (see Appendices I and II). Price (1983) presents a bibliography of the species within New Mexico.

At least 9 (burti, exsanguis, flagellicaudus, inornatus, neomexicanus, sonorae, tesselatus, tigris, and uniparens) and possibly two additional (dixoni and velox) species occur within southwestern New Mexico (Price 1983, Stebbins 1985). Further studies of these species should be initiated to gain a more thorough understanding of their ecology, ontogenetic change, and systematic relationship. Such studies would make data presented here more reliable. Maps 32-38. (Please note that maps and identifications are only provisional.)

LEPTOTYPHLOPIDAE

Leptotyphlops dulcis - Texas blind snake

Distribution.—Leptotyphlops dulcis ranges from south-central Kansas, southward to northern Veracruz, and westward to extreme southeastern Arizona (Hahn 1979a). Distribution in Arizona is reported by Lowe (1964) and Fowlie (1965), Colorado (Hammerson 1982), Texas (Smith and Sanders 1952, Raun and Gehlbach 1972, Tennant 1984), and Oklahoma (Webb 1970b). Specimens from New Mexico are discussed in Little

and Keller (1937), Van Denburgh (1922b), and Wright and Wright (1957). Distribution maps are in Klauber (1940), Wright and Wright (1957), and Stebbins (1985). Map 39.

Recognition.—The Texas blind snake can be separated from other snakes in southwestern New Mexico by the following combination of characteristics: (1) slender worm-like body with ventral and dorsal scales similar in size; (2) vestigial eyes, apparent only as a dark spot on each side of the head; (3) three scales between the oculars; and (4) maximum size ca. 29 cm SV. No sexually dimorphic characters are evident. The hatchlings resemble the adults.

Size.—Maximum size of L. dulcis reported by Hahn (1979a) is 293 mm TL. Stebbins (1985) gives a range of adults as 13-27 cm SV. other measurements are those of Taylor (1939) 226-91 mm TL (10 specimens); Klauber (1940) 272-90 mm TL (35 specimens); and McCoy (1960) 226-125 mm TL (13 specimens).

Four specimens (MSB 42887-42890) collected during this study averaged 129.8 mm SV (range 89-204 mm SV).

Habitat Use.—Klauber (1940) most commonly found L. dulcis in rocky and sandy deserts, chaparral covered foothills, and boulder-strewn mountainsides. He states these blind snakes seem to prefer areas where some moisture is present. Taylor (1939), following an overflow from the Rio Grande in south Texas, found a number of L. dulcis on floating debris in a corn field. Hammerson (1982) reports on a specimen from Colorado found on a south-facing slope of a flat-bottomed canyon. Vegetation in the area included pinon, juniper, Opuntia, Yucca, and various grasses. Punzo (1974) found L. dulcis common on roadways at night in areas characterized by sand flats, intermittent boulder-strewn hillsides, and rocky canyons with dry creek beds. Prominent vegetation in the area included Prosopis, Symphoricarpus, Covillea, and Fouqueria.

All specimens collected during this study were found in pitfall traps in the pinon-juniper zone.

Food Habits.—The eggs, larvae, and pupae of ants and termites are commonly reported prey (Klauber 1940, Smith 1956, Reid and Lott 1963, Conant 1975). Tennant (1984) describes predation on fly larvae found in the nest cavities of screech owls. Punzo (1974) examined stomach contents of 17 L. dulcis and found representatives of 12 arthropod orders. He speculated these blind snakes are opportunistic feeders and will consume most soft-bodied arthropods encountered. Punzo's (1974) data also indicate that several insect species, which live as commensals in ant and termite nests, are consumed. Reid and Lott (1963) report on the prey-handling procedure of L. dulcis.

Reproduction.—On July 10, Hibbard (1964) found a brooding colony of L. dulcis in southwestern Kansas. He reported finding 42 eggs which seemingly comprised six clutches. At a nearby site he found four gravid females which contained 4, 3, 3, and 2 eggs. Klauber (1940) reports a 255 mm TL specimen with seven eggs. McCoy (1960) found 13+ L. dulcis under the same rock and speculated this could represent some sort of breeding aggregation. Eggs are ca. 16 mm long, hatchlings ca. 7 cm TL (Behler and King 1979). Fitch (1970) summarizes reproduction.

Remarks.—Many researchers have studied the ability of blind snakes to follow the pheromone scent trails of its prey along the surface to the insects' underground nests (Watkins et al. 1967, Gehlbach et al. 1968, Watkins and Kroll 1970, Watkins and Plsek 1972).

Photographs of a specimen from Mesilla Valley, Dona Ana Co., New Mexico are in Wright and Wright (1957). Additional photographs appear in Behler and King (1979) and Tennant (1984). The subspecies L. dulcis dissectus occurs in southwestern New Mexico (Hahn 1979a).

Leptotyphlops humilis - Western blind snake

Distribution.—Leptotyphlops humilis occurs from the Big Bend area of western Texas westward to southern California, north to southern Nevada, southwestern Utah,

and south-central New Mexico, and south to Colima and Baja California, including Santa Catalina, Carmen, Cerraluo, and Cedros islands (Hahn 1979b). Distribution in Arizona is reported by Lowe (1964) and Fowlie (1965), Texas (Raun and Gehlbach 1972, Tennant 1984), and California (Stebbins 1972). Distribution maps are found in Klauber (1940), Wright and Wright (1957), and Stebbins (1985). Map 40.

Recognition.—The western blind snake may be separated from other snakes in southwestern New Mexico by the following combination of characters: (1) slender worm-like body with ventral scales and dorsal scales of equal size; (2) vestigial eyes, apparent only as a dark spot on each side of the head; (3) one scale between oculars; and (4) maximum size ca. 38 cm TL. No sexually dimorphic characters are evident. The hatchlings resemble the adults.

Size.—Maximum size of L. humilis reported by Hahn (1979b) is 389 mm TL. Stebbins (1985) gives a range of adults as 18–41 cm SV. Other measurements are those of Klauber (1940) 319 mm TL (7 specimens), Punzo (1974) 21.4–33.8 cm (28 specimens), and Tennant (1984) 20.3–33.0 cm.

Four specimens MSB 42891–42894) collected during this study averaged 192.6 mm SV (range 180–221 mm SV).

Habitat Use.—Klauber (1940) found that specimens usually occurred in rocky canyons or on mountain slopes. Punzo (1974) found L. humilis common on roadways at night in areas characterized by sand flats, intermittent boulder-strewn hillsides, and rocky canyons with dry creek beds. Prominent vegetation in the area included Prosopis, Symphoricarpos, Covillea, and Fouquieria.

All specimens collected during this study were found in pitfall traps in the pinon-juniper zone.

Food Habits.—Punzo (1974) examined stomach contents of 28 L. humilis and found representatives of 11 arthropod orders. He speculated that these blind snakes are opportunistic feeders and will consume most soft-bodied arthropods encountered.

Punzo's (1974) data also indicate that several insect species, which live as commensals in ant and termite nests, are consumed. Other workers (Klauber 1940; Stebbins 1954, 1985) have found that L. humilis feed primarily on the eggs, larvae, and pupae of ants and termites.

Reproduction.—Klauber (1940) reports finding females with eggs in early summer and suggests that egg-laying takes place in late summer. He found that only females in excess of 245 mm TL contained eggs (248-340 mm TL). Average clutch size was four eggs (range 3-6). Eggs measure approximately 15 x 4.5 mm and hatchlings are about 1/3 the size of adults.

During this study, one female (MSB 42891), 190 mm SV contained two eggs which measured 22 x 2.9 mm and 14.4 x 3.1 mm.

Remarks.—Hulse (1971) reports on the fluorescence of L. humilis exposed to UV light and discusses the potential of using UV light as an aid in collecting blind snakes.

Anderson (1956) reports a large scorpion (Centruroides sp.) preying on a L. humilis 119 mm TL.

Photographs of L. humilis appear in Behler and King (1979) and Tennant (1984). The subspecies L. humilis segregus occurs in southwestern New Mexico (Hahn 1979b).

COLUBRIDAE

Arizona elegans - Glossy snake

The range of this species includes the Gila-San Francisco river drainage (Dixon and Fleet 1976, Stebbins 1985) although no specimens were collected during this study. Fleet and Dixon (1971) discuss specimens found in New Mexico. Life history notes are found in Klauber (1946), Brattstrom (1952), Fowlie (1965), Hammerson (1982), and Tennant (1984). Wright and Wright (1957) present a key to all subspecies. Range maps are in Dixon (1959) and Wright and Wright (1957). Reproduction is discussed by Reynolds (1943), Cowles and Bogert (1944), and Fitch (1970). Hammerson (1982) and Tennant (1984)

provide color photographs. The subspecies A. e. philipi occurs in southwestern New Mexico (Stebbins (1985). Map 41.

Coluber constrictor - Racer

The range of this species may include the Gila-San Francisco river drainages (Conant 1975, Wilson 1978, Stebbins, 1985), although no specimens were collected during this survey. Wilson (1978) presents a distribution map for all known subspecies. Glidewell (1974) presents data on specimens from New Mexico. Smith (1971) discusses distribution in Mexico. Fitch (1963) and Brown and Parker (1974) provide information on the ecology of C. constrictor. Fitch (1970) presents data on reproduction. The specimens in southwestern New Mexico are intergrades between C. c. flaviventris and C. c. oaxaca (Glidewell 1974, Wilson 1978). Photographs of C. constrictor are in Collins (1982) and Behler and King (1979). Adults, hatchlings, and eggs are illustrated in Hammerson (1982). At present there are no specimens from Catron, Grant, or Hidalgo counties in the vertebrate collections of MSB, NMSU, or WNMU. Wilson (1985 in litt.) was unaware of any specimens from Catron Co.

Diadophis punctatus -Ringneck snake

Distribution.—The range of the genus Diadophis extends from coast to coast except for large gaps in the arid west where it is confined to uplands and the vicinity of streams; it also occurs far south into Mexico (Conant 1975). Stebbins (1985) presents a range map for the subspecies D. p. regalis which occurs in southwestern New Mexico. The range of D. p. regalis in the U.S. includes western and central New Mexico, west to central Arizona. Isolated populations occur in west-central Arizona, southwestern and east-central Nevada, and north-central to south-central Utah. Lowe (1964) reports on the distribution of D. punctatus regalis in Arizona, Cole (1965) in Mexico, Tanner (1940b) in Utah, and Tennant (1984) in Texas. Map 42.

Recognition.—Diadophis punctatus may be separated from other snakes in southwestern New Mexico by the following combination of characters: (1) dorsum plain greenish, brownish, or pale slate gray; (2) belly yellow-orange to red posteriorally with numerous small black dots; (3) orange ring around neck (often faint or absent in some individuals); (4) scales smooth, usually in 15-17 rows at midbody; and (5) maximum size ca. 76 cm. The male sometimes has tubercles on the scales above the vent. These tubercles are sometimes present in the females but are much less prominent.

Size.—Tanner (1940b) measured eight females from Utah, the largest was 726 mm. Fowlie (1965) gives a maximum length of 28 in (71.1 cm) for Arizona specimens. Conant (1975) records a specimen 76 cm but states that larger sizes may be attained in the west. Stebbins (1985) gives the maximum size as 75 cm and a range of 20-75 cm.

Two specimens were collected during this study. One male (MSB 42756) measured 72.3 cm TL and a female (MSB 42757) 62.6 cm TL.

Habitat Use.—Reported habitats include: oak, juniper, pinyon-pine belt, aspen-fir to 7,000 ft (Tanner 1940b, Utah); open woodland with abundant flat rocks (Fitch 1958, Kansas); and woodlands below 5,500 ft, grasslands, and into deserts along major drainageways to 2,400 ft (Lowe 1964, Arizona).

Both specimens collected during this study were found along rocky river beaches in pinyon-juniper association. MSB 42757 was swimming across the Gila River.

Food Habits.—Prey items reported for D. punctatus include: Pituophis (Tanner 1940a); Tantilla, Phyllorhynchus, Pituophis (Stebbins 1985); insects, small snakes, small vertebrates (Wright and Wright 1957); earthworms, tipulid larvae, and Ophisaurus (Fitch 1975); and salamanders, frogs, lizards, small snakes, slugs, and worms (Stebbins 1985). Gehlbach (1974) and Tennant (1984) report that specimens from Texas feed mostly on small snakes.

Both specimens examined during this study had empty stomachs.

Reproduction.—Tanner (1940b) measured one clutch of five eggs which averaged 19.2 mm x 7.2 mm. Parker and Brown (1974) report clutches of six and three eggs. Sabath (1960) found four eggs in a female on 7 June. Fitch (1975) examined 300 clutches of D. p. arnyi from Kansas and average egg size was 25.2 x 7.1 mm. Females become sexually mature at ca. 235 mm SV. Fitch (1970) summarizes reproduction.

Remarks.—Traditionally, the numerous forms of Diadophis punctatus have been grouped into three species: D. punctatus (eastern), D. regalis (southwestern), and D. amabilis (Pacific coast) (Blanchard 1923, 1942) although evidence of conspecificity in the genus is presented by Stebbins (1954), Mecham (1956), Gehlbach (1965), and Croulet (1965). Currently one species, D. punctatus, with 12 subspecies is recognized (Collins et al. 1982).

Gehlbach (1974) reports on evolutionary relationships of southwestern Diadophis.

Photographs appear in Tennant (1984).

Elaphe triaspis – Green rat snake

The presumed range of this species includes a portion of the Gila-San Francisco River drainages (New Mexico Department of Game and Fish 1985b) although this has not been documented by museum specimens (see discussion). The range of the subspecies, E. triaspis intermedia, which may occur in southwestern New Mexico, has been reported as follows: from the Santa Rita Mountains of Arizona, southward in the highlands of Mexico to the Isthmus of Tehuantepec (Dowling 1952) and on the mountain slopes from southeastern Arizona and Tamaulipas southward through Mexico (avoiding the central plateau) to Chiapas (Dowling 1960). Behler and King (1979) and Stebbins (1985) include the Baboquivari, Pajarito, Santa Rita, Empire, Whetstone, and Chiricahua Mountains of Arizona and the Peloncillo Mountains (Guadalupe Canyon) of New Mexico. Distribution in Mexico is discussed by Bogert and Oliver (1945) Sonora; Oliver (1937), Duellman (1958), and Painter (1976) Colima; Duellman (1961) Michoacan; Martin (1958) Tamaulipas; and

Hardy and McDiarmid (1969) Sinaloa. The first specimens collected in the United States were found in the Santa Rita Mountains of Arizona (Wright and Wright 1957).

Habitats reported in the literature include: lower pine-oak and tropical deciduous forest from 2,400-4,500 ft (Davis and Dixon 1959); tropical to semi-evergreen forest (Martin 1958); wooded, rocky canyon bottoms near streams (Stebbins 1985); broadleaf riparian associations in evergreen woodland at mid-elevation between 4,000 ft and 6,000 ft (Lowe 1964); either mesophytic forest or xeric conditions which approach thorn scrub (Dowling 1960); and oak and scrub forest (Duellman 1961).

Dowling (1952) reports on the deposition of the type specimen, redefines the type locality, and gives a complete synomony for the subspecies. Dowling (1960) describes general morphology, skull dentition, and hemipenes. Scutellation and associated sexually dimorphic characters are also discussed by Dowling (1960). Additional data on scutellation are presented in Oliver (1937) and Davis and Dixon (1959).

Dowling (1960) postulates E. triaspis is arboreal and diurnal because of the elongate morphology, angulate ventrals, and rather small eyes. Food includes woodrats, birds, lizards, and small mammals (Stebbins 1985). Duellman (1958) reports a specimen which had eaten a Mus musculus.

Dowling (1960) reported a male from Oaxaca 1,213 mm TL and a female from Puebla 1,222 mm TL. Wright and Wright (1957) report the species reaches 610-1,273 mm TL. Individuals less than 500 mm TL are considered immature (Dowling 1960).

Dowling (1960) mentions a specimen from Yucatan which contained two eggs on 17 October. Behler and King (1979) report the species lays five or more eggs.

Dowling (1960) presents a photograph of an adult specimen from the Chiricahua Mountains of southeastern Arizona. Additional photographs appear in Behler and King (1979) and Wright and Wright (1957).

Elaphe triaspis was originally known as E. chlorosoma. Much of the pertinent literature appears under this older name. No specimens of E. triaspis from New Mexico are catalogued in the vertebrate collections of MSB, NMSU, or WNMU.

This species is listed as a state endangered species by the New Mexico Department of Game and Fish.

Gyalopion canum - Western hooknose snake

Distribution.—Gyalopion canum occurs in northern Sonora and southeastern Arizona, New Mexico (north to Sandoval Co. in the Rio Grande Valley), western Texas, Chihuahua, southward to Coahuila, Nuevo Leon, San Luis Potosi, Durango, and Zacatecas (Hardy 1976). Arizona distribution is discussed by Lowe (1964) and Fowlie (1965). Raun and Gehlbach (1972) and Tennant (1984) report on distribution in Texas. Gyalopion canum has been reported from the following states of Mexico: Nuevo Leon (Smith 1944), Chihuahua (Tanner and Robison 1960), Durango (Webb 1960), Zacatecas (McCoy 1961), San Luis Potosi (Dixon et al. 1962), and Coahuila (Fouquette and Rossman 1963). Range maps are in Hardy (1975, 1976) and Stebbins (1985). Map 43.

Recognition.—The western hooknose snake may be separated from other snakes in southwestern New Mexico by the following combination of characters: (1) enlarged rostral scale with turned-up tip; (2) snout flattened and concave behind hook, lacking a mid-dorsal keel; (3) smooth scales; (4) 30 or more brownish dark-edged crossbands on body, 8-12 on tail; and (5) maximum length ca. 36 mm. There are no sexually dimorphic characters evident. The hatchlings resemble the adults.

Size.—Stebbins (1985) gives a size range of 17-36 cm. Reported lengths of specimens are 229-306 mm (Ferguson 1965), 298 mm (Duellman 1955), 266 mm (Tanner and Robison 1960), 234 mm (McCoy 1961), and 20.3-36.2 cm (Behler and King 1979).

The single specimen collected during this study was ca. 245 mm TL.

Habitat Use.—Although usually considered a desert species, G. canum frequently inhabits higher montane situations in parts of New Mexico, Chihuahua, and Texas (Hardy 1975). Reported habitat includes mesquite grasslands (Ferguson 1965), grassy foothills (Tanner and Robison 1960), Atriplex, Larrea, and Prosopis associations with or without

mixed sand and gravel (Taylor 1931), and Yucca-Acacia grasslands, juniper-grassland associations (Hardy 1975).

The single specimen (MSB 43449) collected during this study was taken in a pit-fall trap in mesquite-grasslands association. The soil was mixed sand and gravel.

Food Habits.—Foods of G. canum consist of mostly spiders although centipedes, scorpions, and small snakes are also eaten (Kaufield 1948, Licht and Gehlbach 1961, Tennant 1984, Stebbins 1985).

Reproduction.—Reproductive data are very scarce for G. canum. Hardy (1975) reports on a specimen from Big Bend National Park which laid one white egg measuring 6 x 29 mm on 1 July. Hatchlings are ca. 118 mm (Hardy 1975).

Remarks.—Taylor (1931) first described the cloacal popping and body gyrations characteristic of the genus Gyalopion.

Photographs of G. canum appear in Duellman (1955), Fowlie (1965), Hardy (1975), and Tennant (1984).

No subspecies are recognized.

Heterodon nasicus - Western hognose snake

Distribution.—Heterodon nasicus ranges from southern Canada to San Luis Potosi, Mexico; west to southeastern Arizona and east to central Illinois (Stebbins 1985). Platt (1969) provides an indepth review of its total distribution. Distribution in Arizona is discussed by Lowe (1964) and Fowlie (1965), Colorado (Hammerson 1982), Oklahoma (Webb 1970b), Kansas (Collins 1982), and Texas (Raun and Gehlbach 1972, Tennant 1984). Range maps are presented by Platt (1969) and Stebbins (1985). Map 44.

Recognition.—Western hognose snakes can be distinguished from other snakes in southwestern New Mexico by the following combination of characteristics: (1) rostral scale enlarged and upturned, (2) keeled scales, (3) belly and underside of tail with extensive black areas, (4) distinct series of dark blotches down back and sides, and (5)

maximum length ca. 90 cm. Females are generally larger than males (Platt 1969). Hatchlings resemble adults.

Size.—Bowers (1967) reports a record size western hognose from Texas which measured 895 mm TL. Platt's (1969) longest female was 800 mm TL (average size 450-575 mm TL) and longest male was 663 mm TL (average size 375-525 mm TL). Stebbins (1985) reports a range of 40-90 cm TL.

A single specimen collected during this study (MSB 42755) measured 273 mm SV and 325 mm TL.

Habitat Use.—Smith (1946) states that H. nasicus is frequently encountered in catclaw-cedar association and tobosa-gramma grasslands. Tennant (1984) mentions thorn woodland or chaparral thicket and desert-prairie as suitable habitat. Platt (1969) in Kansas found H. nasicus most abundant in areas of short, sparse vegetation with open sandy areas. This habitat is similar to that where the single specimen collected during this study was found.

Food Habits.—Various prey items have been reported for H. nasicus. These include Scaphopus hammondi (Little and Keller 1937); Rana pipiens, Eumeces septentrionalis, and Ammodramus savannarum (Breckenridge 1944); toads, birds, and small mammals (Munro 1949a), Crotaphytus collaris (Diener 1957); and reptile eggs, snakes, and rodents (Collins 1982). Platt (1969) provides an exhaustive list of prey items taken by wild and captive H. nasicus.

The stomach and gut of MSB 42755 was empty.

Reproduction.—Platt (1969) summarizes reproduction in H. nasicus as follows: less than half the adult females are gravid in any one breeding season; most females produce their first clutches at 20-22 months; and in central Kansas, egg-laying occurs from 2-22 July although records elsehwere vary from 3 June to 24 August. There are 4-23 ($\bar{x}$ = 9.4) eggs per clutch although clutch size is directly correlated with SV length of the female as follows: 490+ mm, $\bar{x}$ = 14.0 eggs; 440-489 mm, $\bar{x}$ = 6.8 eggs; 439 mm or less, $\bar{x}$ = 5.1

eggs. Additional data concerning clutch size, deposition date, and egg size are in Munro (1949b), 11 eggs, 6 July, 31.5-35.5 mm x 18.5-20.0 mm; Sabath and Worthington (1959), 2 eggs, 24 August, 32 x 20 mm; and Sabath (1960), 5 eggs, 17 July, 32.6 x 19.6 mm. Hatchlings measure 128-167 mm SV, $\bar{x}$ = 153 mm SV, N = 20 (Platt 1969).

Remarks.—Edgren (1955) and Platt (1969) provide comprehensive studies of the natural history of H. nasicus.

Smith and White (1955) discuss the role the adrenal gland may play in combating the toxic skin secretions of Bufo sp., the major prey item of Heterodon.

The literature contains numerous articles, Bragg (1960), McAlister (1963), Kapus (1964), Kroll (1976), and Morris (1985), concerning the toxicity of Heterodon venom.

Photographs of H. nasicus appear in Wright and Wright (1957), Collins (1982), and Tennant (1984). The subspecies H. n. kennerlyi occurs in southwestern New Mexico (Platt 1969).

Hypsiglena torquata - Night snake

The range of this species includes the Gila-San Francisco river drainages (Shaw and Campbell 1974, Stebbins 1985), although no specimens were collected during this survey. Dixon (1965) presents a taxonomic reevaluation of H. ochrorhyncha and elevates the subspecies H. t. ochrorhyncha to specific status although this has not been unanimously accepted in current literature (Collins et al. 1982). Hardy and McDiarmid (1969) refute Dixon's (1965) reasoning and present data for the maintenance of H. torquata as a valid species. Data on habitat, reproduction, and food habits are presented in Hammerson (1982). Additional data on reproduction appear in Fitch (1970) and Clark and Lieb (1973) who illustrate a female H. torquata with eggs and summarize all known reproductive data. Wright and Wright (1957) provide a key to all subspecies of H. torquata. Photographs of H. torquata are found in Collins (1982) and Hammerson

(1982). Both subspecies, H. t. ochrorhyncha and H. t. jani, which occur in southwestern New Mexico, are illustrated in Tennant (1984). Map 45.

Lampropeltis getulus - Common kingsnake

The range of this species includes the Gila-San Francisco river drainages (Blaney 1977, Stebbins 1985). Although no specimens were collected during this study, one DOR specimen found on US Hwy 180, 17 km NW Cliff, Grant Co., New Mexico, was identified and discarded. Lowe (1964) describes habitat and habits in Arizona. Additional habitat data are presented in Shaw and Campbell (1974), Collins (1982), and Tennant (1984). Geographic variation, sexual variation, and ontogenetic variation is discussed in Blaney (1977). Fitch (1970) and Tennant (1984) summarize reproductive data. Wright and Wright (1957) illustrate the eggs. Hammerson (1984) illustrates a hatchling from southeastern Colorado. Collins (1982) describes food habits. Scalation is described in Fowlie (1965). Klauber (1972) discusses the immunity of L. getulus to the bite of various rattlesnakes. Duellman (1955), Smith (1956), and Webb (1970b) discuss intergradation between L. g. splendida and various other subspecies of L. getulus. The subspecies L. g. splendida occurs in southwestern New Mexico (Blaney 1977). Photographs appear in Fowlie (1965), Behler and King (1979), and Tennant (1984). Map 46.

Lampropeltis pyromelana - Sonoran mountain kingsnake

Distribution.—Lampropeltis pyromelana ranges from north-central Utah to eastern Nevada, Arizona, extreme western New Mexico, and eastern Sonora to southern Chihuahua (Tanner 1983). Distribution in Arizona is reported by Lowe (1964) and Fowlie (1965). Tanner (1940b) reports on distribution in Utah. Specimens from New Mexico are discussed in Belfit (1978) and New Mexico Department of Game and Fish (1985c). Mexican distribution is briefly discussed by Van Devender and Lowe (1977) and Taylor (1940). Range maps are presented in Tanner (1983) and Stebbins (1985). Map 47.

Recognition.—The Sonoran mountain kingsnake can be distinguished from other snakes in southwestern New Mexico by the following combination of characters: (1) body with red, black, and white rings which may or may not completely encircle body; (2) snout white or black flecked with white; (3) smooth scales in 23-25 rows at midbody; and (4) maximum size ca. 104 cm. SV. Hatchlings are similar to adults in appearance.

Size.—The largest specimen measured by Blanchard (1921) was 1,067 mm in length. Tanner and Cox (1981) measured three adult specimens from Utah which averaged 662 mm SV (range 569-836 mm SV). Wright and Wright (1957) gave a size range of 424-1,067 mm for males and 519-840 mm for females. Stebbins (1985) reports that adult specimens range from 45-104 cm SV.

The single specimen (MSB 42744) collected during this study measured 628 mm SV and 755 mm TL.

Habitat Use.—Lowe (1964) reports that this species in Arizona is a mountain form usually occurring above 1,433 m. Reported habitats include pinon-juniper zone (Hulse 1973), wooded canyons, pine-oak woodland, pine forest (Van Devender and Lowe 1977), oak woodland into ponderosa pine, Douglas fir (Lowe 1964), and old sawdust piles and sawmills (Fowlie 1965). Belfit (1978) reports the habitat in southwestern New Mexico as more mesic vegetative communities of mountain ranges between 1,189 m and 2,042 m.

During this study this species was found in ponderosa pine forest and in pinon-juniper forest.

Food Habits.—Stebbins (1985) reports that L. pyromelana eats lizards and probably snakes and small mammals. Woodin (1953) reported on a specimen from Carr Canyon in the Huachuca mountains which had eaten two mice, Peromyscus sp. Gehlbach (1956) found a specimen in the Grand Canyon which had eaten a Sceloporus graciosus. Stebbins (1954) reports on a specimen from Arizona which contained a S. jarrovi.

Reproduction.—Tanner and Cox (1981) report on reproduction in L. pyromelana. A female from Utah laid five eggs which averaged 4.38 x 1.786 cm (range 4.7-4.11 x 1.9-1.7

cm). Incubation required 57-58 days. Hatchlings averaged 232.4 mm SV (range 230-235 mm SV). Minimum sizes reported by Wright and Wright (1957) are 205 mm (tail 27½ mm), 281 mm TL, and 262 mm TL. Stebbins (1985) reports L. pyromelana lays 3-6 eggs in June and July.

During this study a pair of L. pyromelana were seen copulating on 5 May.

Remarks.—Tanner (1953) discusses the taxonomy and phylogeny of the L. pyromelana complex.

Few data have appeared in the literature concerning life history of this species.

Photographs of L. pyromelana appear in Wright and Wright (1957), Fowlie (1965), and Behler and King (1979). The subspecies L. p. pyromelana occurs in southwestern New Mexico (Tanner 1983).

This species is listed as a state endangered species by the New Mexico Department of Game and Fish.

Masticophis flagellum - Coachwhip snake

Distribution.—Masticophis flagellum occurs across the southern half of the United States coast to coast, from North Carolina westward through Kentucky, Tennessee, Missouri, Nebraska, and eastern Colorado, then southwestward through central and southern New Mexico and southern Arizona. From there, the range extends northward through southwestern Utah, south-central Nevada, and southern and central California. In Mexico, M. flagellum occupies the Mesa Central and both coastal lowlands as far south as northern Veracruz, Queretaro, southern Durango, and central Sinaloa, as well as the entire peninsula of Baja California (Wilson 1973, Conant 1975, Stebbins 1985). Distribution in Arizona is discussed by Lowe (1964) and Fowlie (1965), Colorado (Hammerson 1982), Oklahoma (Webb 1970b), and Texas (Raun and Gehlbach 1972, Tennant 1984). Specimens from New Mexico are discussed in Lewis (1950), Gehlbach (1965), and Wilson (1970). Mexican distribution is discussed by Dixon et al. (1962), Hardy

and McDiarmid (1969), and Martin (1958). Additional papers concerned with this species in Mexico are found in Smith and Smith (1973, 1976a). Range maps are found in Wright and Wright (1957), Wilson (1970, 1973), and Stebbins (1985). Map 48.

Recognition.—The coachwhip can be distinguished from other snakes occurring in southwestern New Mexico by the following combination of characters: (1) long slender body and tail with posterior scalation suggesting a braided whip, (2) smooth scales with 17 scale rows at midbody, (3) divided anal plate, (4) smooth scales, and (5) maximum length ca. 255 cm SV. No sexually dimorphic characters are evident. The juveniles have dark blotches or crossbars that are most prominent on the anterior portion of the body.

Size.—Wilson (1970) presented the following mensural data for M. f. testaceus and M. f. lineatulus: 365 male testaceus ranged 263-1,480 mm SV, 313 female testaceus 279-1,270 mm SV; 29 male lineatulus 249-1,270 mm SV, 20 females 290-1,281 mm SV. Stebbins (1985) gives a size range of adults as 90-255 cm TL.

Three specimens (MSB 42772-42774) collected during this study averaged 110.03 cm TL (range 93.9-130.5 cm TL).

Habitat Use.—Specimens of M. flagellum have been found in Yucca-Juniperus, Atriplex-Allenrolfea, and Yucca-grassland associations (Lewis 1950, Gehlbach 1965). Lowe (1964) reports specimens from Arizona are found in the Larrea-Franseria, Cercidium-Cereus, and Atriplex communities. Wilson (1970) reports that this species prefers the relatively dry, warm situations from the southwestern deserts to the pine forests of the southeast.

Specimens collected during this study were found DOR in the pinyon-juniper zone and the Yucca-grassland association.

Food Habits.—Small mammals, birds, and their eggs, lizards, snakes, and insects are reported as food items taken by M. flagellum (Guidry 1953, Wright and Wright 1957, Carpenter 1958, Cunningham 1959, Hammerson 1982, Stebbins 1985). Stebbins (1954) reports M. flagellum feeding on the lizards Callisaurus, Crotaphytus, Cnemidophorus,

Dipsosaurus, Holbrookia, Phrynosoma, and Sceloporus. Cowles (1946) and Minton (1959) include carrion in the diet.

Specimens examined during this study contained rodent hair, lizards (Cnemidophorus sp.) and grasshoppers.

Reproduction.—Copulation in M. flagellum was observed by Minton (1958) on 30 April. Data on clutch size, egg size, and deposition date are found in Guidry (1953) 8 eggs, 17 July; Carpenter (1958) 13 eggs, $\bar{x}$ = 3.58 x 2.16 mm, 2 July, 12 eggs, $\bar{x}$ = 4.39 x 2.63 cm, 7 July, and 7 eggs, $\bar{x}$ = 3.5 x 2.1 cm, 19 June; Hammerson (1982) 15 eggs, 24 June. Incubation requires 6-11 weeks, hatchlings are ca. 30-41 cm TL (Behler and King 1979).

Remarks.—The subspecies of M. f. testaceus and M. f. lineatulus integrade throughout central and southwestern New Mexico although there is a decreasing indication of the lineatulus pattern to the north (Wilson 1970). Photographs of M. flagellum are found in Wilson (1970) and Tennant (1984).

Masticophis taeniatus - Striped whipsnake

Distribution.—Masticophis taeniatus is found in western North America from southeastern Washington southeastward across parts of Idaho, Oregon, Utah, Nevada, eastern California, northern Arizona, western New Mexico, and southern Texas, then southeastward into Mexico to Tamaulipas through the Mexican states of Chihuahua, Coahuila, Durango, Guanajuato, Hidalgo, Michoacan, Nuevo Leon, San Luis Potosi, and Zacatecas (Parker 1982a). Distribution in Arizona is discussed by Lowe (1964) and Fowlie (1965), Williamson and Scott (1982), Texas (Gloyd and Conant 1934, Tennant 1984), and southwestern New Mexico (Bogert and Degenhardt 1961, Dixon and Medica 1965). Range maps are found in Stebbins (1954, 1985), Parker (1982a), and Wright and Wright (1957). Map 49.

Recognition.—The striped whipsnake may be distinguished from other snakes in southwestern New Mexico by the following combination of characters: (1) long slender body with black and cream to white stripes along sides of body, (2) smooth scales with 15 scale rows at midbody, (3) coral pink coloration on posterior venter, and (4) maximum length ca. 183 cm TL. No sexually dimorphic characteristics are evident. The hatchlings resemble the adults.

Size.—Parker and Brown (1980) measured 171 whipsnakes and found both sexes attained maximum sizes in the range of 105-110 cm SV. Stebbins (1985) gives the size range of adults as 90-183 cm TL. Wright and Wright (1957) give the size range of males as 600-1,150 mm and females 575-1,000 mm.

During this study 12 specimens were measured; males N = 5, $\bar{x}$ = 88.8 cm SV, range = 74.7-104.14 cm SV; females N = 6, $\bar{x}$ = 76.4 cm SV, range = 39.5-90.1 cm SV. One unsexed DOR specimen measured ca. 36 cm. SV.

Habitat Use.—In east-central Arizona, Hulse (1973) reported finding M. taeniatus along streambeds in deciduous riparian habitat and rocky hillsides in the pinon-juniper zone. Parker and Brown (1972, 1980) found whipsnakes very abundant in Artemisia-Chrysothamnus association of Utah. Lewis (1950) describes the habitat in south-central New Mexico. Wright and Wright (1957) present an exhaustive account of the different habitats of M. taeniatus reported in the literature prior to 1957.

The 12 specimens collected during this study were found in a variety of habitats including pinon-juniper, Acacia thicket, grasslands, deciduous riparian, Yucca-Nolina-grasslands, and downtown Silver City in a residential neighborhood.

Food Habits.—Twenty-eight specimens examined by Parker and Brown (1980) contained the following: lizards, Cnemidophorus, Phrynosoma, Sceloporus, and Uta; snakes, Coluber and Masticophis; mammals, Perognathus, Peromyscus, and Microtus. Parker and Brown (1980) noted that small to medium whipsnakes fed entirely on lizards while the larger specimens included mammals and lizards. Additional prey species of M.

taeniatus include young birds and frogs (Gloyd and Conant 1934, Wright and Wright 1957) and bats (Herreid 1962). Fautin (1946) examined three stomachs of M. taeniatus and found 1 Cnemidophorus tigris, 2 Uta, 2 grasshoppers, and 3 beetles. Stebbins (1954) mentions a M. taeniatus which fed on a Crotalus atrox.

Eleven specimens were examined during this study. Five of the 11 (45%) contained food items which included Cnemidophorus sp., Urosaurus ornatus, Peromyscus sp., and insect parts.

Reproduction.—Parker and Brown (1972, 1980) report mating in the spring or early summer. They examined 13 snakes and found the average clutch to be 5.8 eggs (range 3-10). Oviposition was observed on 4 July and 5 July with seven and six eggs, respectively, which were laid in rodent burrows. Incubation of one clutch required 44-58 days. Illustrations of females with eggs are in Gloyd and Conant (1934), 12 eggs and Pope (1955), 7 eggs. Wright and Wright (1957) measured two eggs that were 6 x 33 mm and 10 x 35 mm. Fitch (1970) summarizes reproduction.

Remarks.—Pope (1955) illustrates a female from Mimbres, Grant Co., New Mexico. Additional photographs of M. taeniatus are in Tennant (1984), Behler and King (1979), and Gloyd and Conant (1934). The subspecies M. t. taeniatus occurs in southwestern New Mexico (Parker 1982a).

Pituophis melanoleucus - Gopher snake

Distribution.—Pituophis melanoleucus affinis, the subspecies which occurs in southwestern New Mexico, is found from the desert areas of southeastern California and northeastern Baja California eastward to eastern New Mexico and southeastern Coahuila, including San Diego and Riverside Co., and Imperial Co., California; extreme northeastern lower California; Arizona south of the Grand Canyon, the Hopi villages, and Canyon de Chelly; Sonora; extreme northern Sinaloa; Chihuahua; and southern and western Coahuila (Klauber 1947, Stebbins 1985). The most complete distributional

records are those of Klauber (1947). Distribution in Arizona is discussed by Lowe (1964), Texas (Raun and Gehlbach 1972, Tennant 1984), and New Mexico (Lewis 1950, Gehlbach 1965). Smith and Smith (1976a) discuss specimens from Mexico. Map 50.

Recognition.—The Sonoran gopher snake may be distinguished from other snakes occurring in southwestern New Mexico by the following combination of characters: (1) upper surface yellowish or cream-colored with an average of 48 dark dorsal blotches, (2) dorsal scales keeled, (3) four prefrontals, (4) usually a dark line across the head in front of the eyes and from behind the eye to the angle of the eye, and (5) maximum length ca. 275 cm. TL. Sweet (1985) discusses similarities in pattern of P. melanoleucus and Crotalus viridis. Parker and Brown (1980) discuss sexual dimorphism. Hatchlings resemble the adults. Klauber (1947) presents a key.

Size.—Klauber (1943) measured 31 males and 23 females. He found males averaged 783 mm TL and females 815 mm TL. Maximum size was 1,495 mm TL for males and 1,566 mm TL for females. Wright and Wright (1957) state the adults average 66-229 cm TL. Klauber (1947) speculates that large adults may reach lengths greater than 2,000 mm TL and Tennant (1984) records a specimen which measured 2,337 mm TL.

Twenty specimens were examined during this study. Average size of adults (those greater than or equal to 50 cm SV) was 153.1 cm SV (N = 9, range 50.0-133.7 cm SV). Juveniles averaged 434.5 mm TL (N = 11, range 400-520 mm TL). One series of eight juveniles (MSB 42848-42849, 42851-42856), found 16 September, DOR along a short stretch of highway averaged 421.3 mm TL (range 400-450 mm TL). This series most likely represents the dispersal movements of a portion of a recently hatched brood. Klauber (1947) and Sweet (pers. comm.) state that newly hatched snakes of this species are most prevalent along the roadside between 16 September and 10 October.

Habitat Use.—Pituophis melanoleucus is found in a wide variety of habitats. Lewis (1950) reported specimens from the east side of the Organ Mountains in yucca-mesquite-ephedra-grassland association. Gehlbach (1965) encountered specimens most commonly

in saltbush-sage association in northwestern New Mexico although he also found specimens in pinon-juniper and cholla-juniper. Klauber (1947) discusses specimens commonly associated with irrigated agricultural areas. He also includes the sparsely covered southern deserts, chaparral, grassy plains, and pine-forest to 9,000 ft in New Mexico mountains. Wright and Wright (1957) offer a complete list of reported habitats.

Specimens collected during this study were found in pinon-juniper, Atriplex-grassland, grasslands, Yucca-Nolina, and riparian areas where cottonwood was dominant. During early spring and early fall, specimens were comonly seen crossing roadways.

Food Habits.—Gopher snakes feed on small mammals, birds, and lizards. Food items reported in the literature include Peromyscus, Neotoma, Thomomys bottae, Sceloporus undulatus, and various passerine birds (Gehlbach 1965); Citellus (Webb 1970b); Urosaurus (Hulse 1973); birds, mice, quail eggs, and Cnemidophorus tessallatus (Klauber 1947); and duck eggs, flickers, and nestling songbirds (Hammerson 1982).

Twelve specimens were examined for food items during this study, of these two contained food. A 50 cm SV male contained a Peromyscus and a 72.1 cm SV female contained a (Sigmodon?).

Reproduction.—Klauber (1947) reports on a brood of 11 hatchlings which averaged 393 mm TL (range 356-412 mm TL). Additional clutches of 12, 9, and 8 eggs were reported by Klauber (1947) with an average hatching size of ca. 390 mm TL. On 23 July, Gehlbach (1965) found a 385 mm TL hatchling with the yolk-sac scar still evident. Depending upon the size of the female, eggs may reach 30 mm x 90 mm. Klauber (1947) reports a clutch laid 29 June which hatched 12 September. Fitch (1970) discusses captive specimens which lay two clutches per year. Fitch (1970) summarizes reproduction.

Remarks.—Sweet (1984, pers. comm.) has extensively studied the morphology and systematics of P. melanoleucus. Based on cranial morphology he has redefined the species to include four species groups. A forthcoming taxonomic revision of Pituophis

melanoleucus will likely include the southwestern New Mexico form, P. m. affinis, in the P. sayi group of Sweet (1984).

Photographs of P. melanoleucus affinis appear in Tennant (1984), Conant (1965), and Wright and Wright (1957).

Rhinocheilus lecontei - Longnose snake

Distribution.—Medica (1975) describes the distribution of R. lecontei in detail. He divides the range into three major sections. One section encompasses much of Texas, the western half of Oklahoma, the southwestern portion of Kansas, and New Mexico except the northwestern third of the state. This section of the range also extends southward into Mexico along the eastern side of the Sierra Madre Occidental from Chihuahua and Durango through Coahuila, Nuevo Leon, Tamaulipas, and San Luis Potosi. Another section joins the first around the border between southeastern Arizona and southwestern New Mexico and extends northwestward through Arizona, the western half of Utah, most of Nevada, and the southern two-thirds of California. The range extends southward into most of Baja California Norte. The third section extends southward along the western side of the Sierra Madre Occidental from Sonora through Sinaloa and Nayarit to Jalisco. Isolated populations exist at Elmore Co., Idaho, Carbon Co., Utah, and on Cerralvo Island in Baja California del Sur. Distribution in Arizona is discussed by Fowlie (1965) and Lowe (1964), Texas (Raun and Gehlbach 1972, Tennant 1984), Kansas (Collins 1982), Oklahoma (Webb 1970b), and Colorado (Hammerson 1982). Literature pretaining to Mexican distribution is found in Smith and Smith (1976). Stebbins (1985) and Medica (1975) provide distribution maps. Map 51.

Recognition.—The longnose snake may be distinguished from other snakes which occur in southwestern New Mexico by a combination of the following characters: (1) dorsum with black saddles which are flecked with whitish on the sides, (2) lower jaw

countersunk, (3) scales smooth in 23 rows at midbody, (4) most caudal scales in a single row, and (5) maximum size ca. 104 cm TL.

Size.—Klauber (1941) measured 235 R. l. lecontei and 79 R. l. tessellatus. Maximum male size in R. l. lecontei was 892 mm TL, maximum female size was 755 mm TL. Hatchlings measured 210-220 mm TL. The smallest specimen was 202 mm TL. Maximum male size in R. l. tessellatus was 936 mm TL, maximum female size was 763 mm TL. The smallest specimen was 186 mm TL. Stebbins (1985) gives a size range of adults as 50-104 cm TL.

The single specimen MSB 42758 collected during this study measured 230 mm TL.

Habitat Use.—In Texas, Tennant (1984) reports that specimens occur mostly on dry gravelly soils of catclaw-grama grass, catclaw-tobosa, or mesquite-prickly pear associations. Hammerson (1982) states that they occur most commonly in the plains grasslands and sandhills of Colorado. McCoy (1964) found Rhinocheilus on open active sand dunes in Coahuila, Mexico.

The specimen collected during this study was found at Red Rock in riparian vegetation along the Gila River.

Food Habits.—Food items reported in the literature for R. lecontei include lizards and their eggs, rodents, small snakes, and insects (Hammerson 1982); Cnemidophorus tigris (Minton 1958); and Dipodomys, lizard eggs, and grasshoppers (Klauber 1941). McKinney and Ballinger (1966) examined 14 specimens and found Sceloporus, Cnemidophorus, and Uta.

Reproduction.—Lardie (1965) reported a 593 mm TL Rhinocheilus from Texas which deposited six eggs on 11 June. Eggs averaged 33 x 16 mm (range 31-36 and 16 mm). Hatching began 65 days after depositon. Hatchlings averaged 181.2 mm TL (range 166-198 mm TL). Klauber (1941) reported clutch sizes of 5, 7, 8, and 9 eggs. In one clutch of eight, the eggs measured 20 x 7 mm. Behler and King (1979) report 4-9 eggs are laid in June to August. Fitch (1970), reviewing all published clutch sizes, estimated average

clutch size to be 6.3 eggs. He suggests some females may lay more than one clutch per season.

Remarks.—Rhinocheilus is unique among the Nearctic colubrid snakes in having the majority of the caudals undivided.

Photographs of this species occur in Behler and King (1979), Hammerson (1982), and Tennant (1984). A zone of intergradation between the subspecies R. l. lecontei and R. l. tessellatus occurs in extreme southwestern New Mexico (Medica 1975).

Salvadora deserticola - Big Bend patchnose snake

Distribution.—Salvadora deserticola occurs from extreme western Texas (from the Big Bend region to El Paso) west through southern New Mexico to southeastern Arizona. The range then extends southward through eastern Sonora, Chihuahua, and into southern Sinaloa (Stebbins 1985). Distribution in Arizona is discussed by Lowe (1964), Texas (Tennant 1984), and New Mexico (Jameson 1957). Mexican specimens are discussed in Hardy and McDiarmid (1969) and Reynolds and Scott (1982). Stebbins (1985) presents a range map (see Remarks Section of this account). Map 52.

Recognition.—The Big Bend patchnose snake may be distinguished from other snakes in southwestern New Mexico by the following combination of characters: (1) dosrum with tan background color overlaid by bold, dark brown or black stripes; (2) rostral scale enlarged, free at the edges and curved back over the snout; (3) two or three scales between posterior chin shields; (4) usually nine upper labials; and (5) maximum length ca. 102 cm TL. Hatchlings resemble the adults.

Size.—Wright and Wright (1957) give a size range of 709-826 mm for females and 684+ mm for males. Tennant (1984) states adults range 50.8-114.3 cm TL and Conant (1975) gives a range of 61-81 cm TL. The record size recorded by Conant (1975) is 101.6 cm TL.

Five specimens, MSB 42738-42742, collected during this study averaged 500 mm SV (range 268-611 mm SV).

Habitat Use.—In Texas, S. deserticola has been found in the low-lying flats characterized by octillo, yucca, and agave (Tennant 1984); shrub desert, tobosa-grama grassland, and catclaw-creosote-blackbrush flats (Jameson and Flury 1949); and river floodplains and low gravel hills adjacent to the floodplain (Axtell 1959). In Arizona, Lowe (1964) describes the habitat of S. deserticola as deserts, grasslands, and occasionally into the lower edge of the chaparral and woodlands.

The five specimens collected during this study were found at sites from 1,245 m to 1,669 m elevation. They were found mostly around Red Rock in Larrea-Prosopis associations although one specimen was collected on the west slope of the Burro Mountains in a dry wash where Juglans major and Chilopsis linearis were abundant.

Food Habits.—Stebbins (1985), Tennant (1984), and Conant (1975) report that S. deserticola feed on lizards, small snakes, reptile eggs, and rodents.

Of five specimens examined during this study, three contained food. Prey items found included Cophosaurus texanus, Cnemidophorus sp., unidentified lizard remains, and grasshoppers.

Reproduction.—Salvadora deserticola lays between 5 and 10 eggs in summer. Hatchlings are ca. 23 cm TL (Behler and King 1979). Tennant (1984) estimates hatchling size to be 21-25 cm TL. Fitch (1970) suggests certain females may lay two or more clutches per season.

Remarks.—The taxonomy of the genus Salvadora has a confusing history (Bogert 1939) with various combinations of species and subspecies used in the literature. At present, Stebbins (1985) does not recognize S. deserticola as a distinct species prefering to regard it as a subspecies of S. hexalepis. The range map presented by Stebbins (1985) is a composite map for S. hexalepis subspecies. Although he states that the Big Bend patch-nosed snake (= S. hexalepis deserticola) may be a distinct species, he feels as

though there is a lack of adequate documentation in the literature to support this. Collins et al. (1982) seem to be in agreement with other herpetologists and recognize three distinct species of Salvadora in the U.S., deserticola, hexalepis, and grahamiae.

Photographs of S. deserticola appear in Tennant (1984) and Behler and King (1979). As presently understood by some authorities, S. deserticola contains no subspecies.

Salvadora grahamiae - Mountain patchnose snake

Distribution.—Salvadora grahamiae ranges from north-central Texas to north-central New Mexico and southeastern Arizona. Mexican distribution is from southern Chihuahua in the west, southward to Hidalgo (Conant 1975). Distribution in Arizona is discussed by Lowe (1964), Texas (Jameson and Flury 1949, Tennant 1984), and New Mexico (Mosauer 1932). Literature concerning Mexican distribution is found in Smith and Smith (1976a). Conant (1975) presents a range map. Map 53.

Recognition.—The mountain patchnose snake may be distinguished from other snakes which occur in southwestern New Mexico by the following combination of characters: (1) dorsal background color tan overlaid by bold, dark brown or black stripes; (2) rostral scale enlarged, free at the edges and curved back over the snout; (3) the posterior chin shields touching or separated by only one scale; (4) usually eight upper labials; and (5) maximum size ca. 120 cm TL.

Size.—Wright and Wright (1957) give a size range of 50.8-121.9 cm TL for adults. Conant (1975) estimates adult size to be 56-119.4 cm TL.

Four specimens, MSB 42734-42737, collected during this study averaged 444.5 mm SV (range 367-542 mm SV).

Habitat Use.—In Texas, this species is known to occur in catclaw-"cedar" (= juniper) and lecheguilla-beargrass associations (Jameson and Flury 1949) and in the ecotone of prairie and oak-elm stands and in oak-juniper savannahs (Tennant 1984). Conant (1975) indicates that this species occurs in isolated mountain areas, foothills, and mesas. It also

occurs in arid brushlands and cultivated farmlands of the lower Rio Grande Valley (Conant 1975).

Specimens collected during this study occurred predominantly in pinyon-juniper association although one specimen was found near the Moon Ranch in open grasslands.

Food Habits.—Stebbins (1954, 1985) and Conant (1975) report S. grahamiae to feed on lizards, reptile eggs, and rodents. Tennant (1984) includes small snakes and small frogs. Minton (1958) observed S. grahamiae to feed on Sonora.

Of four specimens examined during this study, one contained a Cnemidophorus sp. and one contained unidentified lizard remains.

Reproduction.—Minton (1958) collected a female which laid six eggs on 29 May. Three of these eggs hatched 27-28 August. The hatchlings averaged 264.7 mm TL (range 263-267 mm). Conant (1975) says the hatchlings are 21-25 cm TL. Stebbins (1985) estimates the clutch size to be 6-10 eggs which are laid in spring or early summer. Fitch (1970) summarizes reproductive data and provides data on clutches of 6 and 10 eggs.

Remarks.—Surprisingly little is published concerning the life history of such an abundant snake. Tennant (1984) believes S. grahamiae to be one of the most common terrestrial snakes in Texas.

Photographs of this species are found in Tennant (1984) and Wright and Wright (1957). The subspecies S. g. grahamiae occurs in southwestern New Mexico (Stebbins 1985).

Sonora semiannulata - Ground snake

The range of this species includes the Gila-San Francisco river drainage (Frost and Van Devender 1979, Frost 1983b, Stebbins 1985) although no specimens were collected during this study. Frost (1983a, 1983b) considers Sonora to be monotypic in the U.S. and considers semiannulata the only valid species. As a result, much of the literature on S. semiannulata is found under the name S. episcopa (Frost and Van Devender 1979, Frost

1983b). Frost (1983b) offers an extensive bibliography. Kassing (1961) presents data on morphological variation, habits, reproduction, and habitat. Fitch (1970) summarizes reproductive data. Food habits are found in Carpenter (1958), Collins (1982), Hammerson (1984), and Tennant (1984). Kroll (1971) offers information on combat behavior. Dentition is presented in Dowling and Duellman (1978); hemipenes in Dowling and Duellman (1978) and Frost (1983b). Strecker (1934) and Stickel (1938, 1943) describe color pattern polymorphism. Photographs of this polymorphism are found in Conant (1975) and Tennant (1984). No subspecies are recognized (Frost 1983b, Stebbins 1985). No specimens of this species from the Gila-San Francisco river drainages are catalogued into the vertebrate collections of MSB, NMSU, or WNMU.

Tantilla hobartsmithi - Southwestern blackheaded snake

The range of this species includes the Gila-San Francisco river drainage (Cole and Hardy 1981, 1983) although no specimens were collected during this study. Taylor ("1936b" 1937) described the holotype and collection habitat in Sonora, Mexico. Wilson (1982) and Cole and Hardy (1981) provide keys to this species. Prior to the taxonomic revision by Cole and Hardy (1981), T. hobartsmithi had been considered conspecific with several other species (T. atriceps, T. planiceps). As a result, most of the literature on these species actually pertains to T. hobartsmithi (Cole and Hardy 1981). Tanner (1966) states that the type specimen of T. hobartsmithi is actually an aberrant atriceps. Data on geographic distribution, scutellation, color pattern of the head and neck, hemipenes, maxillae, and chromosomes appear in Cole and Hardy (1981). Eggs were described by Stebbins (1954) and Easterla (1975) under the names T. utahensis and T. atriceps, respectively (Cole and Hardy 1983). A photograph of T. hobartsmithi appears in Fowlie (1965) as T. n. nigriceps. No subspecies are recognized. Map 54.

Tantilla nigriceps - Plains blackhead snake

Distribution.—Tantilla nigriceps ranges from southwestern Nebraska south into Mexico and from southeastern Arizona into central Texas (Stebbins 1985). Distribution in Arizona is discussed by Lowe (1962), Texas (Raun and Gehlbach 1972, Tennant 1984), and Colorado (Hammerson 1982). Locality records for New Mexico are provided by Cole and Hardy (1981). Mexican distribution is discussed in the literature found in Smith and Smith (1976a). Range maps are provided by Stebbins (1985) and Conant (1975). Map 55.

Recognition.—The plains blackhead snake may be distinguished from other snakes which occur in southwestern New Mexico by the following combination of characters: (1) dorsal coloration plain brown; (2) ventral coloration salmon without dark spotting; (3) black or gray-brown cap, convex behind, extending 2-5 scale length behind posterior end of furrow separating parietals; (4) no white collar; and (5) maximum length ca. 37 cm TL. The hatchlings resemble the adults.

Size.—Stebbins (1985) gives a size range of adults as 18-37 cm TL. Conant (1975) lists maximum size as 37.5 cm TL. The largest specimen reported by Collins (1982) from Kansas is a female 356 mm TL. The single specimen collected during this study, MSB 42886, measures 107 mm SV.

Habitat Use.—Tanner and Robison (1960) found T. nigriceps in the low desert areas of Chihuahua. Tennant (1984) found the species most commonly in prairie grasslands and arid desert environments. Collins (1982) reports the plains blackhead snake in Kansas is found on rocky hillsides of grassland prairies and along prairie streams.

The single specimen collected during this study was found in a pit-fall trap in Yucca-Nolina association.

Food Habits.—Prey items of T. nigriceps reported in the literature include centipedes and subterranean insect larvae (Conant 1975); centipedes, millipedes, spiders, and insect larvae, pupae, and adults (Stebbins 1985); soft-bodied invertebrates (Tennant 1984); and spiders (Stebbins 1954).

Reproduction.—Tennant (1984) discusses one specimen which laid two eggs on 11 June that hatched 25 July. Hatchlings were ca. 65 mm TL. Clark (1970) reports that T. nigriceps normally has only one oviduct.

Remarks.—As with most Tantilla, the life history of T. nigriceps is poorly known. No subspecies are recognized (Collins et al. 1982).

Thamnophis cyrtopsis - Blackneck garter snake

Distribution.—Thamnophis cyrtopsis ranges from the southwestern U.S. (southeastern Utah and southern Colorado south through Arizona, New Mexico, and west Texas) south through most of Mexico into Guatemala (Webb 1980). Distribution in Arizona is discussed in Lowe (1964), New Mexico (Mosauer 1932, Lewis 1950, Gehlbach 1965, Fleharty 1967), Colorado (Hammerson 1981, 1982), and Texas (Raun and Gehlbach 1972, Tennant 1984). Distribution in Mexico is discussed in the literature found in Smith and Smith (1976a). Range maps are presented by Milstead (1953b), Webb (1980), and Stebbins (1985). Map 56.

Recognition.—The blackneck garter snake may be distinguished from other snakes in southwestern New Mexico by the following combination of characteristics: (1) conspicuous pale yellow or orange middorsal stripe with lateral stripe on second or third scale row; (2) ventral coloration greenish-white, bluish-white, or brownish; (3) scales keeled usually 19 rows at midbody; 14 paired black blotches on head; and (5) maximum size ca. 106 cm TL.

Size.—Fleharty (1967) measured 37 T. cyrtopsis from Wall Lake in Catron County, New Mexico. He found 31 females averaged 73.4 cm TL and 6 males averaged 54.9 cm TL. Wright and Wright (1957) give an average size of females as 504-764 mm TL, males as 429-470 mm TL. Fouquette and Rossman (1963) report a female from Oaxaca which measured 1,015 mm TL. Conant (1975) gives the record size as 106 cm TL.

During this study 13 specimens (seven males, six females) were measured. The females ($\bar{x}$ = 500.8 mm SV, range 380-631 mm SV) averaged slightly longer than the males ($\bar{x}$ = 463.7 mm SV, range 330-537 mm SV).

Habitat Use.—Stebbins (1954) states that T. cyrtopsis prefers mountain streams although during the period of summer rains it is often found some distance from permanent water. Milstead (1953b) indicates that preferred habitat is around springs and tanks in watered canyons of desert mountain areas. Other reported habitats include, wooded canyons and near springs (Minton 1958); mesquite-mountain ash-cottonwood association (Milstead 1953a); rocks and boulders of canyon streams (Wright and Wright 1957); and well-vegetated and rocky areas (Fleharty 1967). In Sinaloa, Mexico, Hardy and McDiarmid (1969) found T. cyrtopsis also occupies extensive agricultural areas.

During this study specimens were found primarily along rocky tributaries of the mainstem Gila River. Vegetation was mostly riparian deciduous forest. One specimen was found DOR along a paved road in pinon-juniper association.

Food Habits.—Thamnophis cyrtopsis feeds almost exclusively on amphibians. Fouquette (1954) examined stomach contents of 40 specimens which contained 97% amphibians and one lizard (Scincella lateralis). The amphibians included: Hyla arenicolor, Rana pipiens, Gastrophryne olivacea, Bufo punctatus, B. compactilis, Scaphiopus hammondii, Syrrhophus marnocki, and Plethodon glutinosus. Hammerson (1982) includes Bufo woodhouseii. Minton (1958) observed specimens feeding on Hyla arenicolor tadpoles. In Wall Lake, Catron County, New Mexico, Fleharty (1967) found T. cyrtopsis to be feeding almost exclusively on R. catesbeiana. Stebbins (1985) includes the eubranchiopod, Triops.

During this study stomach contents of 13 specimens were examined. Of these 5 or 38% contained food items which included Bufo sp., Hyla arenicolor, fish, vertebrate bones, and unidentified material.

Reproduction.—In the Guadalupe Mountains of Eddy and Otero counties in southeastern New Mexico, Mosauer (1932) found young, apparently newborn, on ca. 20 July. These measured 230-270 mm TL. Sabath and Worthington (1959) mention a female which gave birth to seven young on 14 August. Average size of these newborn was 200.9 mm SV (range 145-230 mm SV). Fleharty (1967) first encountered newborn individuals during the second week of July at Wall Lake. Webb (1966) records a brood of 11 removed from a gravid female.

Oviducal eggs were found in two specimens collected during this study. MSB 42775 contained 10 oviducal eggs on 14 April which averaged 17.0 x 6.7 mm; MSB 42780 contained six oviducal eggs on 29 May, average 22.0 x 9.9 mm.

Remarks.—Thamnophis cyrtopsis was long confused with T. eques, until Smith (1951) indicated that eques referred to another species and resurrected the name cyrtopsis.

Photographs of T. cyrtopsis appear in Hammerson (1982) and Tennant (1984). The subspecies T. c. cyrtopsis occurs in southwestern New Mexico (Webb 1980).

Thamnophis elegans - Western terrestrial garter snake

Distribution.—Thamnophis elegans is widely distributed in western North America, from east of the Continental Divide in south-central Saskatchewan, northwestern Nebraska and the tip of the Oklahoma panhandle, west to the Pacific coast through most of the length of California, and in the Pugent Sound region and the southern end of Vancouver Island. Some populations are disjunct and isolated, including elegans in the San Bernardino Mountains of southern California, and hueyi in the San Pedro Martir Mountains, Baja California del Norte (Fitch 1983). Distribution in Arizona is discussed by Lowe (1964) and in Colorado by Hammerson (1981, 1982). Specimens from New Mexico are discussed in Gehlbach (1965). Mexican distribution is discussed by Webb (1976). Map 57.

Recognition.—The western terrestrial garter snake may be distinguished from other snakes which occur in southwestern New Mexico by the following combination of characteristecs: (1) dorsal scales keeled, single anal plate; (2) irregular black marks on belly; (3) pale stripes on sides of body on second and third scale rows; (4) background color dark overlain in darker irregular blotches; and (5) maximum length ca. 90.2 cm TL. In some parts of their range, the dorsal stripe tends to fade posteriorly.

Size.—Fitch (1983) gives the adult length as 290-740 mm SV. Stebbins (1985) records adult length as 45-107 cm TL. Klauber (1943) measured 139 specimens and found the average length to be 500 mm SV.

Six specimens collected during this study averaged 505 mm SV (range 335-647 mm SV).

Habitat Use.—Hammerson (1981, 1982) and Lowe (1964) describe the habitat of T. elegans as any flowing or non-flowing bodies of water within its range. This species will wander far from water into whatever terrestrial habitat happens to be nearby. Hammerson (1981) reports T. elegans from as high as 3,992 m elevation in Colorado.

Specimens collected during this study were found primarily along the mainstem of and tributaries to the Gila and San Francisco Rivers. One specimen was collected along the fringe of a large tule marsh.

Food Habits.—Thamnophis elegans is an opportunistic feeder. Hammerson (1982) summarizes food habits data for Colorado. Prey items mentioned include leeches, snails, slugs, earthworms, fishes, salamanders, frogs, toads, fence lizards, small birds, voles, and other rodents. Metamorphosing and newly metamorphosized frogs and toads seem to be the primary food taken in late summer. Cunningham (1955) includes Bufo boreas, Hyla regilla, spiders, beetles, and ants. Stebbins (1954) mentions Sceloporus graciosus and Eumeces skiltonianus and Arnold (1977) discusses snail eating habits of a California population of T. elegans.

Six stomachs were examined during this study; of these, only two contained food. One specimen, MSB 42791, regurgitated three R. catesbeiana when captured and another, MSB 42790, captured 16 August, contained a juvenile T. rufipunctatus ca. 180 mm TL.

Reproduction.—Cunningham (1955) reports a female collected 20 June which contained 11 eggs and the birth of four young on 11 October. Hammerson (1982) mentions two females from Colorado which gave birth to 11 young. Fitch (1970) summarizes reproduction and states that T. elegans normally breed in spring and the young are born in late July, August, or September. He gives average litter size as 8.6–10.6 young.

Remarks.—Ruthven (1908) included T. elegans as a subspecies of T. ordinoides although Johnson (1947) separated T. elegans and elevated it to full specific status.

Fitch (1940), Rossman (1979), and Lawson and Dessauer (1979) discuss the systematic relationships of T. elegans with T. couchii and T. ordinoides.

Photographs of T. elegans appear in Hammerson (1982) and Wright and Wright (1957). The subspecies T. elegans vagrans occurs in southwestern New Mexico (Fitch 1983).

Thamnophis eques - Mexican garter snake

The range of this species includes the Gila-San Francisco river drainage (New Mexico Department of Game and Fish 1985d, Stebbins 1985) although no specimens were collected during this study. Data on geographical distribution, habitat, scutellation, and dorsal pattern variation are presented in Conant (1963). Data on reproduction and food habits are scarce. Woodin (1950) presents data on brood size and birth date. Wright and Wright (1957) and Stebbins (1966) mention fish and frogs as prey items. Conant (1961a) describes the apical pits. Smith (1951) provides a synonymy of T. e. eques and T. e. megalops. Reports of this species from Mexico are contained in Chrapliwy and Fugler (1955), Zweifel and Norris (1955), Thompson (1957), Tanner (1959), Grant and Smith

(1960), Smith et al. (1963), Anderson and Lidicker (1963), and Conant (1969). Photographs are in Smith (1951) who provides an illustration of the type specimen and Conant (1961a) who illustrates an adult male and female. The subspecies T. e. megalops occurs in southwestern New Mexico (Stebbins 1985).

This species is listed as a state endangered by the New Mexico Department of Game and Fish. Map 58.

Thamnophis marcianus - Checkered garter snake

The range of this species includes the Gila-San Francisco river drainage (Conant 1975, Stebbins 1985) although no specimens were collected during this study. Geographic variation and systematics are found in Mittleman (1949). Habitat descriptions are in Lowe (1964) and Tennant (1984). Food habits are discussed in Fouquette (1954), Raun (1965), Shaw and Campbell (1974), and Collins (1982). Stebbins (1954), Wright and Wright (1957), and Fowlie (1965) give brood size and birth dates. Conant (1961a) describes apical pits. Parasites are discussed in La Rue (1917), George (1960), and Hilman (1960). Vial (1957) gives a maximum size record. Raun and Gehlbach (1972) offer an extensive bibliography. Photographs appear in Behler and King (1979) and Collins (1982). The subspecies T. m. marcianus occurs in southwestern New Mexico (Conant 1975). Map 59.

Thamnophis rufipunctatus - Narrowhead garter snake

Distribution.—Thamnophis rufipunctatus ranges throughout the upland drainages of central and eastern Arizona and southwestern New Mexico; south in the Sierra Madre Occidental of Mexico to central Durango (Stebbins 1985). Distribution in Arizona is discussed by Duellman (1955), Thompson (1957), Tanner (1959), Lowe (1964), and Fowlie (1965). New Mexico localities are in Van Denburgh (1922b), Thompson (1957), Fleharty (1967), Belfit (1978), and the New Mexico Department of Game and Fish (1985e). Mexican distribution is discussed in Smith (1942), Thompson (1957), Smith and Taylor

(1966), Conant (1963, 1969), and Smith and Smith (1976a). Range maps are in Thompson (1957), Conant (1963), and Stebbins (1985). Map 60.

Recognition.—The narrowhead garter snake may be distinguished from other snakes found in southwestern New Mexico by the following combination of characters: (1) dorsum with olive or brown background color with a dark-spotted pattern, (2) usually a row of black wedge-shaped marks on each side of the belly, (3) scales keeled in 21 rows at midbody, (4) eyes placed high on the head, and (5) maximum size ca. 86 cm TL. The young resemble the adults although the dorsal spots sometimes tend to be reddish brown. Van Denburgh (1922b) states "their general appearance is very different from that of most garter-snakes, the absence of lines, the heavy spotting, and the long narrow head are not suggestive of Thamnophis." Information on scutellation is presented by Van Denburgh (1922b), Smith (1942), Thompson (1957), Tanner (1959), and Conant (1963).

Size.—Woodin (1950) commented on 10 specimens collected at Oak Creek Canyon, Arizona. The largest specimen measured 34 in (76.2 cm TL). Fleharty measured 29 specimens; 22 females averaged 68.07 cm TL, seven males averaged 53.09 mm TL. Smith (1942) reports two specimens 570 mm and 415 mm SV. Stebbins (1985) gives the range of adults as 46-86 cm TL.

Six specimens measured during this study averaged 581 mm SV (range 355-800 mm SV). The largest, MSB 43130, is a female 800 mm SV.

Habitat Use.—Riparian areas with permanent flowing water seems to be the preferred habitat of T. rufipunctatus (Stebbins 1954, Lowe 1955, Hulse 1973). Tanner (1959) reports T. rufipunctatus as mostly aquatic although he mentions collecting specimens on rocky hillsides some distance from water. Fleharty (1967) found they preferred a rocky habitat around Wall Lake in Catron County, New Mexico.

Specimens collected during this study were found in creeks and rivers which contained mostly rocky substrate. One individual observed but not collected was seen under a rock ca. 50 m from the mainstem Gila River up a dry rocky side canyon.

Food Habits.—Fish seem to be the primary food of T. rufipunctatus (Lowe 1955, Fleharty 1967). Hulse (1973) found specimens which contained the fish Catastomus insignis and Rhinichthys osculus. Woodin (1950) reported captives eating toads, Bufo punctatus and L.A. Fitzgerald (pers. comm.) reports Gambusia affinis taken by a captive specimen. Stebbins (1954) discusses a specimen from Chihuahua, Mexico, which contained larval ambystomid salamanders.

Six specimens were examined during this study; two of these contained unidentified fish.

Reproduction.—Data on reproduction in T. rufipunctatus are scarce in the literature. Behler and King (1979) report the species is live-bearing with the young born in July. Fleharty (1967) found a gravid female during the second week of July. A specimen, MSB 43127 collected during this study on 14 May contained 17 oviducal eggs.

Remarks.—Lowe (1955) proposed the transfer of T. angustirostris (= T. rufipunctatus) to the genus Natrix although Thompson (1957) and Tanner (1959) rejected Lowe's action and retained rufipunctatus in the genus Thamnophis. Collins et al. (1982) agree.

Fitch (1940) discusses the relationships of T. rufipunctatus with T. ordinoides, Conant (1946) with Nerodia valida, and Thompson (1957) with T. nigronuchalis.

The range map presented by Stebbins (1954) illustrates T. rufipunctatus from northern Texas near Palo Pinto. This was probably based on Trapido's (1942) erroneous identification of Nerodia erythrogaster. Interestingly however, Trapido (1941) had seemingly described Natrix harteri from the same series of specimens which contained the specimen of "T. rufipunctatus."

Photographs of T. rufipunctatus are in Conant (1963) and Smith (1955). No subspecies are recognized.

This species is listed as a state endangered species by the New Mexico Department of Game and Fish.

Trimorphodon biscutatus - Lyre snake

The range of this species includes the Gila-San Francisco river drainage (Scott and McDiarmid 1984, Stebbins 1985) although no specimens were collected during this study. Specimens from New Mexico are discussed in Gehlbach (1958), Harris (1959), Medica (1962), Jones and Findley (1963), and Belfit (1978). Food habits are in Degenhardt and Steele (1957), Gehlbach (1958), Behler and King (1979), and Tennant (1984). Records of this species eating bats are in Stager (1942) and Krutzsch (1944). Werler (1951) describes courtship behavior and eggs. Fitch (1970) and Porter (1972) provide egg production data and hatching dates. Cowles and Bogert (1935) illustrate a fang of Trimorphodon and discuss the effectiveness of its venom on small mammals. Biogeographical accounts are in Duellman (1966) and Morafka (1977). Gehlbach (1971) redefines the T. biscutatus complex to include only one species containing six subspecies. Scott and McDiarmid (1984) provide a distribution map of all subspecies and present an exhaustive bibliography. Photographs are in Wright and Wright (1957) and Fowlie (1965). The subspecies T. b. lambda occurs in southwestern New Mexico although there may be areas of intergradation between T. b. lambda and T. b. vilkinsoni (Scott and McDiarmid 1984). Map 61.

ELAPIDAE

Micruroides euryxanthus - Arizona coral snake

Distribution.—Micruroides euryxanthus occurs in the southwestern U.S. from central Arizona and southwestern New Mexico southward into Mexico. The Mexican range extends from western Chihuahua and Sonora (including Isla Tiburon) southward to Mazatlan in southern Sinaloa (Roze 1974). There is an isolated record of M. euryxanthus from El Paso, Texas (Brown 1950) although Roze (1967, 1974) considers this record erroneous as El Paso is well within the Chihuahuan Desert region and far outside the verified Sonoran Desert distribution of the species. Distribution in Arizona is

discussed in Lowe (1964) and Fowlie (1965). Stebbins (1954) mentions a specimen from Turkey Creek, Grant Co., New Mexico. Additional records from southwestern New Mexico are reported by Belfit (1978) and Campbell (1977). Mexican distribution is discussed by Bogert and Oliver (1945), Zweifel and Norris (1955), Duellman (1957), and Hardy and McDiarmid (1969). Range maps appear in Wright and Wright (1957), Roze (1974), and Stebbins (1985). Map 62.

Recognition.—The Arizona coral snake may be distinguished from other snakes in southwestern New Mexico by the following combination of characters: (1) alternating rings of red and black separated by narrower rings of white or yellow, (2) rings encircle body, (3) unmodified rostral scale, (4) snout black to behind the eyes, and (5) maximum size ca. 550 mm TL.

Size.—Gates (1956a) describes a record specimen from the vicinity of Wickenburg, Arizona, which measures 551 mm TL. Roze (1974) gives the average size as ca. 40 mm TL. Shaw (1971) states the species may reach 22 in (55.9 cm) although average size is 15 in (38.1 cm) to 18 in (45.7 cm).

The single specimen (MSB 42437) collected during this study measured 382 mm SV and 406 mm TL.

Habitat Use.—Micruroides seems to prefer rocky desert areas where there is a variety of closely adjacent soil types from loose sand to rock and rock rubble (Lowe 1964). Stebbins (1985) states Micruroides usually occurs in rocky upland desert especially along arroyos and river bottoms. Habitat includes the arid and semiarid regions of thornscrub, brushland, woodland, grassland, and farmland.

The specimen collected during this study was found during an excavation of a culvert along an irrigation ditch in the Gila River valley near Red Rock. Prominent vegetation included cottonwood and various grasses.

Food Habits.—Although little is known concerning the food habits of Micruroides, Vitt and Hulse (1973) provide the most comprehensive data. They examined 16 specimens

and found only one to contain food, an adult Leptotyphlops humilis. In a subsequent laboratory study, they offered 20 species of potential prey (small snakes and lizards) to captive Micruroides, only seven of these (all small snakes) were eaten. Other captives have also been observed to feed on Tantilla, Leptotyphlops, (Vorhies 1929), and Hypsiglena (Gates 1960). Fowlie (1965) includes insect larvae in the diet. Stebbins (1954, 1985) mentions the species feeds on lizards and small snakes.

Reproduction.—Funk (1964a) reported two eggs from a 416 mm specimen from Wickenburg, Arizona. Measurements were 34.3 x 6.1 mm and 39.3 x 6.2 mm although he stated both eggs were thin-shelled and contained no embryonic development. Shaw (1971) states mating probably occurs in early spring with egg deposition occurring in late spring or early fall. Hatchling size has not been reported.

Remarks.—Russell (1967) reports treating only four bites from Micruroides during an 11-year period.

Photographs appear in Behler and King (1979) and Dept. Navy (1965). The subspecies M. euryxanthus euryxanthus occurs in southwestern New Mexico (Roze 1974).

VIPERIDAE

Crotalus atrox - Western diamondback rattlesnake

Distribution.—Crotalus atrox is found from central Arkansas to southeastern California southward through most of Texas into Mexico to northern Veracruz and southern Sonora with an isolated population in Oaxaca (Dept. Navy 1965, Klauber 1972). Range maps are presented in Gloyd (1940), Stebbins (1966), Klauber (1972), and Conant (1975). Distribution in Arkansas is discussed by Dowling (1957), Oklahoma (Webb 1970b), Arizona (Lowe 1964, Fowlie 1965), Texas (Raun 1965, Raun and Gehlbach 1972, Tennant 1984), Mexico (Armstrong and Murphy 1979), Tamaulipas (Martin 1958), and Sinaloa (Dixon et al. 1962, Hardy and McDiarmid 1969). Map 63.

Recognition.—Crotalus atrox may be separated from other snakes found in southwestern New Mexico by the following combination of characters: (1) rattle on end of tail; (2) two light diagonal stripes on side of head, posterior one extending to angle of mouth; (3) tail distinctly ringed with black and white, the black rings as wide as or wider than the pale ones; (4) small scales between supraoculars; and (5) maximum size ca. 215 cm.

Size.—The largest C. atrox mentioned in Klauber (1972) is 8 ft 2 in (2,489 mm) although he admits not having seen one over 7 ft (213 cm). Tennant (1984) mentions two large specimens from extreme south Texas of having lengths of 7 ft 1 3/4 in (218 cm), and 7 ft 3 1/2 in (222 cm). Conant (1975) gives the record as 83 7/8 in (213 cm) although he states most specimens range 30-72 in.

One specimen (MSB 42746) collected during this study measured 66.3 cm SV.

Habitat Use.—Reported habitat includes seashore where the sand and shrubs meet (Taylor 1936a); dry, sparsely wooded rocky hills to flat desert and coastal sand dunes, agricultural lands and near towns (Dept. Navy 1965); deserts, grasslands, woodlands (Lowe 1964); desert to rocky areas and brushland (Fowlie 1965); and creosote-tarbush and bajada assemblages (Pough 1966, Reynolds and Scott 1982).

The single specimen collected during this study was found DOR near Red Rock. Surrounding vegetation was primarily Acacia. An additional specimen was observed on the Conner Ranch near the USGS gaging station. Jamie and Brook Stillman (pers. comm.) report that C. atrox is common around Red Rock.

Food Habits.—Beavers (1976) examined the digestive tract of 205 C. atrox from Texas and found 78 which contained prey items. Small mammals comprised the major portion of the diet by both weight (Neotoma sp.) and frequency of occurrence (Perognathus sp.). Birds and lizards formed a small proportion of the total food. Additional reports relating to the food habits of C. atrox are provided by Ruthven (1907), Lewis (1950), Milstead et al. (1950), Minton (1958), McKinney and Ballinger (1966),

Stebbins (1966), Klauber (1972), and Reynolds and Scott (1982). King (1975) reports C. atrox preying on a laughing gull.

A single specimen collected during this study (MSB 42746) contained rodent hair in the hindgut.

Reproduction.—Klauber (1972) recorded copulation dates as 25 March, 13 April, and 19 August. Gravid females were observed 14 May and 26 June by Minton (1958). Tinkle (1962) found that females mature at 3 years of age and 900 mm SV. Klauber (1972) counted 36 litters and obtained an average of 10.16. Young are born in late summer and are 21.5-33.0 cm long (Behler and King 1979). Fitch (1970) summarizes reproduction.

Remarks.—Some interesting common names, folklore, and taxonomic arguments are presented by Wright and Wright (1957).

Photographs appear in Dept. Navy (1965), Klauber (1972), and Tennant (1984). No subspecies are recognized.

Crotalus lepidus - Rock rattlesnake

The range of this species includes the Gila-San Francisco river drainages (Gloyd 1936, Conant 1975, Stebbins 1985) although no specimens were collected during this study. Klauber's (1972) monumental work on rattlesnakes includes a description, range map, and key. Data on life history, reproduction, morphology, behavior, and food habits are also presented. Gloyd (1940) produced an equally impressive monograph on rattlesnakes which contains much of the same type information as found in Klauber's work. Reproductive data is also found in Fitch (1970) and Armstrong and Murphy (1979). Sexual dichromatism in body coloration is described and illustrated in Jacob and Altenbach (1977) and Van Devender and Lowe (1977). Male combat is discussed in Carpenter et al. (1976). A photograph of a specimen from Mimbres, Grant Co., New Mexico, is in Gloyd (1940). Additional photographs are in Harris and Simmons (1978),

Behler and King (1979), and Tennant (1984). The subspecies of C. l. klauberi occurs in southwestern New Mexico (Klauber 1972). Map 64.

Crotalus molossus -Blacktail rattlesnake

Distribution.—Crotalus molossus ranges from the Kofa, Castle Dome, and Hualapai mountains in western Arizona through the Edwards Plateau in west-central Texas and from the Grand Canyon in northern Arizona and north-central New Mexico southward to the southern edge of the Mexican Plateau (Price 1980). It also occurs on Tiburon and San Esteban islands in the Gulf of California (Soule and Sloan 1966). Lowe (1964) and Fowlie (1965) discuss distribution in Arizona. Texas distribution is discussed by Raun and Gehlbach (1972) and Tennant (1984). Range maps are provided by Gloyd (1940), Klauber (1972), Harris and Simmons (1978), and Price (1980). Map 65.

Recognition.—Blacktail rattlesnakes may be separated from other snakes in southwestern New Mexico by the following combination of characters: (1) rattle on end of tail; (2) black of the tail ends abruptly at body; (3) each scale unicolored, not bisected by pattern elements; (4) broad brown diagonal line from eye to angle of jaw; and (5) maximum size 1,257 mm.

Size.—Gloyd (1940), Klauber (1972), and Conant (1975) report 1,257 mm as the maximum size attained by C. molossus. Tennant (1984) reports a specimen from Texas 1,321 mm in length. Reynolds and Scott (1982) measured 20 male C. molossus from Chihuahua and found an average of 780 mm SV. Conant (1975) reports an average range of 760-1,070 mm.

Two specimens (MSB 42752-42753) collected during this study are 988 mm and 876 mm SV.

Habitat Use.—Reynolds and Scott (1982) found C. molossus most common in rocky areas and mountain pediments in Chihuahua. Pough (1966) found C. molossus in talus

rockslides occupied by C. lepidus. Armstrong and Murphy (1979) summarize habitat data for C. molossus.

During this study, several specimens were observed along rocky streams of the West and Middle forks of the Gila River where sycamore, alder, oak, agave, and various grasses are the dominant vegetation.

Food Habits.—Klauber (1972) reported Neotoma and Peromyscus as prey of C. molossus. Reynolds and Scott (1982) examined 12 C. molossus from Chihuahua and found the following: Perognathus flavus, P. intermedius, Neotoma albigula, and birds. Funk (1964b), in the first report of lizards in the diet of C. molossus, reports a 28 cm SV Heloderma suspectum from a 1,010 mm TL C. molossus.

One specimen (MSB 42753) collected during this study contained an adult green-tailed towhee, Chlorura chlorura.

Reproduction.—Bogert and Oliver (1945) describe the hemipenes. Klauber (1972) states that females mature at 703 mm. Size at birth has been reported as 230 mm (Gloyd 1940), 280 mm (Klauber 1972), and 230-300 mm (Conant 1975). Litter size is 3-7 (Wright and Wright 1957), and 3-6 (Behler and King 1979).

Remarks.—Melanistic C. molossus have been reported from New Mexico lava beds by Lewis (1949) and Prieto and Jacobson (1968).

Gloyd (1940) illustrates an adult from Pinos Altos, Grant Co., New Mexico. Additional photographs appear in Tennant (1984) and Harris and Simmons (1978).

The subspecies C. m. molossus occurs in southwestern New Mexico (Stebbins 1985).

Crotalus viridis cerberus - Arizona black rattlesnake

The range of this subspecies includes a portion of the Gila-San Francisco river drainages (Klauber 1972; pers. obs.) although no specimens were collected during this study. Klauber (1972) contains data on morphology, reproduction, life history, and food habits. Wright and Wright (1957) mention a specimen collected in the "San Francisco

Mountains" by Cope in 1866 which contained a Western Bluebird, Sialia mexicana, in its stomach. In southwest New Mexico this species has been collected most commonly in ponderosa pine forest habitat. Photographs of this subspecies occur in Klauber (1972) and Harris and Simmons (1978). Map 66.

Crotalus viridis viridis - Prairie rattlesnake

Distribution.—The range of Crotalus v. viridis includes the Great Plains from Canada (Alberta and Saskatchewan) to Mexico (northeastern Sonora, northern Chihuahua, central Coahuila) and west-central Texas; thence north through western Oklahoma, Kansas, Nebraska, and South Dakota to southwestern North Dakota (Wright and Wright 1957). Range maps are presented by Gloyd (1940), Klauber (1972), Conant (1975), and Harris and Simmons (1978). Distribution in Arizona is discussed by Lowe (1964), Colorado (Hammerson 1982), Kansas (Smith 1956, Collins 1982), and Texas (Raun and Gehlbach 1972, Tennant 1984). Map 66.

Recognition.—Crotalus v. viridis may be separated from other snakes in southwestern New Mexico by the following combination of characters: (1) rattle on end of tail, (2) two oblique light lines on side of head, (3) 30-55 body blotches, (4) body blotches rectangular, usually with narrow light edges, (5) small scales on snout and between supraoculars, and (6) maximum size ca. 145 cm. Adult males have longer and thicker tails than females (Collins 1982).

Size.—Conant (1975) cites a record size of 144.8 cm. Klauber (1972) measured a specimen 120.6 cm and believed the record of 144.8 cm to be reliable. Of 110 individuals from a prairie dog town near Dalhart, Texas, only eight were more than 76.2 cm (Tennant 1984). Specimens of C. v. viridis in Colorado attain 146 cm in length (Hammerson 1982). Aldridge (1979) measured 44 females from New Mexico which averaged 64 cm, range 51-81. Gannon and Secoy (1984) reported that growth in the first year averaged 33.7 cm.

Habitat Use.—Klauber (1972) reported C. v. viridis to occur as high as 10,000 ft in New Mexico. General habitat includes the western prairies up to and including the foothills of the Rockies. It most commonly inhabits the grassy plains but also occurs in plains with light brush cover or areas where sandstone outcrops and buttes are common (Klauber 1972). Wright and Wright (1957) give an exhaustive list of habitats occupied by C. viridis which includes almost every niche except river bottoms or lowlands.

Three specimens collected during this study were found in pinyon-juniper and yucca-grassland association.

Food Habits.—Smith (1956) reports rats, mice, gophers, and young prairie dogs as prey items. Wright and Wright (1957) include rodents, birds, and frogs. Tennant (1984) reports ground nesting birds and lizards being taken in large numbers.

No prey items were found in the three specimens collected during this study.

Reproduction.—Dates of observed copulation include July, 2 August, 9 August (Wright and Wright 1957), and the last days of August to about 10 September (Rahn 1942). The two-year breeding cycle of C. v. viridis in the northern portion of their range is discussed by Rahn (1942), Ludwig and Rahn (1943), and Gannon and Secoy (1984). Alridge (1979) states that 73% of the 44 female C. v. viridis collected in New Mexico showed signs of producing a litter during the year they were collected. He found the oviducal egg number to average 9.5 (range 5-14, N = 23). Additional estimates of mean litter size are 11.4 (Klauber 1972, N = 307), and 11.0 (Klauber 1936, N = 2,089). Female C. v. viridis mature at ca. 585 mm (Klauber 1936). Rahn (1942) illustrates ripe and postpartum reproductive tracts of C. viridis.

Remarks.—Jacob and Painter (1980) studied the thermal ecology of C. v. viridis in New Mexico. The body temperatures of six prairie rattlesnakes were monitored telemetrically during the winter of 1976-1977 while they inhabited a hibernaculum 8 km southeast of Moriarity, New Mexico. As long as their body temperatures remained above about 10°C, the snakes were active in the den and often emerged to bask at the mouth of

the hibernaculum on sunny days. Within the 6-month period during which the snakes occupied the hibernaculum, their body temperatures ranged from 6-29°C, with a mean of 11.3°C. Increasing ground temperatures appear to have been responsible for emergence of the snakes in April. Hirth (1966) describes on the ability of C. viridis to return to the hibernaculum after displacement.

Duvall et al. (1985) performed an excellent study on the behavioral ecology and ethology of the prairie rattlesnake. Cowles and Phelan (1958) report on olfaction in C. viridis.

Wright and Wright (1957) illustrate a specimen from Carlsbad, New Mexico. Additional photographs appear in Klauber (1972) and Collins (1982). This species includes many races. Collins et al. (1982) recognize six subspecies which occur in the U.S. Crotalus v. viridis occurs in southwestern New Mexico (Klauber 1972).

Sistrurus catenatus - Massasauga

The range of this species includes the Gila-San Francisco river drainage (Minton 1983, Stebbins 1985) although no specimens were collected during this study. Klauber's (1972) monumental work on rattlesnakes includes a description, range map, and key. Data on life history, reproduction, morphology, behavior, and food habits are also presented. Knoph and Tinkle (1961), Fowlie (1965), and Tennant (1984) discuss food habits and habitat. Toxicity and biochemistry of the venom is discussed in Dept. Navy (1965) and Glen and Straight (1982). Maslin (1965) reports on the systematic status of the southeastern Colorado population. Minton (1983) includes a distribution map and bibliography. Klauber (1972) presents a photograph of a specimen from Hidalgo Co., New Mexico. Additional photographs apear in Fowlie (1965), Behler and King (1979), Hammerson (1982), and Tennant (1984). The subspecies S. c. edwardsi (Gloyd 1955) occurs in southwestern New Mexico. No specimens of this species from the Gila-San

Francisco river drainages are catalogued into the vertebrate collections of MSB, NMSU, or WNMU.

EMYDIDAE

Terrapene ornata - Western box turtle

Distribution.—Terrapene ornata ranges from southern Wisconsin to southeastern Wyoming, southward to the Gulf Coast of western Louisiana and Texas, and westward to southern Arizona and northeastern Sonora (Ward 1978). Distribution in Arizona is discussed by Lowe (1964), Texas (Raun and Gehlbach 1972), Colorado (Hammerson 1981, 1982), Oklahoma (Webb 1970b), and New Mexico (Degenhardt and Christiansen 1974). Distribution in Mexico is discussed by Milstead and Tinkle (1967) and in the literature found in Smith and Smith (1976a, 1979). Range maps are in Carr (1952), Ward (1978), and Stebbins (1985). Map 67.

Recognition.—The western box turtle is the only terrestrial turtle which is known to occur in southwestern New Mexico. It can be easily recognized by its high-domed shell and hinged plastron. In adult males the iris is red; in females it is yellowish-brown. In males the first toe on the hind foot is thickened, widened, and turned in. The hind lobe of the plastron is slightly concave in males; flat or convex in females. Females grow larger than males (Ernst and Barbour 1972).

Size.—Collins (1982) states that adults normally attain 100-126 mm carapace length. The maximum size reported by Collins (1982) from Kansas is 154 mm shell length. Carr (1952) reports the maximum shell length as 145 mm. Ernst and Barbour (1972) give the average range of adult size as 10-14 cm carapace length.

Two specimens collected during this study had carapace lengths of 144 mm and 105 mm.

Habitat Use.—Ernst and Barbour (1972) state that T. ornata is a prairie turtle which inhabits treeless plains and gently rolling country with grass and scattered low bushes as

dominant vegetation. In New Mexico, they have been reported from the Yucca-grassland zone (Lewis 1950) and grasslands and dry sandy areas (Degenhardt and Christiansen 1974). In Chihuahua, Mexico, Axtell (1963) found T. ornata in a grassy area on a dry, playa-flat covered by scattered clumps of mesquite, catclaw, grasses, and herbs. Fitch (1958) reported that in Kansas, T. ornata preferred grazed pastureland and woodlands or open fields with undisturbed prairie vegetation. Clarke (1950) reported they often enter slow-moving rivers and shallow pools.

Specimens collected during this study were both found along the highway in pinyon-juniper association.

Food Habits.—Hammerson (1982) states the diet of the western box turtle consists almost entirely of insects, especially beetles, caterpillars, and grasshoppers. Legler (1960) reports a wide variety of foods including beetles, grasshoppers, caterpillars, Rana pipiens, R. catesbeiana, snails, sowbugs, crawfish, fungi, mulberries, and carrion. Little and Keller (1937) examined the stomach of one individual which contained ants and beetles. Marr (1944) and Metcalf and Metcalf (1970) observed T. ornata eating small rodents out of snap traps.

Reproduction.—Legler (1960) found that mating occurs throughout the activity period (April to October) but most frequently in the spring and fall. Norris and Zweifel (1950) observed copulation on 12 August. Nesting occurs chiefly in June although reported dates extend from 25 April to 11 July. The early nesting females may lay a second clutch (Legler 1960). Legler (1960) examined 23 clutches and found the mean number of eggs was 4.7 (range 2-8). Egg size averaged 36.1 x 21.7 mm. Incubation under natural conditions is ca. 65 days. Legler (1960) found males mature at 100-109 mm carapace length and 8-9 years old; females at 110-119 mm and 10-11 years old.

Remarks.—Cagle (1944) offers suggestions for studying home range, homing behavior, and migration in turtles.

Photographs of T. ornata appear in Carr (1952), Ernst and Barbour (1972), and Hammerson (1982). The subspecies T. ornata luteola occurs in southwestern New Mexico (Smith and Ramsey 1952), although Ward (1978) regards the separation of T. ornata into subspecies as questionable. Smith and Smith (1979) state that, in their opinion, a careful study of geographic variation will resolve the problem and will uphold the validity of luteola.

KINOSTERNIDAE

Kinosternon sonoriense - Sonoran mud turtle

This species occurs in the Gila-San Francisco river drainages (Iverson 1976, 1978; Stebbins 1985), although no specimens were collected during this study. Iverson and Iverson (1980) present an exhaustive bibliography which includes all known species of Kinosternon (Iverson 1985). Carr (1952) and Ernst and Barbour (1972) describe habitat, hatchlings, and general food habits. Hulse (1974) describes food habits in detail and discusses foraging behavior. Harless and Morlock (1979) give linear measurements of adults, hatchlings, and eggs. Plastral and carapacial flora and fauna are reported by Hulse (1976a) and Dixon (1960). Hulse (1976b) presents data on growth and morphometrics. Conant and Berry (1978) provide a key to adults and juveniles. Niles (1962) presents records of K. sonoriense for New Mexico although many additional specimens have been collected since his manuscript. Photographs of this species are found in Ernst and Barbour (1972), Behler and King (1979), and Iverson (1981). The subspecies K. s. sonoriense occurs in southwestern New Mexico (Iverson 1981). Map 68.

TRIONYCHIDAE

Trionyx spiniferus - Spiny softshell

Distribution.—Trionyx spiniferus occurs over most of the eastern U.S. from southeastern Canada (Quebec and Ontario) and Montana south to the Carolinas and

Georgia, and to New Mexico, extending into northeastern Mexico (Chihuahua, Coahuila, Nuevo Leon, and Tamaulipas). The species has been successfully introduced in New Jersey (Conant 1961b), and into the Gila-Colorado River drainage in Arizona (Webb 1973). Distribution in Arizona is reported by Lowe (1964), New Mexico (Brown 1968, Degenhardt and Christiansen 1974), Colorado (Hammerson 1981, 1982), and Texas (Raun and Gehlbach 1972). Distribution records of T. spiniferus in Mexico are discussed in the literature found in Smith and Smith (1976a, 1979). Range maps are presented in Webb (1973) and Stebbins (1985). Map 69.

Recognition.—The spiny softshell may be distinguished from all other turtles in southwestern New Mexico by the following combination of characteristics: (1) flexible, pancake-like shell; (2) shell devoid of scales or scutes; (3) pointed snout; and (4) maximum size ca. 47 cm carapace length. Adult males have long thick tails with the anal opening near the tip; and they often retain the juvenile pattern of ocelli, spots, and lines. Adult females develop a mottled or blotched pattern.

Size.—Ernst and Barbour (1972) state males reach 12.7-21.6 cm in carapace length; females, 16.5-45.7 cm. Webb (1973) gives the maximum size of males as near 24 cm carapace length and females as near 47 cm. Webb (1962b) examined 1,849 soft-shelled turtles and presents maximal size based on the 10 largest specimens of each sex and each species. In T. spiniferus, he found the largest males averaged 14.4 cm plastral length (range 13.8-16.0 cm) while the largest females averaged 28.0 cm (range 26.0-31.0). Lardie (1963) reports on a female 42.2 cm plastral length from central Texas.

A single male, MSB 43327, collected during this study measured 20 cm carapace length. Another specimen, MSB 43328, which consists only of a dried shell measured ca. 17 cm.

Habitat Use.—Trionyx spiniferus inhabits a great variety of aquatic habitats, including marshy creeks, large swift-flowing rivers, bayous, oxbows, lakes, and impoundments. A soft bottom with some aquatic vegetation is essential, and sandbars

and mudflats are preferred. Fallen trees with spreading underwater limbs are frequented (Webb 1962b, Ernst and Barbour 1972).

Specimens collected during this study were found along the lower Gila River where sandy-gravelly substrate along with short, shallow riffles and deeper runs characterized the river.

Food Habits.—Webb (1962b) and Ernst and Barbour (1962) report T. spiniferus is mostly carnivorous. Prey items included by them include crawfish, aquatic insects, earthworms, mollusks, fish, tadpoles, frogs, and occasionally vegetable matter. Penn (1950) estimated crawfish comprised 58% of the diet of softshells.

Reproduction.—Ernst and Barbour (1972) found that in T. spiniferus nesting usually occurs in June and July but may extend from May to August. Clutch size is 4-32, females often lay two clutches per year. The spherical eggs average 28 mm diameter (range 24-32). Hatching usually occurs from August to October with hatchlings 30-40 mm carapace length. Dates of egg deposition reported by Webb (1962b) include 20 May; 14, 19, 22, 26 June; and 6, 9 July. Records from the literature gathered by Webb (1962b) indicated clutch size ranges from 8-32 eggs. Conant (1961b) reports one hatchling from 21 September with a carapace length of 41 mm.

In T. spiniferus emoryi, Webb (1962b) found males reach sexual maturity at 8.2-9.0 cm carapace length ($N = 10$, $\bar{x} = 8.8$). Webb (1956) reports that elongation of the tail beyond the carapace is correlated with the attainment of sexual maturity in males. Females are larger than males. Ernst and Barbour (1972) say that probably all physiologically normal females are adult at 22 cm carapace length. Webb (1962b) reports a 16 cm carapace length mature female from the Rio Grande at Big Bend, Texas.

Remarks.—Miller (1946) believes T. spiniferus gained access to the Colorado River system by introduction into the upper part of the Gila River in New Mexico, at about the turn of the century. He discusses field notes of F.M. Chamberlain made on 14, 15 April 1904 which accompanied a collection of fishes from the Gila River near Duncan, Arizona,

in Greenlee County. In these notes, Chamberlain stated, "Hardshell turtles were seen but could not be secured, a soft-shell was taken. These latter are said not to be rare." In 1938, Little and Keller collected a specimen from the Rio Grande at Mesilla Dam in Dona Ana County, New Mexico.

Miller (1946) also refers to a letter sent to him by the county clerk of Silver City dated 4 August 1944. The clerk told Miller he understood softshell turtles had been stocked in a pond between Gila and Buckhorn by Mr. Tom Lyons. Unfortunately, Mr. Lyons died and the clerk's statement could not be verified. A subsequent letter from Lyons' widow dated 15 August 1944 stated that she had no recollection of softshells being stocked in the pond although she remembered "blue catfish, black bass, and frogs."

Ernst and Hamilton (1969) reported that in a four-choice situation of red, yellow, green, and blue compartments, T. spiniferus entered the yellow compartment in 10 of 12 trials.

Photographs of T. spiniferus appear in Carr (1952), Webb (1962b), and Ernst and Barbour (1972), who also illustrate the skull. The subspecies T. spiniferus emoryi occurs in southwestern New Mexico (Webb 1973).

DISCUSSION

The reptiles and amphibians occurring in southwestern New Mexico form a herpetofaunal assemblage exceeded by few places of comparable size in the United States. As a result of this diversity, many gaps remain in our knowledge of the distribution and ecology of individual species. Throughout this report an effort was made to include as much of the available systematic and ecological literature pertinent to each species as practical.

Due to contractural obligations and time constraints, few detailed studies of the regional herpetofauna could be undertaken while this collection was being assembled. However, a series of pit-fall traps were constructed in a variety of habitats to augment collecting efforts. These traps, although checked on a rather erratic schedule, provided many additional specimens. Active terrestrial species, e.g., Cnemidophorus, Cophosaurus, and Coleonyx, and small burrowing forms, e.g., Leptotyphlops, were especially susceptible to this pit-fall trapping. A sampling program designed to use such traps exclusively would provide much needed data on several poorly known species. Gibbons and Semlitsch (1981) provide a review paper concerning the use of terrestrial drift fences in conjunction with pit-fall traps.

The widespread occurrence of Rana catesbeiana within the Gila-San Francisco drainage basin could be having detrimental effects on certain native species. As an example, two native leopard frogs, R. chiricahuensis and R. yavapaiensis, occur in the basin and detailed studies are lacking which examine the relationship between them and the introduced bullfrog. Areas of sympatry of these species are known from within the basin and such areas could provide ideal study sites.

As funding and personnel become available additional collecting efforts focused on the Gila-San Francisco drainage basin and surrounding areas may yield species new to the

state or regional herpetofauna. Such species include, Tantilla yaquia, Phrynosoma solare, Gopherus agassizi, and Kinosternon flavescens.

Tantilla yaquia.—McDiarmid (1968, 1977) and Cole and Hardy (1981) discuss the habitat and distribution and provide range maps for Tantilla yaquia. In their discussion, each author includes specimens taken at Cave Creek and 0.25 mi east of Portal, both in Cochise County, Arizona. Given the similar physiography and close proximity to the area included within this report, its not unlikely that T. yaquia will be collected in the Gila drainage of New Mexico.

Phrynosoma solare.—Reeve (1952) and Parker (1974) provide range maps for Phrynosoma solare. Included in these maps is a locality which appears to be located in the area around Portal in Cochise County, Arizona. Given the similar physiography and close proximity to the area included within this report, it is not unlikely that P. solare will be collected in the lower Gila drainage of New Mexico.

Gopherus agassizii.—The natural occurrence of populations of Gopherus agassizii in the Gila-San Francisco drainage of New Mexico is unlikely given the historic distribution and habitat requirements. However, Hulse and Middendorf (1979) and Patterson (1982) report on three specimens from the Portal and San Simon areas of Arizona. Most likely these specimens represent pet releases although that is only speculation and cannot be verified. The only suitable habitat for G. agassizii within the area covered by this report is in the desert areas of the extreme lower Gila drainage basin.

Kinosternon flavescens.—Iverson (1978, 1981) discusses two specimens of Kinosternon flavescens which were collected in the Rio Mimbres basin. Considering the locality data and the intermittent nature of the Rio Mimbres at the areas of collection it seems likely the specimens were taken from cattle tanks. Therefore, I see no reason that K. flavescens could not turn up farther to the north in the lower Gila drainage basin.

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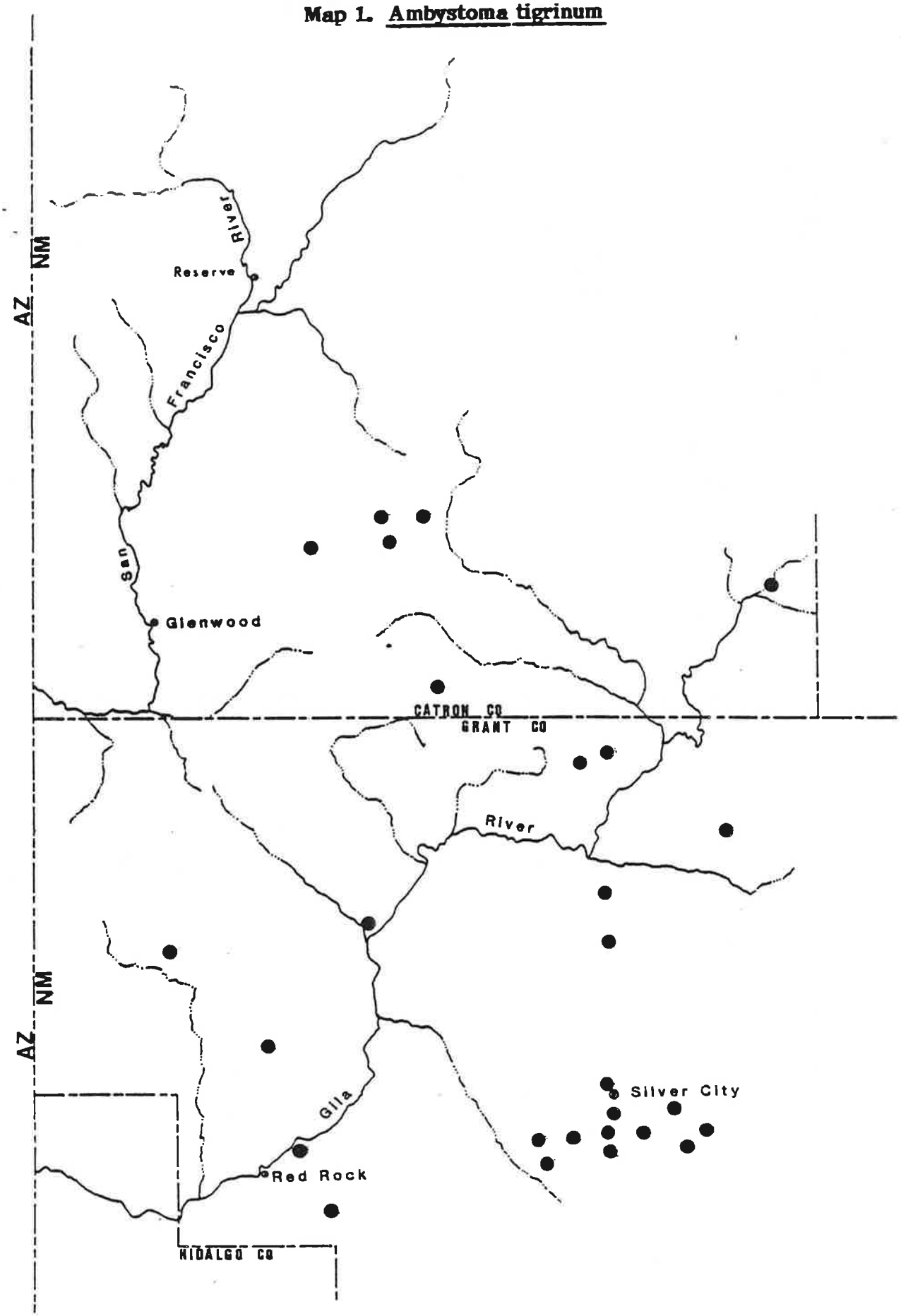
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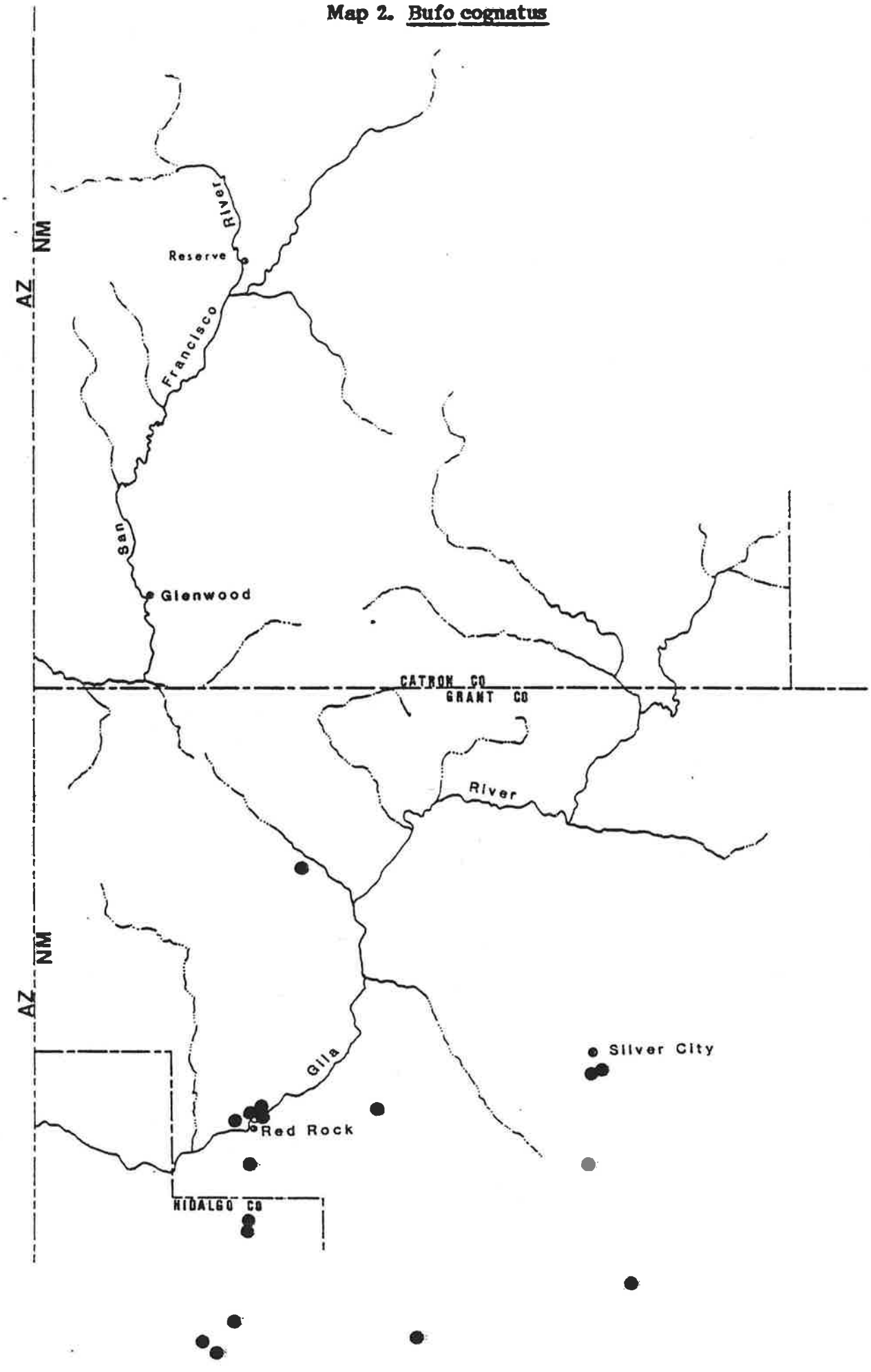
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APPENDIX I - Distribution Maps Prepared from Specimens Housed in the Vertebrate Collections of MSB, NMSU, and WNMU

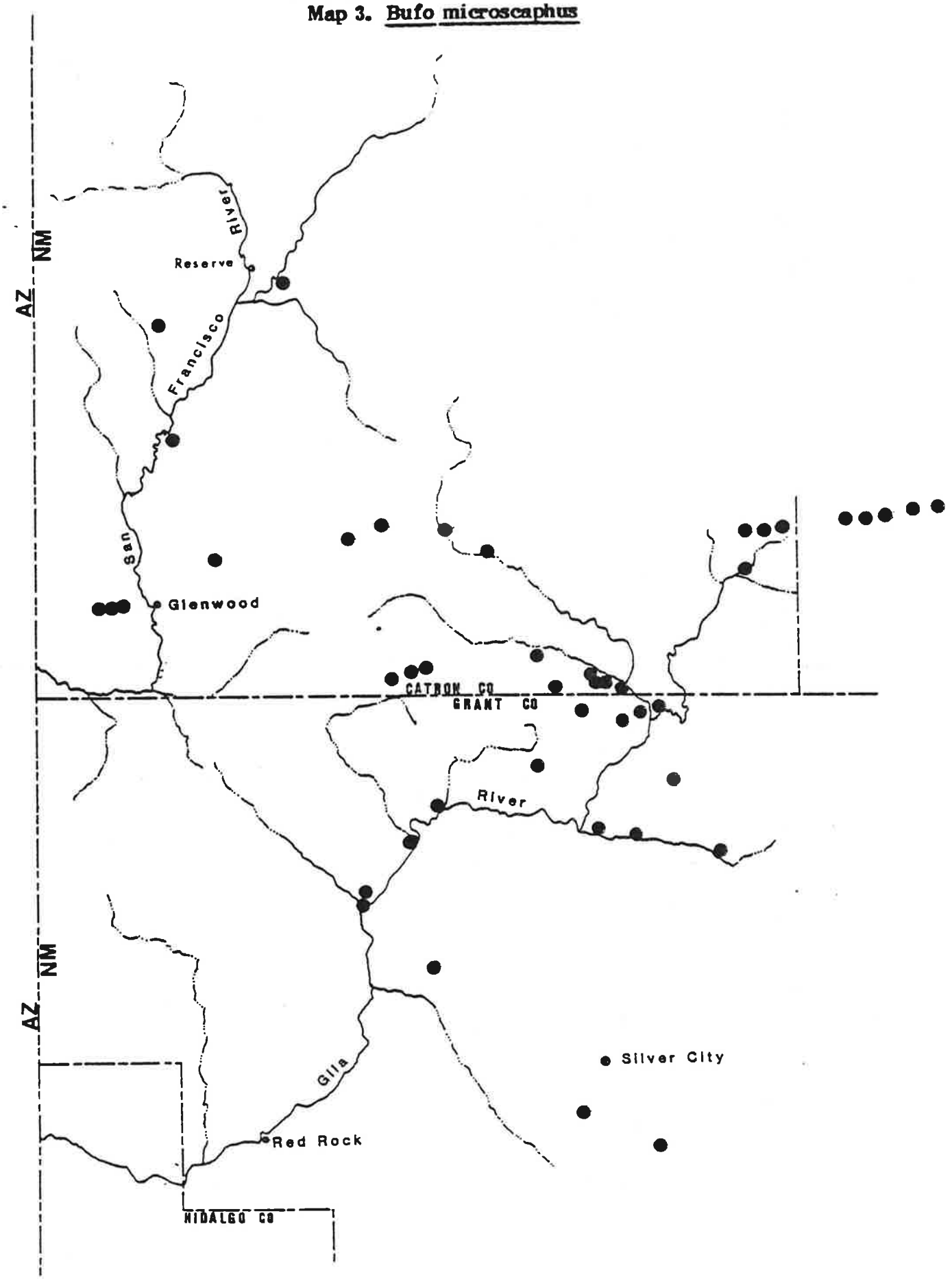
Map 1. Ambystoma tigrinum



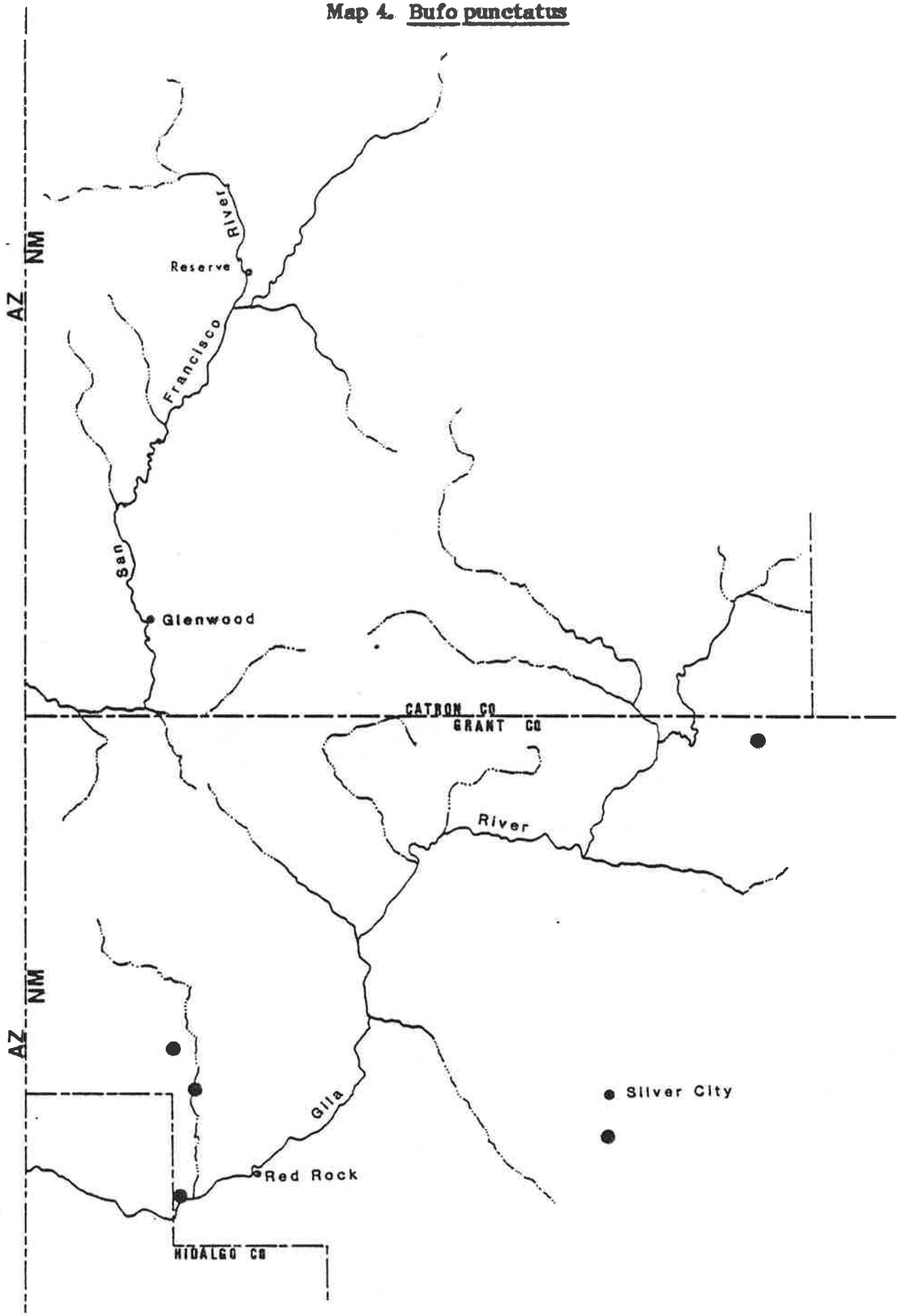
Map 2. Bufo cognatus



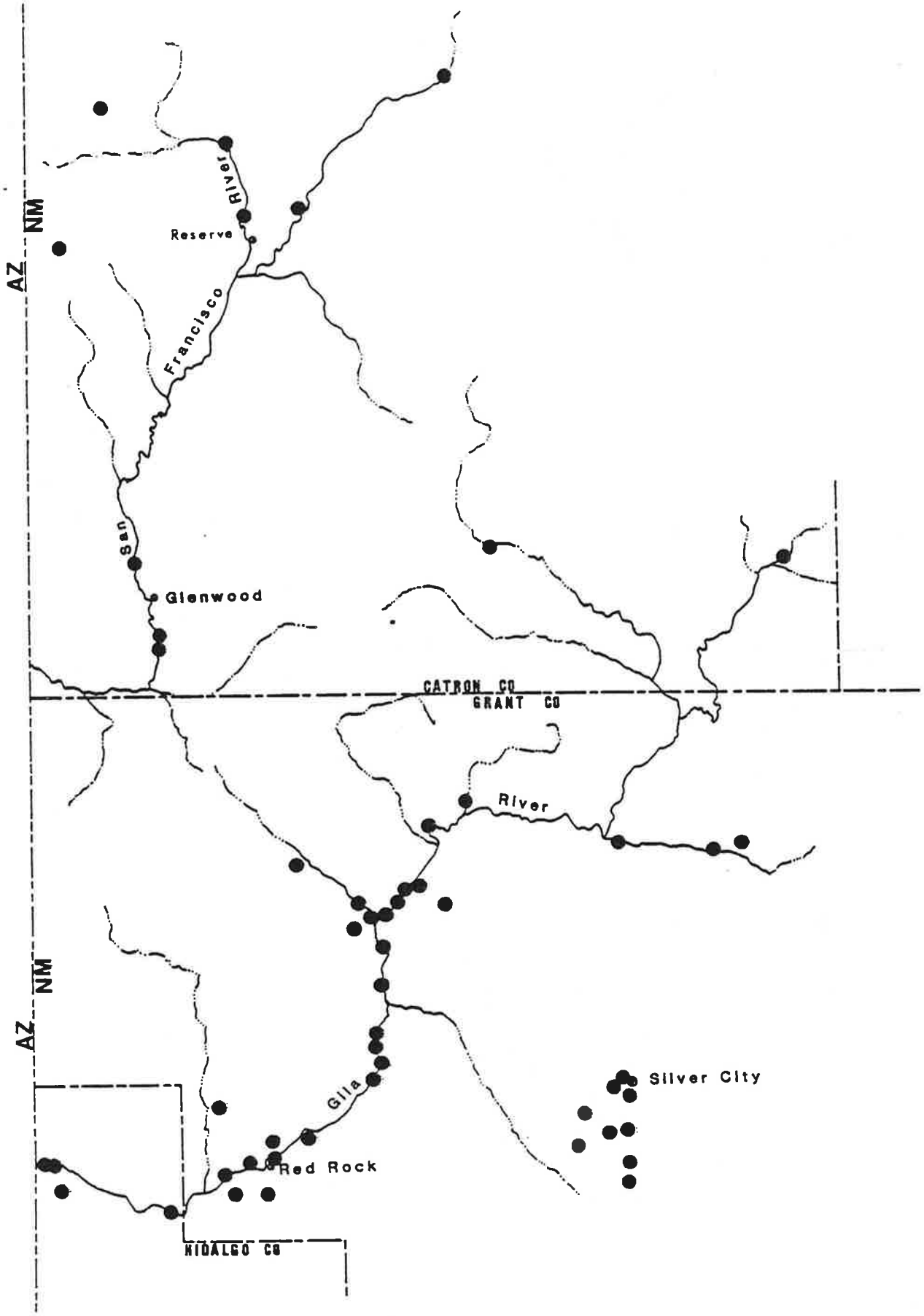
Map 3. Bufo microscaphus



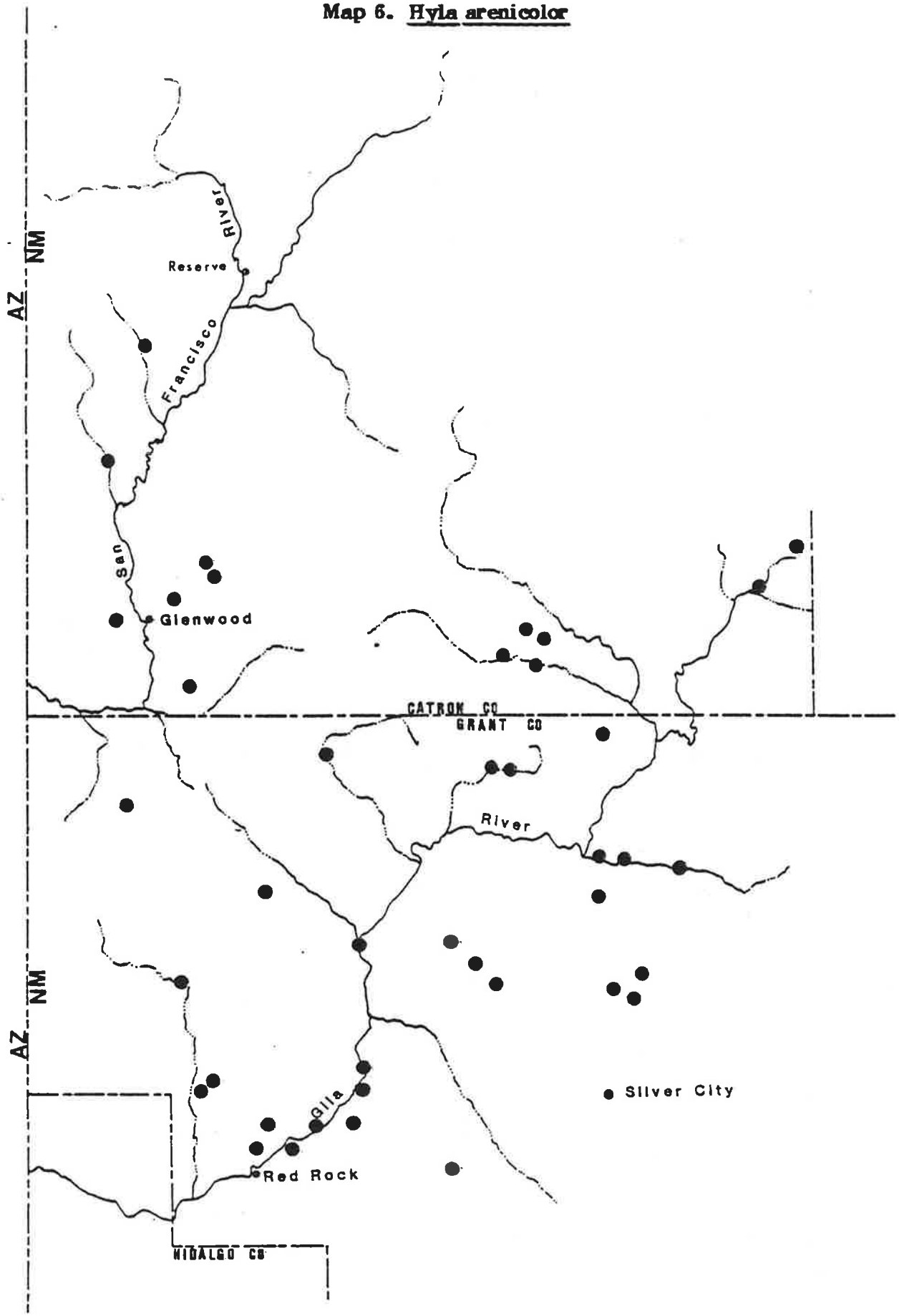
Map 4. Bufo punctatus



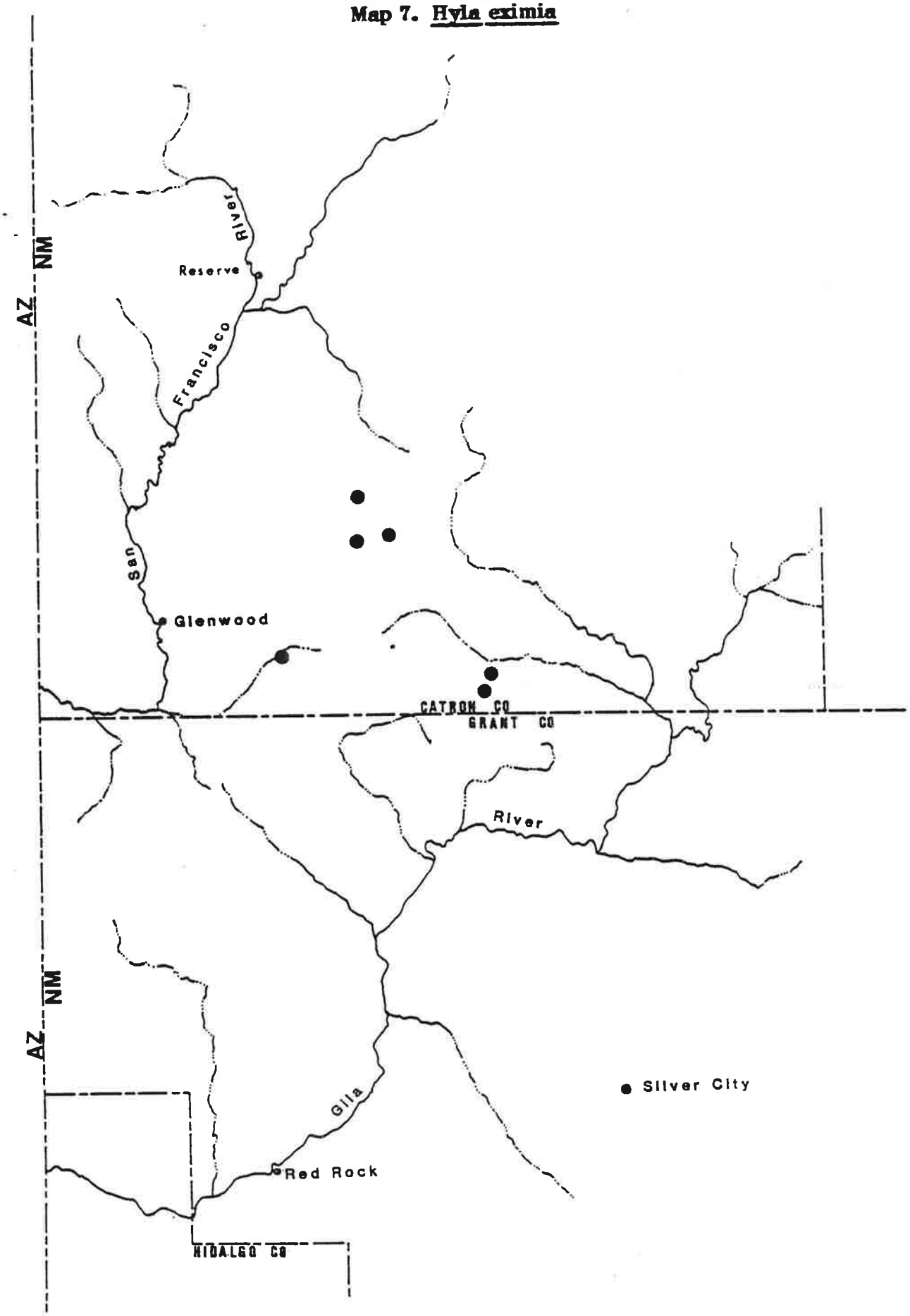
Map 5. Bufo woodhouseii



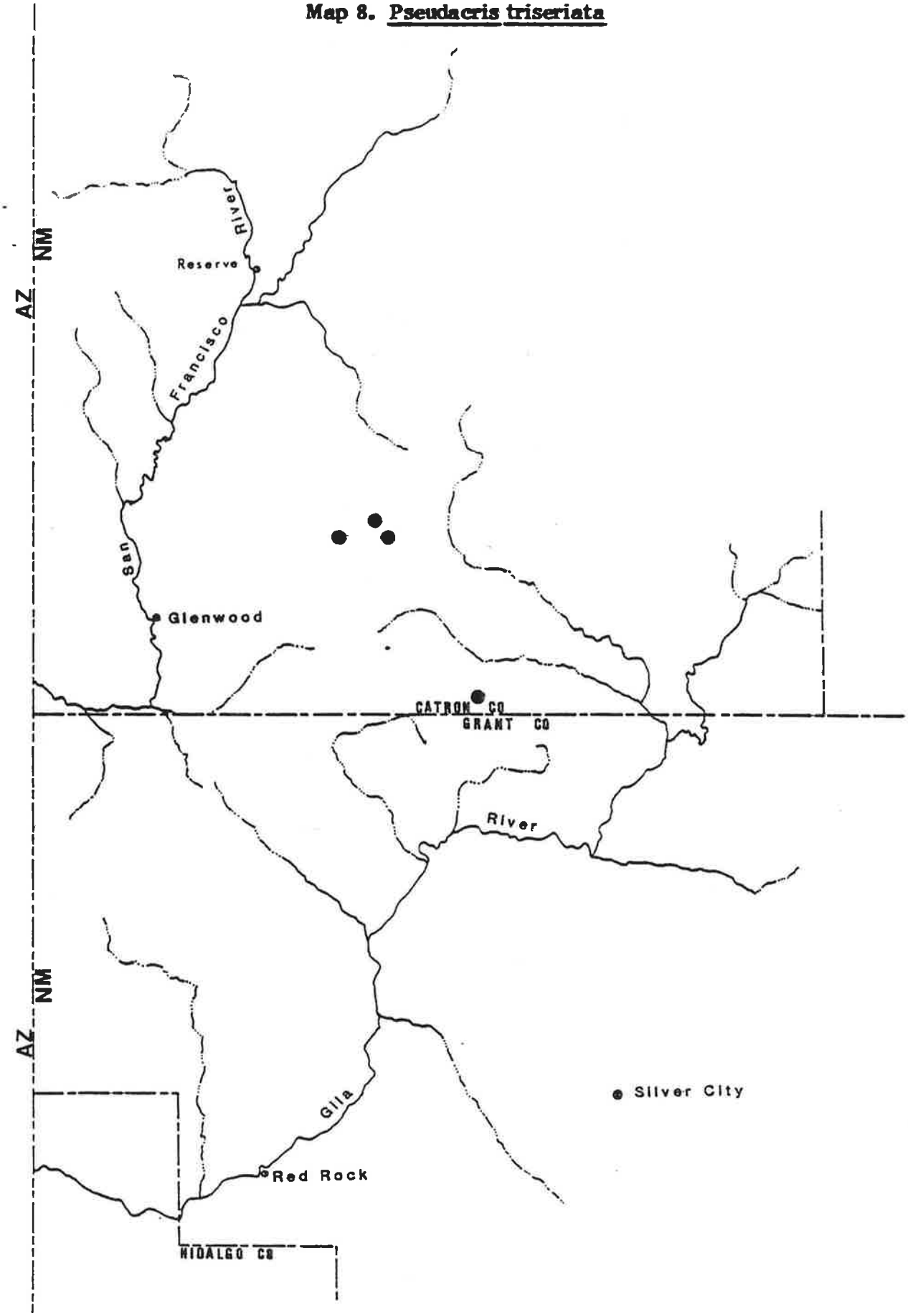
Map 6. Hyla arenicolor



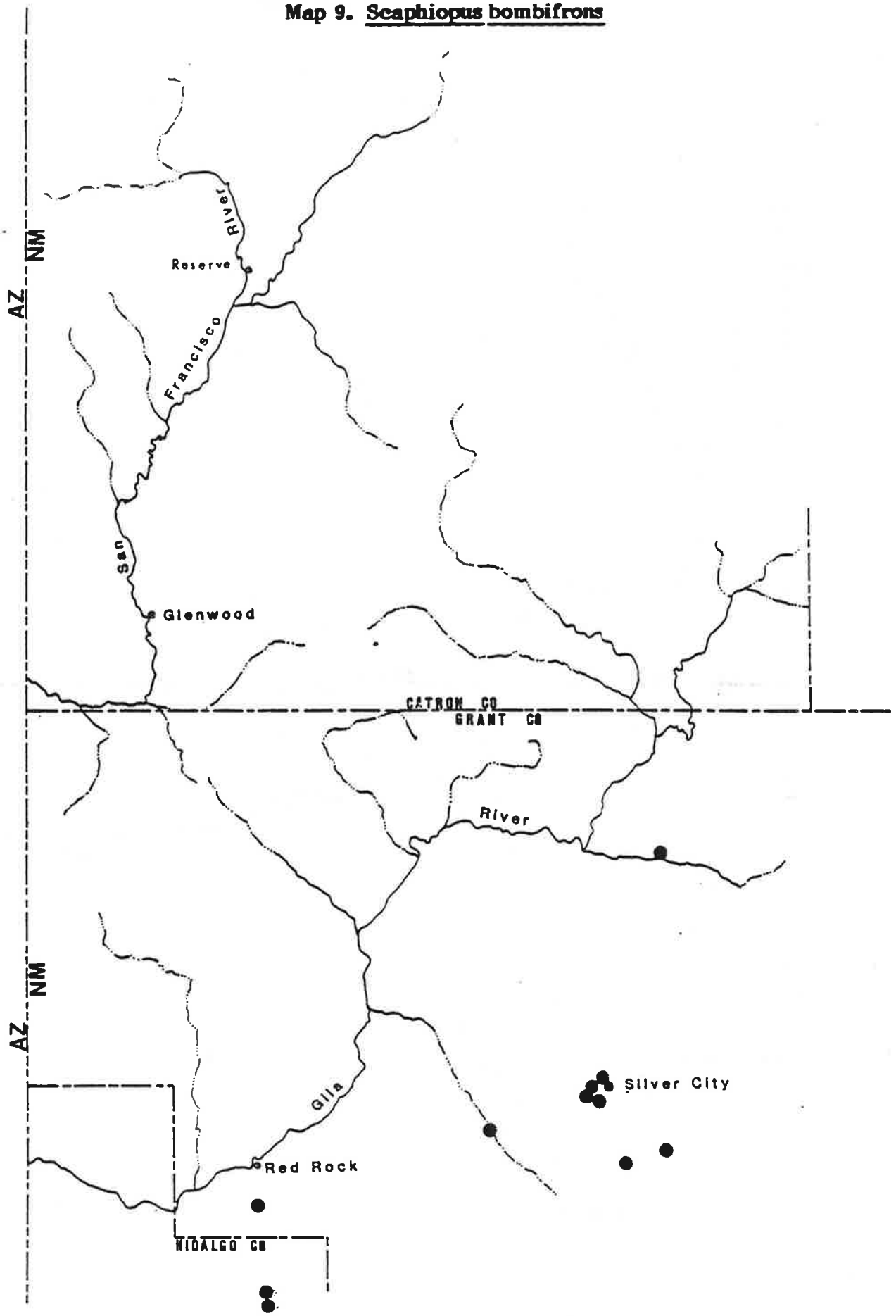
Map 7. Hyla eximia



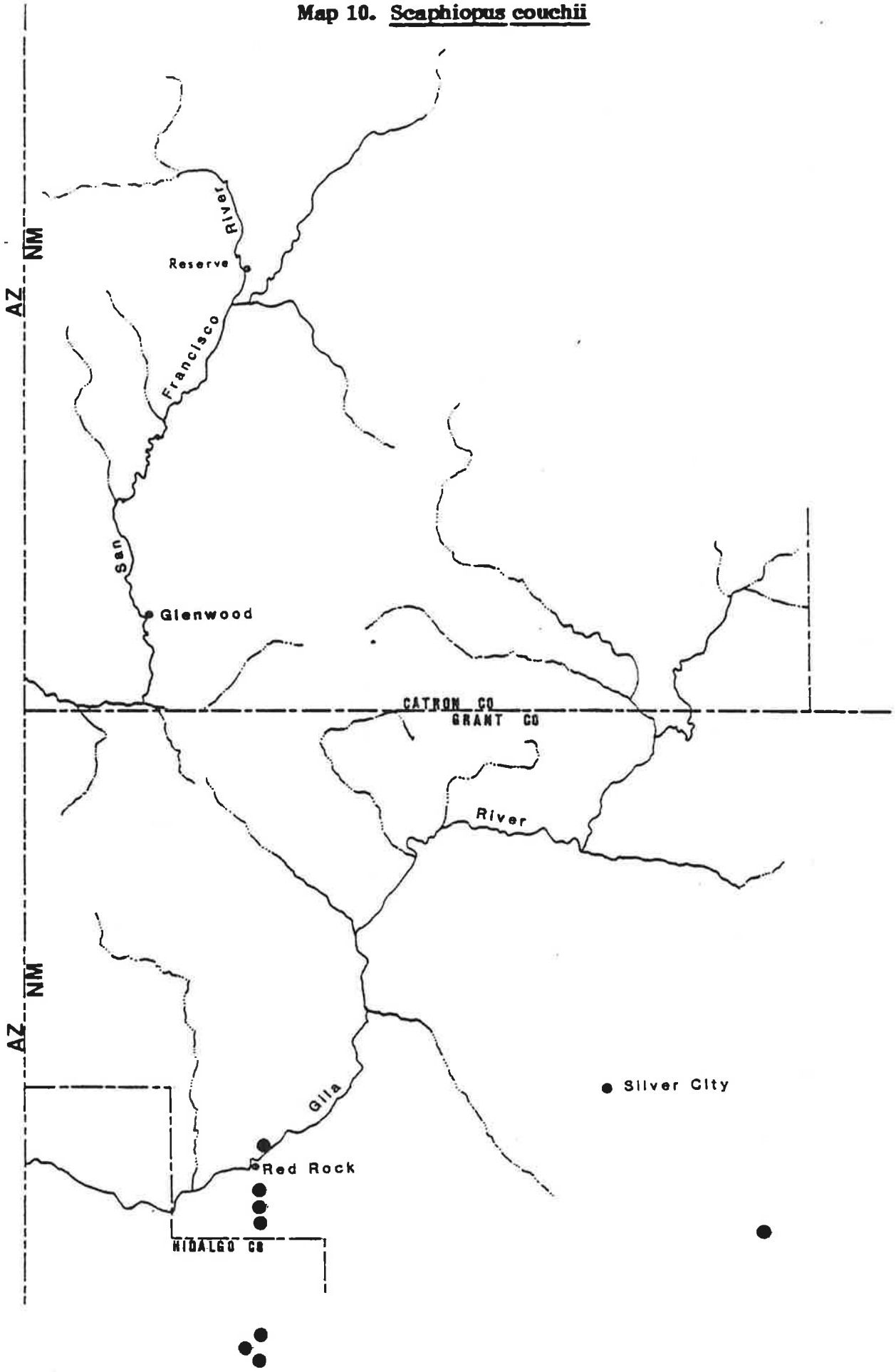
Map 8. Pseudacris triseriata



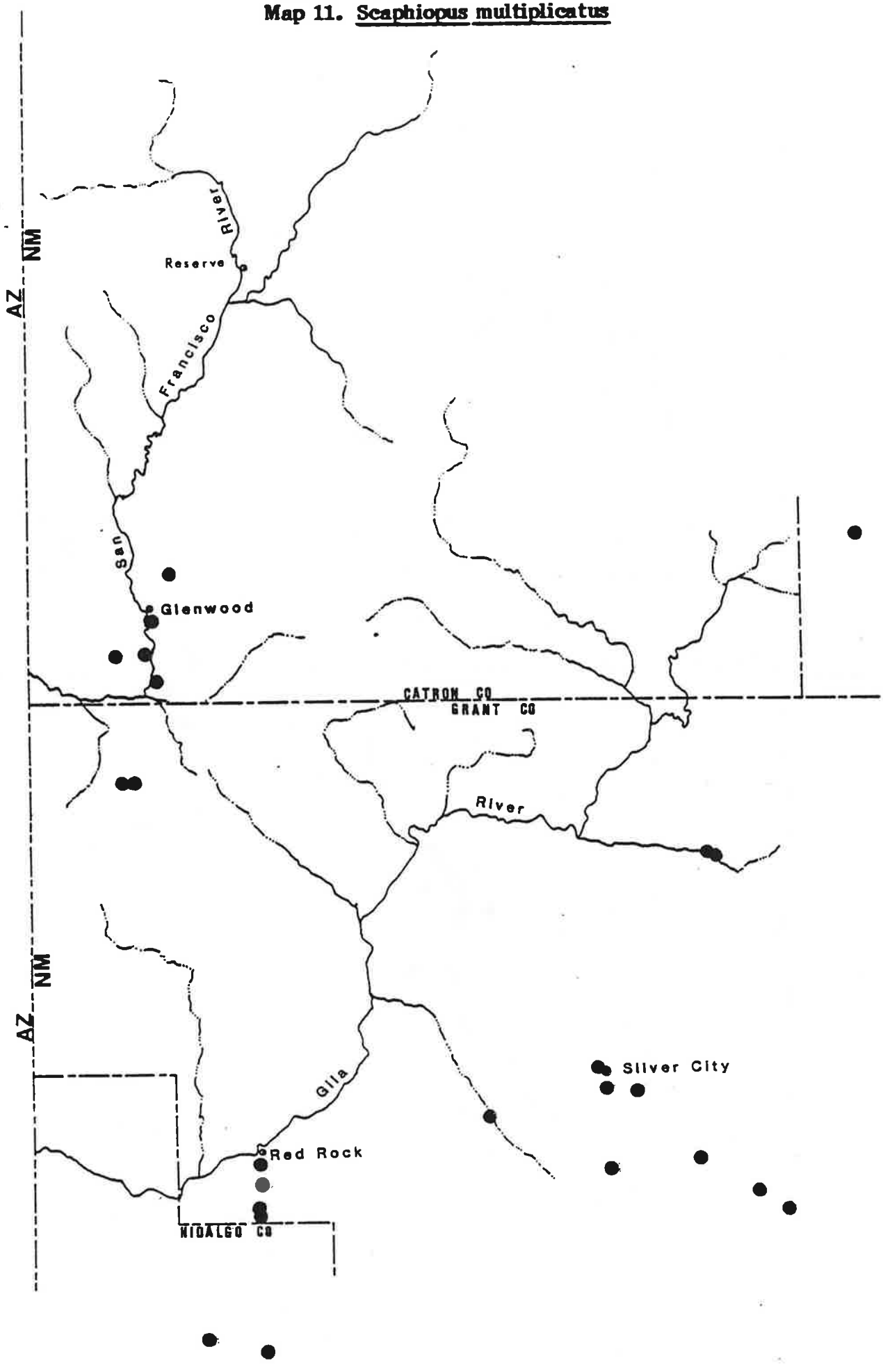
Map 9. Scaphiopus bombifrons



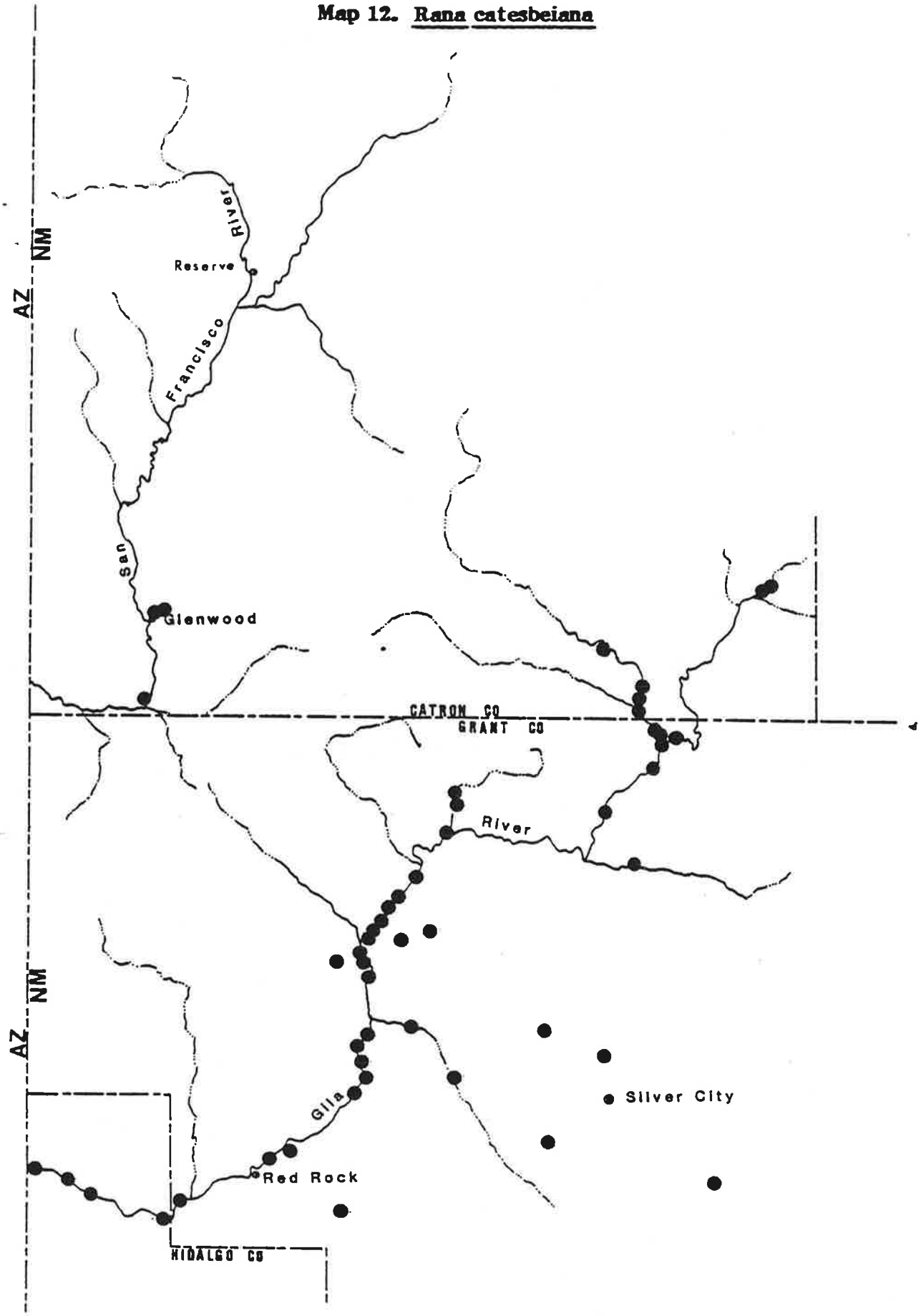
Map 10. Scaphiopus couchii



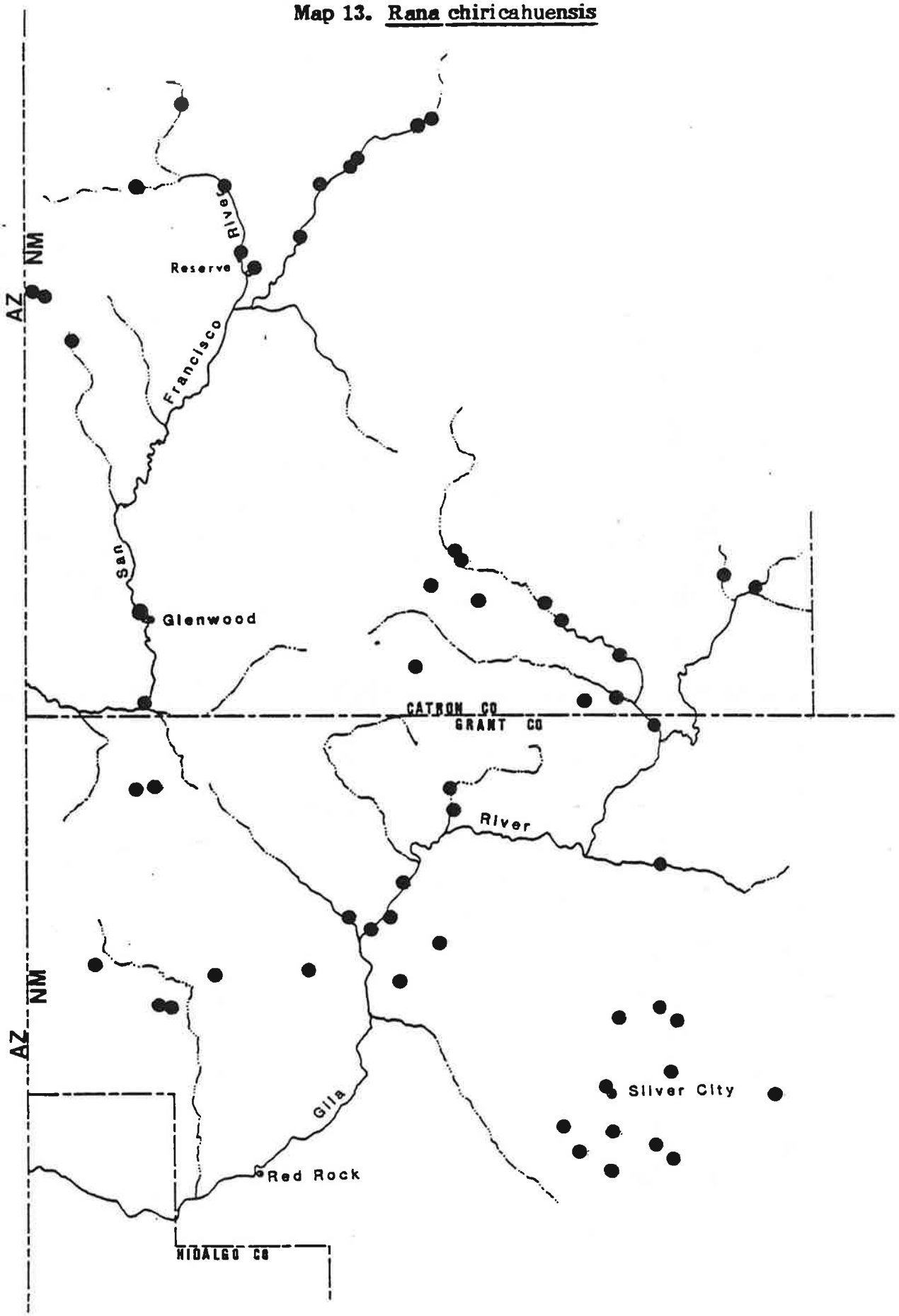
Map 11. Scaphiopus multiplicatus



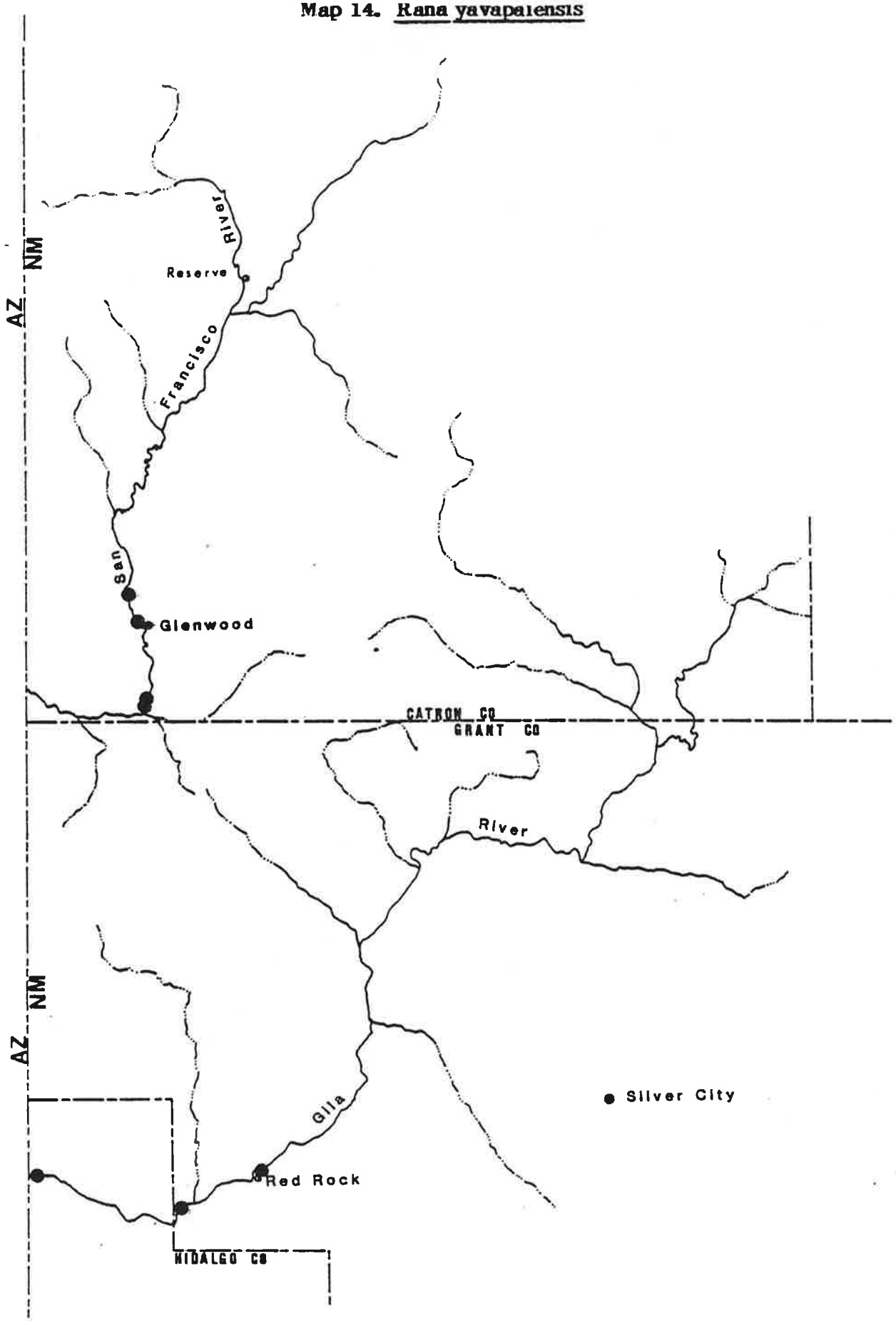
Map 12. Rana catesbeiana



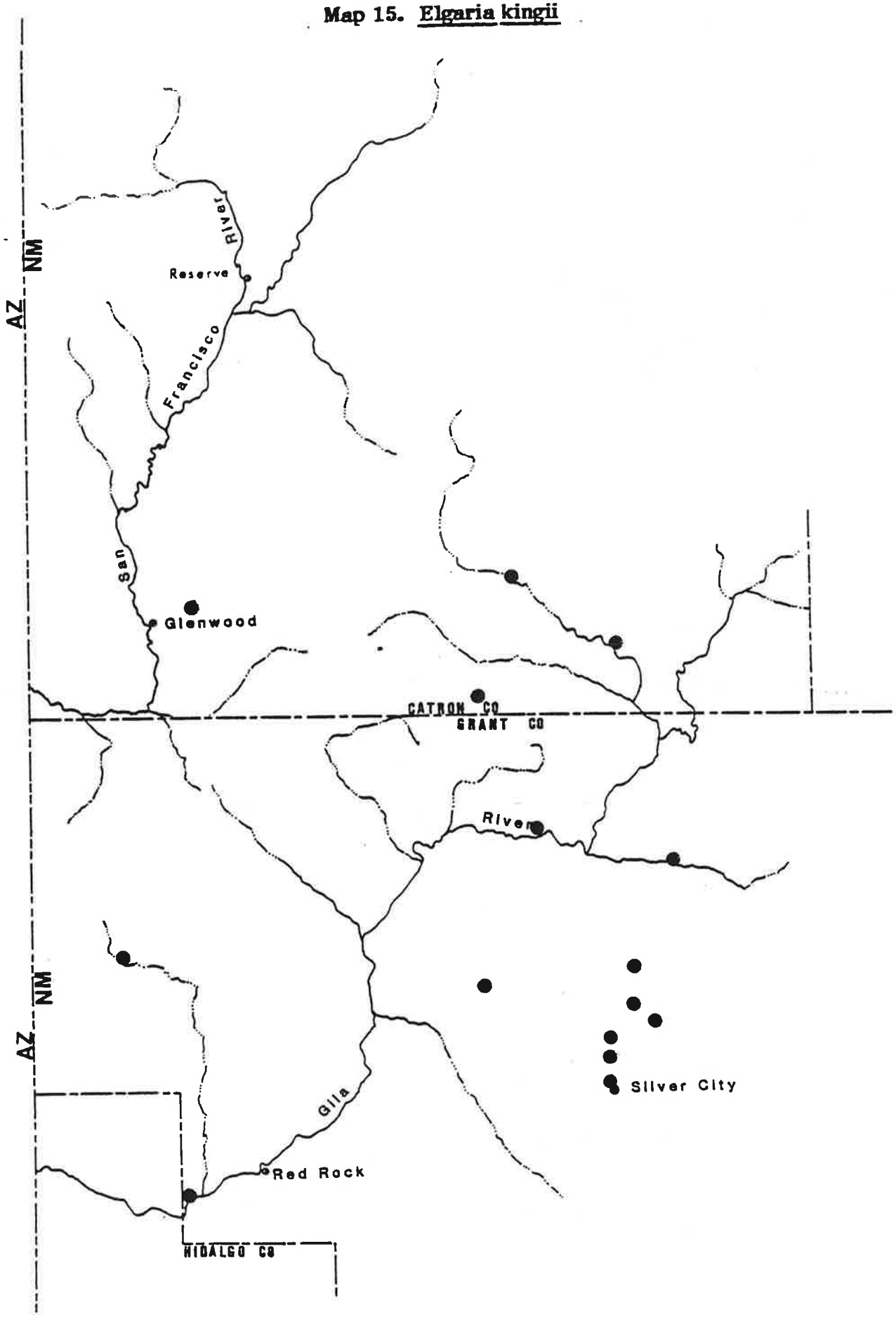
Map 13. Rana chiricahuensis



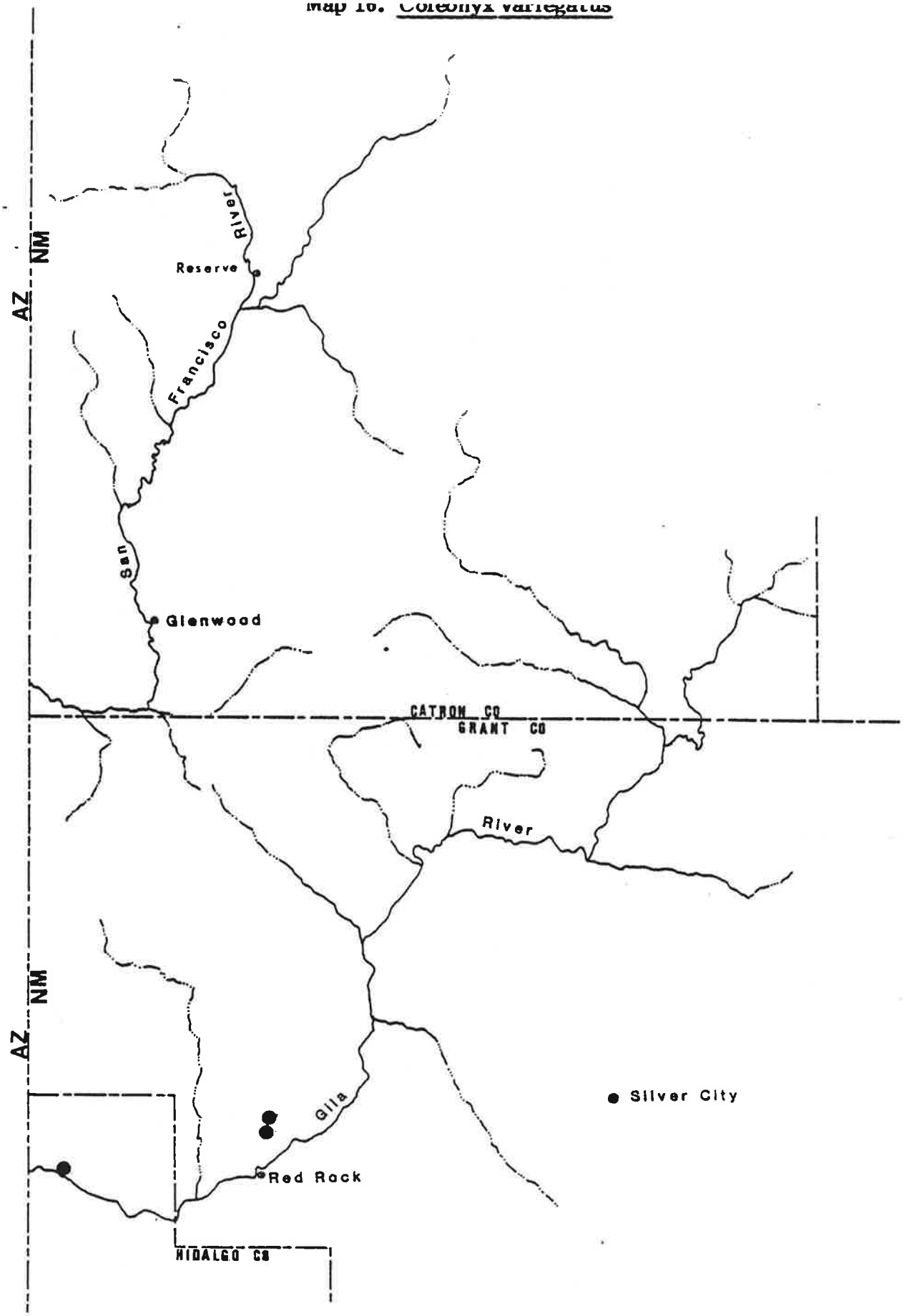
Map 14. Rana yavapaiensis



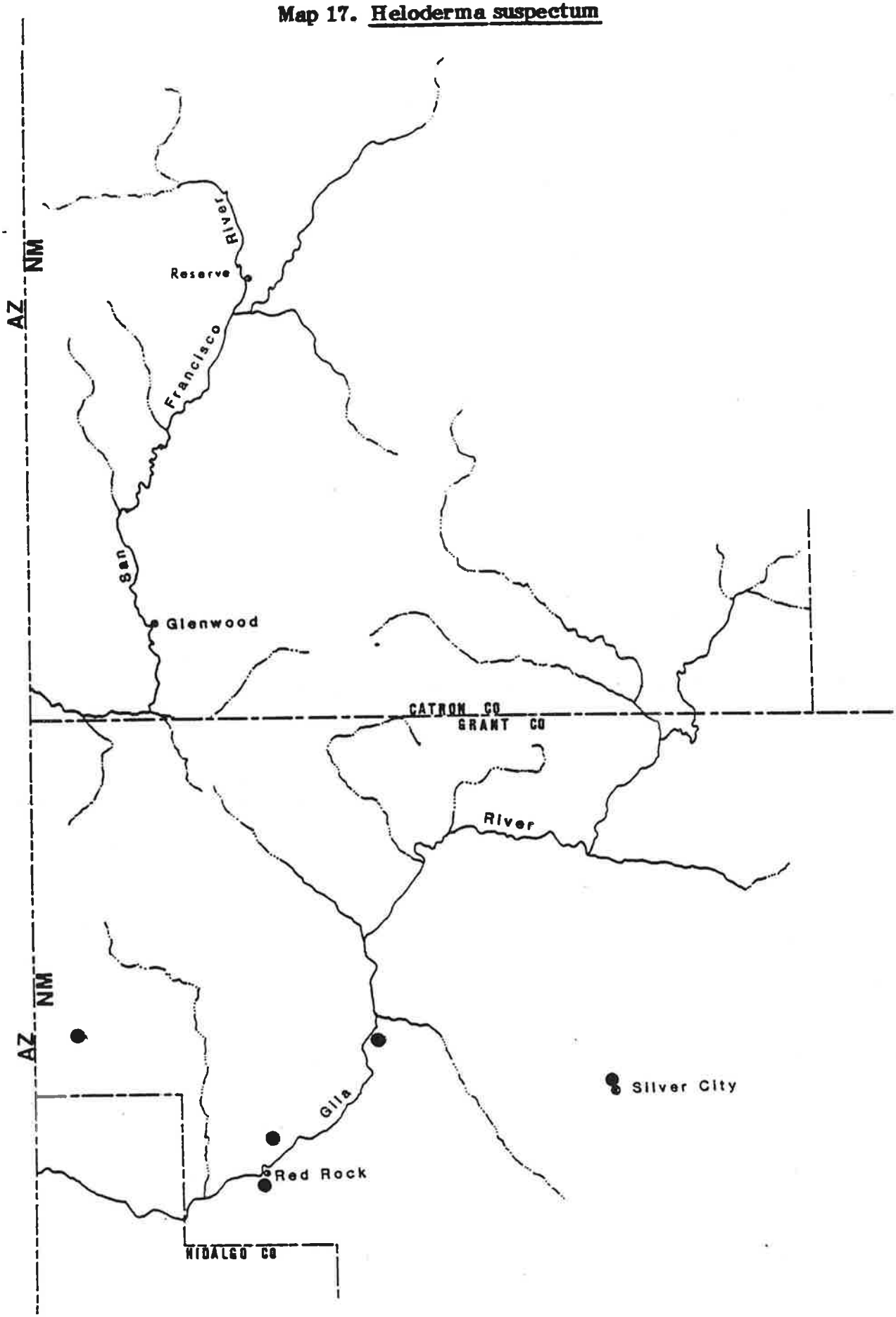
Map 15. Elgaria kingii



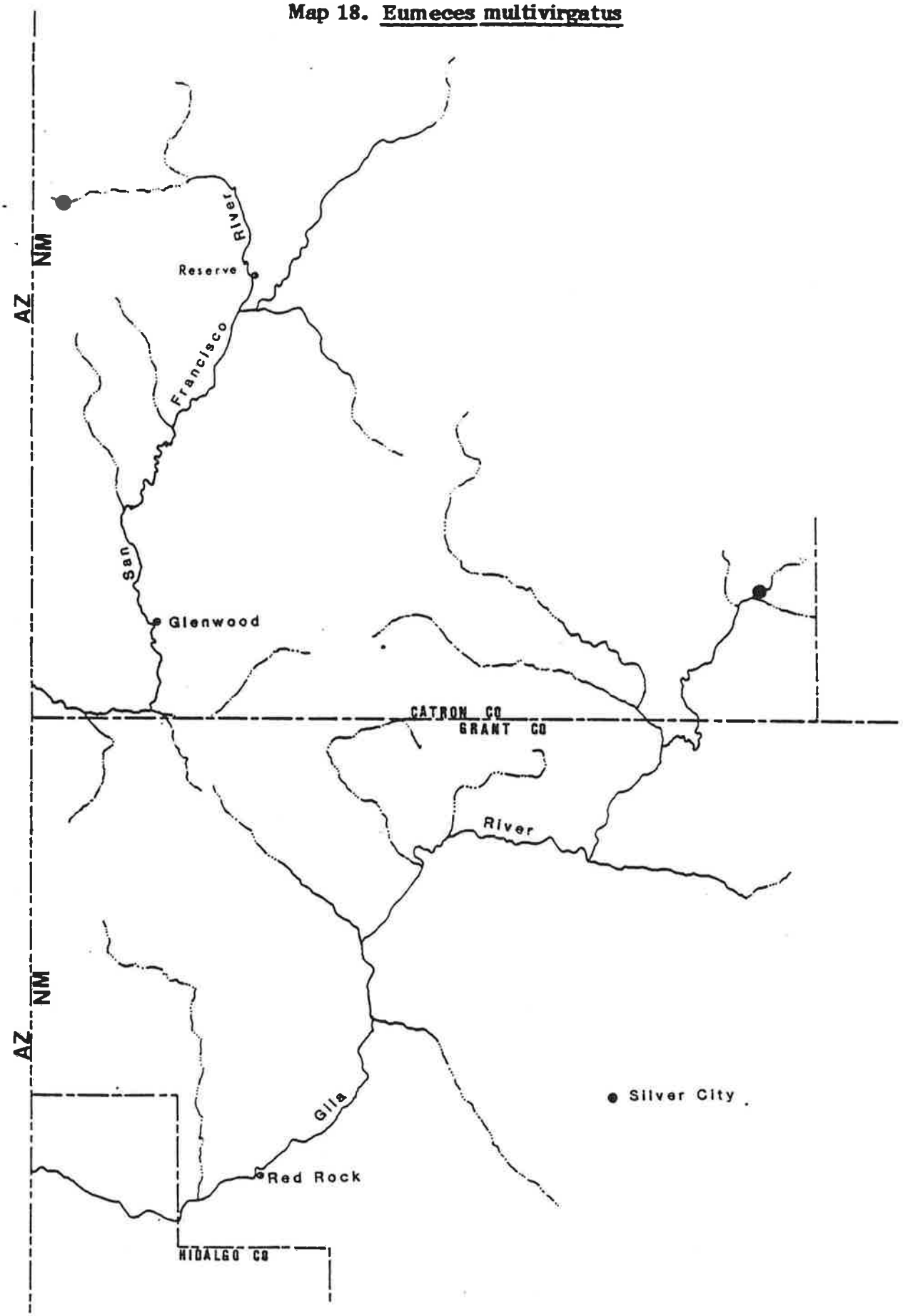
Map 16. Coleonyx variegatus



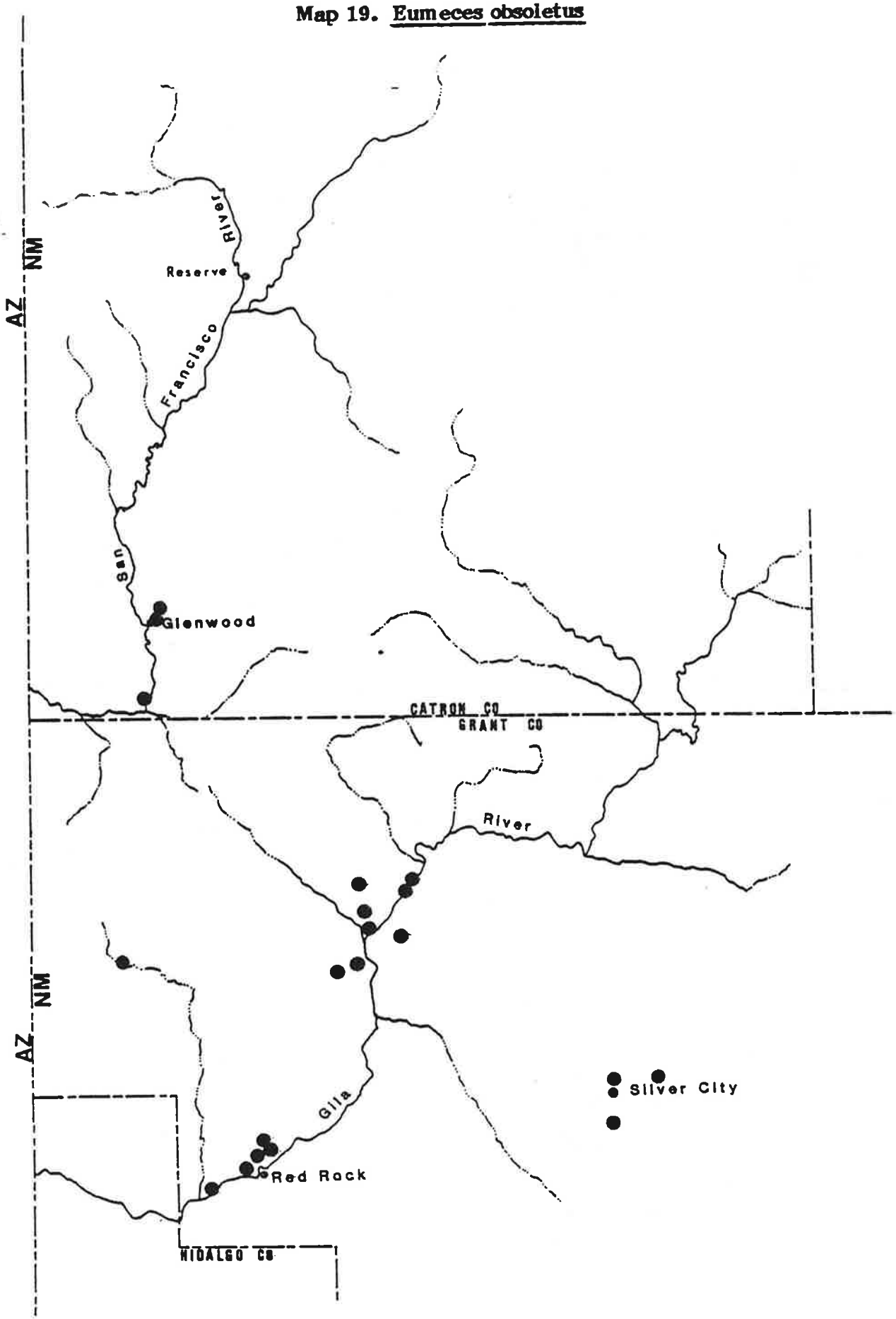
Map 17. Heloderma suspectum



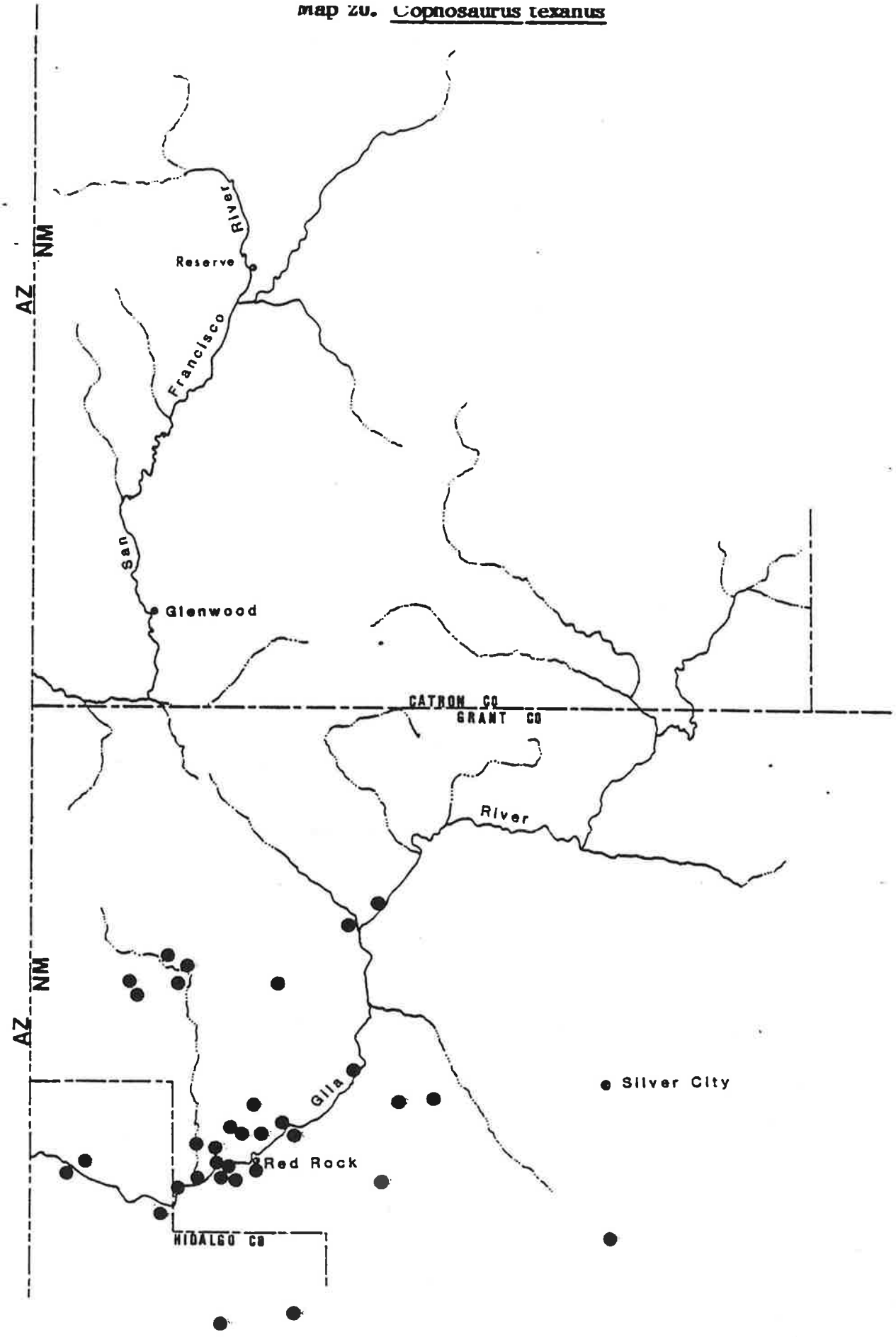
Map 18. Eumeces multivirgatus



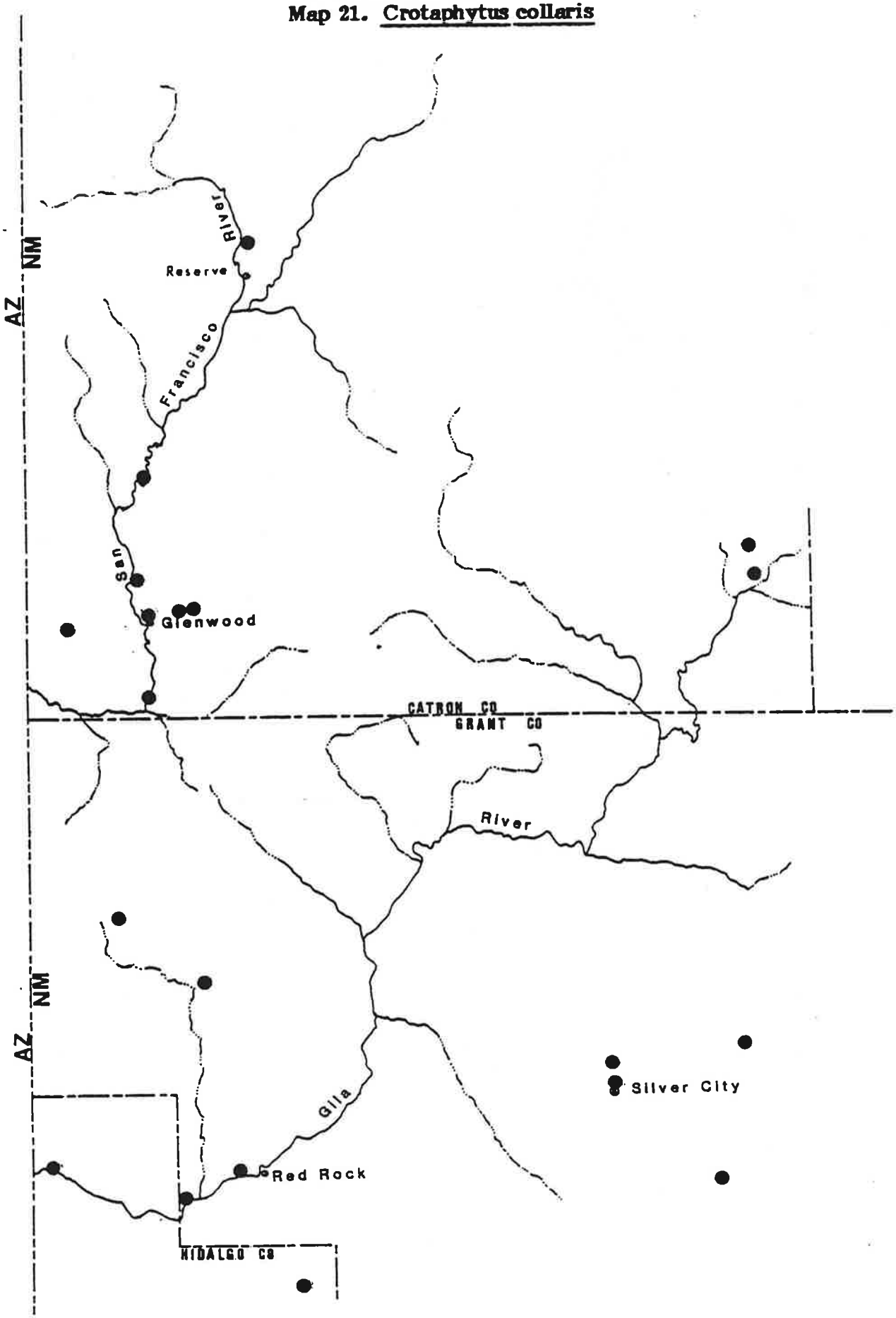
Map 19. Eumeces obsoletus



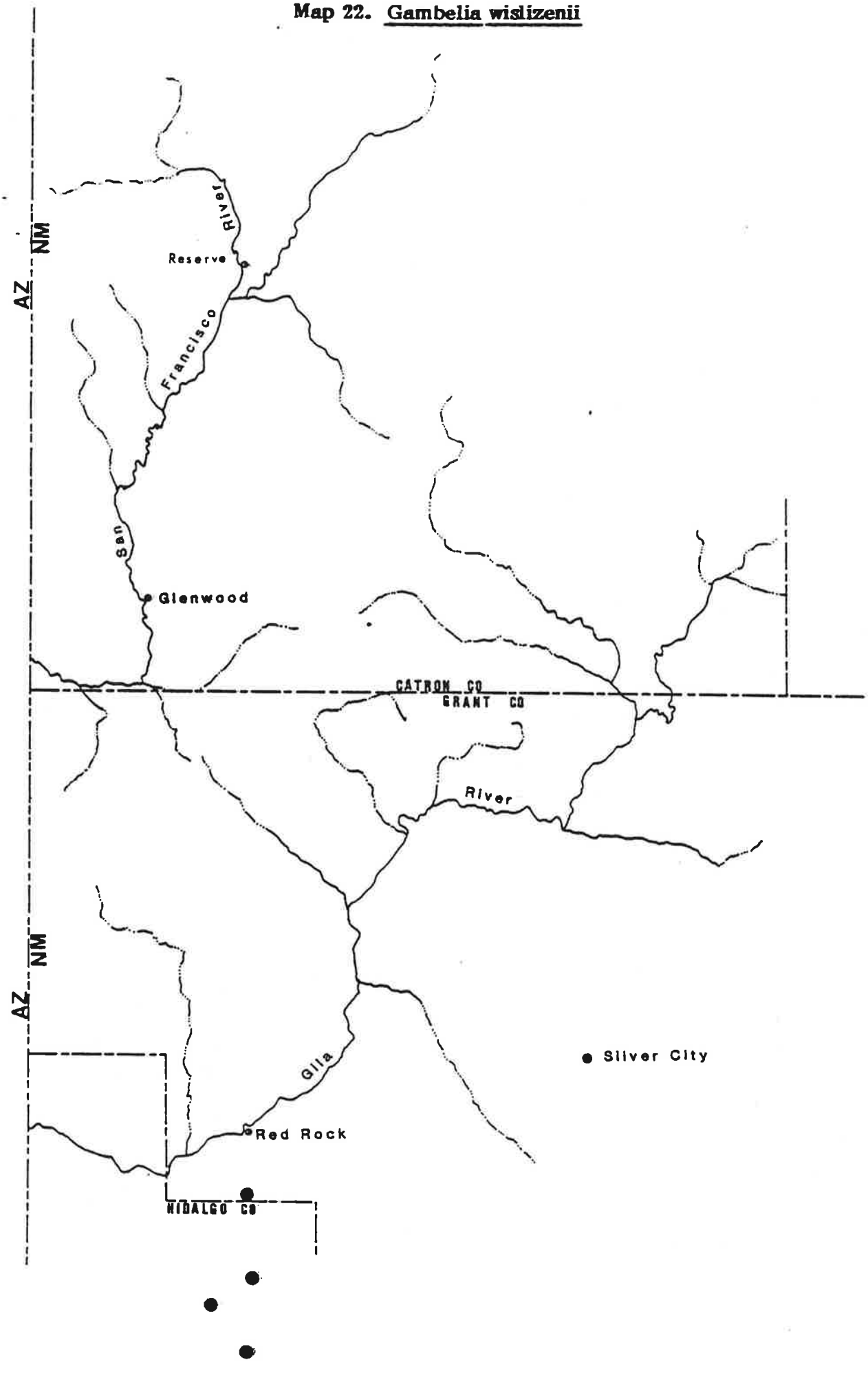
Map 20. Cophosaurus texanus



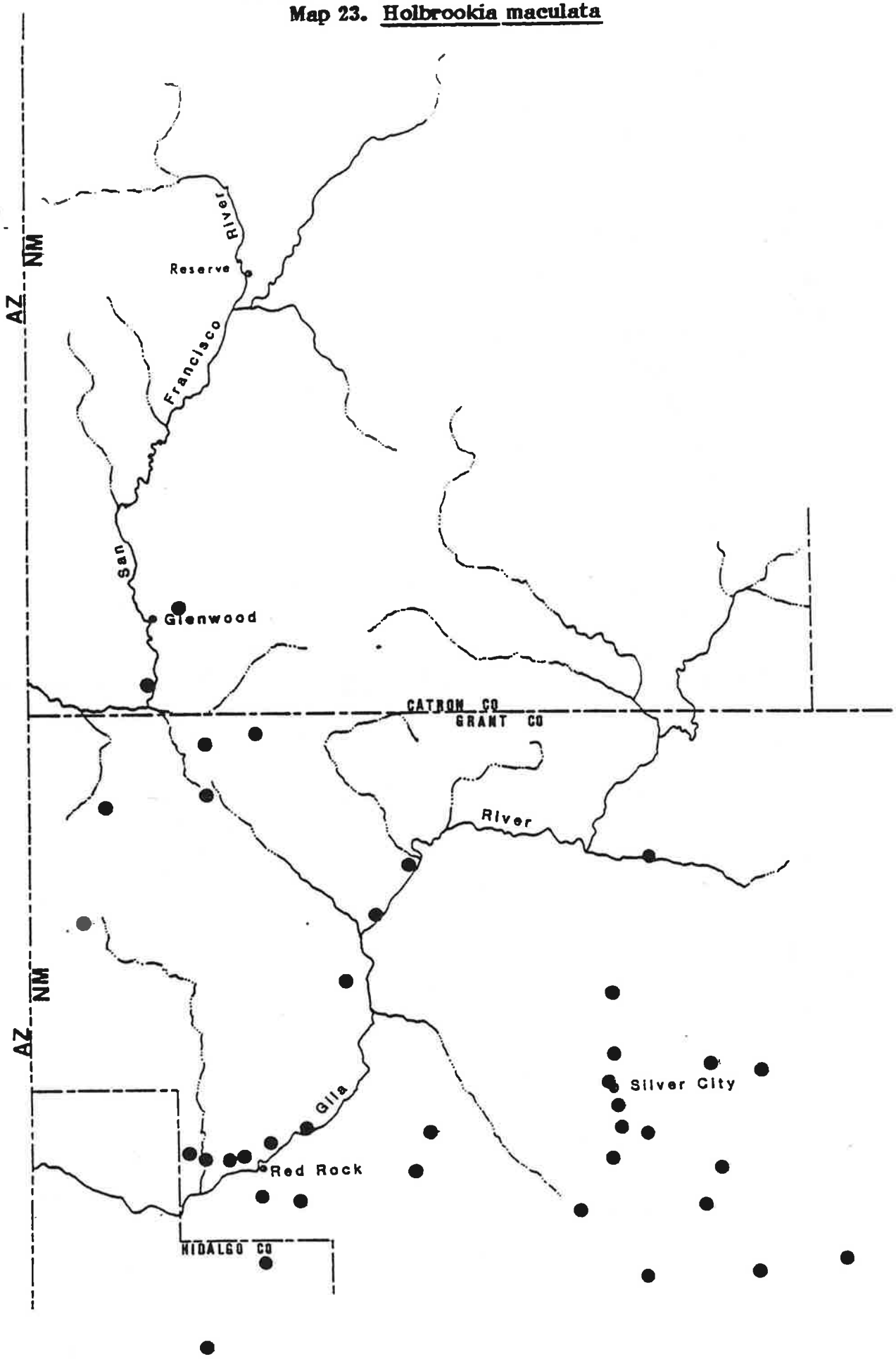
Map 21. Crotaphytus collaris



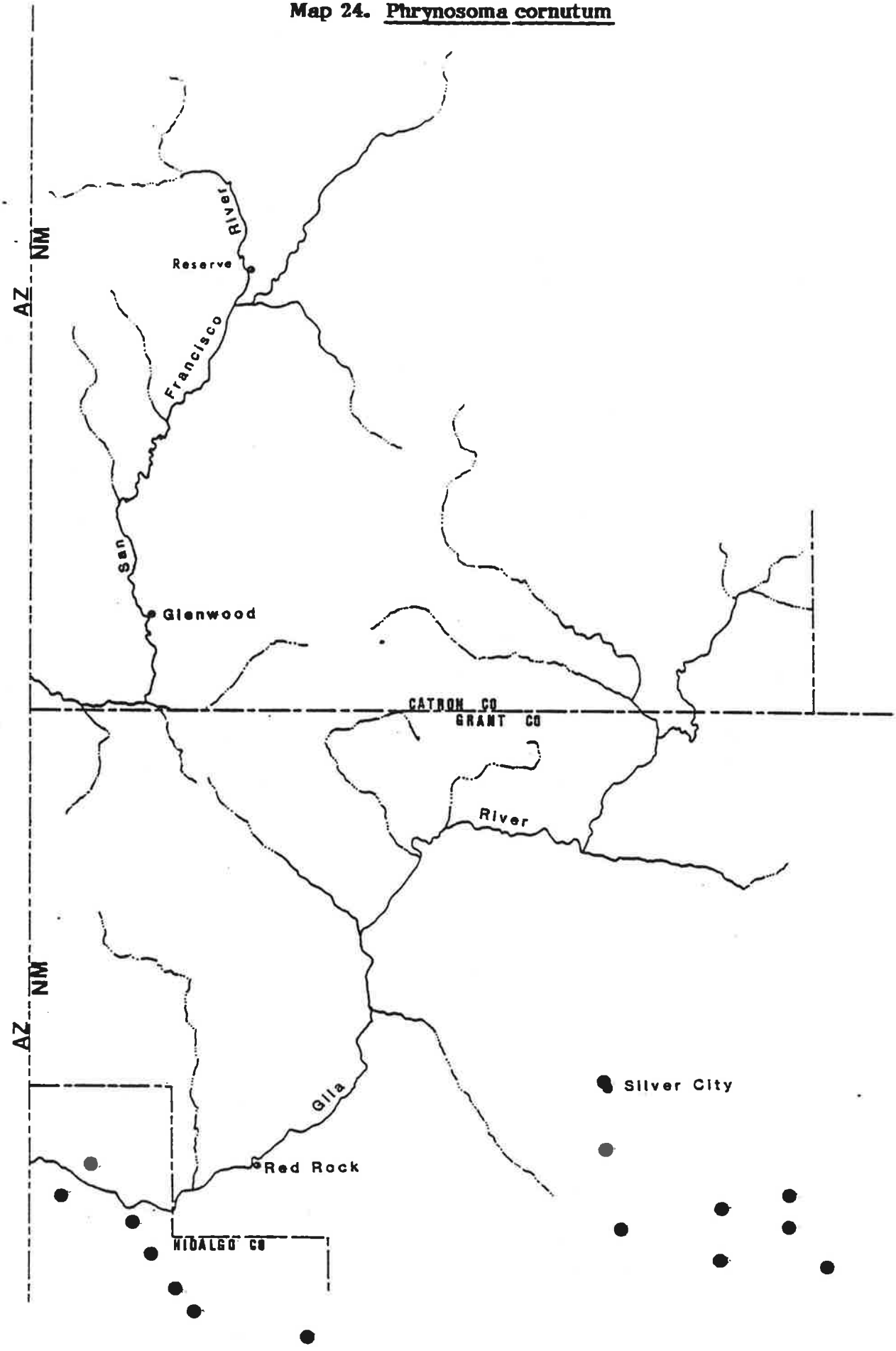
Map 22. Gambelia wislizenii



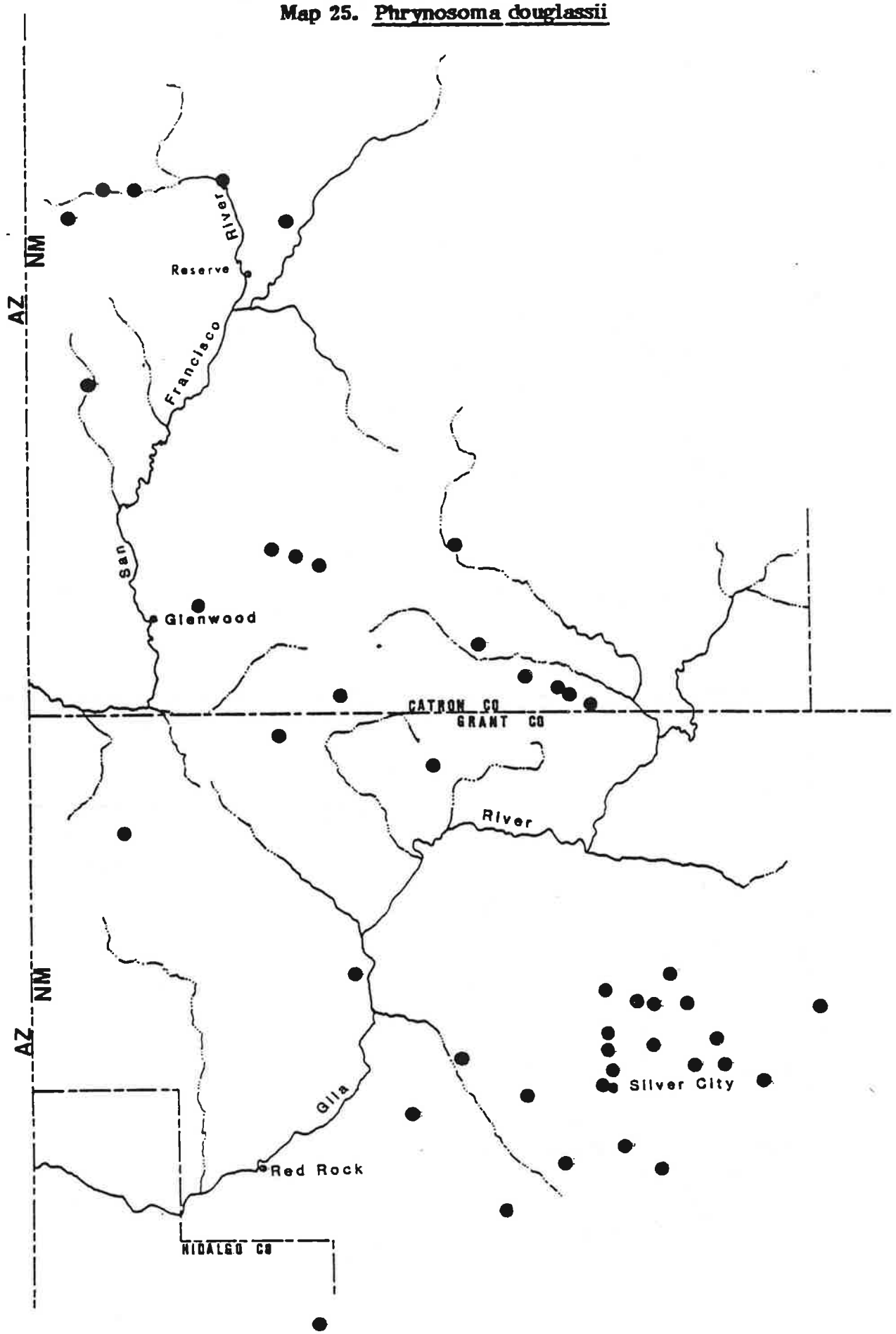
Map 23. Holbrookia maculata



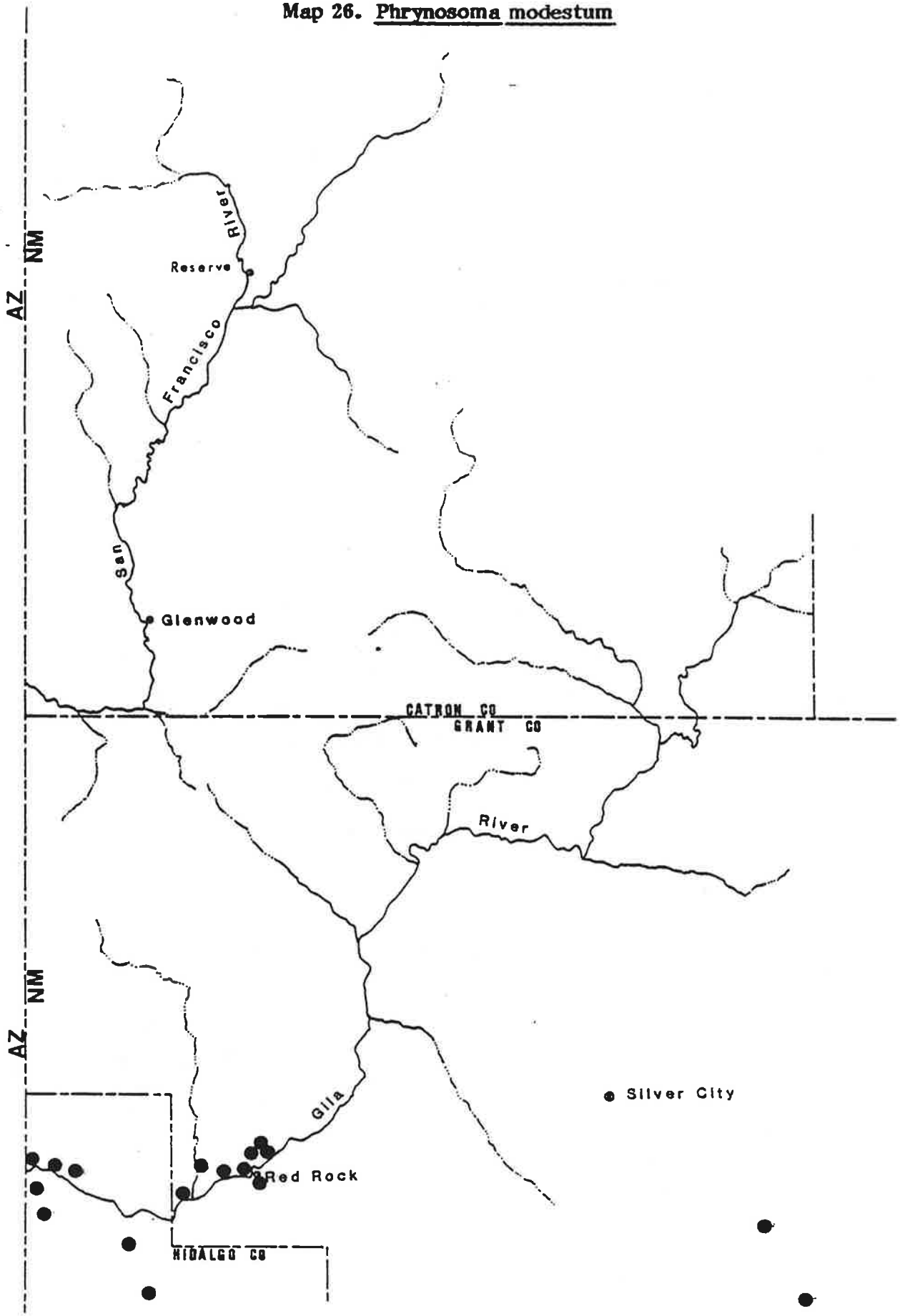
Map 24. Phrynosoma cornutum



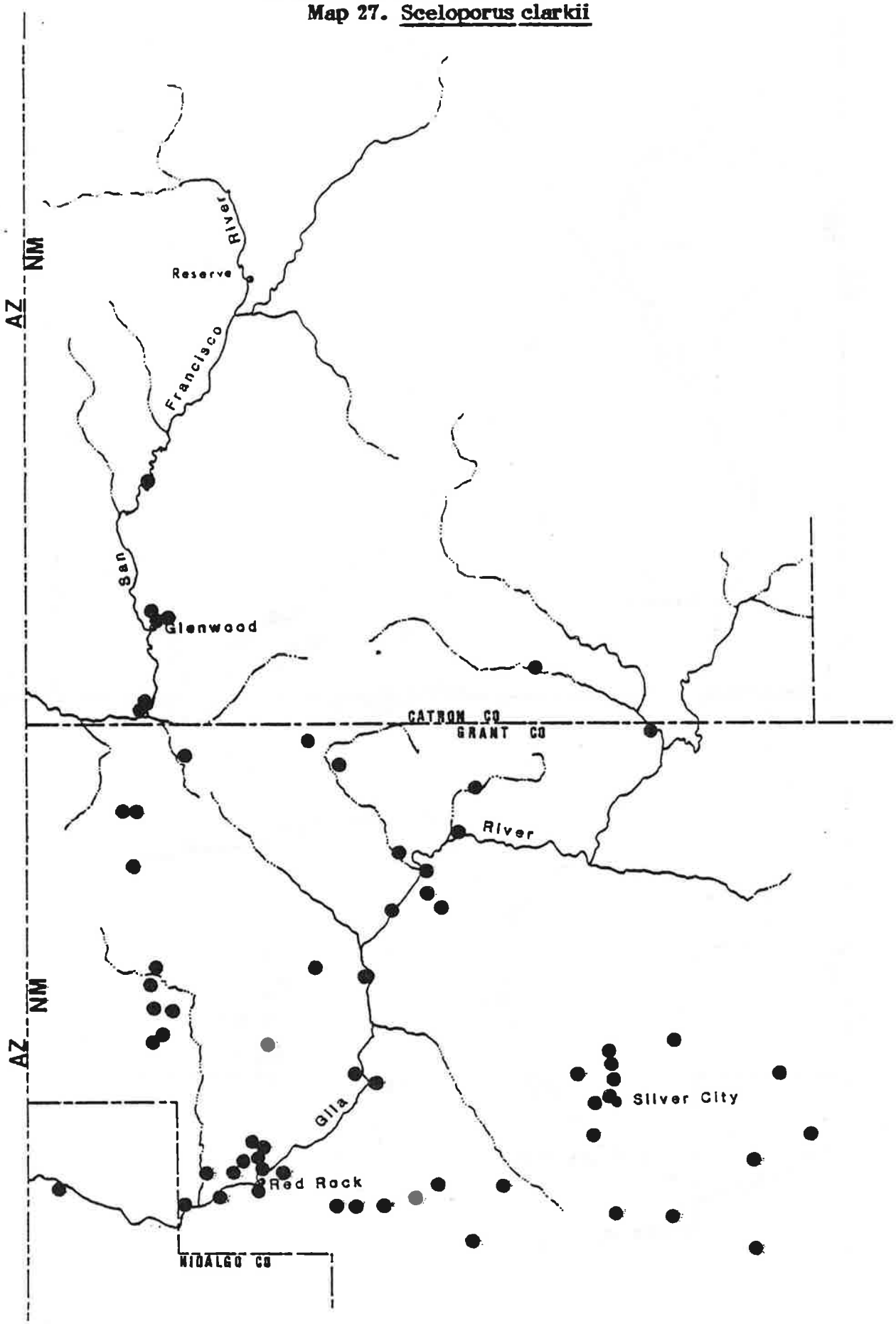
Map 25. Phrynosoma douglassii



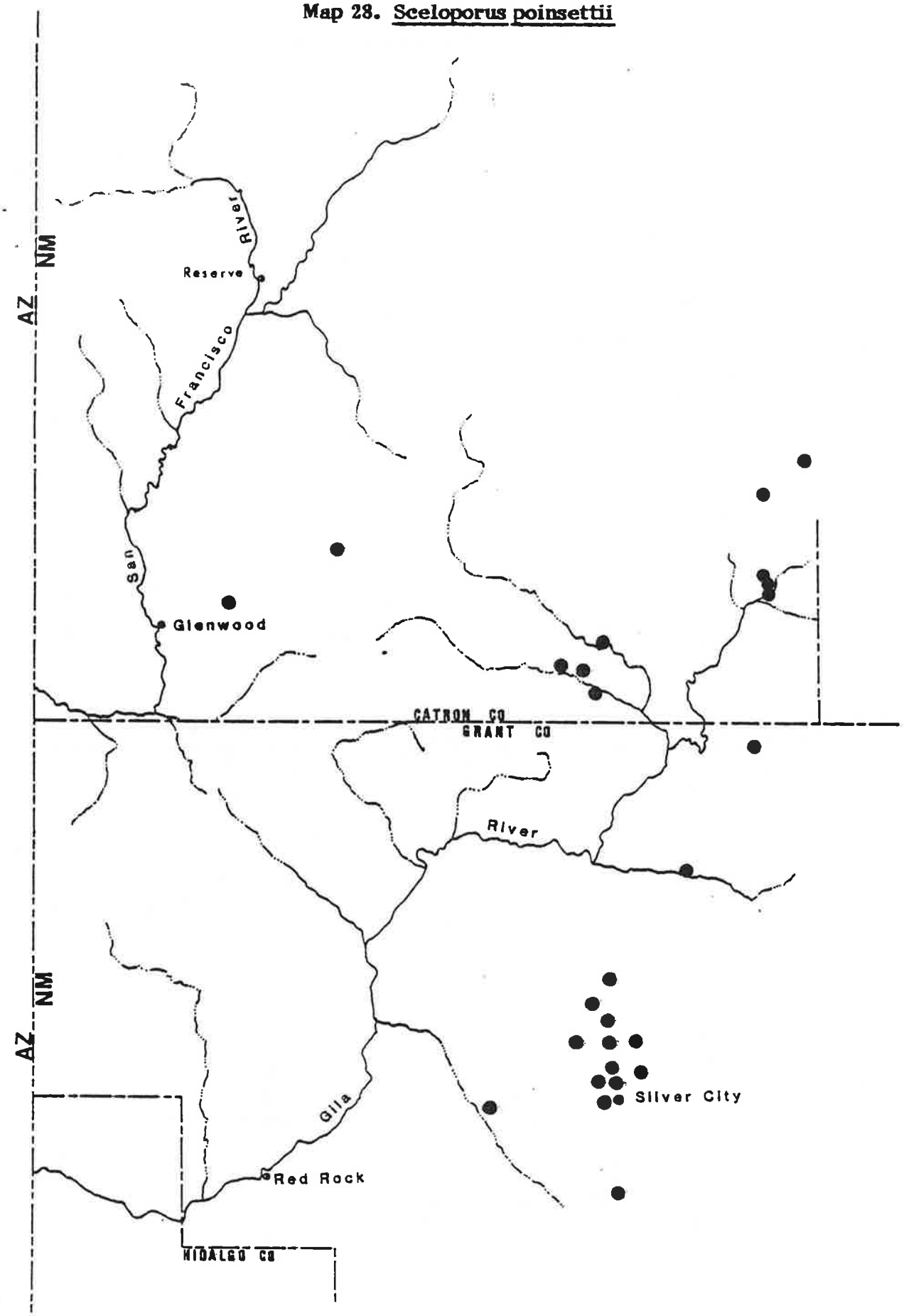
Map 26. Phrynosoma modestum



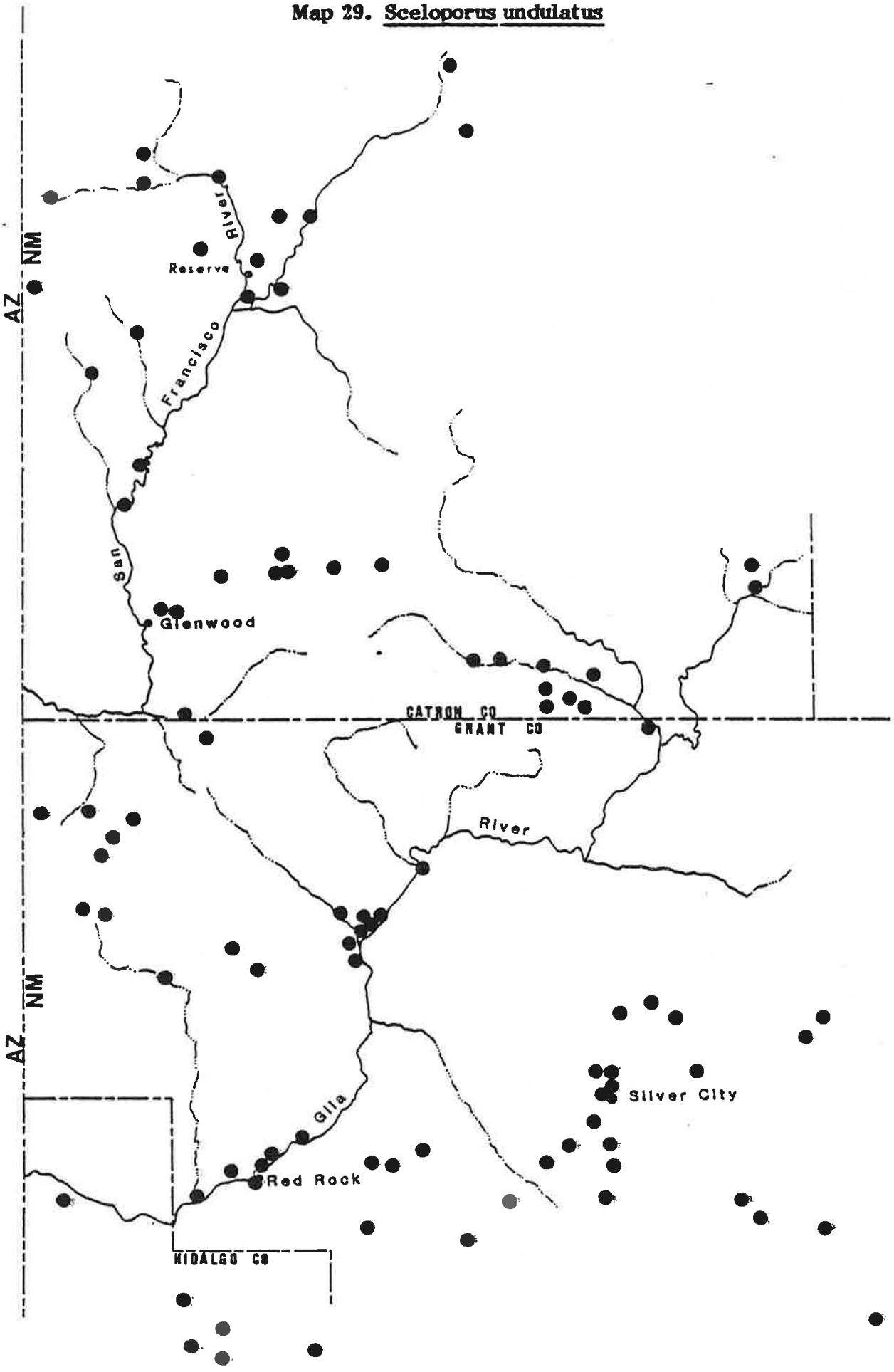
Map 27. Sceloporus clarkii



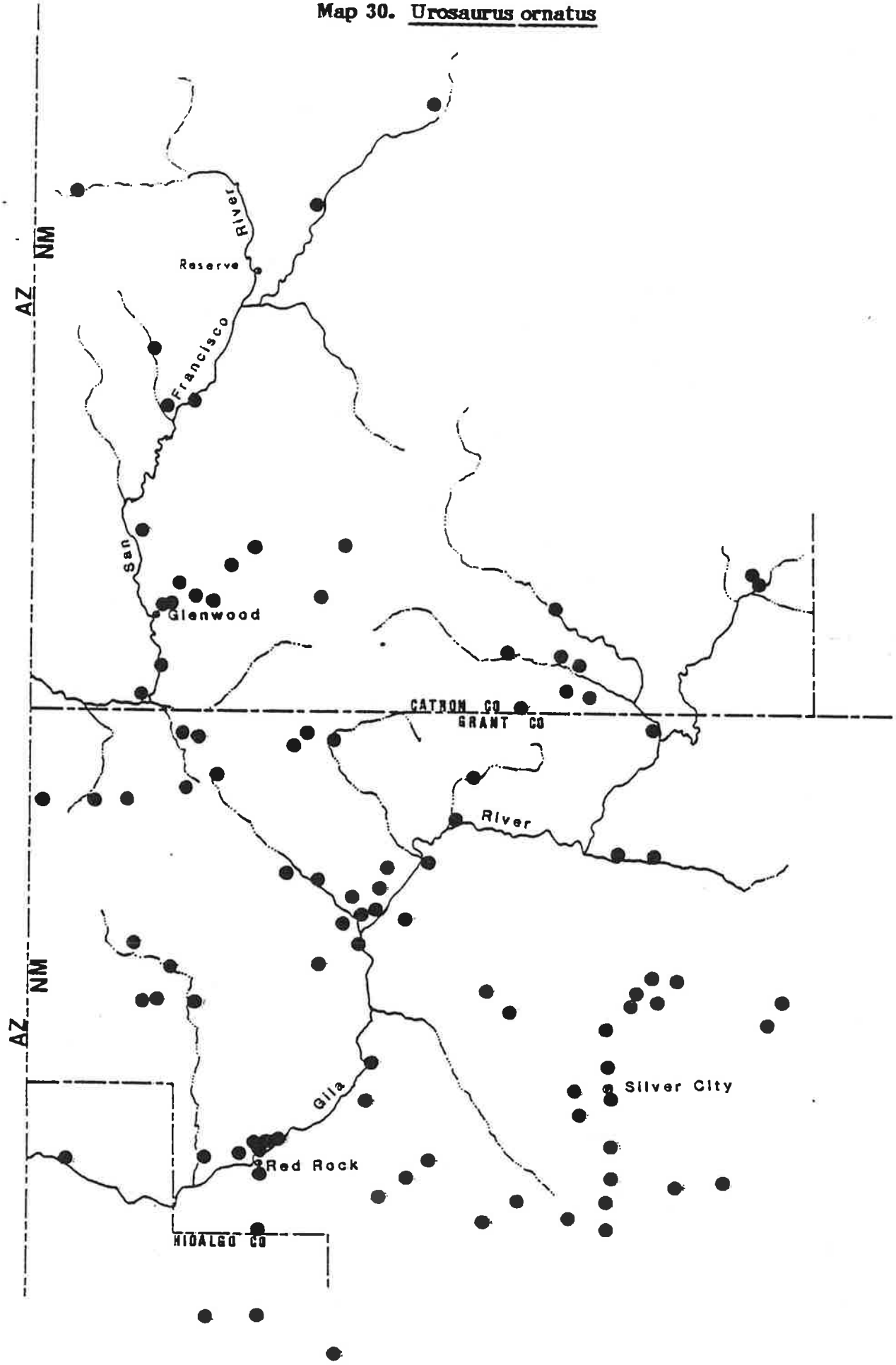
Map 28. Sceloporus poinsettii



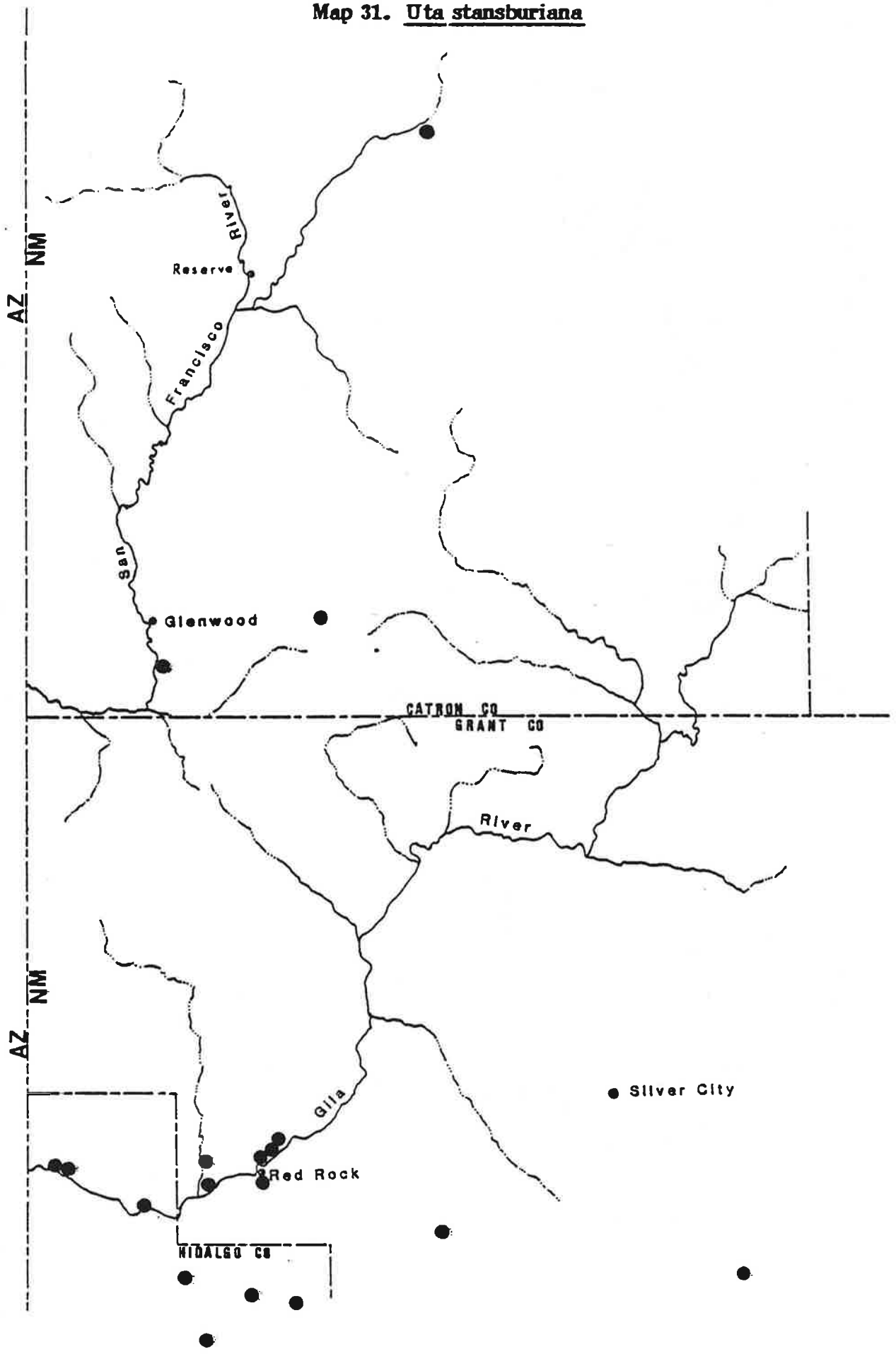
Map 29. Sceloporus undulatus



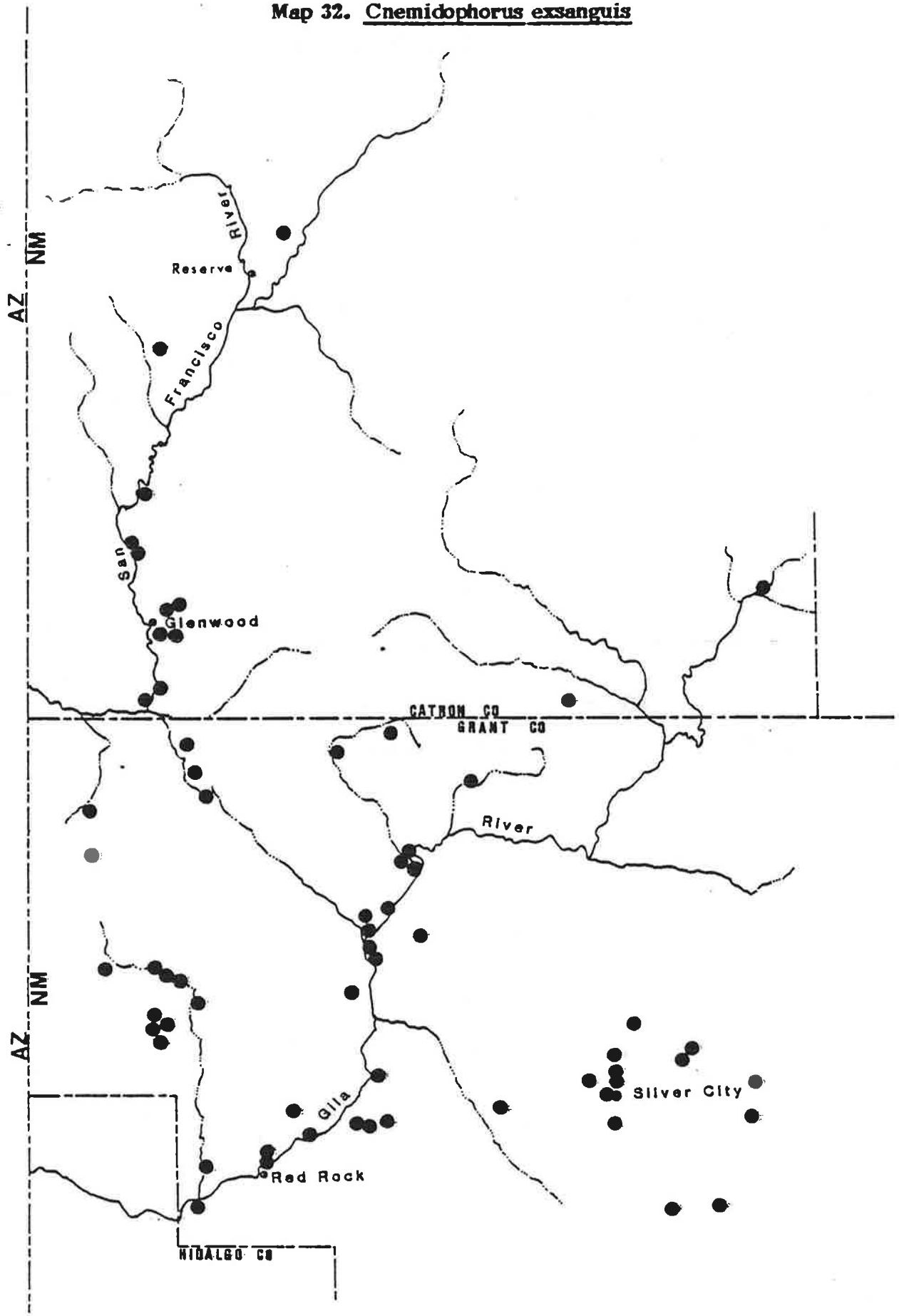
Map 30. Urosaurus ornatus



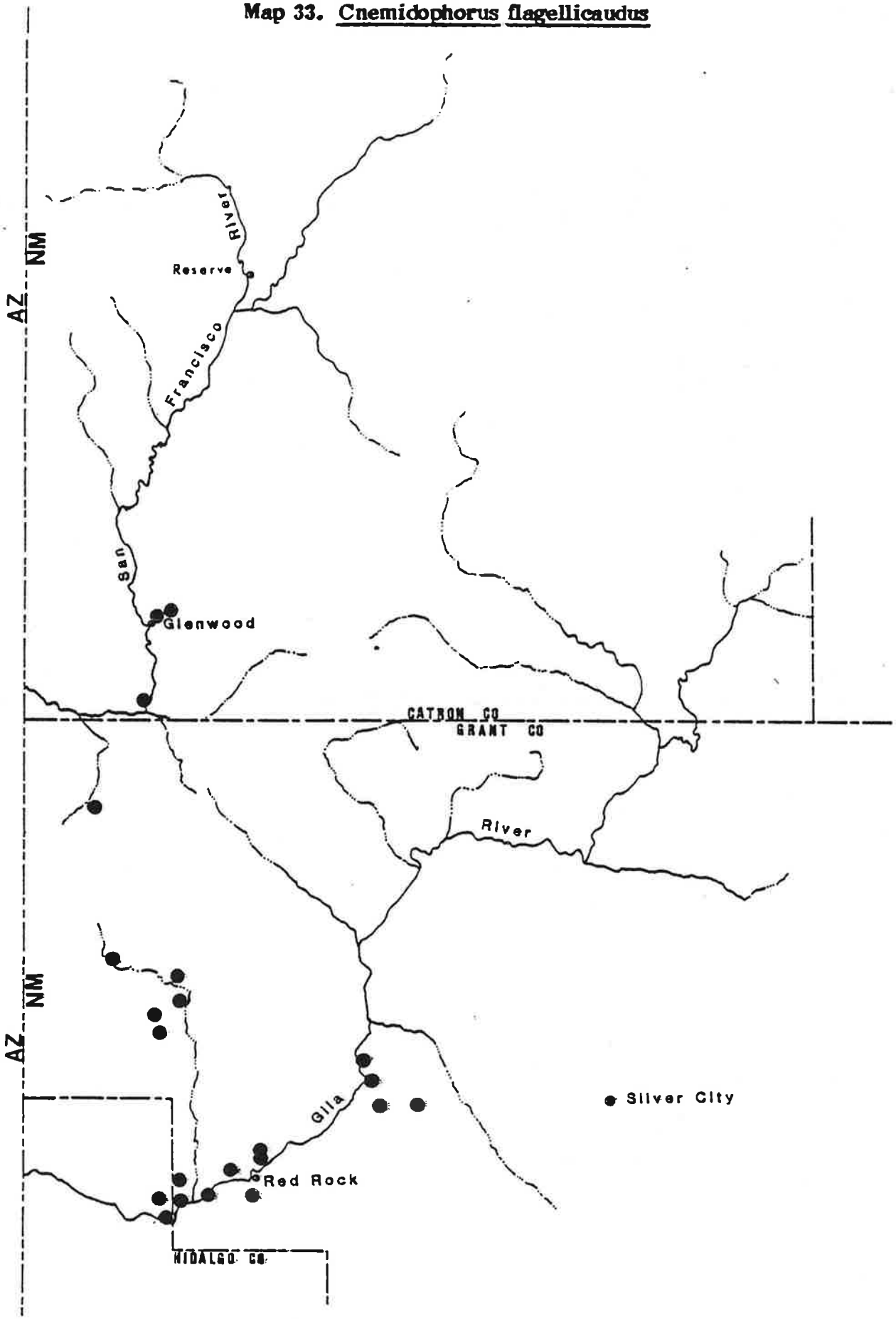
Map 31. Uta stansburiana



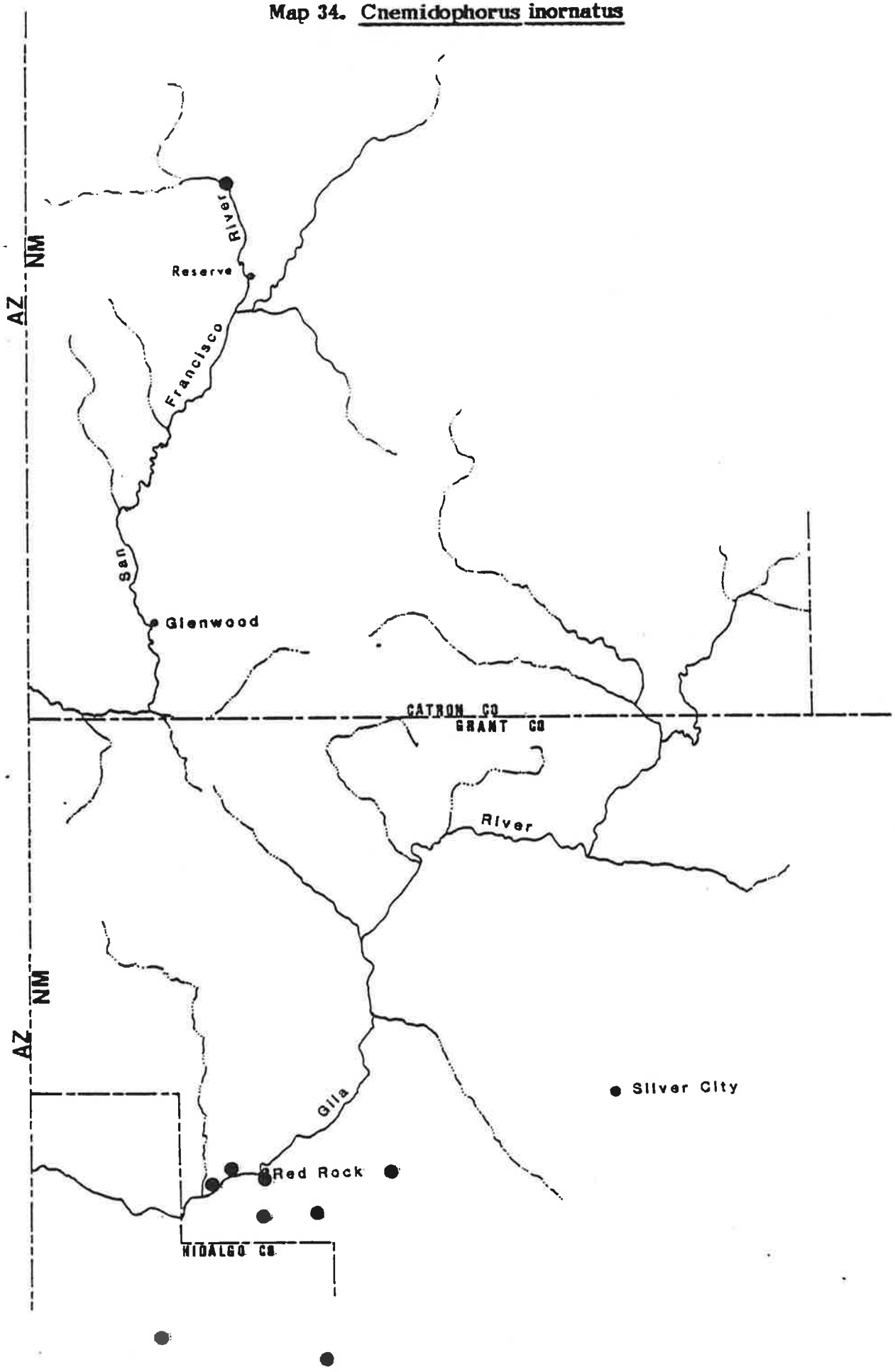
Map 32. Cnemidophorus exsanguis



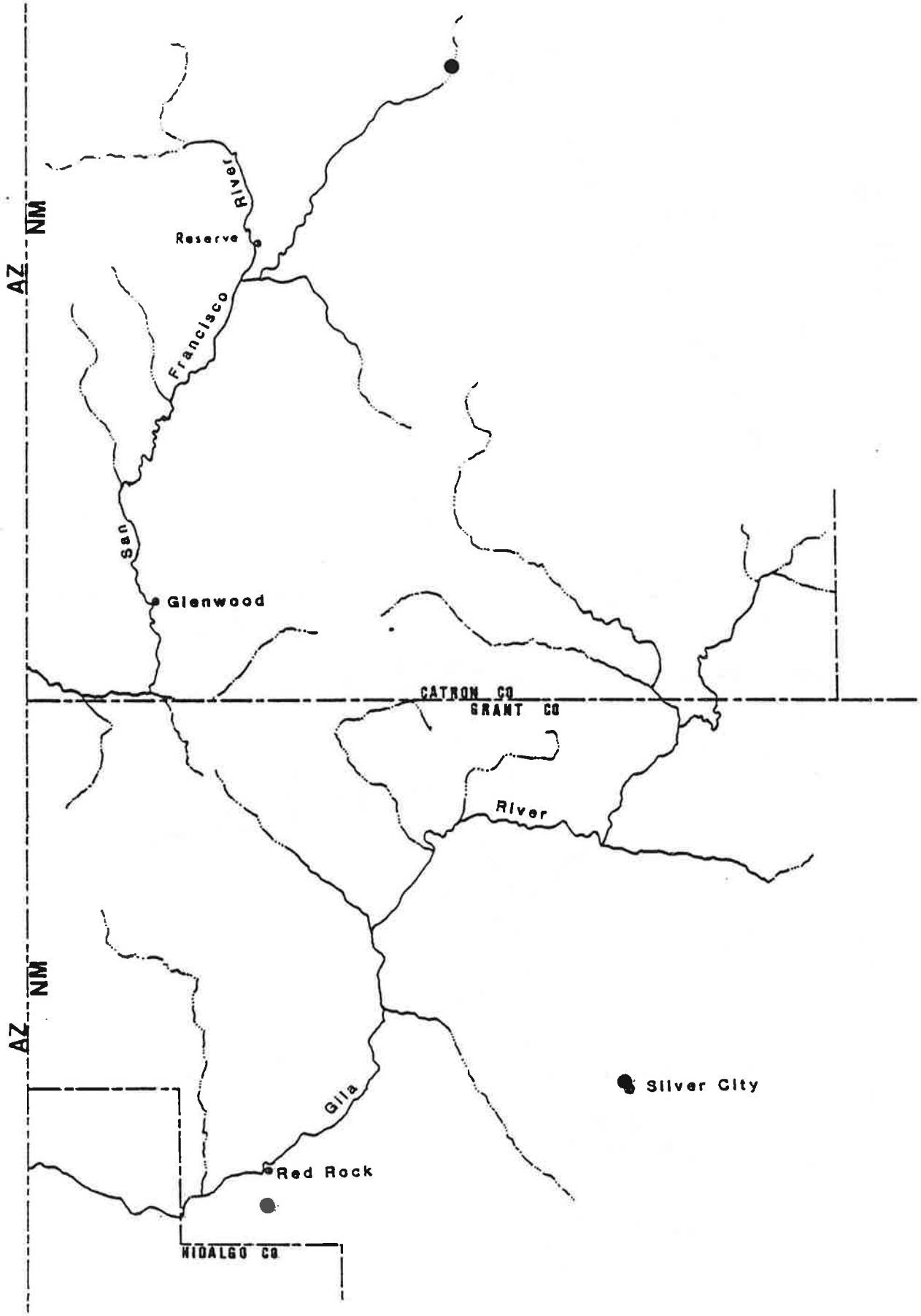
Map 33. Cnemidophorus flagellicaudus



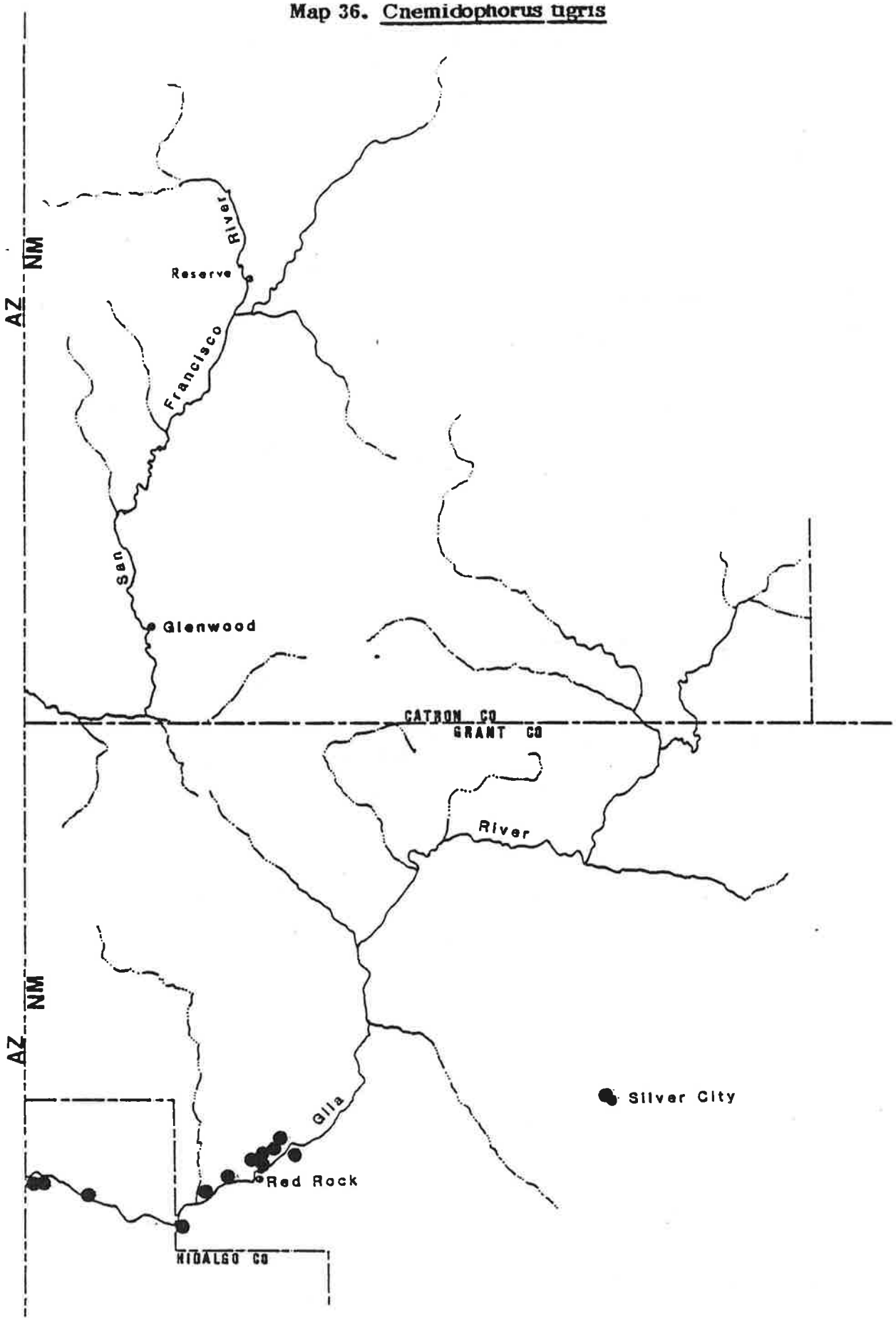
Map 34. Cnemidophorus inornatus



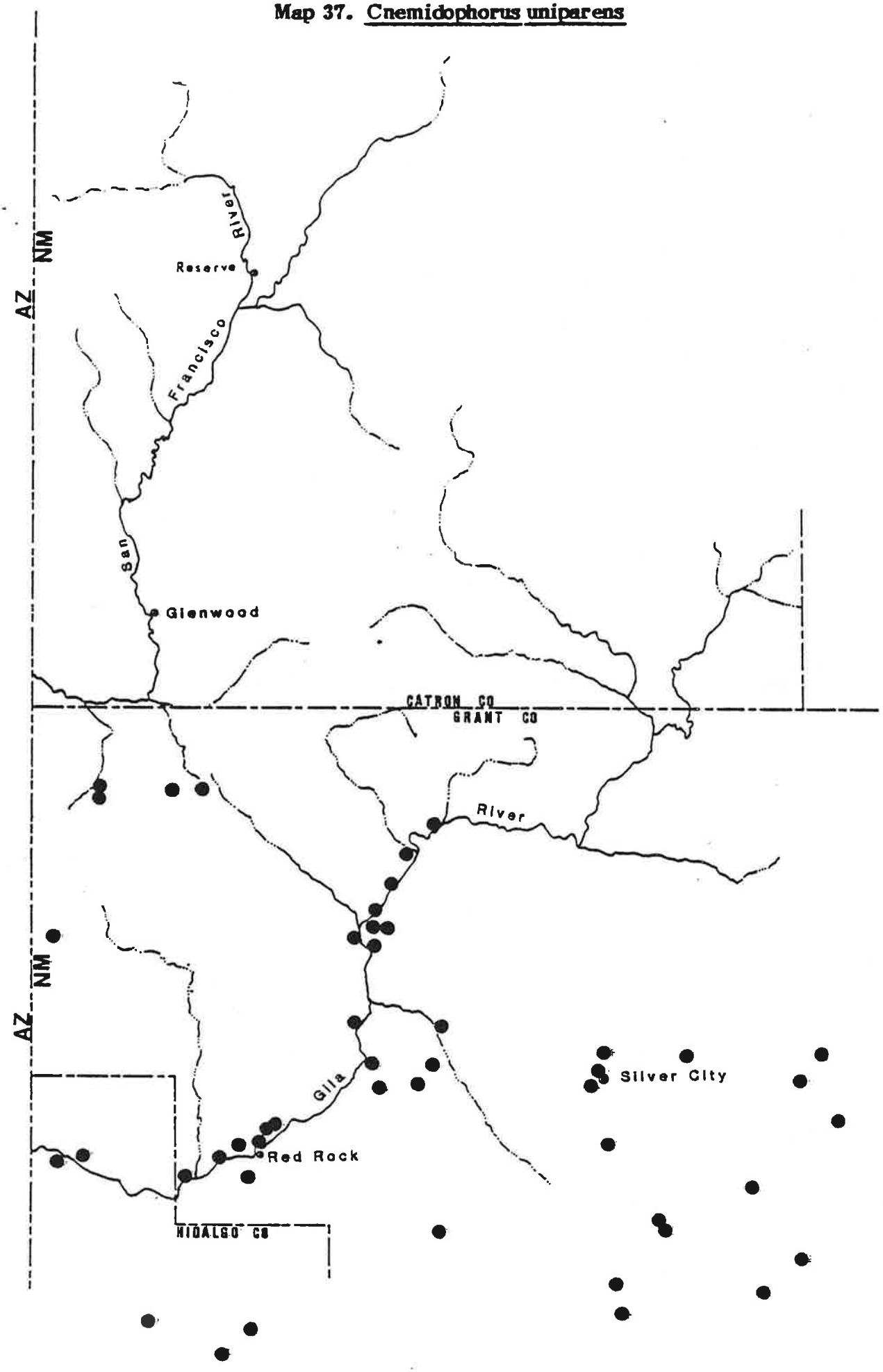
Map 35. Cnemidophorus neomexicanus



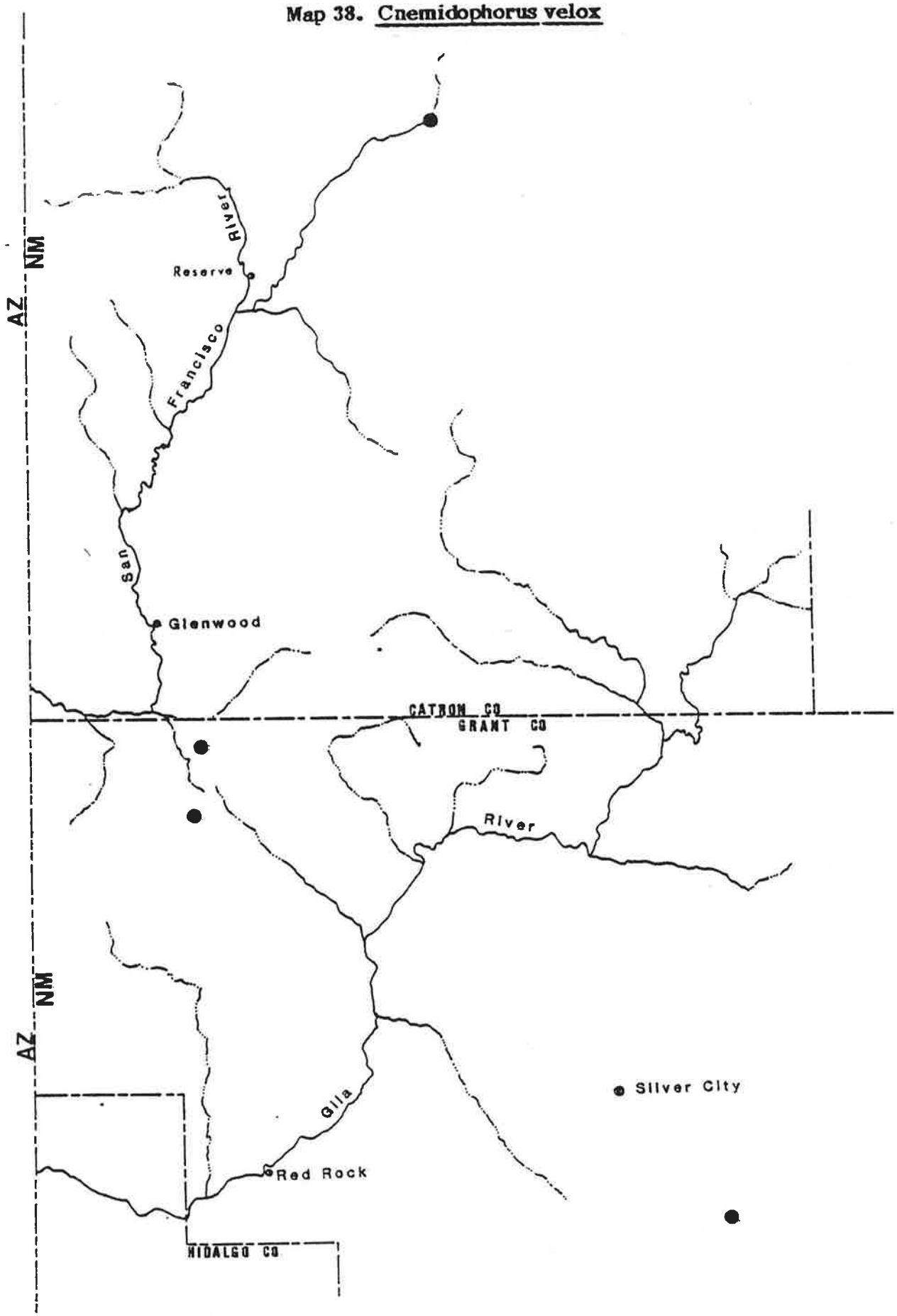
Map 36. Cnemidophorus tigris



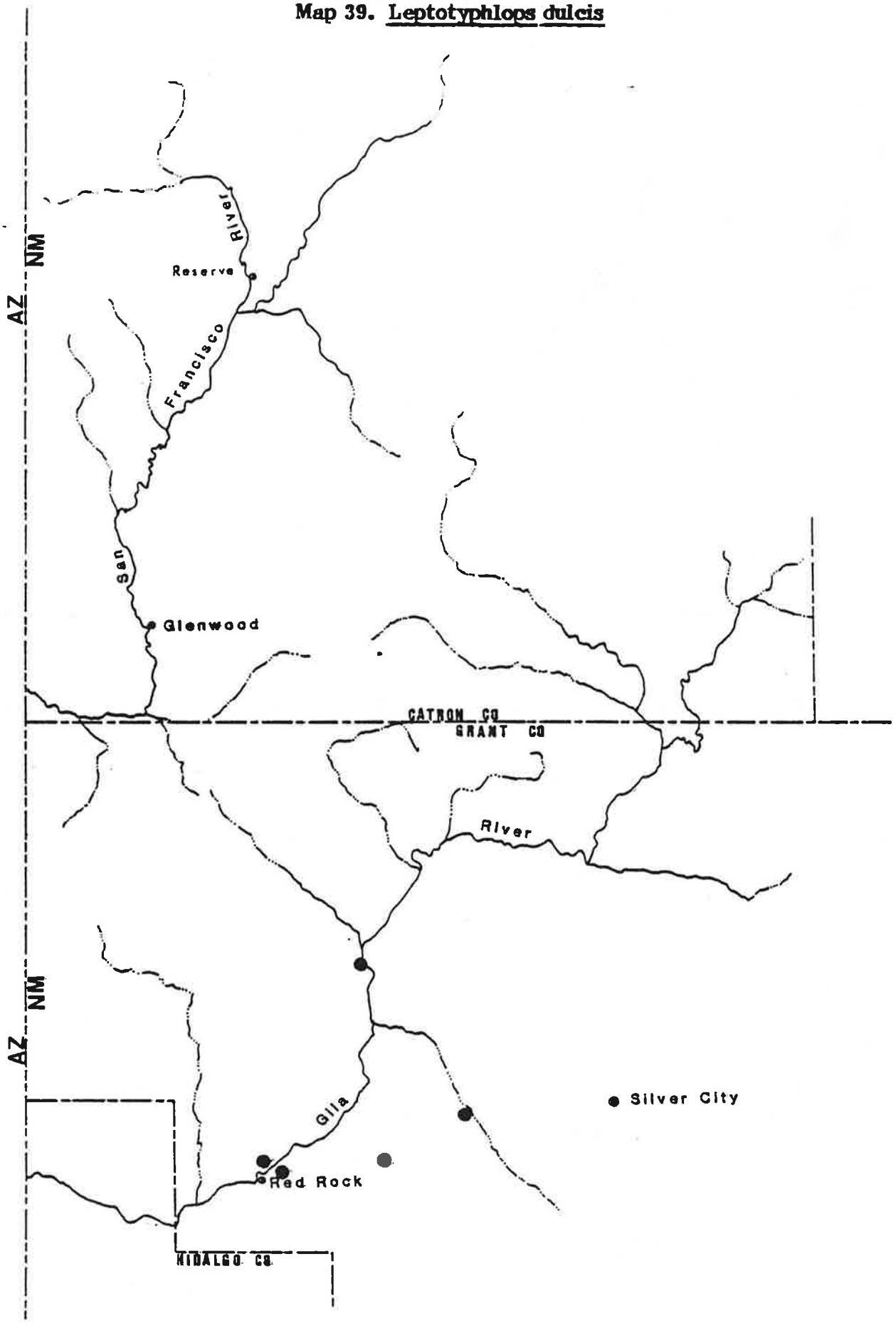
Map 37. Cnemidophorus uniparens



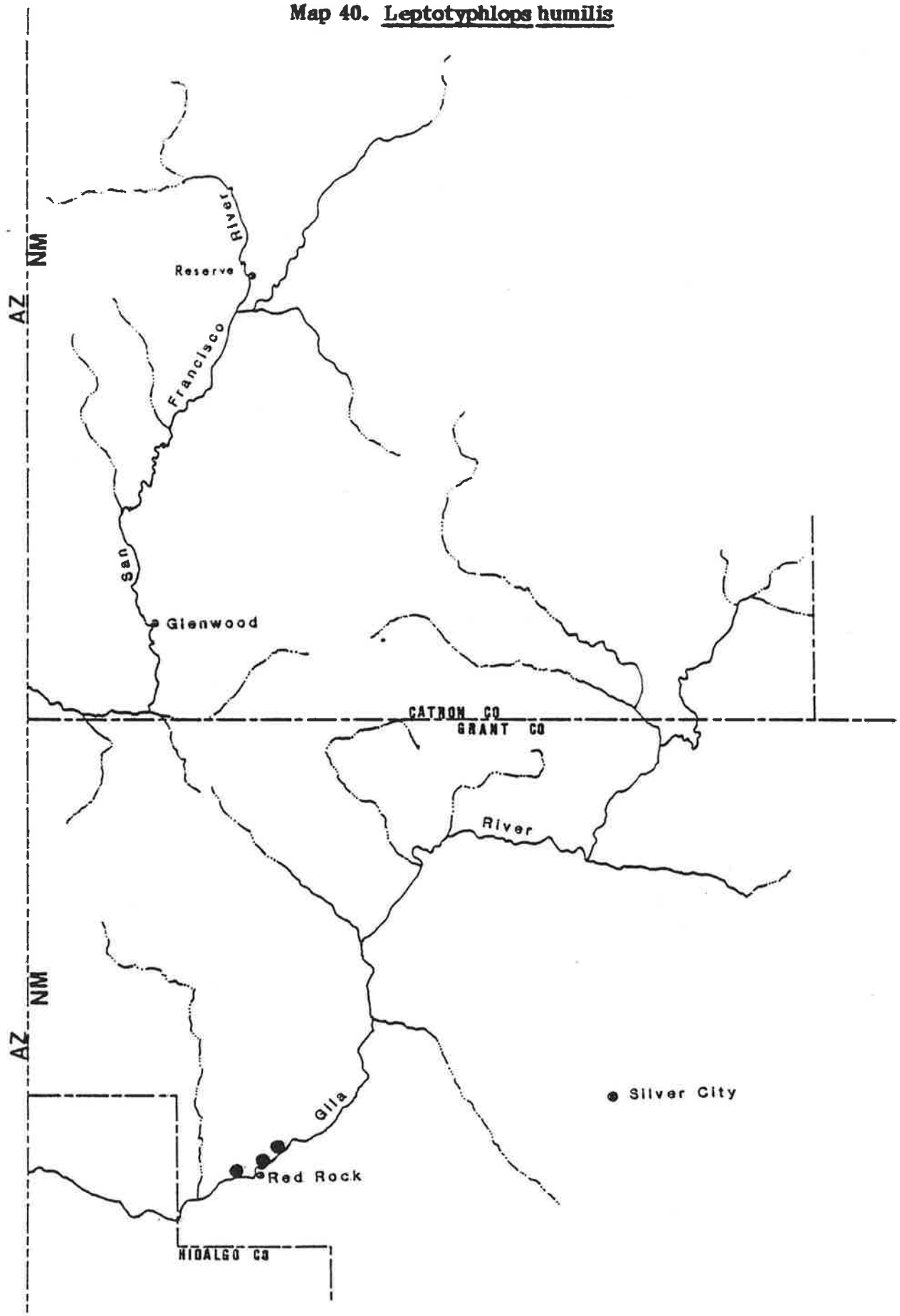
Map 38. Cnemidophorus velox



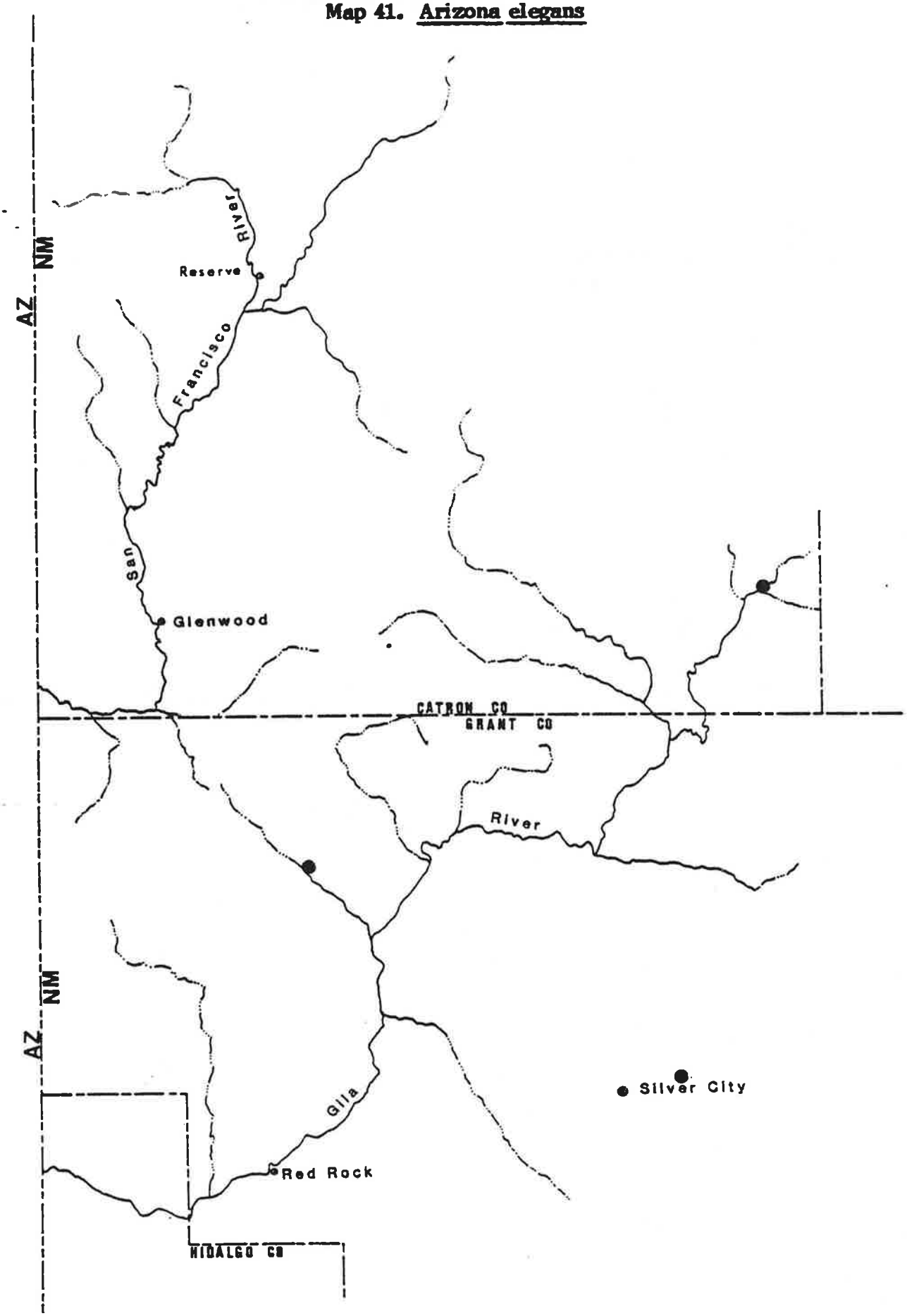
Map 39. Leptotyphlops dulcis



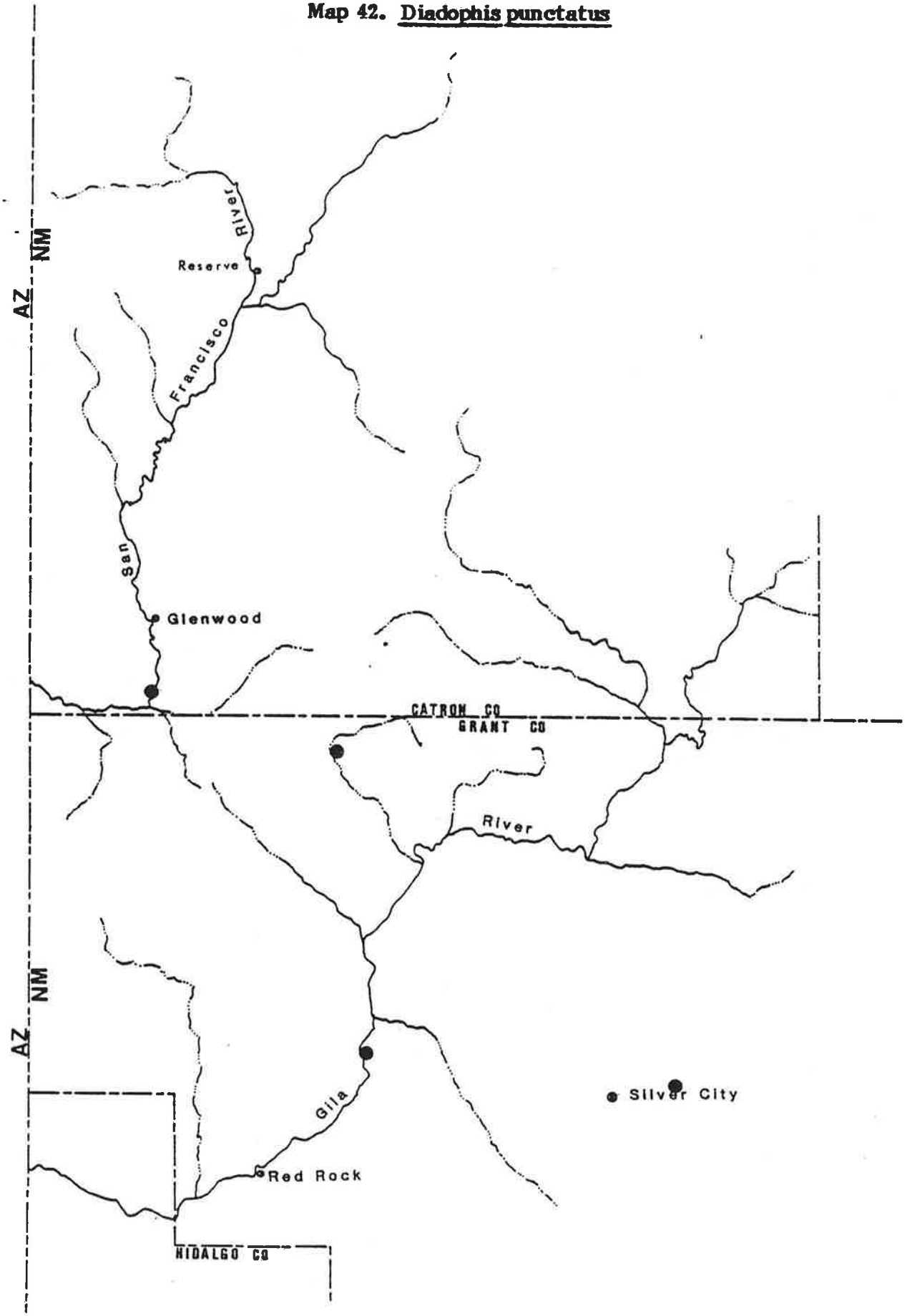
Map 40. Leptotyphlops humilis



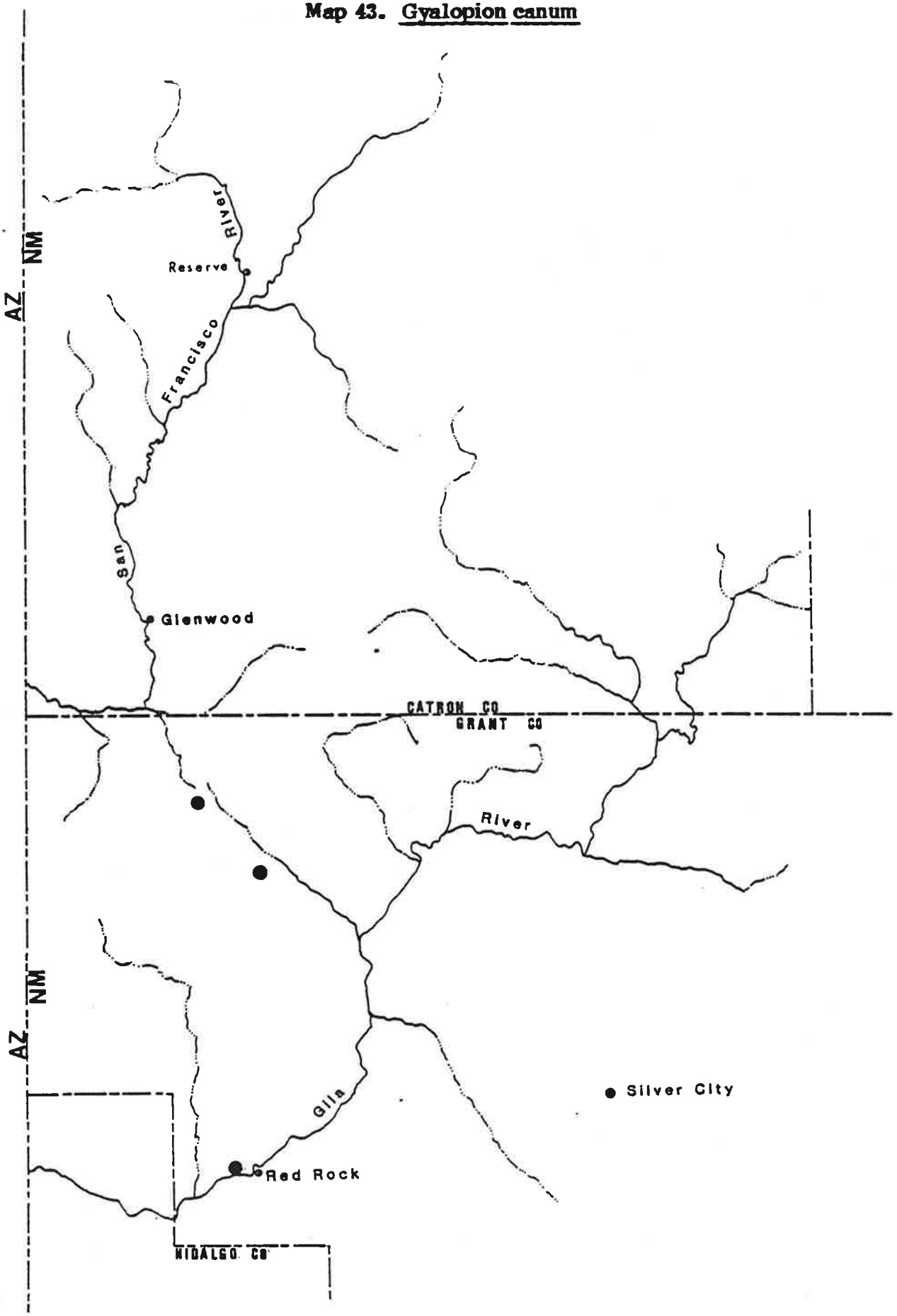
Map 41. Arizona elegans



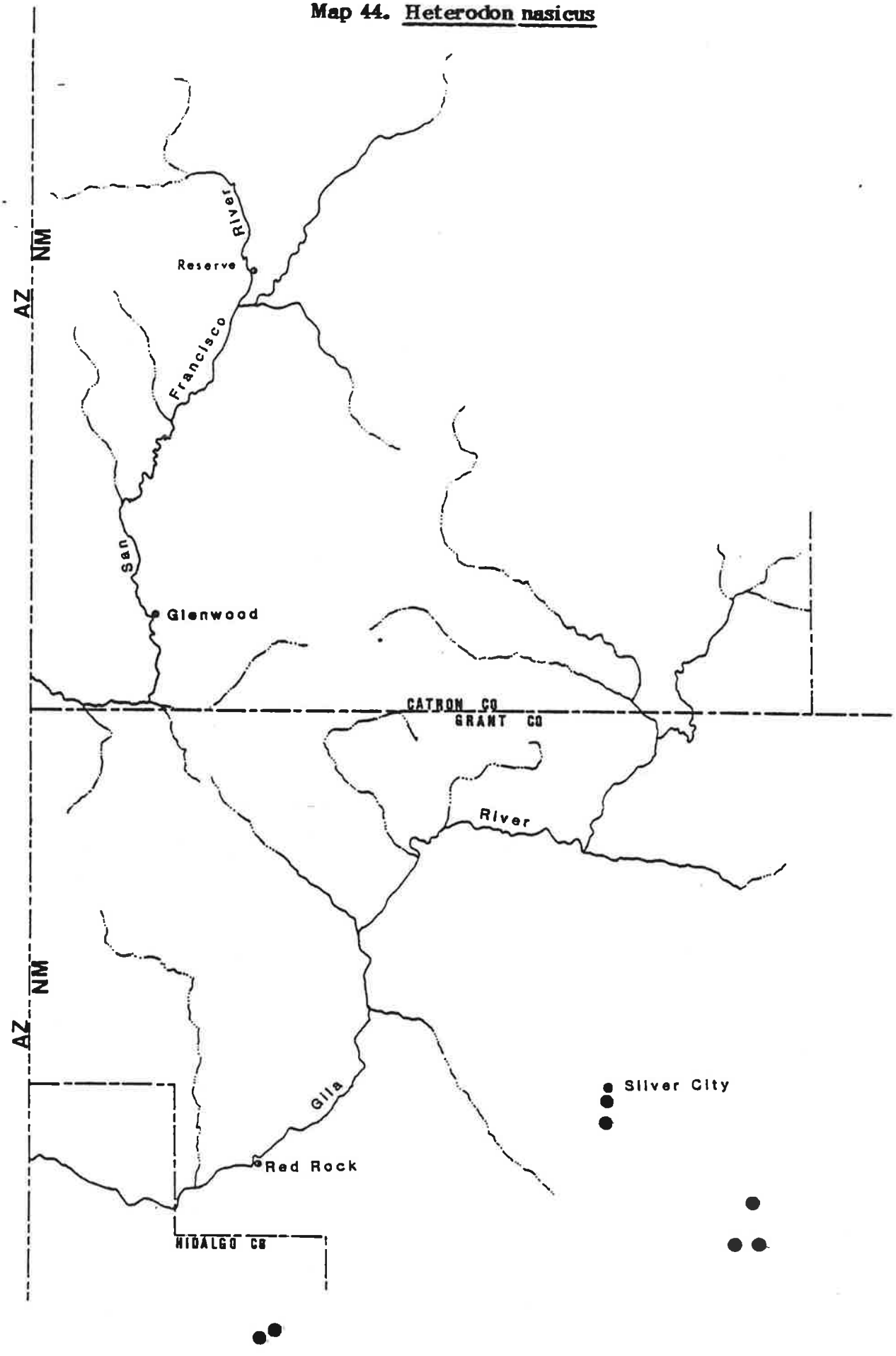
Map 42. Diadophis punctatus



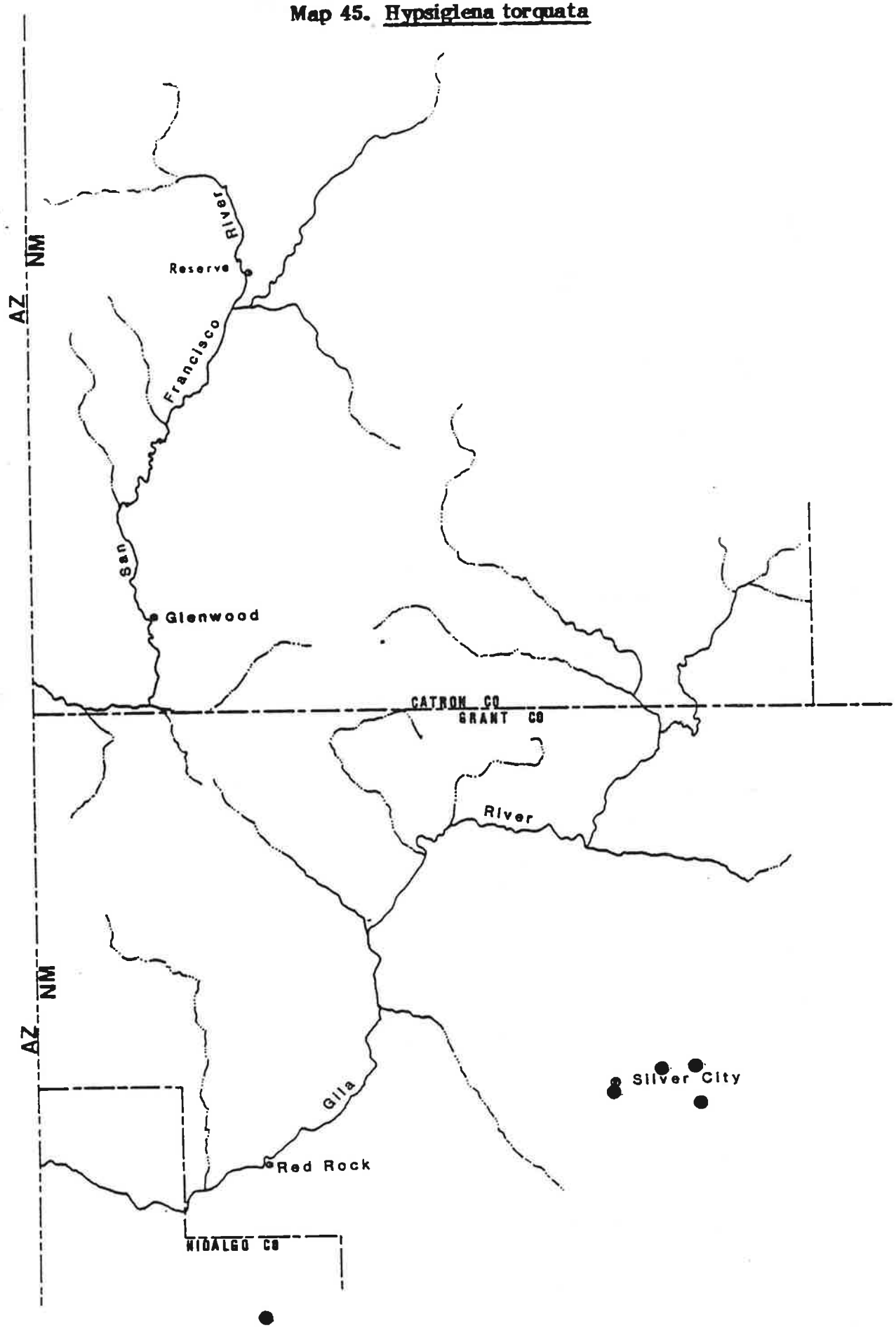
Map 43. Gyalopion canum



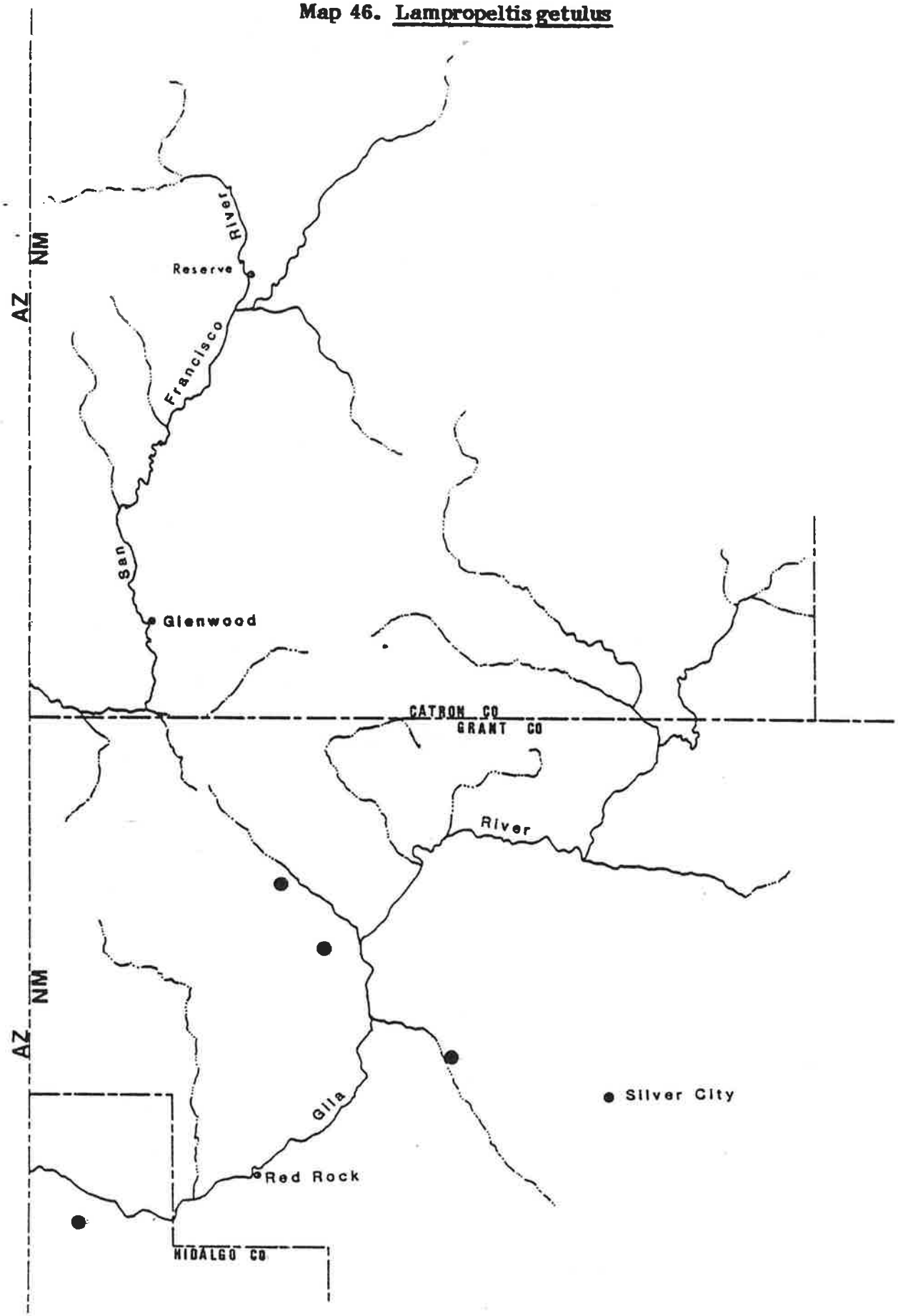
Map 44. Heterodon nasicus



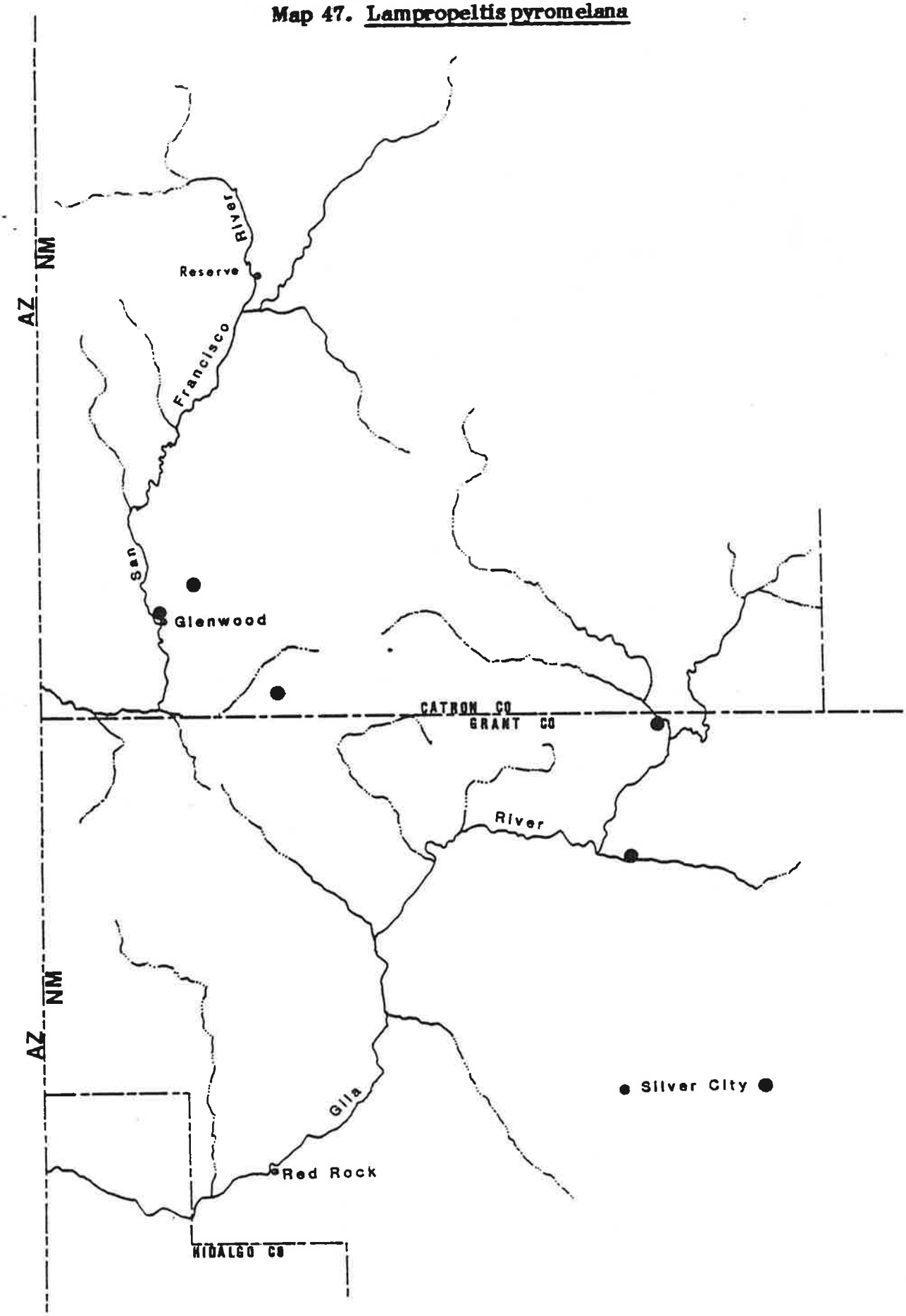
Map 45. Hypsiglena torquata



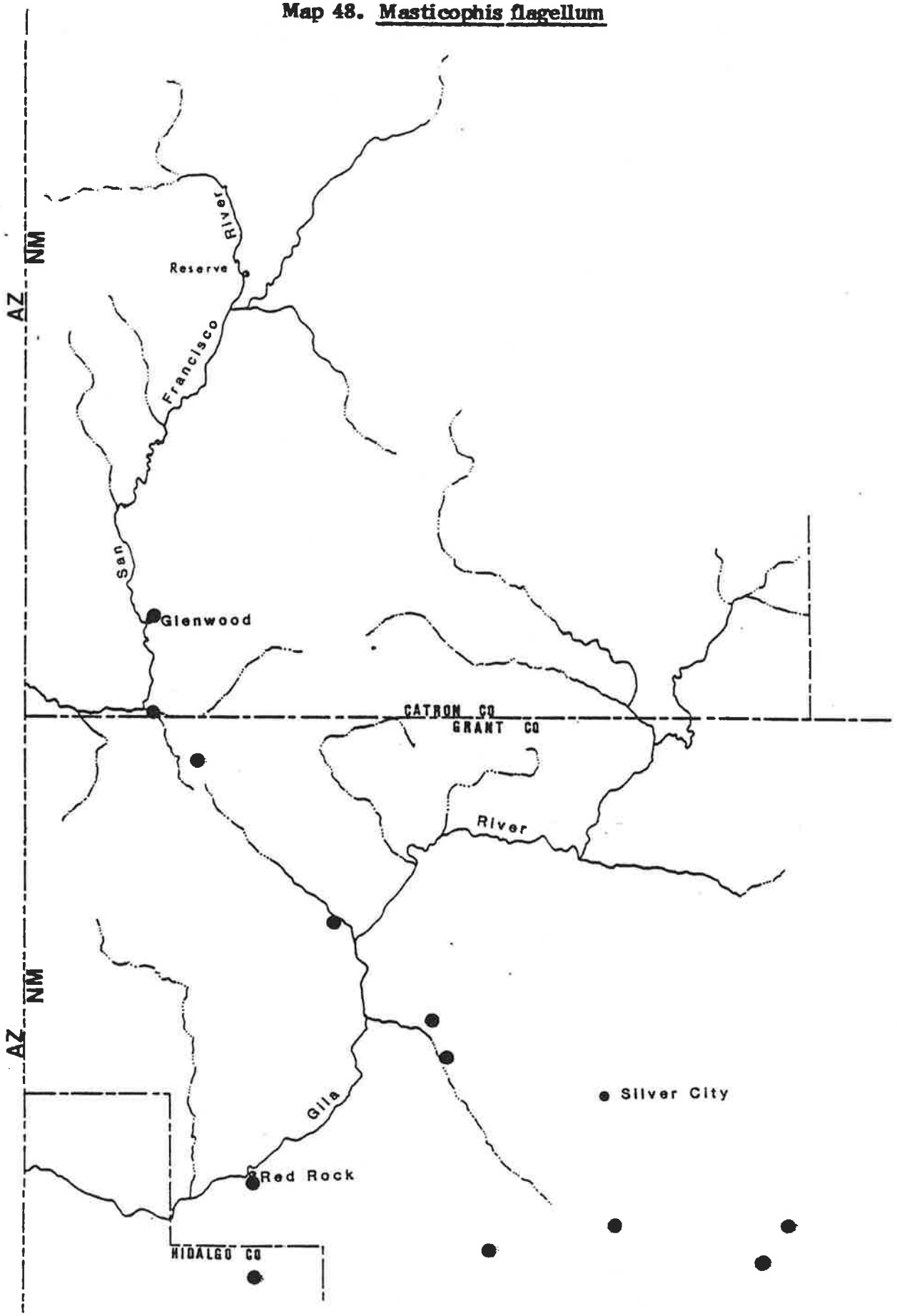
Map 46. Lampropeltis getulus



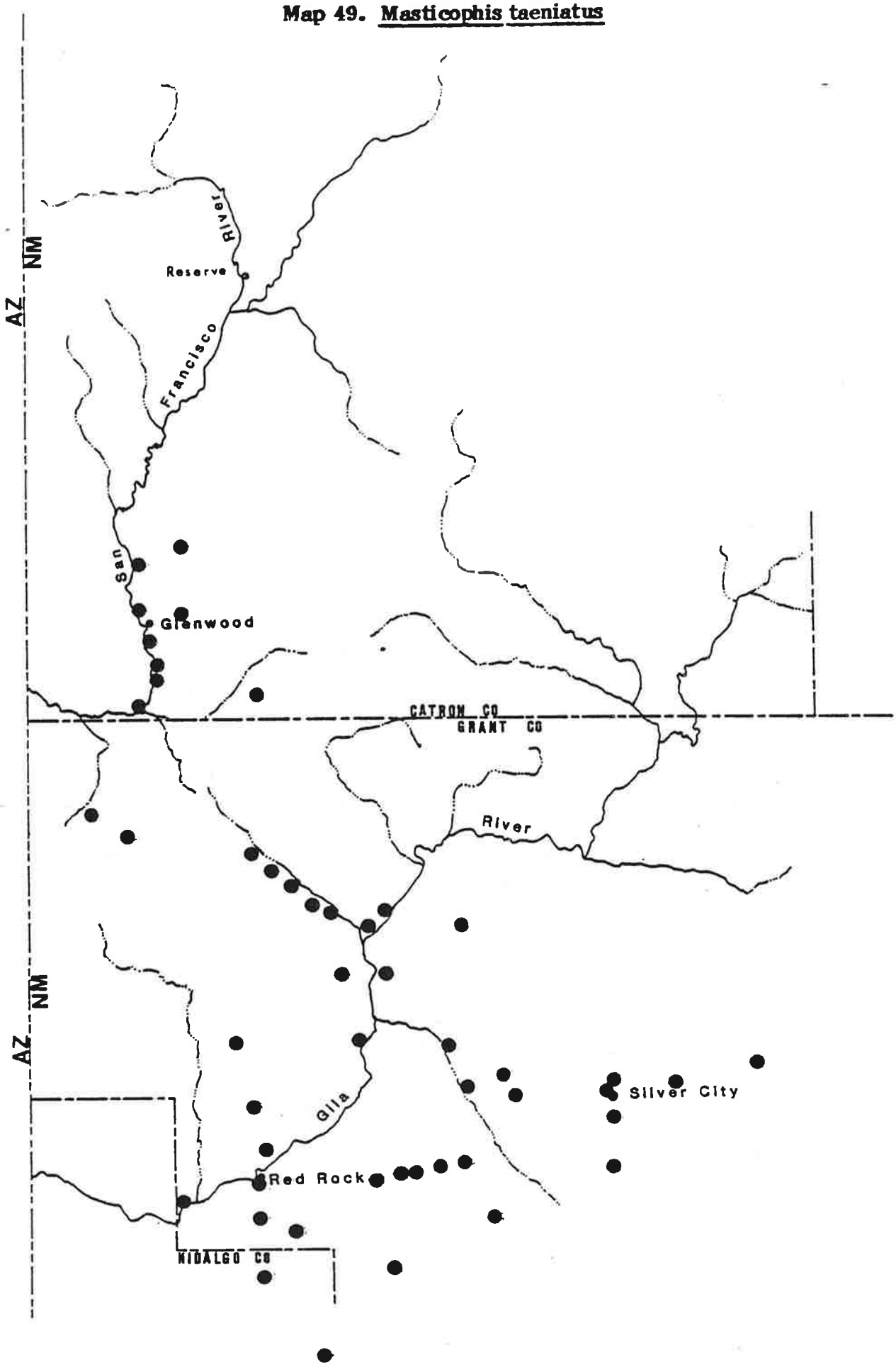
Map 47. Lampropeltis pyromelana



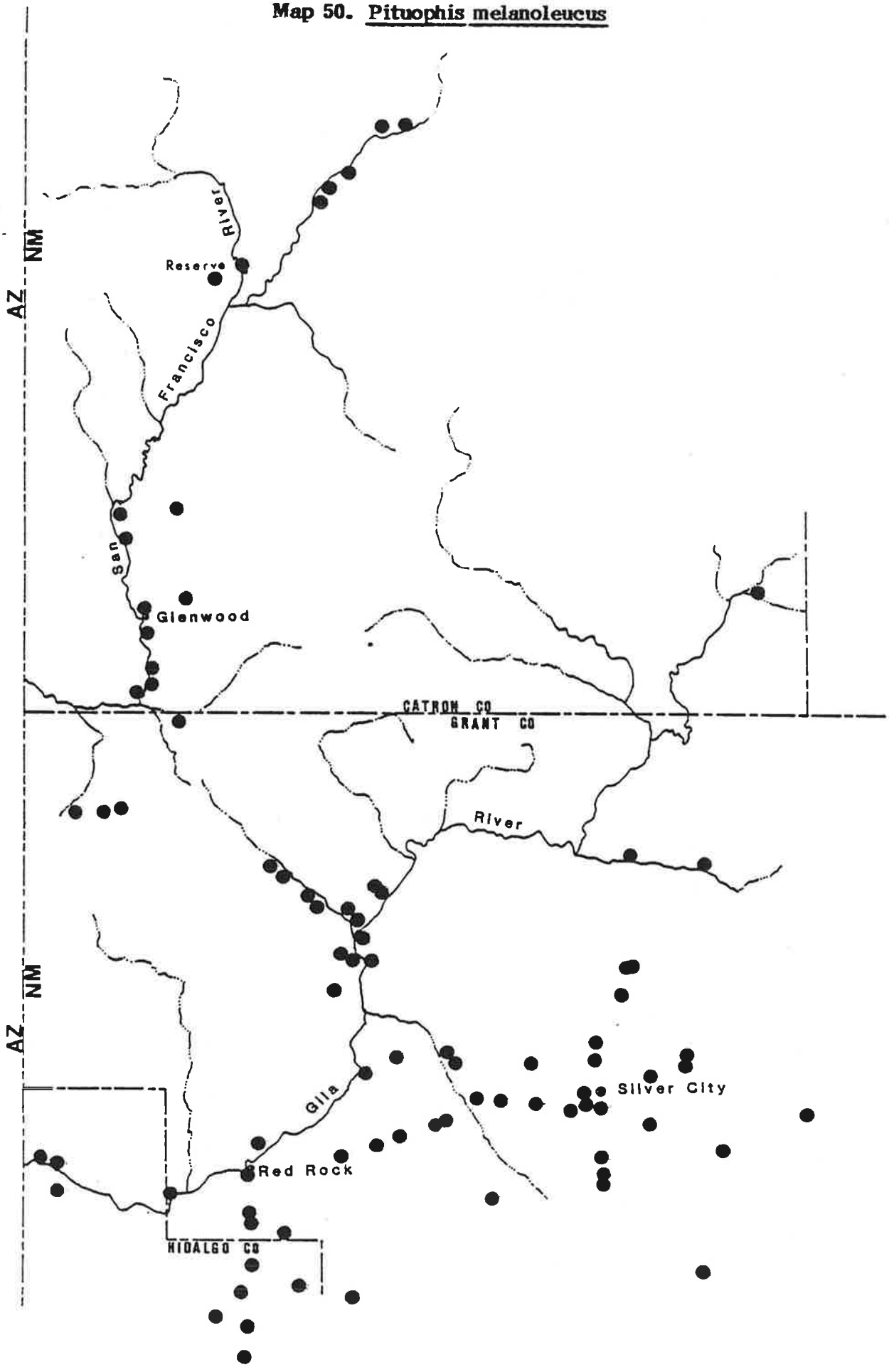
Map 48. Masticophis flagellum



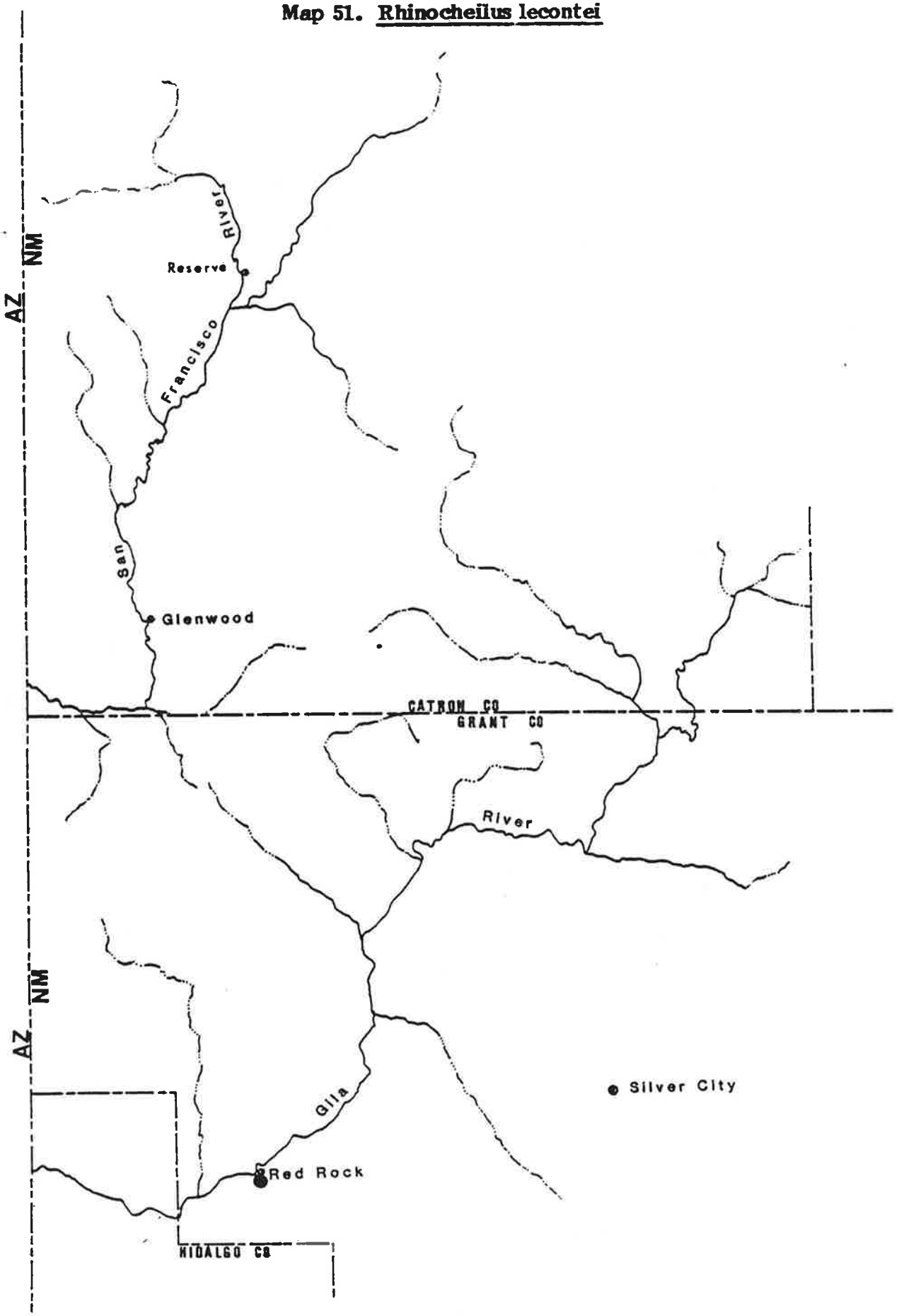
Map 49. Masticophis taeniatus



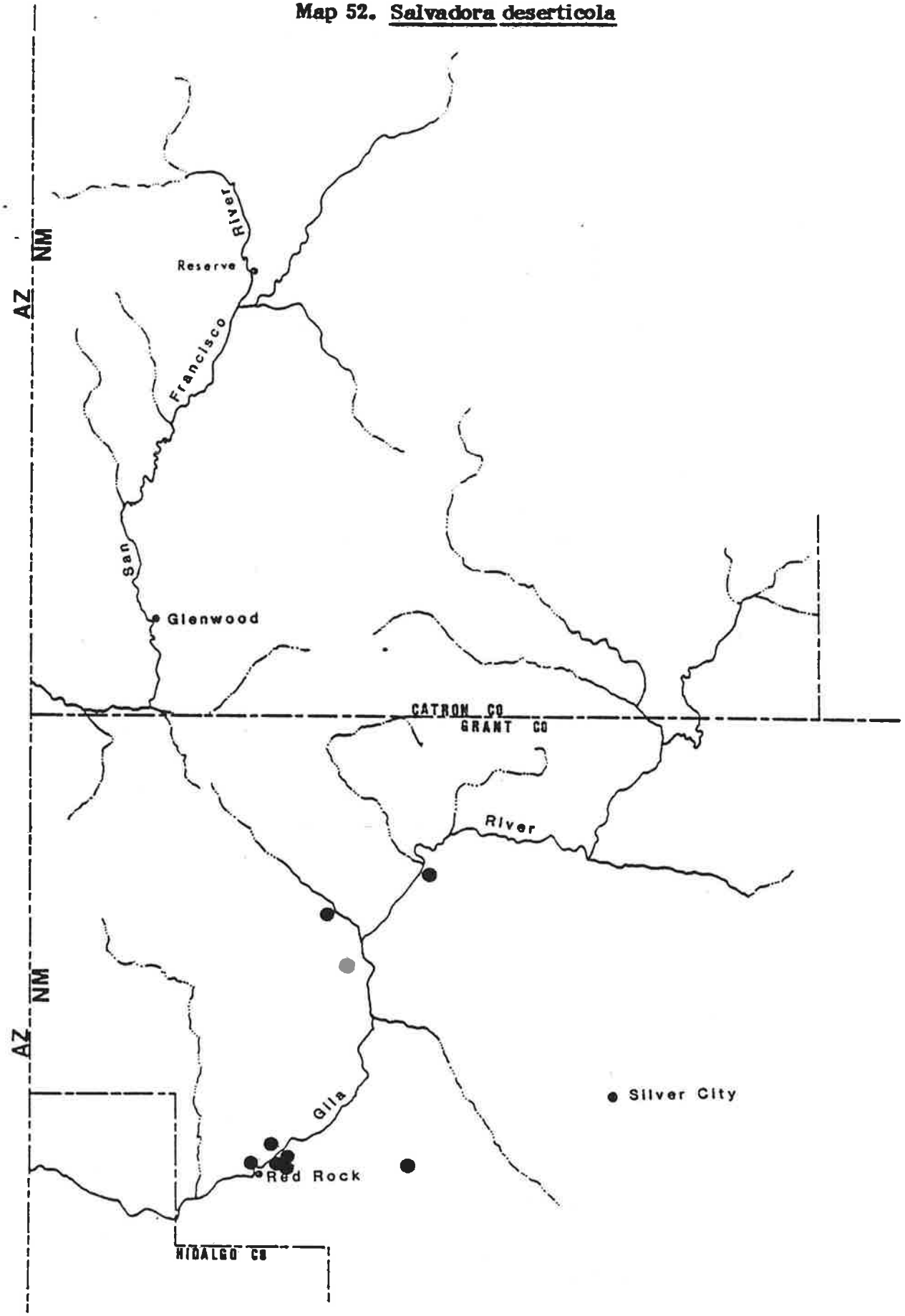
Map 50. Pituophis melanoleucus



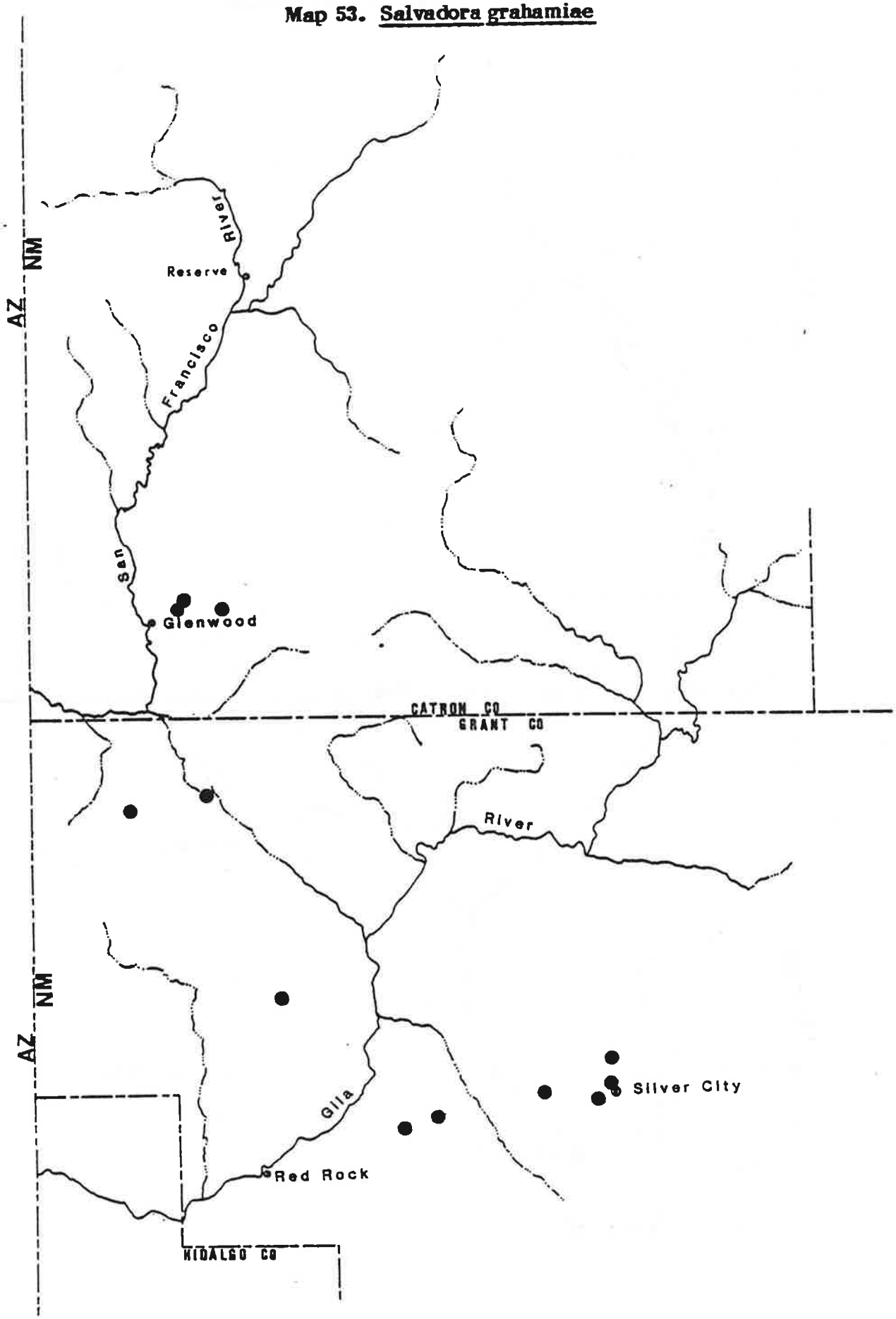
Map 51. Rhinocheilus lecontei



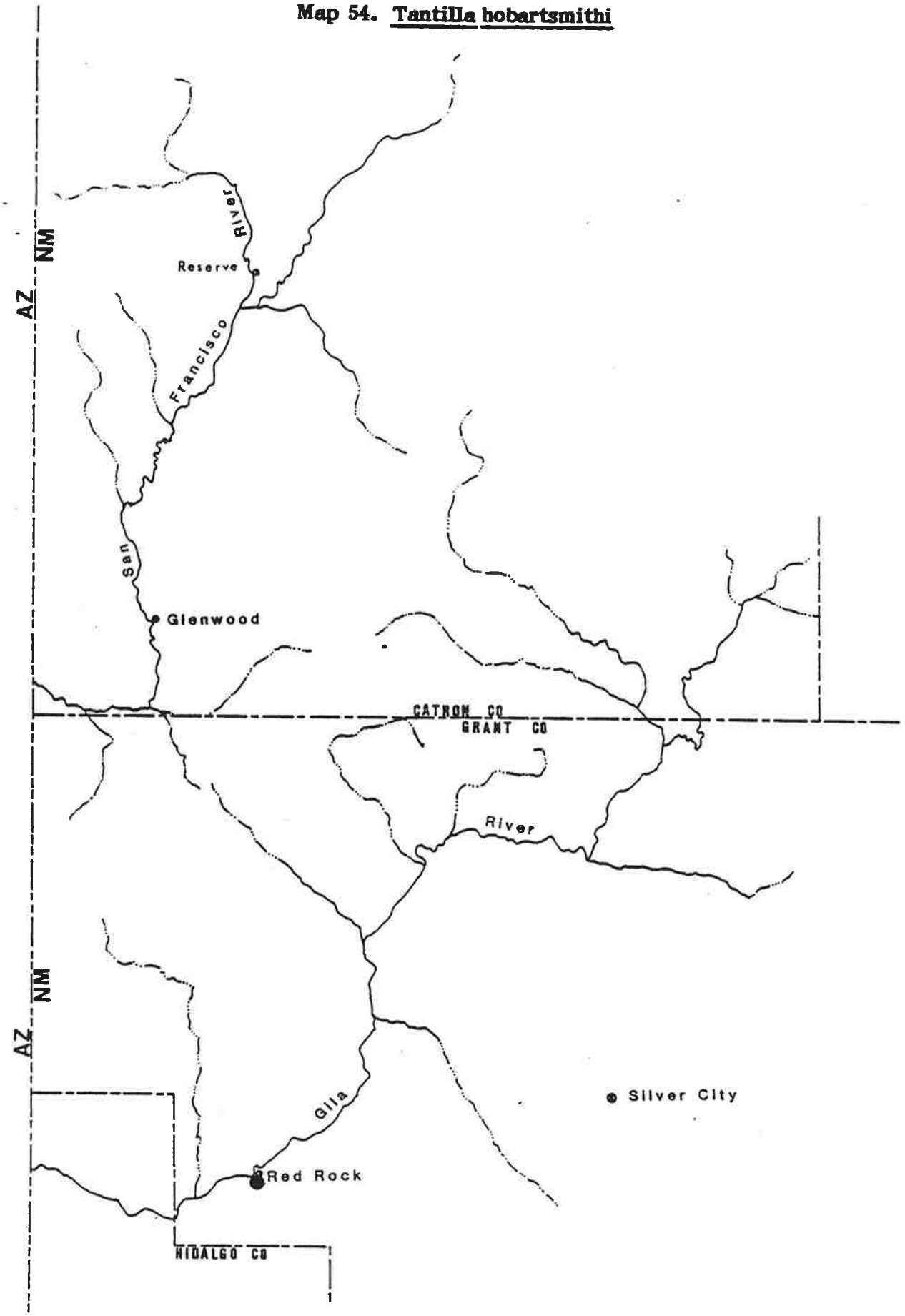
Map 52. Salvadora deserticola



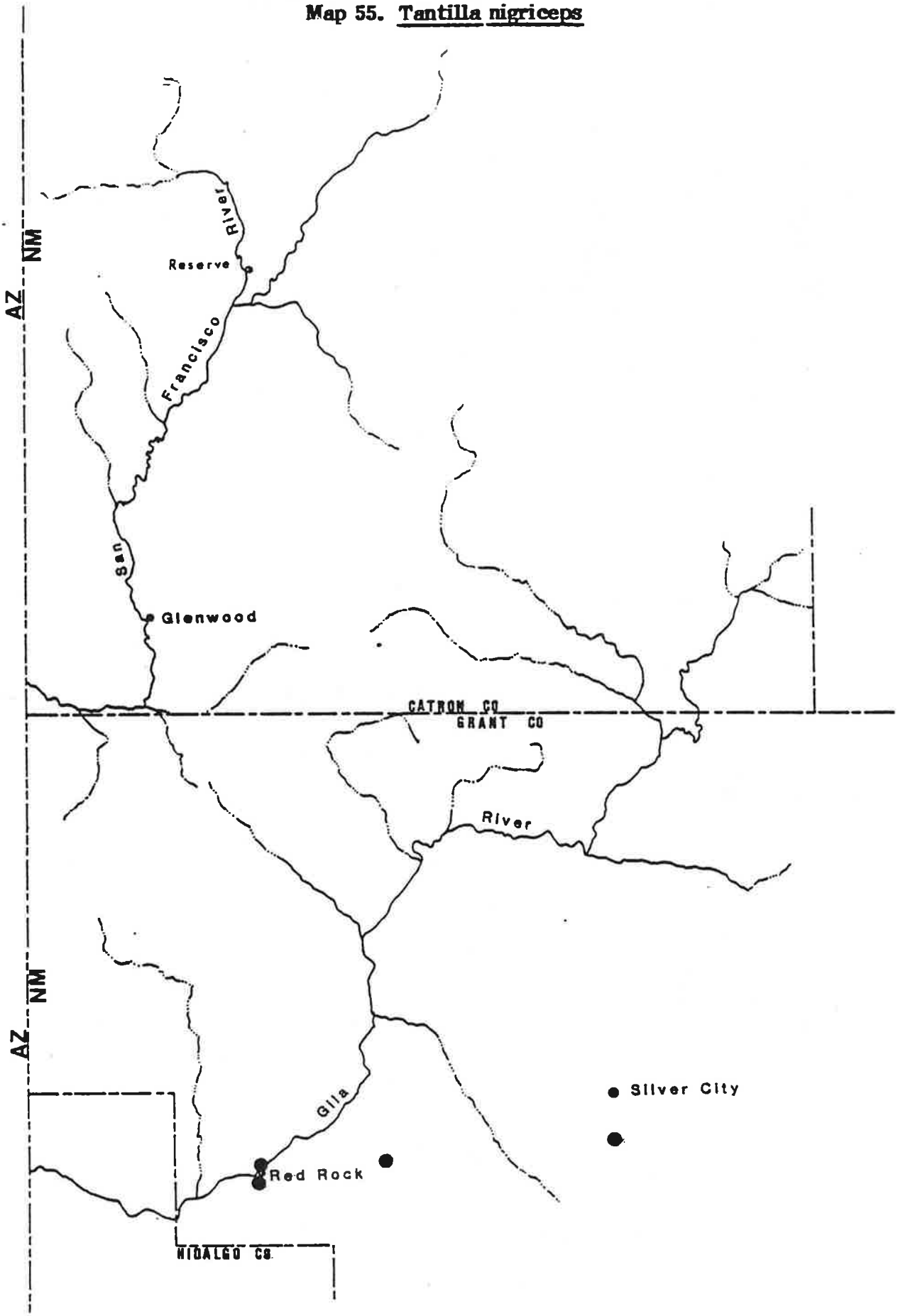
Map 53. Salvadora grahamiae



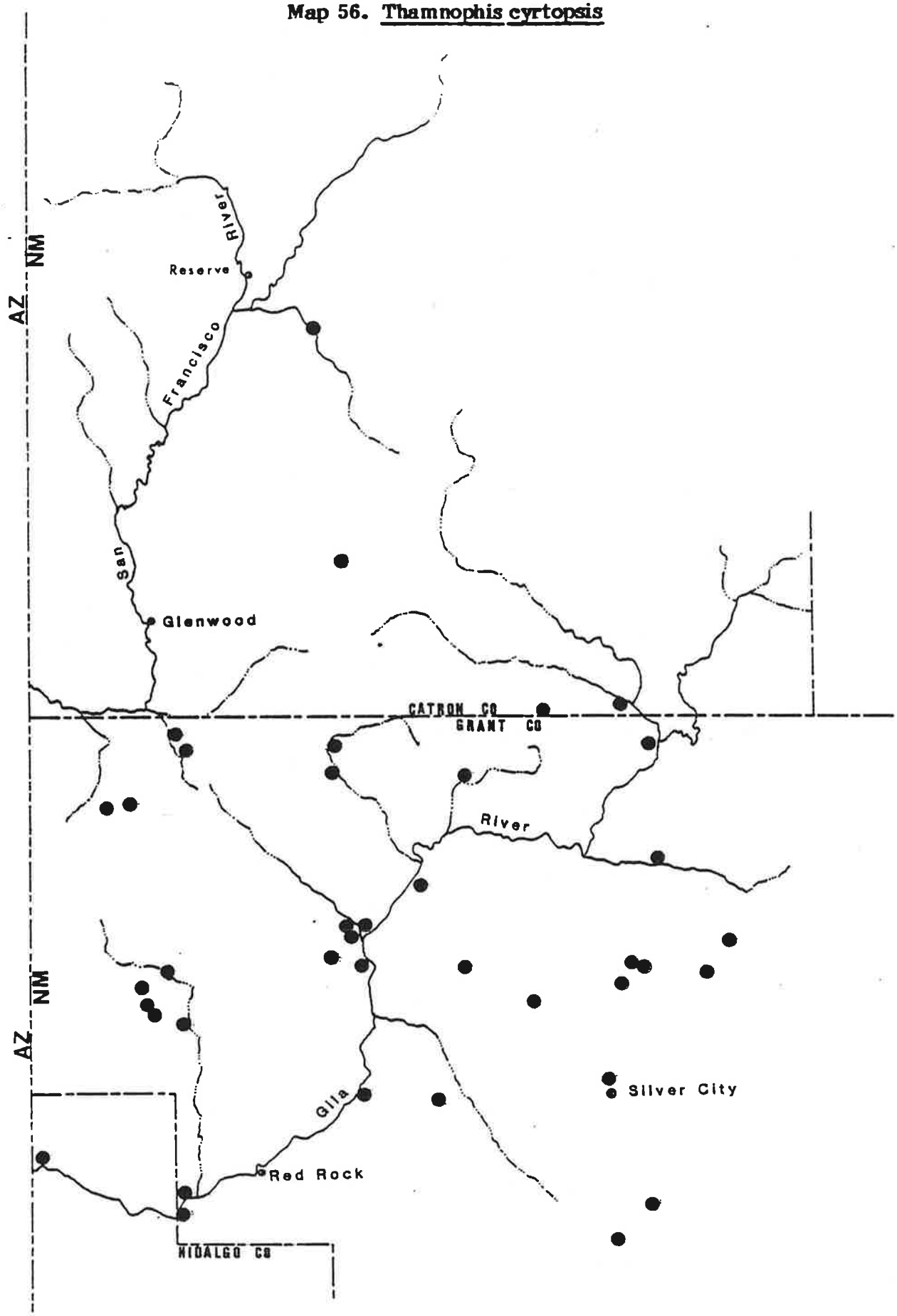
Map 54. Tantilla hobartsmithi



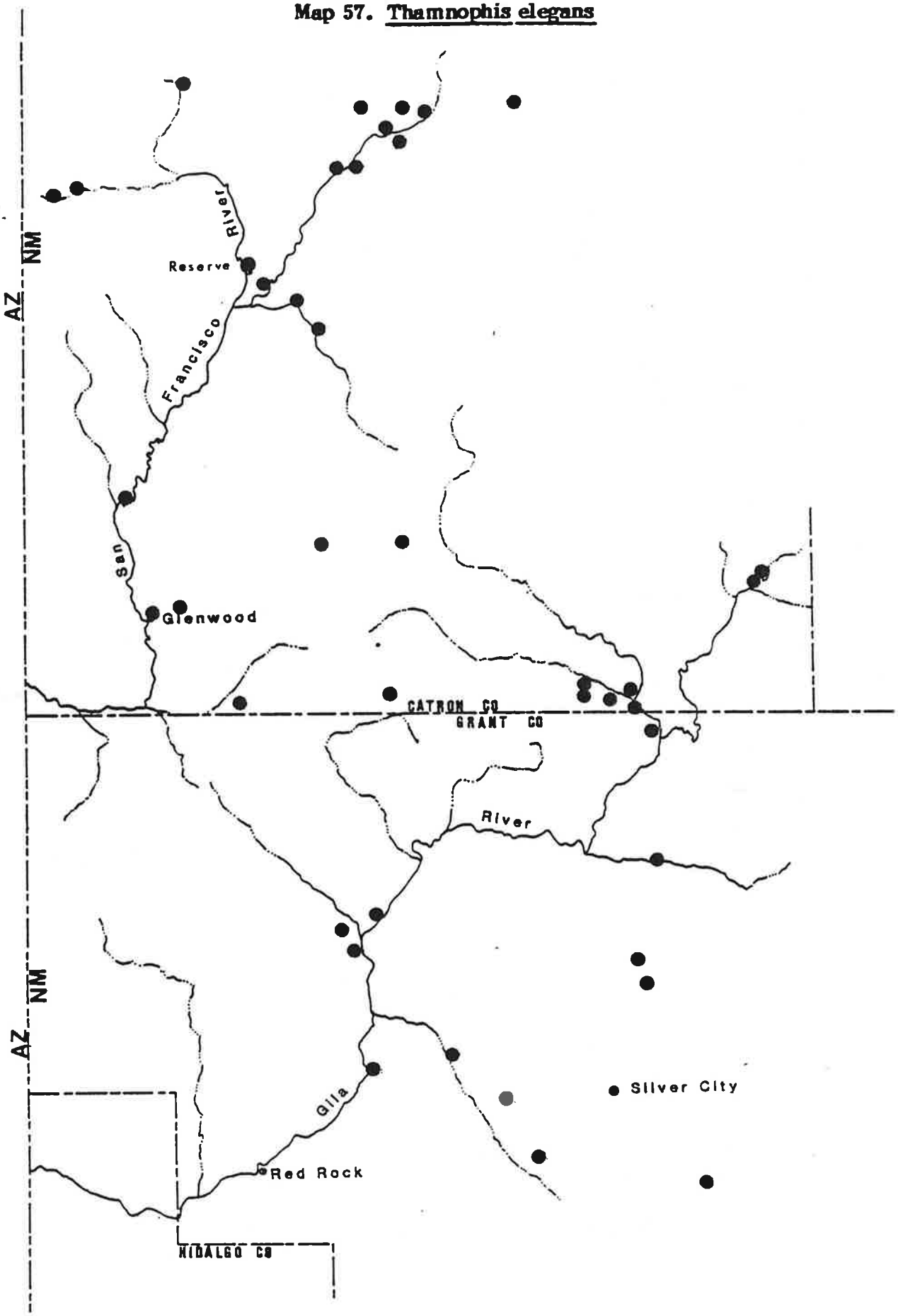
Map 55. Tantilla nigriceps



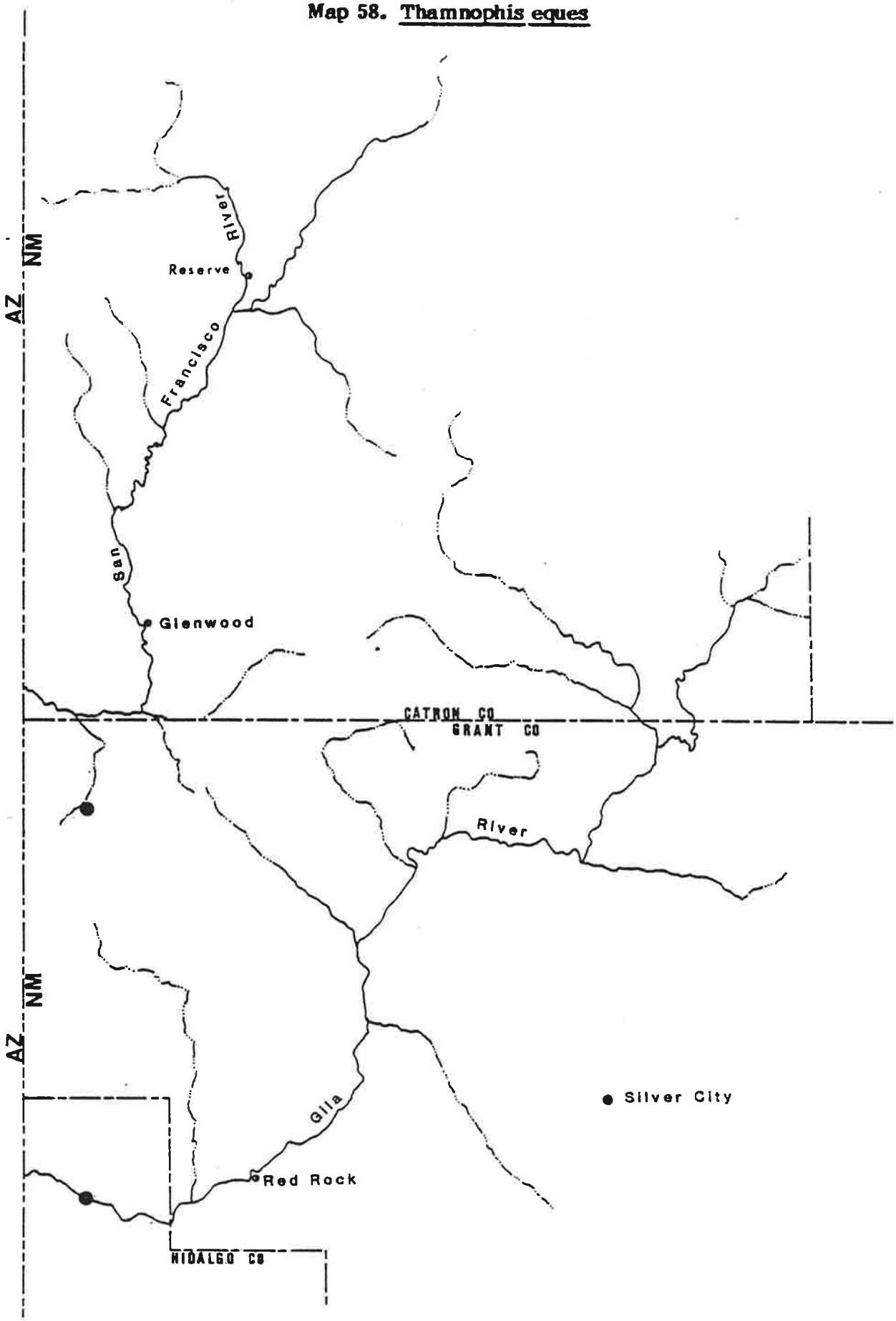
Map 56. Thamnophis cyrtopsis



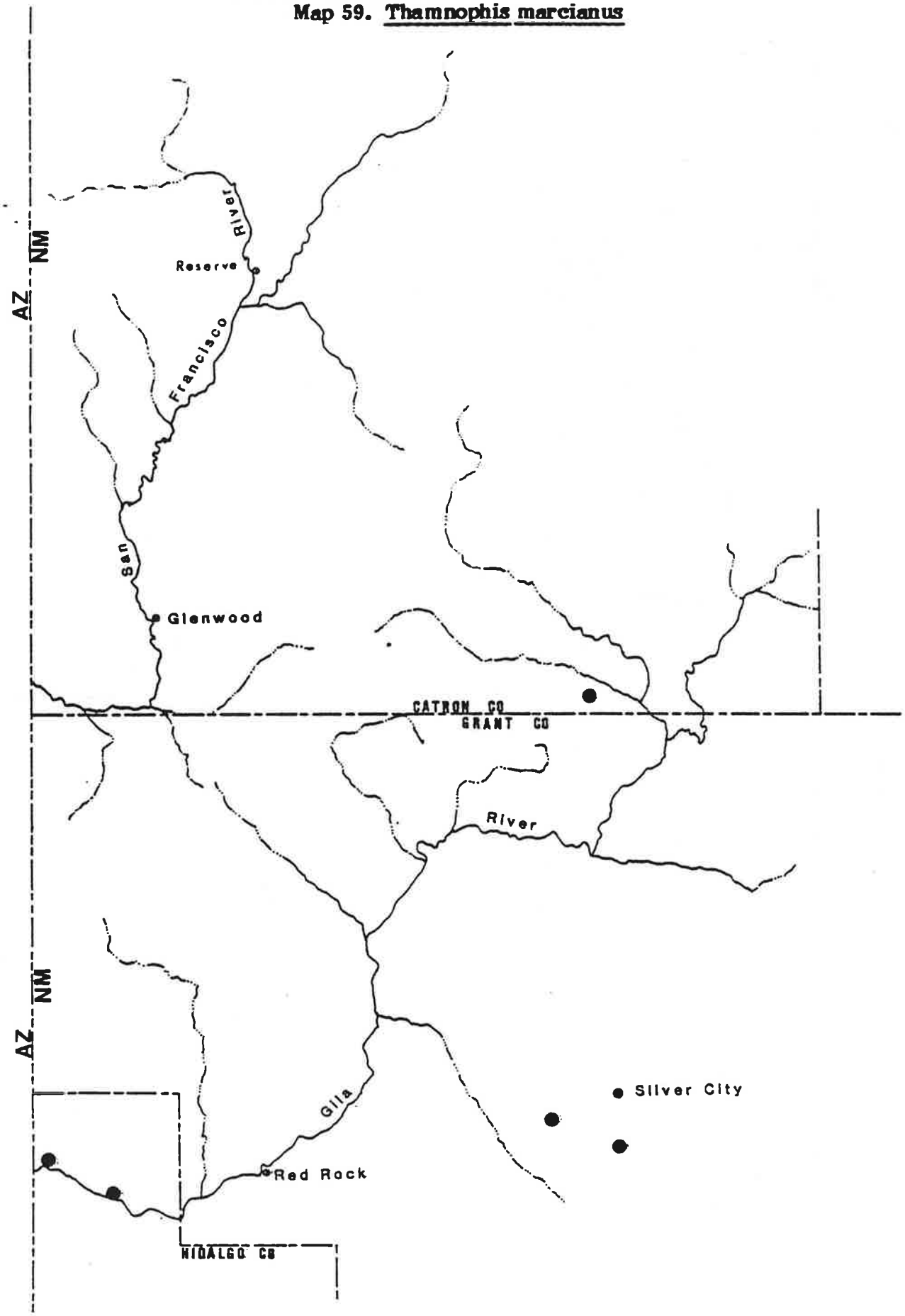
Map 57. Thamnophis elegans



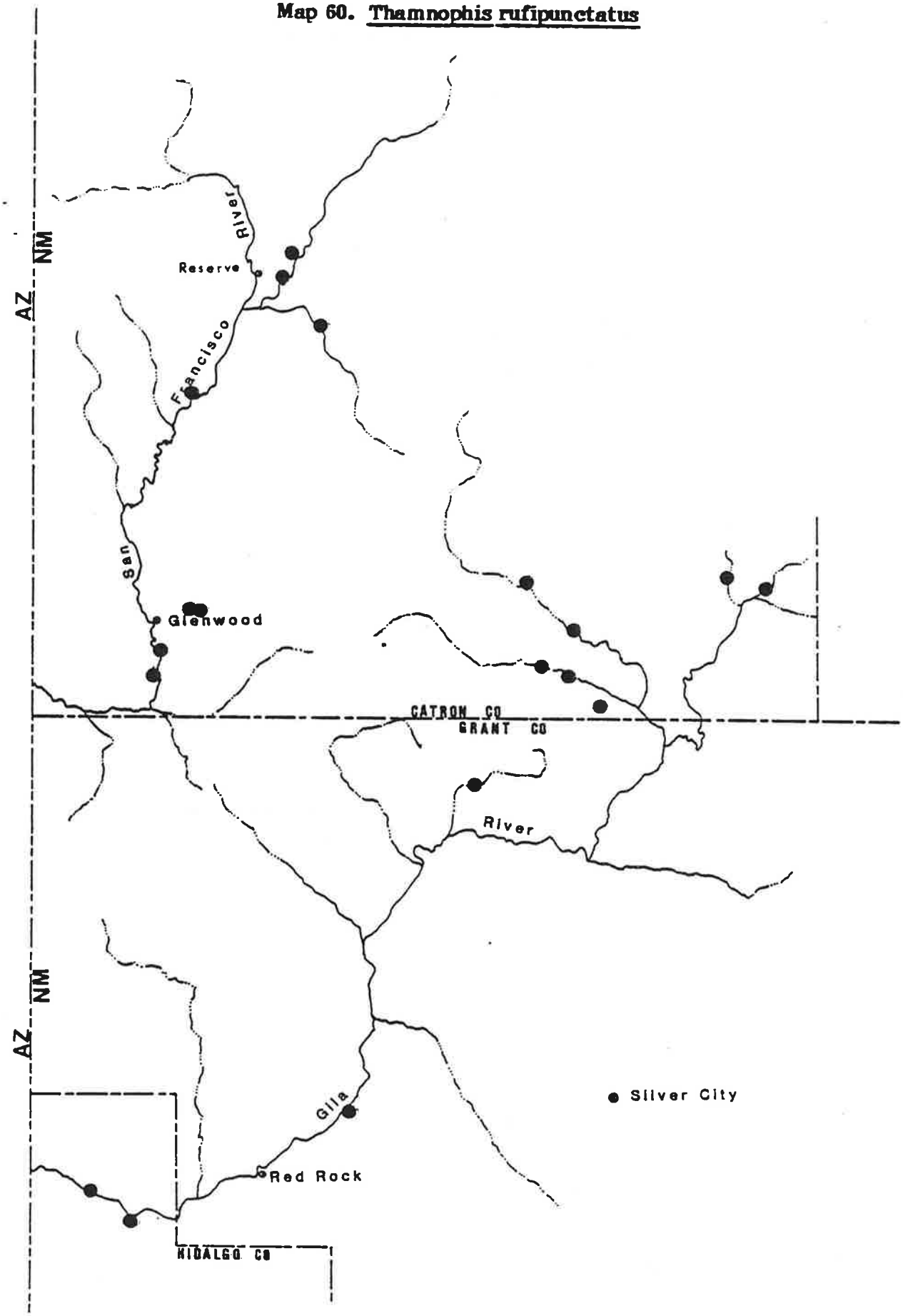
Map 58. Thamnophis eques



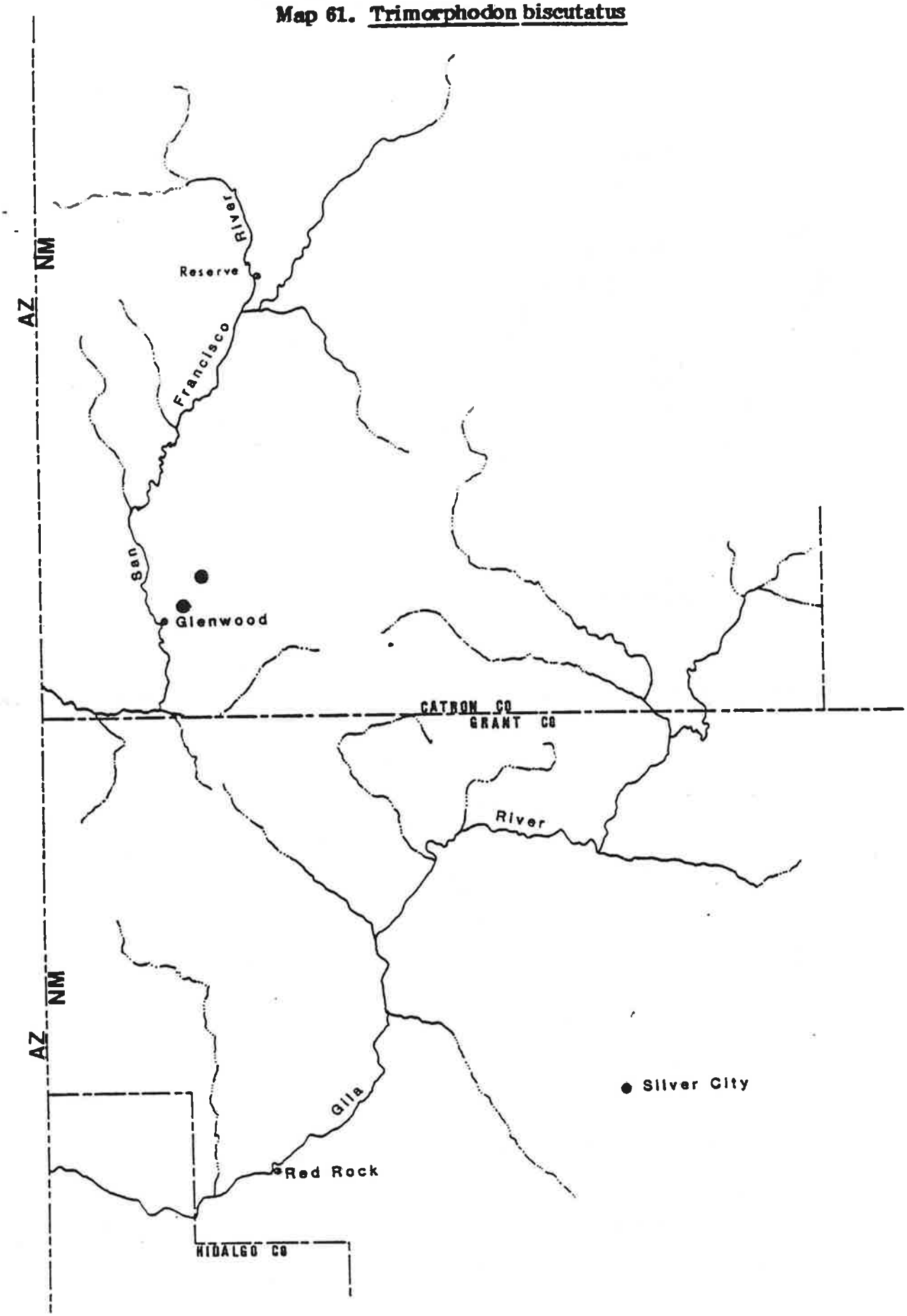
Map 59. Thamnophis marcianus



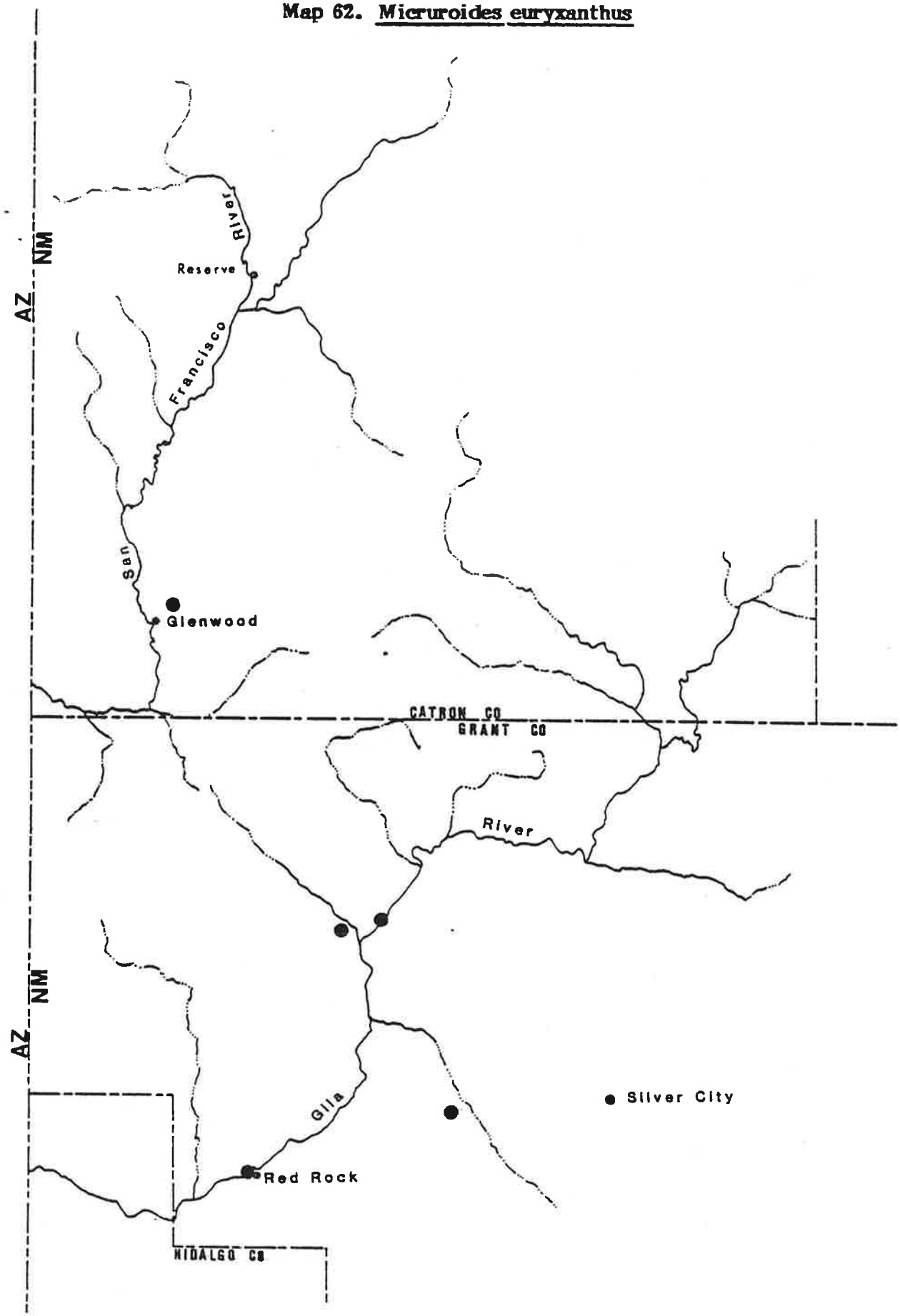
Map 60. Thamnophis rufipunctatus



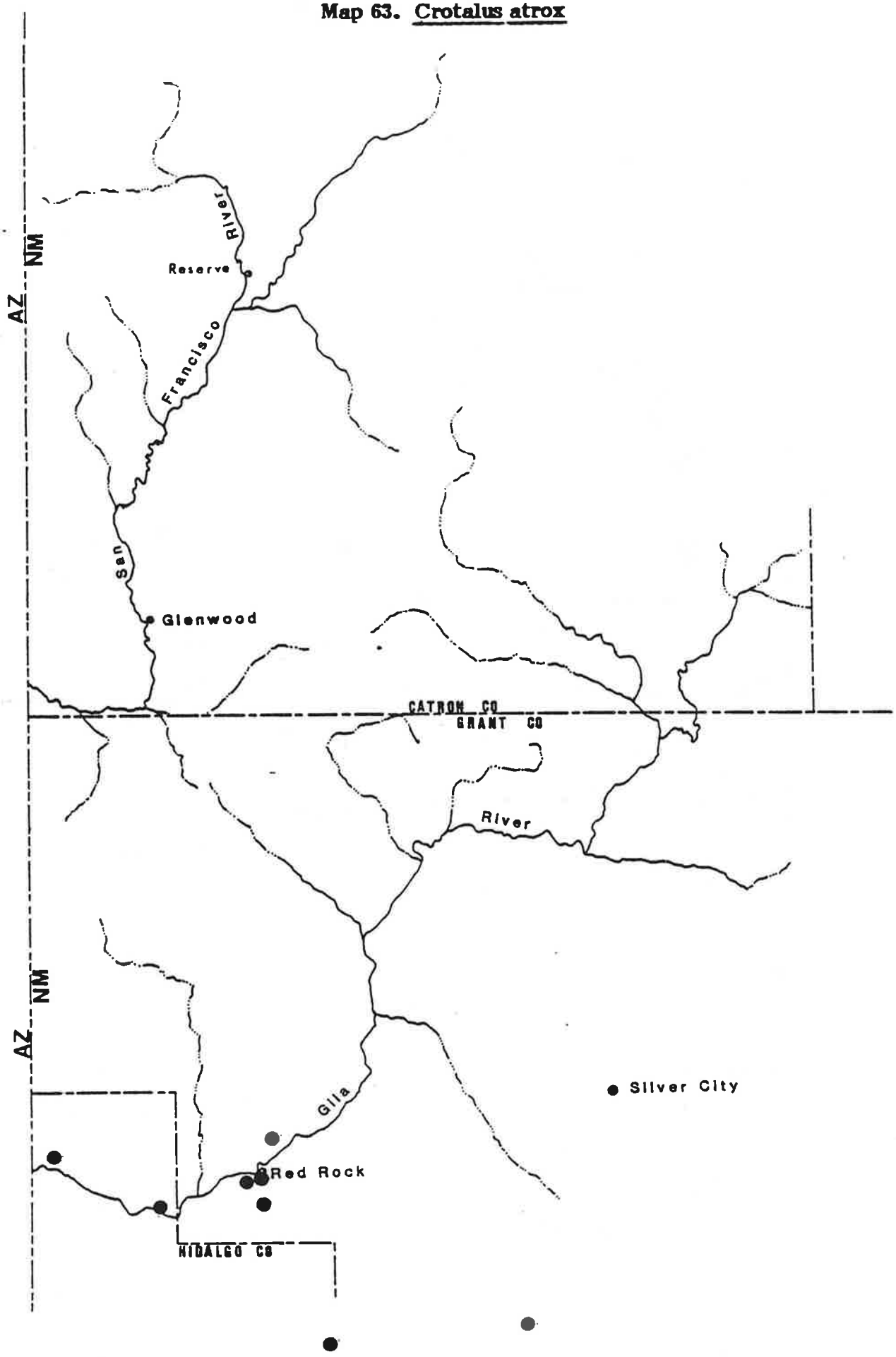
Map 61. Trimorphodon biscutatus



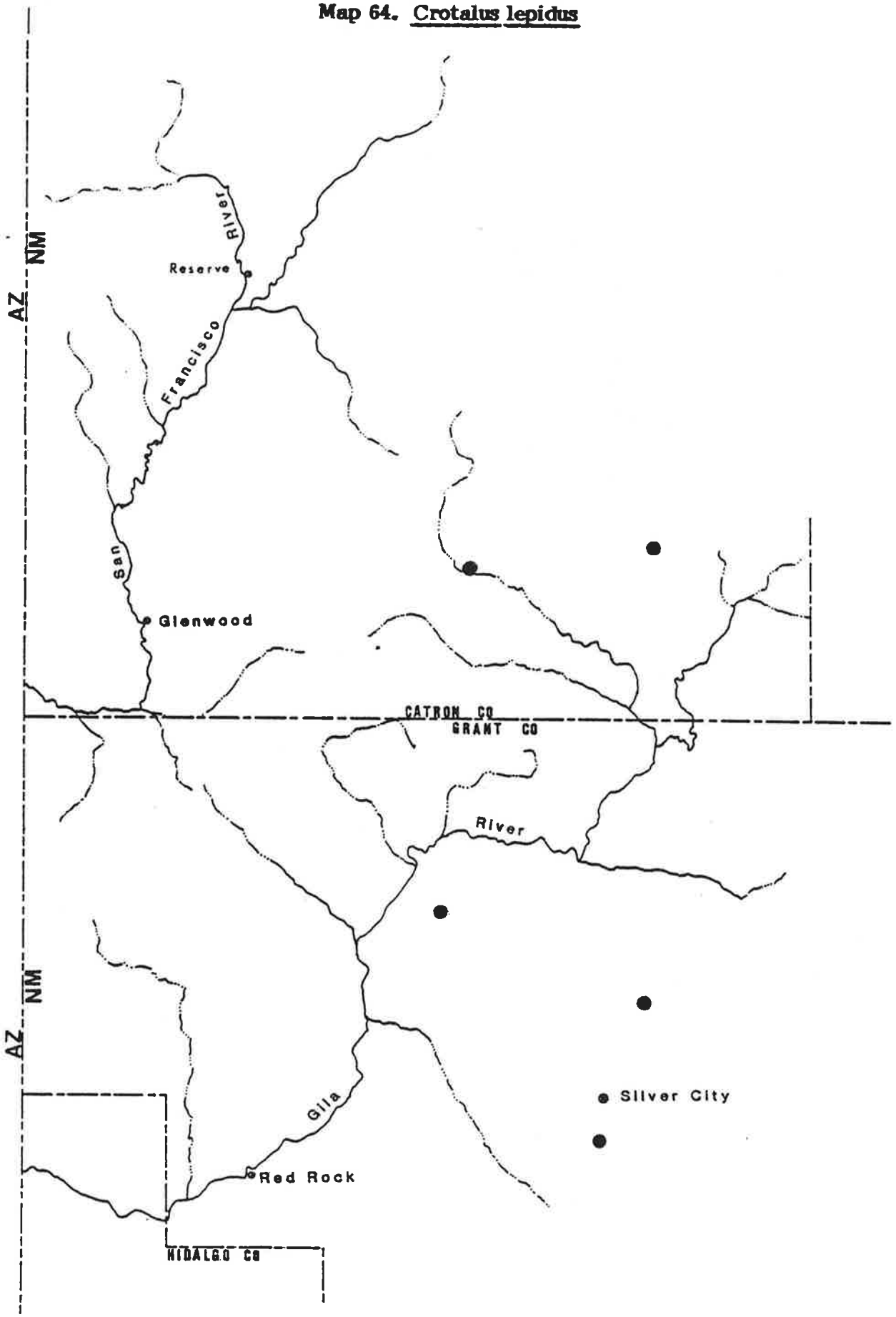
Map 62. Micruroides euryxanthus



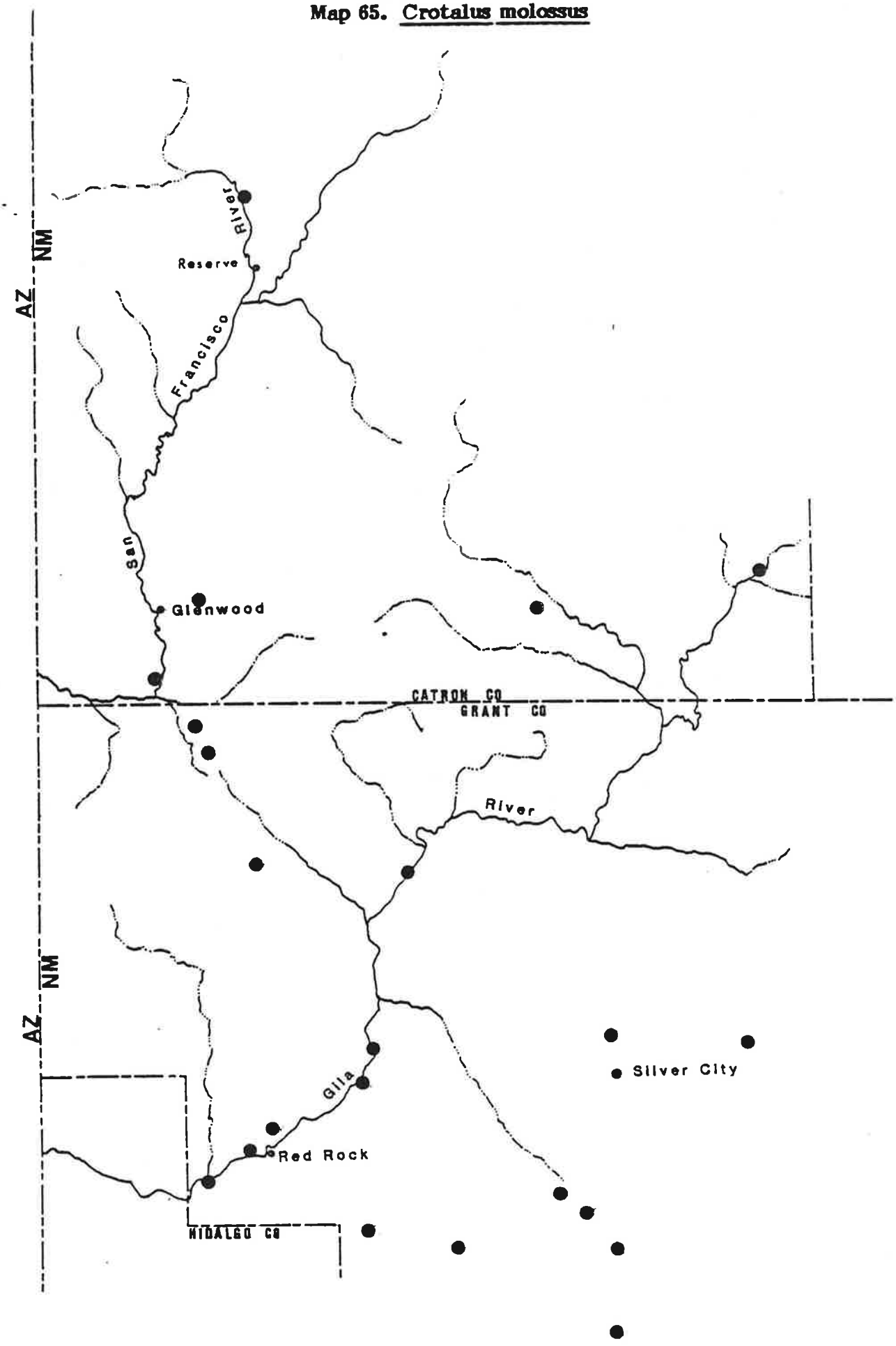
Map 63. Crotalus atrox



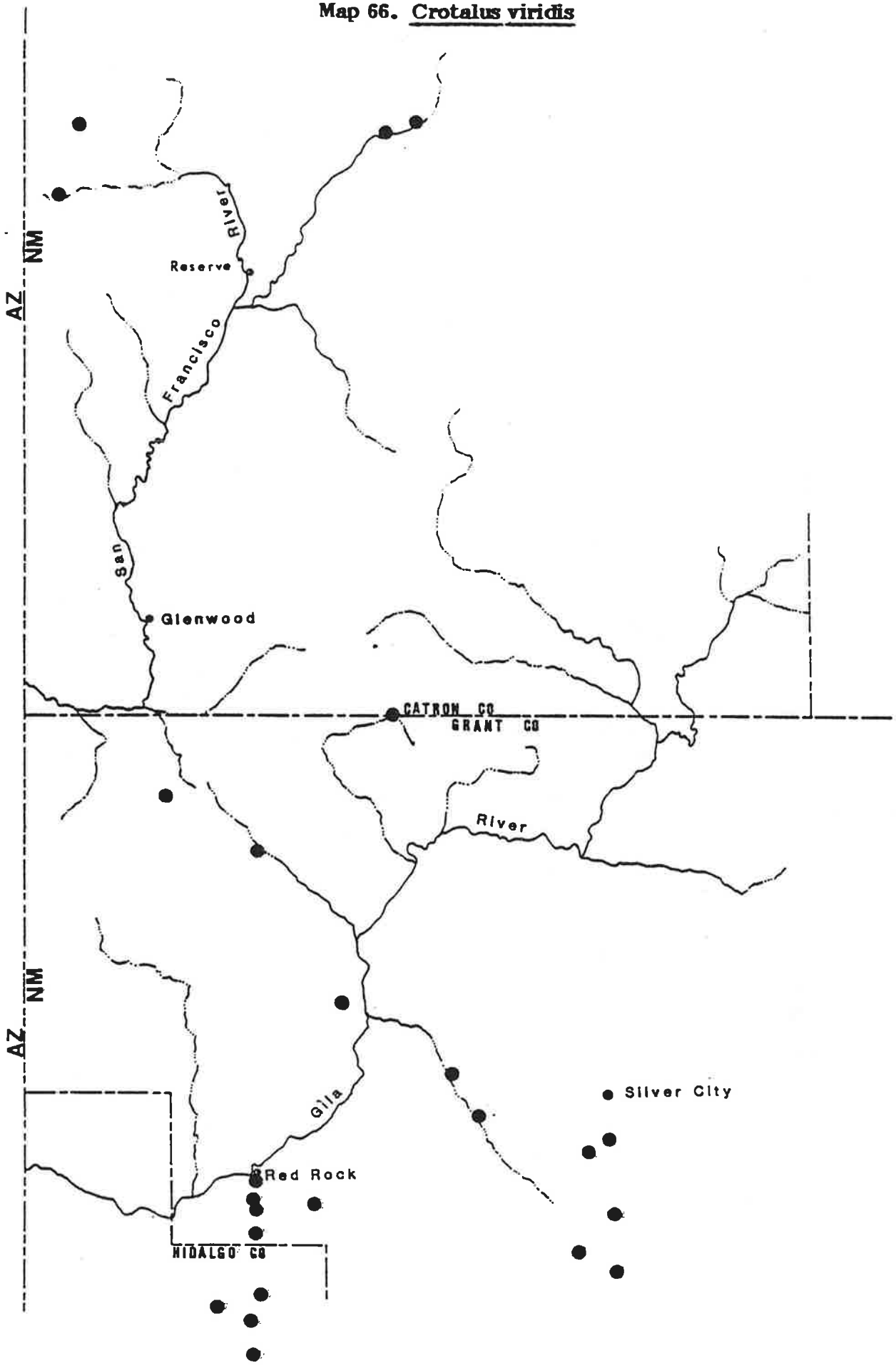
Map 64. Crotalus lepidus



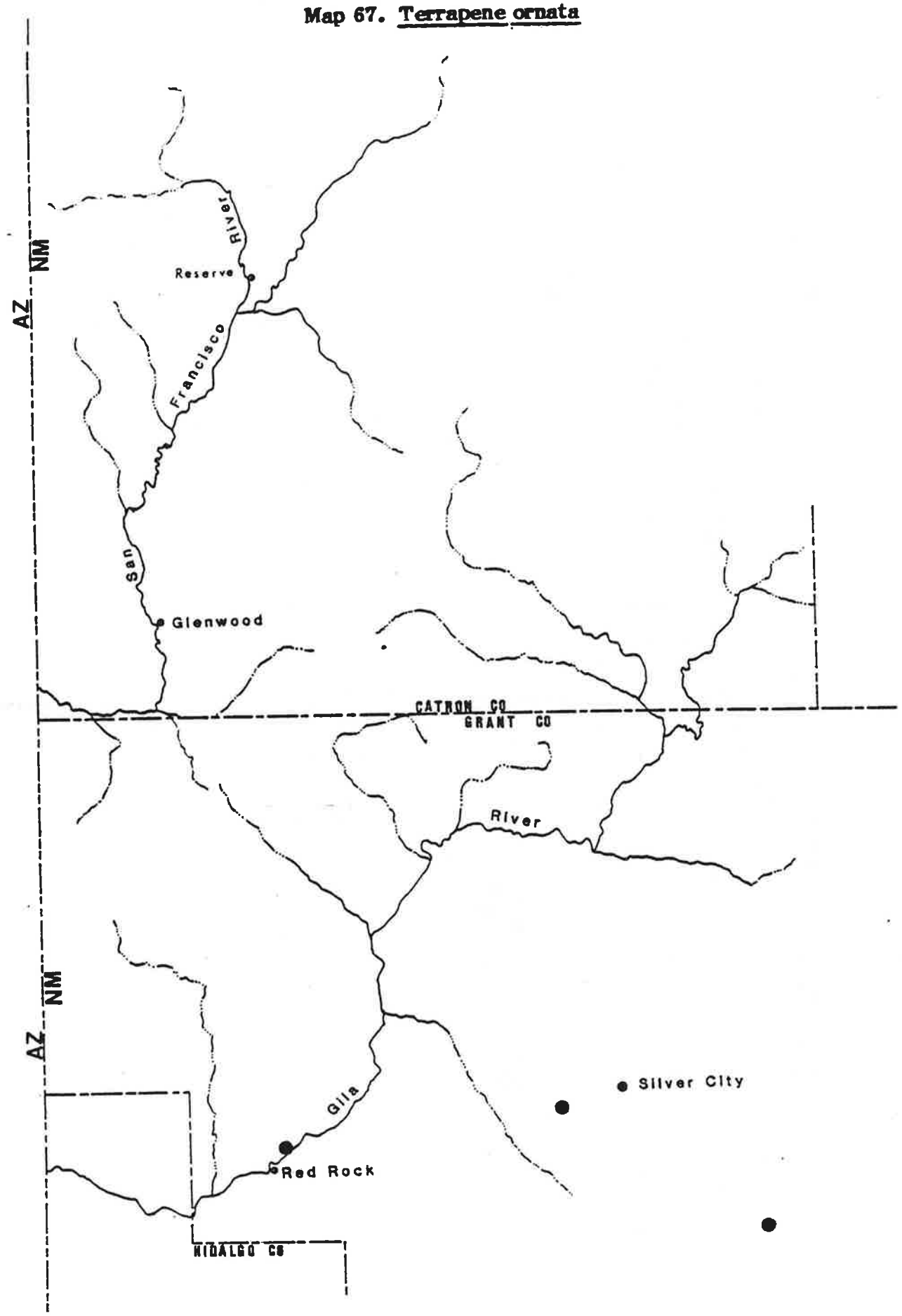
Map 65. Crotalus molossus



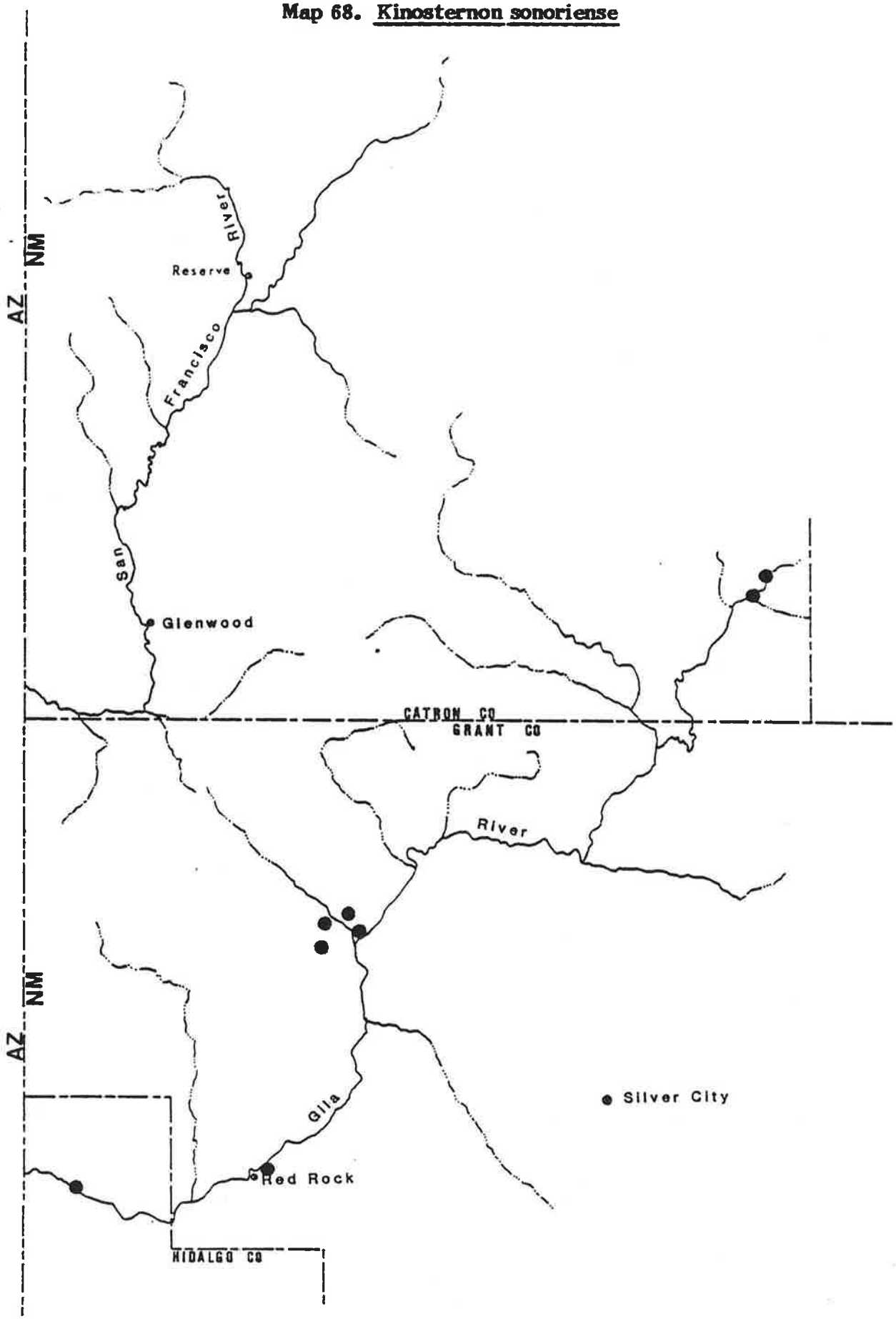
Map 66. Crotalus viridis



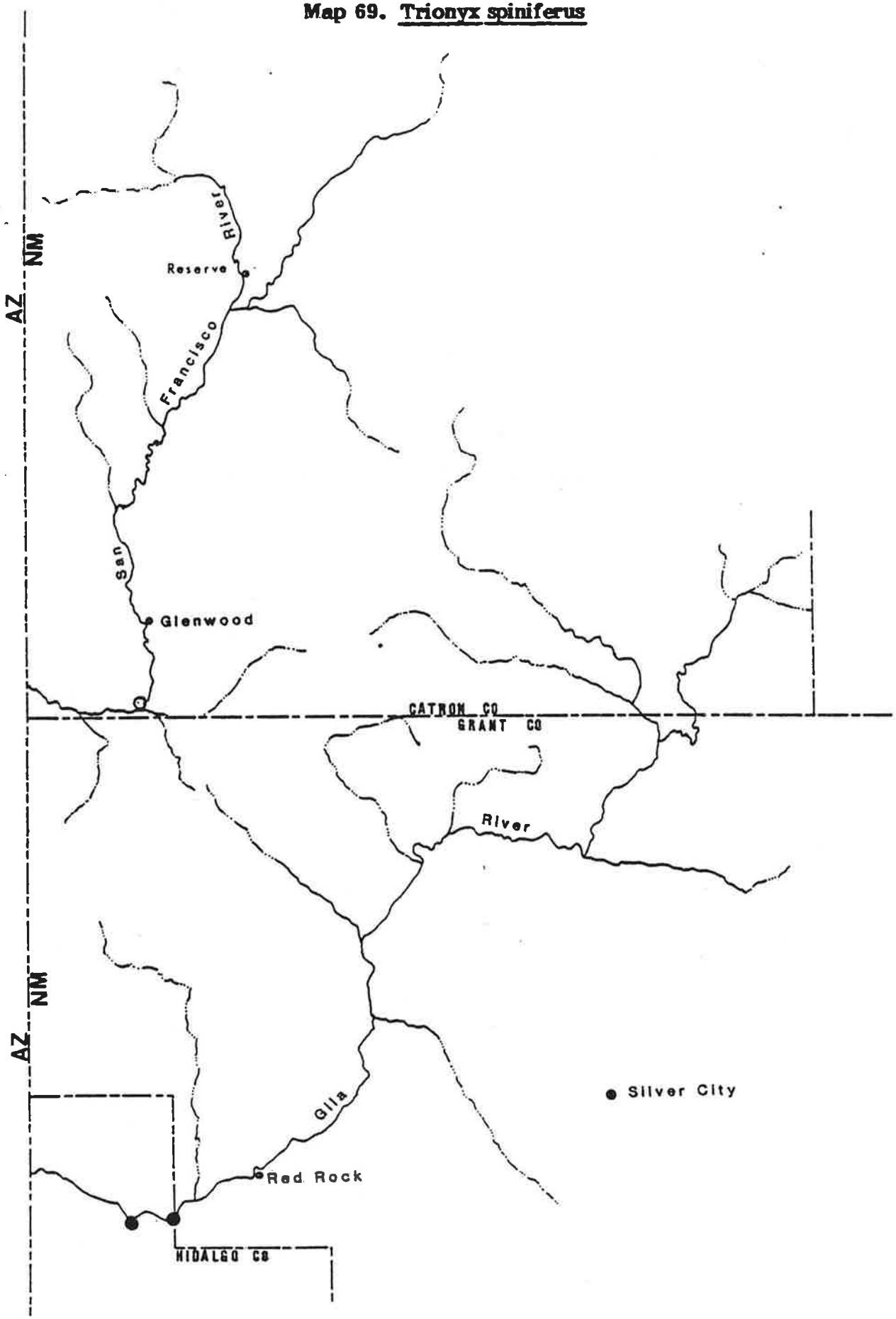
Map 67. Terrapene ornata



Map 68. Kinosternon sonoriense



Map 69. Trionyx spiniferus



APPENDIX II - Specimens Examined

SPECIMENS EXAMINED

AMBYSTOMATIDAE

Ambystoma tigrinum

NEW MEXICO: Catron County:

MSB 1163-1168. 9 mi E Mogollon, Mogollon Mountains. 06/23/60

MSB 3399. Wall Lake, T11S R12W sec. 10. 08/17/59

MSB 6089. Willow Creek, Mogollon Mountains, T10S R17W. 08/19/58

MSB 7303-7304. Adam Hoague Lake, T10S R17W sec. 21. 08/27/62

MSB 11900-11903. Willow Creek area, Mogollon Mountains, T10S R17W. 05/24/64

MSB 11918-11929. Willow Creek area, Mogollon Mountains, T10S R17W. 06/08/64

MSB 41606-41608. Gila National Forest, Gila Wilderness, McKenna Park, McKenna Spring, T12S R15W SW¼ sec 30. 05/29/84

NMSU 4591. 14 mi E Mogollon near Willow Creek campground. 06/05/64

NMSU 5592. Snow Lake, T10S R16W sec. 20. 09/15/79

NEW MEXICO: Grant County:

MSB 15322-15323. 8 mi SE Red Rock. 04/08/66

MSB 42827-42832. Farm pond at Conner Ranch headquarters, 6.3 km NE Red Rock, T18S R18W SW¼ sec. 22. 05/11/84

MSB 42833. Silver City, corner of College and West Streets. 11/17/84

MSB 42834-42835. 1.6 km S, 29 km W Riverside, stock tank ca. 1.6 km S Alexandra Canyon, T16S R20W NW¼ sec. 20. 06/13/84

NMSU 4568-4569. 25 mi NE Silver City, T14S R11W sec. 33. 04/10/84

NMSU 4570. 1 mi E Tyrone. 02/18/72

NMSU 4571. 3 mi S Silver City. 04/20/68

NMSU 4572. Cooney's Place. 04/08/74

NMSU 4573. Little Turkey Park, T13S R14W sec. 20. 08/14/73

NMSU 4574. Cooney's Place. 04/08/74

NMSU 4575-4576. Scotts Park, 2 mi S Silver City. 04/25/66

NMSU 4577. Hurley. 10/20/64

NMSU 4578. Miller Spring, T13S R15W sec. 35. 08/13/72

NMSU 4579. 1 mi W Tyrone. 04/02/72

NMSU 4580. 5 mi W Tyrone. 03/05/72

NMSU 4581, 4590. T14S R11W sec. 33. 04/10/74

NMSU 4582. 1 mi E Tyrone. 02/18/72

NMSU 4583. Cliff, near Gila River. 03/26/72

NMSU 4584. 5 mi SW Silver City, Hwy 180. 09/24/67

NMSU 4585. Cooney's Place, T14S R11W sec. 33

NMSU 4586. Head Cow Creek, 15 mi N Silver City. 04/02/72

NMSU 4587. 10 mi N Silver City. 04/01/72

NMSU 4588. Snow Creek. 04/01/72

NMSU 4589. 3.5 mi S Silver City. 02/18/72

WNMU 12448. Arenas Valley, ca. 6 mi E Silver City. 09/17/70

WNMU 12513. Little Turkey Park, T12S R14W sec. 7. 08/14/72

WNMU 12514. Silver City. 10/10/83

WNMU 12515. Bear Mountain Cave. 10/08/78

WNMU 12516. 8 mi SE Silver City. 04/26/66

WNMU 12517-12518. 1 mi E Tyrone. 02/18/72

WNMU 12519. 12 mi NE Mimbres on Cooney Place. 04/08/74

WNMU 12520. "Near Silver City." 09/28/67

WNMU 12600. Silver City. 09/19/81

BUFONIDAE

Bufo cognatus

NEW MEXICO: Grant County:

MSB 3741-3746, 3797-3801. 10 mi S Silver City (by road). 06/15/61

MSB 20307. 12.5 mi N NM 464 from Red Rock turnoff on US Hwy 70. 08/10/69

MSB 20308. Red Rock bridge in Red Rock. 08/09/69

MSB 20452-20457. 1 mi W Red Rock, Gila River bridge, N side of river. 05/30/69

MSB 42809-42810. Stillman Ranch, ca. 3.9 km WNW Red Rock, T19S R19W NW¼ sec. 2. 06/27/84

MSB 42811. Red Rock Wildlife Experimental Area, ca. 2.6 km NE Red Rock, T18S R18W NW ¼ sec. 28. 06/27/84

MSB 42812. Burro Mountains, Burro Spring Canyon, USFS Road 848, T19S R16W NW¼ sec. 23. 06/30/84

MSB 42813. Red Rock Wildlife Experimental Area, ca. 1.7 km NE Red Rock, T18S R18W NW¼ sec. 28

NMSU 4092. Red Rock. 04/27/68

NMSU 4093. Red Rock Game Preserve. 04/26/68

NMSU 4094. 2 mi S Silver City. 07/27/62

NMSU 4095, 4221. Red Rock Game Preserve. 05/11/68

NMSU 4222. 10 mi S Silver City, Ridge Road. 04/27/68

NMSU 4223. Red Rock Game Preserve. 04/26/68

WNMU 12432. 6 mi NE Cliff, T14S R16W Sec. 31. 01/10/81

WNMU 12489, 12495. 7 mi NE Separ-Burro Cienega Creek. 09/11/81

WNMU 12496-12498. 7 mi NE Separ, T23S R14W, sec. 7. 09/11/81

WNMU 12569, 12572. 7 mi NE Separ-Jarrell Ranch. 09/11/81

WNMU 12573. 7 mi NE Separ-Burro Cienega Creek. 09/12/81

NEW MEXICO: Hidalgo County

MSB 14048. 3 mi N Lordsburg

NMSU 5238-5239. State Hwy 464, 9.2 road mi S Red Rock bridge. 07/30/77

NMSU 5240. State Hwy 464, 8.5 road mi S Red Rock bridge. 07/30/77

NMSU 5912. 2.0 mi N Lordsburg, T22S R18W NE¼ sec. 20. 08/06/81

NMSU 6005. N of Lordsburg, T22S R18W SW¼ sec. 15. 08/26/81

Bufo microscaphus

NEW MEXICO: Catron County:

MSB 3677. 4.5 mi S Glenwood. 06/13/59

MSB 4897. Wall Lake. 08/24/59

MSB 5800, 10596. Willow Creek, 10 mi E Mogollon. 06/30/63

MSB 20239. Rt. 59, 1 mi E Beaverhead, Gila National Forest. 07/12/69

MSB 20241. Wall Lake. 07/13/69

MSB 22182. Rt. 59, 5 mi E Beaverhead, Gila National Forest. 07/12/69

MSB 23151. 1.5 mi S Cliff Dwellings on NM 756. 07/23/70

MSB 23153. 2.5 mi S Cliff Dwellings on NM 756. 07/18/70

MSB 23155. 0.5 mi downstream from Frisco Hot Springs on San Francisco River east bank. 07/17/70

MSB 23156. 1.5 mi downstream from Frisco Hot Springs on San Francisco River. 07/17/70

MSB 23159. 3.5 mi S Cliff Dwellings on NM 756. 07/18/70

MSB 23161. 1 3/8 mi S Gila Cliff Dwellings. 07/18/70

MSB 24587. 4.4 mi W Glenwood, unmarked road, AOR. 08/13/70

MSB 24593. 4.1 road mi W Glenwood, unmarked road, AOR. 08/13/70

MSB 24594. 3.4 mi W Glenwood, unmarked road, AOR. 08/13/70

MSB 24595. 2 mi W Glenwood, unmarked road, AOR. 08/13/70

MSB 24596. 10.5 mi E Alma via NM 78, AOR. 08/13/70

MSB 24597. Willow Creek, 29 mi E Alma via NM 78, AOR. 08/13/70

MSB 24619. 3.2 mi S jct NM 12/US 180 via 180. 08/08/70

MSB 24620. 3.2 mi S jct NM 12/US 180 via 180. 08/13/70

MSB 32926-32928. Along Snow Creek, just N Snow Lake. 07/05/75

MSB 41081-41082. Wall Lake, Gila National Forest. 09/07/74

MSB 41601. Gila National Forest, Gila Wilderness, Little Creek Trail, T12S R15W sec. 33

MSB 41623. Gila National Forest, Hell's Hole at West Fork Gila River, T12S R15W sec. 4

MSB 42803. 24.1 km S, 11.3 km W Reserve, Kelly Mountains, USFS Rd 626 off US Hwy 180 along San Francisco River at Kelly Ranch, T9S R20W NE¼ sec. 27. 04/11/84

MSB 42804-42805. 24.1 km S, 11.3 km W Reserve, Kelly Mountains, USFS Rd 626 off US Hwy 180 along San Francisco River at Kelly Ranch, T9S R20W NE¼ sec. 27. 04/23/84

MSB 42808. Tularosa River at Joe Mullins Ranch, ca. 2.4 km upstream of confluence with San Francisco River, T17S R19W SE¼ sec. 24. 08/16/84

NMSU 3775-3778. Gila Wilderness, McKenna Park. 05/01/65

NMSU 3779. T12S R16W sec. 28. 06/12/71

NMSU 4197. Head McKenna Creek, T12S R15W sec. 30. 06/11/72

NMSU 4198. Mouth Clear Creek, T11S R15W sec. 11. 07/22/72

NMSU 4199. McKenna Park air strip, T12S R15W sec. 19. 08/04/72

NMSU 5587-5589. Snow Lake, T10S R16W sec. 20. 09/14/79

WNMU 12617. T12S R16W sec. 22. 08/20/71

NEW MEXICO: Grant County:

MSB 23145. 3 mi S Copperas Vista on NM 527-15. 07/23/70

MSB 23146. 6 mi S Cliff dwellings on NM 756. 07/18/70

MSB 23147. 7 mi S Cliff dwellings on NM 756. 07/18/70

MSB 23148. On NM 25-35, 2 mi W jct with 61. 07/23/70

MSB 23154. 0.75 mi down on Gila River from Gila Hot Springs. 07/21/70

MSB 23157. On NM 25-35, 3 mi W 61-25, 35 jct. 07/23/70

MSB 42802. 11.3 km S, 16.1 km W Gila Cliff Dwellings National Monument, along Turkey Creek, ca. 2.4 km upstream of Skeleton Canyon at Hot Springs, T13S R16W sec. 34, 1597 m. 04/14/84

MSB 42806-42807. 10.1 km S, 17.1 km W Gila Cliff Dwellings National Mounument, along Turkey Creek near confluence with Gila River, T14S R16W SW¼ sec. 15. 07/02/84

NMSU 2824. Lake Roberts. 06/28/69

NMSU 2971-2973. NM 257, 8 mi S Gila Cliff Dwellings. 08/28/71

NMSU 3772. 15 mi NW Silver City, T15S R15W sec. 34. 09/08/62

NMSU 3773. 8 mi N Cliff, mouth Mogollon Creek. 06/01/64

NMSU 3774. 8 road mi SE Silver City off Ridge Road. 04/26/66

NMSU 4153-4154. 25 mi NE Silver City, T14S R11W sec. 33. 04/10/74

NMSU 4192. Miller Spring, T13S R15W sec. 35. 08/13/72

NMSU 4193-4194. Little Turkey Creek, T13S R14W sec. 20. 08/13/72

NMSU 4195-4196. 5 mi W Lake Roberts. 05/15/70

NMSU 4699. 0.5 mi W Gila on Rt. 28. 04/20/68

WNMU 12615. 6 1/3 mi S, 1 7/10 mi E Silver City. 08/09/66

WNMU 12616. 1 mi E Cliff. 03/11/72

Bufo punctatus

NEW MEXICO: Grant County:

MSB 757-758. Black Creek at T13S R12W, sec. 12. 09/03/49

MSB 40319. Gila River, 6 mi SW Red Rock—mouth of Nichol's Canyon. 05/28/78

NMSU 4706-4707. 2 mi S Silver City. 07/27/62

NMSU 6004. Blue Creek, 10.5 mi N, 6.5 mi W Red Rock, T17S R19W SE¼ sec. 8. 09/02/81

WNMU 12473. 16 mi SW Cliff. 05/14/72

Bufo woodhouseii

NEW MEXICO: Catron County:

MSB 661-675. Rio San Francisco, 10 mi below Luna. 09/05/48

MSB 724-725. Tularosa Creek, above Aragon, T5S R16W, sec. 3. 09/03/48

MSB 727. Rio San Francisco, 1 mi above Reserve. 09/04/48

MSB 728. Dry Fork of Blue River, 1 mi above mouth. 09/06/48

MSB 732. Middle Fork of Gila River at T11S R16W, sec. 1. 09/04/49

MSB 733. Rio San Francisco, 5 mi N Alma, T11S R16W, sec. 8. 08/02/49

MSB 739-740. Tularosa River, about 5 mi above Reserve. 08/20/49

MSB 3676. Pleasanton. 08/24/59

MSB 3677. 4.5 mi S Glenwood. 06/13/59

MSB 5801-5826. Ca. 5 mi above Luna, T5S R21W, sec. 31. 09/06/48

WNMU 12429. Wall Lake. 03/19/76

NEW MEXICO: Grant County:

MSB 554-562. Gila River at Cliff. 08/25/49

MSB 676-682. Gila River at Red Rock. 08/24/49

MSB 686-688. Sapillo Creek, T14S R13W, sec. 31. 09/02/49

MSB 701-712. Gila River, 7 mi NE Gila, T14S R16W, sec. 31. 08/27/49

MSB 726. Rocky Canyon, Sapillo Creek. 09/02/49

MSB 735-738. Gila River, ca. 11 mi below Cliff. 08/26/49

MSB 741. Gila River, 5 mi below Cliff. 08/26/49

MSB 3663-3675. Cliff. 08/24/59

MSB 3678. Buckhorn. 08/24/59

MSB 14593. Between Red Rock and Blue Creek Canyon. 04/07/66

MSB 42814-42815. Gila River ca. 4 km NE Moonhull Canyon, USFS Rd 809, T17S R17W NW¼ sec. 16. 04/23/84

MSB 42816. Conner Ranch ca. 7.2 km NE Red Rock near USGS gaging station on Gila River, T18S R18W SW¼ sec. 23. 05/08/84

MSB 42817. Gila River ca. 0.8 km NNW Riverside, T16S R17W SW¼ sec. 4. 06/08/84

MSB 42818. Gila River at Gila, NM 211, T15S R17W sec. 27. 05/24/84

MSB 42819-42820. Stillman Ranch ca 3.9 km WNW Red Rock, T19S R19W NW¼ sec. 2, 1219 m. 08/11/84

MSB 42821-42823. Red Rock Wildlife Management Area 2.6 km NE Red Rock, T18S R18W NW¼ sec. 28. 06/27/84

MSB 42824. Gila River ca. 4 km NE Cliff, St Hwy 293 at Salado Site Indian Ruins, T5S R17W NW¼ sec. 23. 08/09/84

NMSU 3877. Ditch parallel to Silver Street, Silver City. 05/13/70

NMSU 3878. 1 mi S Silver City. 04/28/66

NMSU 3879. 5 mi W Lake Roberts. 05/17/70

NMSU 3880. 2 mi W Silver City. 05/17/70

NMSU 3881. 1.5 mi S Silver City at Scott Park. 05/19/66

NMSU 3882. Big Ditch, Silver City. 05/19/66

NMSU 3883. 2 mi S Silver City. 04/25/66

NMSU 3884. 2 mi S Silver City, Scotts Park. 04/25/66

NMSU 3885. Gila River, 1 mi NE Gila. 05/16/64

NMSU 3886. 8 road mi SE Silver City off Ridge Road. 04/26/66

NMSU 3887. 6.5 mi S, 1.7 mi E Silver City. 04/09/66

NMSU 4211. 9 mi S Silver City. 05/08/68

NMSU 4212. Wildlife Preserve in Red Rock. 05/11/68

NMSU 4213. 1 mi E Silver City on Ridge Road. 09/01/67

NMSU 4214. 9 mi SE Silver City. 04/15/68

NMSU 4215. 10 mi S Silver City, Ridge Road. 04/27/68

NMSU 4216. 1.5 mi SW Gila in pond, 4500 ft. 04/28/68

NMSU 4217. 9 mi S Silver City. 05/08/68

NMSU 4218. Gila River near Gila. 05/05/72

NMSU 4219. 8.5 mi S Silver City, Ridge Road. 04/30/68

NMSU 4220. 3 mi S Silver City. 04/13/68

NMSU 4236. 5 mi S Silver City. 05/14/66

NMSU 4237. Big Ditch, Silver City. 05/19/66

NMSU 4238. 1 mi S Silver City. 04/28/66

NMSU 4440. Scott Park, Silver City. 09/01/67

NMSU 4441-4442. 8 road mi SE Silver City off Ridge Road. 04/26/66

NMSU 4443. Scott Park, 1.5 mi S Silver City. 05/04/66

NMSU 4444. 8 road mi SE Silver City, off Ridge Road. 05/26/66

NMSU 4445. 1 mi S Silver City. 04/28/65

NMSU 4446. 2 mi S Silver City. 04/25/66

NMSU 4447-4449. Big Ditch, Silver City. 05/20/66

NMSU 4450. 1 mi S Silver City. 04/28/66

NMSU 4451. Scott Park, 1.5 mi S Silver City. 05/04/66

NMSU 4454. Gila River, 1 mi W Gila. 04/28/64

NMSU 4455. Gila River, 1 mi W Gila. 04/21/64

NMSU 4456. Gila River, 0.5 mi W Gila. 04/21/64

NMSU 4457. Gila River, 30 mi NW Silver City. 04/23/64

NMSU 4458. Gila River, 0.5 mi W Gila. 04/23/64

NMSU 4459. Gila River, 1 mi NW Gila. 04/21/64

NMSU 4460. Gila. 04/25/64

NMSU 4461. 2 mi S Silver City golf course. 07/27/62

NMSU 4462. Gila River, 1 mi NW Gila. 04/21/64

NMSU 4463. 30 mi W Silver City. 05/15/64

NMSU 4464-4465. 2 mi S Silver City golf course. 07/09/62

NMSU 4466-4468. Big Ditch, Silver City. 04/27/62

NMSU 4700. Ranch pond, 9 mi S Silver City. 04/26/66

NMSU 4720. 1 mi W Gila, Gila River. 04/21/64

NMSU 4721. Gila River, 1 mi NW Gila. 05/16/64

NMSU 4722. Gila River, 3/4 mi W Gila. 04/25/64

NMSU 4723. Cliff, Gila River. 05/05/64

NMSU 4724. 10 mi S Silver City, Ridge Road. 04/27/68

NMSU 4725-4726. 9 mi SE Silver City. 04/15/68

NMSU 4727. Cliff, Gila River. 05/13/72

NMSU 4728-4730. 3 mi S Silver City. 04/13/68

NMSU 5241. NM 464, 6.2 road mi S Red Rock bridge. 07/30/77

NMSU 5281. Gila River, 0.2 mi N, 0.4 mi E Red Rock bridge, T18S R18W sec. 32. 08/25/77

NMSU 5282. 0.6 mi S, 1.0 mi W Dale McCauley Ranch, T17S R17W SW¼ sec. 17. 08/26/77

NMSU 5297. State Road 293, 3.9 road mi N jct. State Road 293 and State Road 260. 07/06/77

NMSU 5298. Gila River, Gila National Forest, T17S R17W sec. 21. 07/11/77

NMSU 5299. Duck Creek, T15S R17W sec. 29. 07/13/77

NMSU 5907. 3.5 mi W Red Rock, T19S R19W SW¼ sec. 3. 08/26/81

NMSU 5945. Gila River, 6 mi W Red Rock, T19S R19W NE¼ sec. 18. 07/23/81

WNMU 12422. 3 mi SSE Cliff, T15S R17W, sec. 4. 04/27/80

WNMU 12423. 7 mi WSW Red Rock. 09/07/78

WNMU 12424. Cliff-Gila bridge. 04/08/76

WNMU 12426. 2 mi S Cliff. 07/07/77

WNMU 12427. 3 mi SE Cliff. 04/27/80

WNMU 12428. 10 mi S Silver City. 07/27/68

WNMU 12430. 8 mi N Gila-Turkey Creek. 04/26/64

WNMU 12431. 1 mi W Gila. 04/13/74

WNMU 12433. 0.25 mi W Gila. 09/17/83

WNMU 12559. 1.5 mi S Silver City. 09/12/81

WNMU 12624. 19 mi NW Silver City. 09/17/83

WNMU 12625. Gila River near BLM Bird Sanctuary, T17S R17W, sec. 28. 06/19/83

WNMU 12626. 0.25 mi W Gila at Gila River bridge. 09/17/83

NEW MEXICO: Hidalgo County:

MSB 620-627. Gila River, 1 mi E Arizona border, T18S R21W sec. 32. 08/23/49

MSB 683-685. 7 mi SE Virden, T19S R20W sec. 21. 08/22/49

MSB 12368-12369. Gila River under bridge (Virden). 04/15/65

NMSU 4453. 1 mi E Virden. 05/04/68

NMSU 5281, 5283-5284. NM 92, 0.2-0.3 road mi N Gila River. 08/12/77

NMSU 5285-5286. Gila River at mouth Cottonwood Canyon, T19S R20W sec. 21. 08/16/77

HYLIDAE

Hyla arenicolor

NEW MEXICO: Catron County:

MSB 3943. Mogollon. 05/14/60

MSB 4553. Wall Lake. 06/08/60

MSB 6878. Cottonwood Canyon, 13 mi S Reserve. 04/19/62

MSB 20289. 11.6 mi E Beaverhead on NM 59. 07/12/69

MSB 20290, 20394-20398, 20431. 11.2 mi E Beaverhead on NM 59. 07/12/69

MSB 23160. On road to Mogollon cemetary, 0.5 mi from jct. with 78. 07/07/70

MSB 24589. 4.4 mi W Glenwood, unmarked road, AOR. 08/13/70

MSB 38957. Whitewater Recreation Area, 4 mi N, 3 mi E Glenwood, T11S R19W sec. 5. 04/30/83

MSB 41624. Gila Wilderness, W Fork Gila River, 10 mi upstream of Gila Cliff Dwellings National Mounument, T12S R15W sec. 9 and 10. 05/31/84

MSB 41807. Pueblo Creek at Pueblo Creek campground, 8.5 mi S, 12 mi W Reserve, T8S R21W sec. 24. 08/13/84

NMSU 3623. T12S R18W sec. 17. 07/27/71

WNMU 12609-12610. Woodland Park, T11S R15W sec. 35. 06/18/72

WNMU 12611. Prior Cabin, T11S R15W sec. 22. 06/20/72

WNMU 12618. Head of McKenna Creek, T12S R15W sec. 30. 06/11/72

NEW MEXICO: Grant County:

MSB 1081-1110. Mogollon Creek, N falls, T13S R18W sec. 13. 08/28/49

MSB 2569-2579. Mogollon Creek below the falls, T13S R18W sec. 13. 08/29/49

MSB 32325. Near bridge on US 180 over Gila River, S of Cliff, T15S R17W. 04/30/77

MSB 40642. Sycamore Creek, 10.5 mi N, 5.5 mi W Silver City, T16S R15W sec. 11. 06/16/75

MSB 41802. 4.5 mi E Mule Creek, NM 78. 08/13/84

MSB 42798. Conner Ranch ca. 7.2 km NE Red Rock near USGS gaging station on Gila River, T18S R18W SW¼ sec. 23, 1268 m. 06/18/84

MSB 42799. Along Blue Creek ca. 22.7 km SSW Cliff, T16S R19W NE¼ sec. 19, 1615 m. 05/30/84

MSB 42800. Sapillo Creek ca. 1.6 km downstream of jct. NM 15 bridge, T16S R13W sec. 31, 1756 m. 07/09/84 (one tadpole)

MSB 42801. Sapillo Creek ca. 9.6 km downstream of jct. NM 15 bridge T14S R14W sec. 31, 1756 m. 07/09/84 (16 tadpoles)

NMSU 2515. 10 mi S Gila Cliff Dwellings. 05/10/70

NMSU 3622. North Slate Creek, 16 mi SW Cliff. 05/14/72

NMSU 3624. Slades Canyon. 05/12/72

NMSU 3628. 16 mi SW Cliff. 05/13/72

NMSU 3825. 16 mi SW Cliff. 05/14/72

NMSU 3826. Lake below Ben Lily Memorial. 04/30/72

NMSU 3827. 14 mi SW Cliff. 05/14/72

NMSU 3828. Pond below Ben Lily Memorial. 04/06/72

NMSU 3829. 12 mi NW Cliff. 05/13/72

NMSU 3830. 18 mi S Cliff, mouth of Slate Creek. 05/14/72

NMSU 3831. 3 mi NE Pinos Altos. 10/03/59

NMSU 3832. Slate Creek. 05/14/72

NMSU 3833. 15 mi S Cliff. 05/13/72

NMSU 3834. 16 mi SW Cliff. 05/13/72

NMSU 3835. Slades Canyon. 05/13/72

NMSU 3836. 14 mi SW Cliff, Ash Creek. 05/15/72

NMSU 3837. 15 mi NE Silver City. 05/08/72

NMSU 3838. 4 mi N Pinos Altos. 05/07/72

NMSU 3839. Steamboat Canyon, 15 mi N Silver City. 09/08/62

NMSU 4603. T18S R17W sec. 6. 04/12/74

NMSU 4604. T18S R17W sec. 7. 04/13/74

NMSU 4605. 3 mi NE Red Rock. 04/14/74

NMSU 4606. 3 mi NE Red Rock. 04/06/74

NMSU 4607. Slate Creek, T18S R17W sec. 7. 04/13/74

NMSU 4956. 9 mi N mouth of Turkey Creek. 09/09/76

NMSU 5300. 0.6 mi S, 0.5 mi W Dale McCauley Ranch, T17S R17W sec. 17

NMSU 5615. The Falls, Mogollon Creek, Gila National Forest, T13S R18W sec. 13. 10/13/79

WNMU 12472. Ca. 20 mi NW Silver City, Ben Lily Lake. 09/16/81

WNMU 12482. 15 mi N Silver City, Steamboat Canyon. 09/08/62

WNMU 12483. 12 mi NW Silver City. 06/16/75

WNMU 12489. Lake Roberts. 09/22/78

WNMU 12607. Turkey Creek Hot Springs. 06/26/83

WNMU 12608. 20 mi E Red Rock. 05/18/83

WNMU 12612-12614. Ben Lily Lake. 04/25/76

Hyla eximia

NEW MEXICO: Catron County:

MSB 11614. Lava beds, 10 mi E Mogollon. 06/30/63

NMSU 3685. Head of McKenna Creek. 06/11/72

NMSU 3686. T12S R15W sec. 30. 06/11/72

NMSU 3824. Head of Little Dry, T12S R18W sec. 20. 07/17/71

WNMU 12414, 12619-12620. Head of McKenna Creek, T12S R15W sec. 30. 06/11/72

WNMU 12415. Bill Lewis Cienega near Bearwallow Mountain. 07/05/77

WNMU 12621-12622. Iron Creek Lake, T11S R17W sec. 2. 06/25/72

Pseudacris triseriata

NEW MEXICO: Catron County:

MSB 3860-3876. 9 mi E Mogollon, Mogollon Mountains. 06/23/60

MSB 11870-11883. Adam Hoague Pond, Mogollon Mountains. 05/23/64

MSB 11990-11992. Adam Hoague Pond. 05/23/64

MSB 41609-41610. Gila National Forest, Gila Wilderness, McKenna Park, McKenna Spring, T12S R15W SW¼ sec. 30. 05/29/84

WNMU 12550. Iron Creek Lake, T11S R17W sec. 2. 05/01/65

WNMU 12551. Iron Creek Lake, T11S R17W sec. 2. 06/25/72

WNMU 12552-12553. Iron Creek Lake, T11S R17W sec. 2. 05/08/65

PELOBATIDAE

Scaphiopus bombifrons

NEW MEXICO: Grant County:

MSB 3770, 3796. 10 mi S Silver City (by road). 06/15/61

MSB 42858-42861. 5 mi S, 10 mi W Silver City, Mangas Valley, Tyrone Cutoff Road, ca. 3.2 km N jct. USFS Road 851, T18S R16W sec. 24. 06/28/84

NMSU 3629-3639, 3840. 2 mi S Silver City. 07/27/62

NMSU 3841. 3 mi E Lake Roberts. 03/14/72

NMSU 3842. 3 mi SW Silver City. 09/24/67

NMSU 3843. Silver City, Little Walnut Road. 09/30/71

NMSU 3844. 2 mi SE Hurley. 10/16/72

NMSU 4201. Ridge road, 1 mi E Hwy 90. 09/01/67

NMSU 4202. 2 mi S Silver City, golf course. 07/27/63

NMSU 5235. NM 464, 5.6 road mi S Red Rock bridge. 07/30/77

NEW MEXICO: Hidalgo County:

NMSU 3845. 7 mi NW Lordsburg. 10/14/72

NMSU 3846. 10 mi N Lordsburg. 09/01/73

NMSU 5965. 6.5 mi N Lordsburg, T21S R18W SE¼ sec. 29. 07/22/81

Scaphiopus couchii

NEW MEXICO: Grant County:

MSB 20371-20372. 12.5 mi N on NM 464 of US 70 jct. 08/10/69

MSB 20737. 10.2 mi N on NM 464 and US 70 jct. 08/19/69

MSB 42862. Red Rock Wildlife Experimental Area, ca. 2.6 km NE Red Rock, T18S R18W NW¼ sec. 28. 06/27/84

NMSU 3860-3861, 4200. 12 mi SE Hurley. 10/16/72

NMSU 5231-5234. NM 464, 5.6 road mi S Red Rock bridge. 07/30/77

NEW MEXICO: Hidalgo County:

MSB 14024-14039. 3 mi N Lordsburg. 09/09/65

MSB 20370. Intersection of US 70 and NM 464. 08/09/69

NMSU 5966. 6 mi N, 1 mi W Lordsburg, T21S R18W SW¼ sec. 32. 07/22/81

Scaphiopus multiplicatus

NEW MEXICO: Catron County:

MSB 3471-3478. 5 mi N Glenwood. 06/13/59

MSB 3629. 4.5 mi S Glenwood. 08/24/59

MSB 5587. 1.5 mi NW Glenwood. 09/01/61

MSB 20231-20232. 25 mi E Beaverhead (Rt. 59). 07/12/69

MSB 20332-20333. 13.4 mi E Beaverhead on NM 59. 08/02/69

MSB 24588. 4.4 mi W Glenwood, unmarked road, AOR. 08/13/70

MSB 24590-24592. 4.1 mi W Glenwood, unmarked road, AOR. 08/13/70

MSB 24599-24603. 3.3 mi E Alma via NM 78, AOR. 08/13/70

NEW MEXICO: Grant County:

MSB 3757-3797. 10 mi S Silver City (by road). 06/15/61

MSB 5585. 3 mi W Mule Creek, jct. 78-260, 6 mi E Mule Creek. 09/01/61

MSB 5586. 5 mi W Mule Creek, jct. 78-260, 5 mi E Mule Creek. 09/01/61

MSB 20348. Red Rock bridge in Red Rock. 08/09/69

MSB 20349. 1.6 mi E Red Rock on NM 464. 08/01/69

MSB 20350. 12.5 mi N on NM 464 for jct. US 70. 08/01/69

MSB 20351. 8.6 mi N NM 464 of jct. US 70. 08/10/69

MSB 23149. On 25-35, 2 mi W of jct. with 61. 07/23/70

MSB 23150. 4 mi W of jct. with 61 on 25-35. 07/23/70

MSB 23152. 1 mi E of jct. with 61 on 25-35. 07/23/70

MSB 23158. On 25-35, 1 mi W of jct. with 61. 07/23/70

MSB 42863-42872. Mangas Valley, Tyrone cutoff road ca. 3.2 km N jct. USFS Road 851, T18S R16W sec. 24. 06/28/84

NMSU 3640, 3847-3850. 2 mi S Silver City, golf course sewage ponds. 07/27/62

NMSU 3851. Hurley. 09/01/73

NMSU 3852. Hwy 180, 3 mi SW Silver City. 09/24/67

NMSU 3853. 2 mi S Silver city. 07/01/72

NMSU 3854. Silver City. 10/30/72

NMSU 3862-3863. 12 mi SE Hurley. 10/16/72

NMSU 3864. 7 mi SE Hurley. 10/16/72

NMSU 4152. WNMU Campus, Silver City. 09/29/72

NMSU 4203-4205. 2 mi S Silver City, golf course. 07/27/62

NMSU 5236-5237. NM 464, 5.6 road mi S Red Rock bridge. 07/30/77

NMSU 5301-5306. Duck Creek, T15S R17W sec. 29. 07/13/77

NEW MEXICO: Hidalgo County:

MSB 14040-14044. 3 mi N Lordsburg. 09/09/65

NMSU 3865-3869, 4208-4209. 7 mi NW Lordsburg. 10/14/72

RANIDAE

Rana catesbeiana

NEW MEXICO: Catron County:

MSB 3733-3740. Wall Lake. 08/16/59

MSB 10973-10974. Glenwood. 05/25/63

MSB 11112. San Francisco River, 0.25 mi upstream Frisco Hot Springs. 05/25/63

MSB 11275-11276. Frisco Hot Springs. 05/25/63

MSB 11893. Glenwood Hatchery. 05/09/64

MSB 15596. Cool Springs Lyons Lodge, Gila river (16 tadpoles). 03/13/66

MSB 17584. W Fork Gila River, 2 mi above confluence with E Fork Gila River. 06/15/66

MSB 19120. Wall Lake. 05/08/69

MSB 20426-20428. Mouth of Taylor Creek, Wall Lake. 07/13/68

MSB 23162. 1.5 mi downstream from Frisco Hot Springs on Frisco River. 07/16/70

MSB 40566. San Francisco River, near San Francisco Hot Springs, ca. 2 mi S Pleasanton. 09/30/77

MSB 41803-41804. 1.5 mi S Glenwood, San Francisco River at Hot Springs, T113 R20W. 08/13/84

MSB 43165. 21 mi E, 17 mi N Gila, Gila River at confluence of Little Creek, ca. 1.3 km NW Gila Hot Springs, T12S R13W SE¼ sec. 31. 03/01/84

MSB 43274. 21 mi E, 17 mi N Gila, Gila River at confluence of Little Creek, ca. 1.3 km NW Gila Hot Springs, T12S R13W SE¼ sec. 31. 03/01/84 (147 tadpoles)

MSB 43195, 43280. Middle Fork Gila River, USFS trail no. 157, trailhead near Gila Cliff Dwellings National Monument Visitor Center, T12S R14W NW¼ sec. 25. 06/09/84 (1 tadpole)

MSB 43211, 43290. Middle Fork Gila River, USFS trail no. 157, trailhead near Gila Cliff Dwellings National Monument Visitor Center, T12S R14W NW¼ sec. 25. 08/23/84 (127 normal, 15 "albino" tadpoles, 8 "albino" kept alive)

MSB 43291. 3.5 mi S Pleasanton, Backwater pool on San Francisco River, ca. 300 m upstream of Frisco Hot Springs, T12S R20W SW¼ sec. 23. 08/16/84

MSB 43227-43252. 22 mi W, 2 mi N Chloride, Taylor Creek, ca. 0.4 km upstream of Wall Lake, T11S R12W sec. 10. 08/21/84

MSB 43298, 43263-43264. 24 mi N, 3 mi W Redstone, Middle Fork Gila River, ca. 1.6 km downstream of Jordan Canyon, T12S R14W, NE¼ sec. 11. 09/13/84 (21 tadpoles)

MSB 43299, 43265. 20 mi N, 2 mi W Redstone, Middle Fork Gila River, USFS trail no. 157 at jct. USFS trail no. 27, T12S R13W NW¼ sec. 18. 09/13/84 (4 tadpoles)

MSB 43253-43256, 43301. 3.5 mi S Pleasanton, Backwater pool on San Francisco River, ca. 300 m upstream of Frisco Hot Springs, T12S R20W SW¼ sec. 23. 09/18/84 (13 tadpoles)

MSB 43257. Overflow creek from Frisco Hot Springs on San Francisco River, T12S R20W sec. 23, 1387 m. 09/18/84

MSB 43302. Middle Fork Gila River, USFS trail no. 157, trailhead near Gila Cliff Dwellings National Monument Visitor Center, T12S R14W NW¼ sec. 25. 09/13/84 (73 tadpoles)

MSB 43310. Middle Fork Gila River, USFS trail no. 157, trailhead near Gila Cliff Dwellings National Monument Visitor Center, T12S R14W NW¼ sec. 25. 11/18/84 (30 tadpoles)

NMSU 4597. Glenwood Fish Hatchery. 03/31/74

NMSU 4598. Glenwood Fish Hatchery. 04/05/74

NMSU 4599. Glenwood Fish Hatchery. 03/30/74

NMSU 4664-4666. 0.5 mi NE Glenwood. 03/31/66

NMSU 4675. Wall Lake, 5 mi S Beaverhead. 05/17/64

WNMU 12510. Wall Lake. 03/18/78

WNMU 12528. Heart Bar Wildlife Area. 04/14/78

NEW MEXICO: Grant County:

MSB 14135-14140. Hot Springs below Lyons Lodge. 01/29/66

MSB 15597, 16279. Gila River, 0.25 mi below Lyons Lodge. 10/08/66

MSB 16988. East Fork Gila River, 0.25 mi above jct. with West Fork. 03/22/67

MSB 17581. Gila River, 0.5 mi below Lyon's Lodge. 10/08/66

MSB 17582. East Fork Gila River, 1/8 mi above confluence with West Fork. 11/19/66

MSB 17583, 41682, 41914. Confluence of East and West Forks Gila River. 08/20/66

MSB 17675. East Fork Gila River, 0.25 mi above confluence with West Fork Gila River. 02/05/67

MSB 23882-23883. 0.25 mi downstream from Gila Hot Springs on Gila River. 07/18/70

MSB 41704. 10 mi E Buckhorn, Gila River, T15S R16W sec. 6. 11/19/81

MSB 41774. Turkey Creek between Skeleton and Brush Canyons, 13.2 mi N Gila, T13S R16W SW¼ sec. 34. 04/28/84

MSB 41777. Turkey Creek, 13.2 mi NE Gila, T14S R16W sec. 3. 04/28/84

MSB 43138, 43270 17 mi N, 3 mi E Redstone, East Fork Gila River ca. 1.4 km upstream of confluence with West Fork Gila River, State Rt. 527, ca. 1.6 km SSE of Gila Hot Springs, T13S R13W sec. 11, 1695 m. 01/29/84

MSB 43139-43140. 12 mi N, 6 mi E Gila, Turkey Creek (tributary to Gila River) ca. 2.4 km upstream from Skeleton Canyon, near Hot Springs, T13S R16W sec. 34, 1597 m. 01/30/84

MSB 43141. 4 mi S, 4 mi E Red Rock, stock pond along Road Canyon, USFS Road 851, ca. 6.4 km E jct. Grant County road 464, T19S R18W sec. 26. 02/02/84

MSB 43143. Gila River at Riverside bridge ca. 2.4 km NNE of riverside, T16S R17W SW¼ sec. 4. 02/06/84

MSB 43150A. Gila River at Riverside bridge ca. 2.4 km NNE of riverside, T16S R17W SW¼ sec. 4. 03/19/84

MSB 43150B. Sapillo Creek beside NM 35 ca 2.4 km W Lake Roberts and ca. 3.2 km E jct. NM Hwy 15. 01/12/84

MSB 43151-43152. Gila River, ca. 4 km NE of Cliff, NM 293 at Salado Site Indian Ruins, T5S R17W, NW¼ sec. 23. 03/30/84

MSB 43153-43154. 12 mi N, 6 mi E Gila, Turkey Creek (tributary to Gila River) ca. 2.4 km upstream from Skeleton Canyon, near Hot Springs, T13S R16W sec. 34, 1597 m. 04/14/84

MSB 43155. Gila River at Riverside bridge ca. 2.4 km NNE of riverside, T16S R17W SW¼ sec. 4. 03/14/84

MSB 43156. 6 mi E, 7 mi N Gila, at confluence of Turkey Creek and Gila River, USFS Road 155, T14S R16W NW¼ sec. 22. 04/24/84

MSB 43157–43164, 43273. 9 mi N, 7 mi E Red Rock, Gila River ca. 0.4 km NE Moonhull Canyon, USFS Road 809, T17S R17W NW¼ sec. 16. 04/04/84

MSB 43166–43186, 43275. 9 mi N, 7 mi E Red Rock, Gila River ca. 0.4 km NE Moonhull Canyon, USFS Road 809, T17S R17W NW¼ sec. 16. 04/09/84

MSB 43187. 9 mi N, 7 mi E Red Rock, Gila River ca. 0.4 km NE Moonhull Canyon, USFS Road 809, T17S R17W NW¼ sec. 16. 04/23/84

MSB 43188–43189. 12 mi N, 6 mi E Gila, Turkey Creek, (tributary to Gila River) ca. 2.4 km upstream from Skeleton Canyon, near Hot Springs, T13S R16W sec. 34, 1597 m. 04/28/84

MSB 43190. 9 mi n, 7 mi E Red Rock, Gila River ca. 0.4 km NE Moonhull Canyon, USFS Road 809, T17S R17W NW¼ sec. 16. 05/08/84

MSB 43191–43194. 8 mi E, 9 mi N Red Rock, Middle Box Gila River, Gila River at Road Canyon, T17S R17W SE¼ sec. 16. 05/14/84

MSB 43196, 43278. 6 mi n, 4 mi E Redstone, Gila River at confluence with Sapillo Creek, Gila Wilderness, T14S R14W SE¼ sec. 29. 06/16/83

MSB 43197–43199, 43282. Gila River at Gila, NM 211, T15S R17W sec. 27. 05/24/84

MSB 43208, 43285. 9 mi N, 7 mi E Red Rock, Gila River ca. 0.4 km NE Moonhull Canyon, USFS Road 809, T17S R17W NW¼ sec. 16. 03/31/84

MSB 43209. 12 mi N, 6 mi E Gila, Turkey Creek (tributary to Gila River) ca 2.4 km upstream from Skeleton Canyon, near Hot Springs, T13S R16W sec. 34, 1597 m. 01/30/84

MSB 43210. 9 mi N, 7 mi E Red Rock, Gila River ca. 0.4 km NE Moonhull Canyon, USFS Road 809, T17S R17W NW¼ sec. 16. 08/10/84

MSB 43212. Gila River at Riverside bridge ca. 2.4 km NNE of Riverside, T16S R17W SW¼ sec. 4. 07/06/84

MSB 43213. 4 mi E, 6 mi S Riverside, Mangas Creek, ca. 0.4 km downstream of Blacksmith Canyon, T17S R16W SE¼ sec. 6. 08/30/84

MSB 43214. 5 mi S, 1 mi E Riverside, Mangas Creek at Bill Evans Lake, T17S R17W NW¼ sec. 2. 08/30/84

MSB 43266, 43311. 9 mi N, 7 mi E Red Rock, Gila River ca. 0.4 km NE Moonhull Canyon, USFS Road 809, T17S R17W NW¼ sec. 16. 11/07/83

MSB 43267, 43144,43147. Gila River at Brushy Canyon, USFS Road 155, ca. 12.9 km NE Gila, T14S R16W NW¼ sec. 28. 03/16/84

MSB 43268. 6 mi W, 3 mi S Red Rock, Gila River at BLM Wildlife Habitat Area, Nichols Canyon, ca. 6.4 km E Canador Peak, T19S R19W SE¼ sec. 18. 02/02/84

MSB 43269. Borrow pit beside US 180, ca. 1.6 km S Cliff, T15S R17W sec. 33. 02/06/84

MSB 43272. 9 mi N, 7 mi E Red Rock, Gila River ca. 0.4 km NE Moonhull Canyon, USFS Road 809, T17S R17W NW¼ sec. 16. 03/21/84

MSB 43276. Gila River near USGS gaging station, Conner Ranch ca. 7.2 km NE Red Rock T18S R18W SW¼ sec. 23. 04/24/84

MSB 43277. 12 mi N, 6 mi E Gila, Turkey Creek (tributary to Gila River) ca. 2.4 km upstream from Skeleton Canyon, near Hot Springs, T13S R16W sec. 34, 1597 m. 04/14/84

MSB 43279. 9 mi N, 7 mi E Red Rock, Gila River ca. 0.4 km NE Moonhull Canyon, USFS Road 809, T17S R17W NW¼ sec. 16. 05/26/84

MSB 43281. 7 mi E, 7 mi N Red Rock, Middle Box Gila River, Gila River at Ira Ridge, T17S R17W sec. 33. 05/14/84

MSB 43284. 5 mi W, 3 mi S Mangas Springs, Middle Box Gila river, Gila River at St. Peters Rock, T17S R17W sec. 28. 05/15/84

MSB 43288. Gila River at confluence with Ash Creek, ca. 2.4 km NE Red Rock, T18S R18W SE¼ sec. 21. 05/11/84

MSB 43293. 3 mi E, 17 mi N Red Rock, East Fork Gila River, ca. 0.8 km upstream of confluence with Gila River, T13S R13W, sec. 4. 08/23/84

MSB 43294. 5 mi N, 3 mi E Gila, Gila River ca. 0.4 km downstream of Mogollon Creek, T14S R16W sec. 31. 08/09/84

MSB 43295. Gila River ca. 4 km NE of Cliff, NM 293 at Salado Site Indian Ruins, T5S R17W NW¼ sec. 23. 08/09/84

MSB 43303. Gila River downstream of Alum Canyon, Gila Wilderness, T13S R13W sec. 19. 06/14/83

MSB 43304. Gila River ca. 1.6 km downstream of Sycamore Canyon, Gila Wilderness, T14S R14W sec. 10. 06/15/84

MSB 43305. Gila River near USGS gaging station, Conner Ranch ca. 7.2 km NE Red Rock, T18S R18W SW¼ sec. 23. 09/08/84

MSB 43306. Gila River at Riverside bridge ca. 2.4 km NNE Riverside, T16S R17W SW¼ sec. 4. 11/01/84

MSB 43307. Gila River ca. 4 km NE of Cliff, NM 293 at Salado Site Indian Ruins, T5S R17W NW¼ sec. 23. 12/15/83

MSB 43308. Gila River at Bill Evans Lake Diversion. 11/30/83

MSB 43309. Gila River at Riverside bridge ca. 2.4 km NNE Riverside, T16S R17W SW¼ sec. 4. 12/13/83

NMSU 3468. Cambell Farm, 6 mi S Gila Hot Springs. 04/24/76

NMSU 3923. Gila River, 1 mi W Gila. 05/11/64

NMSU 3937. Gila River, Cliff. 05/05/64

NMSU 3938. Gila River, 1 mi W Gila. 04/21/64

NMSU 3939. 9 mi SE Silver City. 05/01/68

NMSU 3940. 3 mi NW Hurley. 03/23/74

NMSU 4155. Gila River, 1 mi N Gila. 05/14/68

NMSU 4156. 2.5 mi S Cliff. 03/02/72

NMSU 4158. 5 mi S Cliff, Lower Box. 04/19/72

NMSU 4159. 0.5 mi W Gila. 04/12/62

NMSU 4160. 6 mi N Silver City, Bear Mountain Road. 04/12/64

NMSU 4161. 4 mi S Cliff, Gila River. 09/24/71

NMSU 4162. Gila River, E of Cliff. 04/16/72

NMSU 4163. Gila, Gila River bridge. 05/05/72

NMSU 4164. 2.5 mi S Cliff, Gila River. 03/02/72

NMSU 4252. Upper Box Canyon. 04/22/72

NMSU 4253. Gila Rivr near Gila. 05/05/72

NMSU 4254. Gila River, E of Cliff. 04/16/72

NMSU 4255. 5 mi N Cliff. 04/30/72

NMSU 4256. 28 mi NW Silver City. 05/17/72

NMSU 4274. 0.5 mi W Gila, Gila River. 04/12/62

NMSU 4275. Gila River, E of Cliff. 04/16/72

NMSU 4600. Bear Mountain pond, 15 mi NW Silver City. 04/20/64

NMSU 4601. Gila River, 1 mi NW Gila. 04/21/64

NMSU 4602. 25 mi NE Silver City, T14S R11W sec. 33, 6800 ft. 04/10/66

NMSU 5242-5243. Sycamore Creek, 1.3-1.4 mi E Norris Ranch, T16S R18W sec. 13. 08/27/77

NMSU 5293-5294. Gila River, Gila National Forest, T14S R16W sec. 30. 07/07/77

NMSU 5295. Gila River Gila National Forest, T17S R17W sec. 9. 07/13/77

NMSU 5296. Gila River, 0.4 mi S mouth Mogollon Creek, T14S R16W sec. 31. 07/06/77

NMSU 5373. Turkey Creek, 100 ft below Hot Springs, Gila National Forest. 10/08/77

WNMU 12511. 0.5 mi W Gila. 05/10/68

WNMU 12529. 3 mi N Cliff. 05/16/72

WNMU 12530. Bill Evans Lake. 10/14/83

WNMU 12531. Gila. 09/18/83

WNMU 12532, 12536, 12538. 3 mi W Gila, T15S R16W sec. 13. 10/10/81

WNMU 12533. 5 mi W Gila. 09/17/83

WNMU 12534. 3 mi NW Hurley. 04/18/78

WNMU 12535. 0.25 mi W Gila, Cliff-Gila bridge. 09/17/83

WNMU 12537. 3 mi S Cliff. 10/15/83

WNMU 12538. 3 mi W Gila, T15S R16W sec. 13. 10/10/81

WNMU 12539. 6.5 mi S Cliff, T6S R17W sec. 34. 10/05/81

WNMU 12575-12576. 1.5 mi S Cliff. 10/18/81

WNMU 12598. 6.5 mi S Cliff. 10/05/81

WNMU 12599. Box Canyon, T14S R16W sec. 30. 09/26/81

NEW MEXICO: Hidalgo County:

MSB 43148. Gila River at NM-AZ border, ca. 4.3 km W Virden, T18S R21W sec. 6. 02/19/84

MSB 43215, 43296. Gila River at NM-AZ border, ca. 4.3 km W Virden, T18S R21W, sec. 6. 08/29/84

MSB 43292. 6 mi W, 3 mi S Red Rock, Gila River Lower Box, Gila River ca. 0.4 km downstream of USGS gaging station, T19S R19W NW¼ sec. 19. 06/19/84

MSB 43297. Gila River at Diversion Dam, ca. 2 km W Virden, T18S R21W NW¼ sec. 5. 08/11/84

MSB 43300. Gila River at Canador Peak, backwater at diversion dam. 08/11/84

Rana chiricahuensis

NEW MEXICO: Catron County:

MSB 814. Rio San Francisco at Frisco Hot Springs. 09/01/50

MSB 869, 1796, 1800. Taylor Creek, T11S, R12W, sec. 8

MSB 900. Apache Creek at town of Apache Creek. 09/03/48

MSB 939. Rio San Francisco, 1 mi above Reserve. 09/04/48

MSB 961-964, 966-967. Tularosa Creek above town of Apache Creek, T5S, R17W, sec. 28. 09/04/48

MSB 977, 982. Rio San Francisco, 10 mi below Luna. 09/05/48

MSB 985. Middle Fork Gila River, T11S, R16W, sec. 1 (sic), 4 mi N, 26 mi E Glenwood. 09/04/48

MSB 1844-1845, 1853, 1855-1856. Blue River at jct. of Campbell Blue and Dry Blue Forks. 09/06/48

MSB 1870-1871, 1873-1875, 1877, 1880-1883, 1885-1887, 1889-1890. Tularosa Creek above Aragon, T5S, R16W, sec. 3. 09/03/48

MSB 2278. Dry Fork at Blue River, ±1 mi above mouth. 09/06/48

MSB 3820. 2 mi E, 2 mi N Aragon. 06/13/59

MSB 5396. Tularosa Creek, 100 yd below confluence of Apache Creek. 04/16/61

MSB 6142. 1 mi NE Aragon. 06/07/50

MSB 6143. 1 mi NE Reserve in Apache National Forest. 06/07/50

MSB 9323. Rio San Francisco, 0.5 mi W Glenwood. 10/07/61

MSB 11531. Tularosa Creek, 2.2 mi NE Aragon. 05/24/63

MSB 24598. Willow Creek, 29 mi E Alma via NM 78. 08/13/70

MSB 32379. Tularosa Creek, 4.2 road mi N Aragon. 05/02/77

MSB 40567-40568. Tularosa Creek, 2 road mi N Aragon

MSB 41706. Tularosa Creek. 10/11/76

MSB 41784. 2 mi W, 2 mi N center of Aragon, T5S, R16W, sec. 3. 04/28/84

MSB 41805-41806. Pueblo Creek at Pueblo Creek Campground, 8.5 mi S, 12 mi W Reserve, T8S, R21W, sec. 24. 08/13/84

MSB 43133. 16 mi E, 6 mi N Glenwood, along Willow Creek ca. 1.6 km upstream of Willow Creek campground, T10S R17W sec. 32. 08/15/84

MSB 43134. Centerfire Bog, USFS Road 216, ca. 15.8 air km NE Luna, T4S R19W NW¼ sec. 33. 09/17/84

MSB 43135-43136. 23 mi N, 3 mi W Redstone, Middle Fork Gila River, USFS trail no. 157, ca. 1.6 km downstream of Jordan Canyon, T12S R14W NE¼ sec. 11. 09/13/84

NMSU 2803-2815. 28.5 mi E Reserve on NM 12

NMSU 3688. White Creek Cabin, T12S, R16W, sec. 1

NMSU 3914. E fork of Gila River

NMSU 3915. Middle Fork Meadows, T11S, R14W, sec. 30

NMSU 5590-5591. Snow Lake, T10S, R16W, sec. 20, 7,450 ft

WNMU 12543. 0.25 mi W Gila Cliff Dwellings. 09/04/83

Tadpoles

MSB 965, 968-969. Tularosa Creek above Apache Creek. 09/04/48

MSB 974-976, 978-981. Rio San Francisco, 10 mi below Luna. 09/05/48

MSB 983-984, 986-987. Middle Fork Gila River, T11S, R16W, sec. 1. 09/04/49

MSB 1795, 1797, 1799, 1801-1805, 41831. Taylor Creek, T11S, R12W, sec. 8. 09/03/49

MSB 1832-1843, 1846-1852, 1854, 1857-1859. Blue River at junction of Campbell Blue and Dry Blue Forks. 09/06/48

MSB 1872, 1876, 1878-1879, 1884, 1888, 1891-1923. Tularosa Creek above Aragon, T5S, R16W, sec. 3. 09/03/48

MSB 2279-2285. Dry Fork of Blue River, 1 mi above mouth. 09/06/48

MSB 2401-2470. Gilita Creek at T10S, R16W, sec. 28. 09/04/49

MSB 2472-2567. Ca. 5 mi above Luna. 09/06/48

MSB 11532. Tularosa Creek, 2.2 mi NE Aragon. 05/24/63

MSB 14130, 40547. Beaver Creek at T11S, R12W, sec. 6, 26 mi W, 2 mi N Chloride. 09/04/49

MSB 24434. Apache Springs. 06/16/70

MSB 38982. NM 12, 1 mi E Aragon. 05/01/83

MSB 41585. Little Creek, 2 mi S Cliff Dwellings. 05/27/84

MSB 41705. Tularosa Creek. 10/11/76

MSB 41828. Tularosa River, 5 mi above Reserve. 09/04/48

NEW MEXICO: Grant County:

MSB 924-926. Gila River about 7 mi NE Gila, T14S R16W sec. 31. 08/27/49

MSB 2268. Mogollon Creek, near the falls, T13S R18W sec. 13. 08/28/49

MSB 2277. Mogollon Creek below the falls. 08/29/49

MSB 38958-38960. 1 km S jct. US 180 and NM 78, 14.5 km E Mule Creek. 04/30/83

MSB 38961-38965. 3.5 mi W jct. of US 180 and NM 78, 5.5 mi E Mule Creek. 04/30/83

MSB 38966-38973. 4 mi W junction of US 180 and NM 78, 5 mi E Mule Creek. 04/28/84

MSB 41761-41773, 41780-41783, 41840-41842, 41857, 41858. Turkey Creek between Skeleton and Brush Canyons, 13.2 mi N Gila, T13S R16W sec. 34. 04/28/84

MSB 41845-41846. 3 mi S, 13 mi W Cliff, Steep Hollow tank in Steep Hollow Canyon, T16S R19W sec. 17. 05/31/84

MSB 41847-41849. 2 mi S, 20 mi W Riverside, SE Deer Peak, Lemmons Creek at confluence with Cherry Creek between T16S R20W sec. 26 and sec. 22. 06/11/84

MSB 41850-41856. 2 mi S, 20 mi W Riverside, along Cherry Creek, from Lemmons Creek to Blue Creek, T16S R19W sec. 31 to T16S R20W NW¼ sec. 26. 06/12/84

MSB 41859-41864. 1 mi S, 18 mi W Riverside, 1 mi S Alexandra Canyon, T16S R20W NW¼ sec. 20. 06/13/84

MSB 41937. Blue Creek near Big Canyon, T16S R19W NE¼ sec. 19. 05/29/84

NMSU 3924, 3927-3928, 4656. Silver City

NMSU 3925. Gila Hot Springs, 25 mi N Silver City

NMSU 3926. 9 mi SE Silver City

NMSU 3929, 4247. 3-3.5 mi S Silver City

NMSU 3930, 3932-3933. 8.5 mi SE Silver City, Ridge Road

NMSU 3931, 3935, 4661. 10 mi S Silver City, Ridge Road

NMSU 3934. 1 mi W Gila

NMSU 4242, 4250, 4261. 8 road mi SE Silver City, off Ridge Road

NMSU 4243. 20 mi E Silver City

NMSU 4244-4245. 9.5 mi SE Silver City

NMSU 4246, 4248. 9 mi S, 1 mi E Silver City

NMSU 4249, 4258. Lake below Ben Lily Memorial, Pinos Altos Mountains

NMSU 4251, 4259, 4265, 4267. 9.5 mi S Silver City

NMSU 4264. 15 mi NE Silver City

NMSU 4266. 6.33 mi S, 1.7 mi E Silver City

NMSU 4655. 3 mi NW Hurley, 5500 ft

NMSU 4660. 25 mi NE Silver City, T14S R11W

NMSU 5611-5614. The Falls, Mogollon Creek, Gila National Forest, T13S R18W sec. 13

NMSU 5969. 8 mi S, 5 mi W Cliff, T17S R18W sec. 4

WNMU 12506. Ca. 20 mi N Silver City, Ben Lily Memorial. 08/27/81

WNMU 12540. Ben Lily Lake, T16S R14W sec. 24. 10/16/81

WNMU 12541. 3 mi NNW Pinos Altos, T16S sec. 24. 09/25/81

WNMU 12542. 2 mi up Turkey Creek from Gila River. 06/26/83

WNMU 12546. Lake Roberts. 09/12/81

WNMU 12547. 2 mi NW Ft. Bayard. 04/14/74

WNMU 12561. Ca. 20 mi NW Silver City, Ben Lily Lake. 08/27/81

WNMU 12562. 17.6 mi N Silver City, Mangas Springs, T12S R16W sec. 9. 04/13/81

Tadpoles

MSB 41778. Turkey Creek between Skeleton and Brush Canyons, 13.2 mi NE Gila. 04/28/84

MSB 41779. Side channel Gila River, 8.5 mi NE Gila. 04/28/84

MSB 41827. Duck Creek, 1.5 mi above Cliff. 08/26/49

Rana yavapaiensis

NEW MEXICO: Catron County:

MSB 811-813, 815, 5455, 5668, 8592-8593, 11274, 41843-41844. Rio San Francisco at Frisco Hot Springs. 09/01/50

MSB 816-824. Rio San Francisco, 2 mi above Frisco Hot Springs. 09/04/50

MSB 955-956. Rio San Francisco, 5 mi N Alma, T10S R20W sec. 8. 08/21/49

MSB 9322, 9324. Rio San Francisco, 0.5 mi W Glenwood. 06/03/61

MSB 41843-41844. Overflow creek from Frisco Hot Springs on Rio San Francisco ca. 3.2 km S Pleasanton, T12S R20W sec. 23, 1387 m. 05/08/84

MSB 43132. Overflow creek from Frisco Hot Springs on San Fransisco River ca. 3.2 km S Pleasanton, T12S R20W sec. 23, 1387 m. 05/24/84

NEW MEXICO: Grant County:

MSB 33758. Gila River, within 100 m of Red Rock Bridge. 05/17/77

MSB 40318. Gila River, 6 mi SW Red Rock, mouth of Nichols Canyon. 05/27/78

WNMU 12505. 3 mi N Cliff, Gila River. 09/23/75

NEW MEXICO: Hidalgo County:

MSB 12363. Gila River under Virden bridge. 04/15/65

ANGUIDAE

Elgaria kingii

NEW MEXICO: Catron County:

MSB 5408. 200 yd above "The Catwalk," Whitewater Canyon, 5 mi ENE Glenwood. 04/15/61

MSB 41604. Gila National Forest, Gila Wilderness, Little Creek Trail, 2-3 mi SE McKenna Spring by trail, T12S R15W sec. 30-32. 05/29/84

MSB 42826. 1.6 km E, 4.8 km N Gila Cliff Dwellings along Middle Fork Gila River, USFS trail no. 157, ca. 0.8 km downstream of Jordan Canyon, T12S R14W sec. 2. 09/13/84

NMSU 3679. T11S R16W sec. 1. 07/07/71

NEW MEXICO: Grant County:

NMSU 3675. 5.75 mi N Silver City. 05/09/72

NMSU 3676. Burro Mountains. 07/16/73

NMSU 3677. 14 mi NE Silver City. 05/17/70

NMSU 3678. Mouth Hell's Canyon, T14S R15W sec. 27. 11/17/71

NMSU 5250. Alexander Canyon at BM 5868, T16S R20W SE¼ sec. 17. 08/20/77

NMSU 5263. Gila River at Nichols Canyon, T19S R19W SE¼ sec. 18. 07/30/77

WNMU 12344. Lake Roberts, T14S R13W sec. 35. 06/02/80

WNMU 12345. Cherry Creek campground. 09/12/71

WNMU 12346. Lake Roberts. 06/00/79

WNMU 12347. 4 mi N Silver City. 10/20/79

WNMU 12366. Pinos Altos. 09/15/76

WNMU 12368. Silver City. 11/10/63

WNMU 12369. Silver City. 09/28/64

WNMU 12420. Silver City. 09/20/84

WNMU 12447. Ben Lily Lake NW of Pinos Altos. 08/27/81

GEKKONIDAE

Coleonyx variegatus

NEW MEXICO: Grant County:

MSB 42883. Ash Creek near Lydian Peak ca. 4.8 km NE of Red Rock, T18S R18W SE¼ sec. 16. 05/10/84

MSB 42884. Ash Creek arroyo ca. 3.5 km NE Red Rock T18S R18W NW¼ sec. 21. 06/18/84

NEW MEXICO: Hidalgo County:

MSB 33814. 2 mi S, 1 mi E Virden. 05/28/78

HELODERMATIDAE

Heloderma suspectum

NEW MEXICO: Grant County:

MSB 39. Silver City. 10/20/54

MSB 10952. Ash Canyon, Red Rock. 08/22/63

MSB 25635. Vicinity of Red Rock. 00/00/64

MSB 43448. Ash Creek near Lydian Peak ca. 4.8 km NE Red Rock, T17S R18W SE¼ sec. 16. 08/11/84 (skeleton)

NMSU 2089. Steeple Rock. 09/00/64

WNMU 12660. Plowed field SW Bill Evans Lake. 07/30/72

WNMU 12661. Red Rock. 05/00/61

SCINCIDAE

Eumeces multivirgatus

NEW MEXICO: Catron County:

MSB 23108. Rock face Cliffs of Wall Lake. 07/13/69

MSB 32289. 4 road mi W Luna via US 180, Canyon of San Francisco River, 0.3 road mi E intersection of US 180, ca. 0.5 mi S Hwy. 05/01/77

MSB 38899. 4 mi W Luna on US 180 near San Francisco River. 04/29/83

Eumeces obsoletus

NEW MEXICO: Catron County:

MSB 5136-5137. Whitewater Canyon above Glenwood. 04/15/61

MSB 5278-5279, 11193. Glenwood Fish Hatchery, Glenwood. 04/15/61

MSB 38855. San Francisco Hot Springs, 2 mi S, 0.25 mi W Pleasanton. 04/30/83

NMSU 3905. 1.5 mi E Whitewater Creek, Glenwood. 05/12/63

NEW MEXICO: Grant County:

MSB 42873. Red Rock Wildlife Experimental Area, ca. 2.6 km NE Red Rock, T18S R18W NE¼ sec. 29. 05/26/84

MSB 42874-42875. Red Rock Wildlife Experimental Area, ca. 2.6 km NE Red Rock, T18S R18W NE¼ sec. 29. 08/11/84

NMSU 3888. Silver City, N of town. 08/28/62

NMSU 3889. 7 mi N Cliff. 05/07/68

NMSU 3890. 2 mi S Cliff. 07/01/71

NMSU 3891-3892. 2 mi NW Gila. 05/20/70

NMSU 3893. Abandoned farm, 1 mi N Red Rock. 04/26/68

NMSU 3894. Red Rock, ca. 3 mi N post office. 04/26/68

NMSU 3895. 1 mi S Red Rock bridge. 04/04/68

NMSU 3896. 1 mi N Mogollon Creek along Gila River. 05/07/68

NMSU 3897. Red Rock. 04/26/68

NMSU 3898. Along Gila River near Cliff. 02/15/64

NMSU 3899. 1 mi W Red Rock. 05/01/68

NMSU 3900. Red Rock, E side of River. 04/26/68

NMSU 3901. 7.5 mi N Cliff. 05/07/68 .

NMSU 3902. Red Rock, old service station. 04/14/68

NMSU 3903. 0.5 mi W Gila. 09/22/67

NMSU 3904. 7 mi N Cliff along river. 05/20/70

NMSU 5145. Sycamore Creek, Norris Ranch, T16S R18W NW¼ sec. 13. 08/27/77

NMSU 5152. Sycamore Creek, Norris Ranch, T16S R18W NW¼ sec. 15. 08/27/77

NMSU 5230. Old ranch, Blue Creek, T16S R20W NE¼ sec. 16. 08/18/77

NMSU 5265. Bear Creek, just below "The Box," Hooker Ranch, T15S R16W sec. 20 or 29. 07/16/77

NMSU 6025. Gila River, north side, T19S R19W SE¼ sec. 3. 08/12/81

WNMU 12356. 3 mi S Silver City. 04/30/68

WNMU 12358. 3 mi N Red Rock, T18S R18W sec. 28. 04/04/80

WNMU 12359. 3.5 mi S Cliff. 04/23/73

WNMU 12434. Red Rock, Ash Creek area. 07/01/79

WNMU 12548. 4 mi E Silver City, Arenas Valley. 07/20/83

IGUANIDAE

Cophosaurus texanus

NEW MEXICO: Grant County:

MSB 1611-1612. 5 mi SW Red Rock. 08/24/49

MSB 12418. 12.7 mi E Tyrone turnoff from Hwy 464. 04/15/65

MSB 12425-12427. 5 mi W Red Rock. 04/14/65

MSB 13375. 3 mi W Red Rock, Gila River. 04/13/65

MSB 13376-13377. Canyon, 3 mi W Red Rock, Gila River. 04/13/65

MSB 13809. Red Rock area, T19S R19W sec. 16. 04/15/65

MSB 13810-13814. Red Rock area, T19S R20W sec. 14. 04/15/65

MSB 14349-14353. 8 mi W Red Rock bridge, Blue Creek Canyon area. 04/07/66

MSB 14805-14806. 8 mi W Red Rock bridge, Blue Creek Canyon area. 04/08/66

MSB 14562-14573. Between Red Rock and Blue Creek Canyon. 04/07/66

MSB 14804. 7.8 mi W Red Rock bridge, Blue Creek Canyon. 04/07/66

MSB 14807-14809. 7.5 mi W Red Rock bridge. 04/07/66

MSB 16252-16253. Mouth of Blue Creek Canyon, T19S R19W sec. 17. 04/19/66

MSB 23109. Gila River at Red Rock bridge, 2 mi SW of bridge. 08/10/69

MSB 23113. 20 mi S Silver City, US 180. 07/05/69

MSB 23117. 6.2 mi NW Gila River bridge, Red Rock. 08/09/69

MSB 23122. 4.5 mi NW Gila River, Red Rock bridge. 08/09/69

MSB 42600. 13 mi W, 20.8 mi SW Silver City on road to Red Rock. 04/08/66

MSB 42993-42994. Ash Creek arroyo, ca. 3.5 km NE Red Rock, T17S R18W NW¼ sec. 21. 03/14/84

MSB 42995-42996. Ash Creek arroyo, ca. 3.5 km NE Red Rock, T17S R18W NW¼ sec. 21. 04/11/84

MSB 42997, 43000-43001. Conner Ranch, ca. 7.2 km NE Red Rock, along Gila River near USGS gaging station, T18S R18W SW¼ sec. 23. 04/24/84

MSB 42998-42999. Conner Ranch, ca. 7.2 km NE Red Rock, along Gila River near USGS gaging station, T18S R18W SW¼ sec. 23. 05/02/84

MSB 43004. Ash Creek near Lydian Peak, ca. 4.8 km NE Red Rock, T17S R18W SE¼ sec. 16. 05/10/84

MSB 43005. Ash Creek near Lydian Peak, ca. 4.8 km NE Red Rock, T17S R18W SE¼ sec. 16. 04/25/84

MSB 43006. Ash Creek arroyo, ca. 3.5 km NE Red Rock, T17S R18W NW¼ sec. 21. 04/06/84

MSB 43007-43008. Ash Creek arroyo, ca. 3.5 km NE Red Rock, T17S R18W NW¼ sec. 21. 05/10/84

MSB 43009-43010. Ash Creek arroyo, ca. 3.5 km NE Red Rock, T17S R18W NW¼ sec. 21. 03/25/84

MSB 43011. Abandoned homestead beside Blue Creek, ca. 1.4 km W jct. Blue Creek and Chick Canyon, T16S R19W SE¼ sec. 30. 05/30/84

MSB 43012. Along Blue Creek between Big Canyon (T16S R19W sec. 19) and Thompson Canyon (T16S R20W sec. 14). 05/29/84

MSB 43013. Ash Creek near Lydian Peak, ca. 4.8 km NE Red Rock, T17S R18W SE¼ sec. 16. 05/26/84

MSB 43014. Ash Creek arroyo, ca. 3.5 km NE Red Rock, T17S R18W NW¼ sec. 21. 06/27/84

MSB 43015-43018. Along Cherry Creek from Lemmons Creek (T16S R20W sec. 26) to Blue Creek (T16S R19W sec. 31). 06/12/84

MSB 43019-43020. Ash Creek near Lydian Peak, ca. 4.8 km NE Red Rock, T17S R18W SE¼ sec. 16. 06/18/84

NMSU 3805-3806, 4365, 4370-4371. 16 mi SW Cliff. 05/13/72

NMSU 3807-3808, 4366-4367, 4370-4371. 16 mi SW Cliff, Ash Creek. 05/13/72

NMSU 3809. Ash Creek. 04/12/72

NMSU 3810. Red Rock W side Gila River. 04/26/68

NMSU 4368. Red Rock, 0.5 mi N bridge, W side of river. 04/26/68

NMSU 4369. Ash Creek, 14 mi SW Cliff. 05/15/72

NMSU 4372. Ash Creek, 14 mi SW Cliff. 05/14/72

NMSU 4373. 20 mi N Lordsburg, US 90. 05/04/68

NMSU 4521. Ash Creek. 04/13/72

NMSU 4522. 3 mi NE Red Rock. 04/06/74

NMSU 4523-4524. Slate Creek, T18S R17W sec. 7. 03/03/74

NMSU 5204. Gila River, Gila National Forest, T14S R16W sec. 30. 07/05/77

NMSU 5205. Gila River, Gila National Forest, T14S R16W sec. 29. 07/05/77

NMSU 5221. Blue Creek, T16S R20W sec. 14. 08/19/77

NMSU 5222. Lemmons Canyon, T16S R20W sec. 27. 08/22/77

NMSU 5252. 1 mi S, 0.2 mi W Summit Lydian Peak, T18S R18W sec. 21. 07/25/77

NMSU 5262. Gila River, T19S R19W NW¼ sec. 16. 07/29/77

NMSU 5321-5322. Gila River, Gila National Forest, T17S R17W sec. 21. 07/11/77

NMSU 5323-5324. Gila River at mouth Blue Creek, T19S R19W sec. 17. 07/27/77

NMSU 5325. Gila River at mouth Blue Creek, T19S R19W sec. 17. 07/29/77

NMSU 5326. Mouth Ash Creek, T18S R18W sec. 21. 07/31/77

NMSU 5341. Mouth Red Rock Canyon, T18S R18W sec. 31. 09/11/77

NMSU 5948. Gila River, 6.5 mi W Red Rock, T19S R19W SE¼ sec. 18. 07/23/81

NMSU 5949. Gila River, 6 mi W Red Rock, T19S R19W SE¼ sec. 18. 07/23/81

NMSU 6013. Gila River, T19S R19W SE¼ sec. 3. 08/19/81

NMSU 6014. Upper Box Canyon, S of Gila River, T19S R19W SW¼ sec. 30. 08/19/81

WNMU 12039, 12042, 12045. 3 mi NE Red Rock, T18S R18W sec. 28. 04/04/80

WNMU 12040-12041, 12043-12044. Red Rock, T18S R18W sec. 6. 04/04/80

WNMU 12043-12044. Red Rock, T18S R18W sec. 6. 04/04/80

WNMU 12047. 3.5 mi NE Red Rock, T18S R18W sec. 22. 04/25/76

WNMU 12049-12050. 4 mi W Red Rock, along Gila River, T19S R19W sec. 18. 04/05/80

WNMU 12052. Cliff, near Sycamore Canyon. 04/07/76

WNMU 12053. 4 mi WSW Red Rock. 09/17/78

WNMU 12056. 4.1 mi NW Red Rock. 04/25/76

WNMU 12058. 2.5 mi NE Red Rock. 04/07/74

WNMU 12470. 1 mi N Red Rock. 06/15/79

WNMU 12471. 2.5 mi N Red Rock near Ash Creek. 05/27/79

WNMU 12491, 12493. 7 mi NE Separ, Burro Cienega Creek. 09/11/81

WNMU 12500. 7 mi NE Separ, T23S R14W sec. 7. 09/12/81

WNMU 12571. 7 mi NE Separ, Jarrell Ranch. 09/12/81

WNMU 12602. 7 mi NE Separ, Burro Cienega Creek. 09/12/81

NEW MEXICO: Hidalgo County:

MSB 42599. 3 mi S, 3 mi E Virden, arroyo 100 yd E of bridge on Hwy 82 over Gila River. 08/09/66

NMSU 3811. 5.5 mi E Virden. 05/04/68

WNMU 12046. 5 mi WSW Red Rock, T19S R20W sec. 25. 09/17/79

Crotaphytus collaris

NEW MEXICO: Catron County:

MSB 3955-3958, 6515. Whitewater Canyon E of Glenwood. 06/14/59, 04/19/62

MSB 3961-3965. 2 mi N Wall Lake. 05/08/60

MSB 3966-3967. Glenwood. 05/14/60

MSB 3968. 2 mi N Reserve. 05/15/60

MSB 4756. 4 mi E Glenwood. 04/16/61

MSB 5113-5116. San Francisco River, ca. 4 mi N Glenwood. 04/16/61

MSB 5267. Frisco Hot Springs, 5 mi below Glenwood. 04/15/61

MSB 5268. 4 mi N Glenwood. 04/15/61

MSB 11189. 7 mi S Glenwood, Frisco Hot Springs. 05/25/63

MSB 11280. Frisco Hot Springs. 05/25/63

MSB 11285. The Catwalk near Glenwood. 05/26/63

MSB 11538. 4.8 mi S Pleasanton, 12 mi SW Hwy 180/260. 05/24/63

MSB 20901. Route 61, 8 mi N Wall Lake. 07/13/69

MSB 38859-38860. San Francisco Hot Springs, 2 mi S, 0.25 mi W Pleasanton. 04/30/83

MSB 39626. Whitewater Mesa near the Catwalk, 4 mi N, 2 mi E Glenwood. 05/01/83

MSB 42733. 14.5 km N, 12.9 km W Mogollon, along San Francisco River between Devil's Creek (T9S R20W sec. 34) and Long Canyon (10S R20W sec. 9). 09/18/84

NMSU 4144. Little Creek, 40 mi N Silver City. 05/03/64

NMSU 4145. Roberts Park, 5 mi W Glenwood. 07/12/70

NEW MEXICO: Grant County:

MSB 13719-13720. 20 mi N Separ. 05/15/65

MSB 40320. Gila River, 1 mi W Red Rock. 05/28/78

MSB 40644. 5 mi N Fort Bayard. 06/04/75

MSB 40960. 10 mi SE Silver City, Hurley. 05/28/58

MSB 41723-41728. Ca. 22.5 km W Riverside, along a gravel road between Steep Hollow Tank (T16S R19W sec. 17) and Reece Canyon (T16S R19W sec. 13). 05/31/84

MSB 41731-41732. Along USFS Road 112 near jct. USFS Road 543, ca. 3.2 km W Brushy Mountain Radar Station, T15S R21W sec. 23. 06/13/84

NMSU 4142. 0.5 mi N Silver City. 05/12/68

NMSU 5208. T19S R19W NW¼ sec. 17. 08/11/77

WNMU 12240. Silver City. 05/09/62

WNMU 12586. 3 mi N Silver City. 07/14/81

NEW MEXICO: Hidalgo County:

MSB 10515. Virden. 05/26/63

Gambelia wislizenii

NEW MEXICO: Grant County:

MSB 33708. AOR NM 464, 0.7 mi N Hidalgo County line. 05/28/78

NEW MEXICO: Hidalgo County:

MSB 23069. 2.2 mi N on Hwy 464 from Red Rock turnoff, US 70. 08/10/69

NMSU 3726. 8.5 mi NE Lordsburg. 06/26/75

NMSU 5970. 5 mi N, 2 mi W Lordsburg, T21S R18W SW¼ sec. 35. 07/22/81

Holbrookia maculata

NEW MEXICO: Catron County:

MSB 4000. Whitewater Canyon. 05/13/60

MSB-11106. 0.25 mi above San Francisco Hot Springs. 05/25/63

NEW MEXICO: Grant County:

MSB 6255-6256. Gila River, above Cliff. 08/30/49

MSB 11352. Water tank 0.25 mi from Mule Creek turnoff. 05/25/63

MSB 12438. 12.7 mi E Tyrone turnoff from Hwy 464. 04/15/65

MSB 14363. 8 mi W Red Rock bridge, Blue Creek Canyon area. 04/07/66

MSB 14558. Between Red Rock and Blue Creek Canyon, Hwy 44. 04/07/66

MSB 14809. 7.5 mi W Red Rock bridge. 04/07/66

MSB 14810. 8 mi W Red Rock bridge. 04/08/66

MSB 15364. 1 mi NW Blue Creek Canyon. 04/07/66

MSB 23118. 10 mi N Buckhorn US 180, Little Dry Creek. 07/04/69

MSB 23120-23121. 10 mi N Buckhorn US 180, Little Dry Creek. 07/04/69

MSB 23128. 5.5 mi N US 180 on road to Rice Ranch and Sacaton Helitack Base. 07/01/70

MSB 33573. Jct. of NM 464 at USFS Road 851, 3 mi S Red Rock, T19S R18W sec. 19. 04/28/78

MSB 38931. Sawmill Creek, 3 mi S, 0.75 mi E Mule Creek on USFS Road, T14S R20W sec. 18. 04/30/83

MSB 40961-40962. 10 mi SE Silver City, Hurley. 05/28/58

MSB 42895. Burro Mountains, Burro Spring Canyon, USFS Road 848, T19S R16 W NW¼ sec. 23. 03/25/84

MSB 42896. 11 mi S, 4 mi W Mule Creek, ca. 2.4 km S Brushy Mountain, USFS Road 112 beside Apache Creek, T15S R21W NE¼ sec. 35. 06/11/84

MSB 42897-42899. Stillman Ranch ca. 3.9 km WNW Red Rock, T19S R19W NW¼ sec. 2, 1219 m. 06/18/84

NMSU 3704. 3 mi N Silver City. 05/06/68

NMSU 3705. 3 mi SE Silver City. 04/18/68

NMSU 3706. Lake Roberts. 05/10/64

NMSU 3707. 6 mi NE Cliff, mouth Mogollon Creek. 05/03/62

NMSU 3708. WNMU Campus, Silver City. 05/07/62

NMSU 3709. 6 mi NE Cliff, mouth Mogollon Creek. 05/03/62

NMSU 3710. Hurley. 04/05/64

NMSU 3711, 4281. Lake Roberts, 12 mi NNE Pinos Altos. 05/10/64

NMSU 3712. 15 mi S Silver City. 05/19/64
NMSU 3715. 2 mi NE Fort Bayard. 04/21/68
NMSU 3716. 12 mi SE Hurley. 07/16/72
NMSU 3804. 1 mi W Tyrone mine. 05/18/70
NMSU 4276. 25 mi SE Silver City jct. Hwy 61 and Hwy 180. 04/08/66
NMSU 4277. 10 mi N Silver City. 05/05/72
NMSU 4278. 12 mi SE Hurley. 07/01/72
NMSU 4279. 12 mi NE Hurley. 07/16/72
NMSU 4280. 4 mi NE Hurley. 04/24/70
NMSU 4282. Silver City. 04/01/72
NMSU 4283. 4 mi SE Silver City. 05/10/70
NMSU 4284. Scott Park. 04/02/72
NMSU 4285. Bill Evans Lake. 04/23/72
NMSU 4286. 10 mi S Silver City. 05/10/72
NMSU 4287. Hurley. 05/24/64
NMSU 4288. Airport. 05/15/66
NMSU 4528. T18S R17W sec. 5. 03/05/74
WNMU 12066. Silver City, Scott Park. 05/03/68
WNMU 12068. Ridge Road, 10 mi S Silver City, 08/16/77
WNMU 12070. Silver City, Scott Park. 04/25/68
NMSU 12071. Arenas Valley, 2 mi N airport. 05/20/76
WNMU 12073. 1 mi S Silver City. 05/03/70
WNMU 12468. 6 mi SE Red Rock. 05/27/79
WNMU 12469. N of Red Rock, Ash Creek area. 07/01/79

NEW MEXICO: Hidalgo County:

MSB 33696. Along dirt road, 2 mi W NM 464, 0.5 mi S Grant County line. 05/27/78
NMSU 3717. 7 mi E NM State line. 04/16/72
NMSU 4290. 7 mi NW Lordsburg. 10/01/72

Phrynosoma cornutum

NEW MEXICO: Grant County:

MSB 40908. Faywood. 05/30/58
NMSU 4489-4490. 12 mi SE Silver City. 05/09/63
NMSU 4491. City of Rocks, 13.7 mi NE Hurley. 05/03/68

NMSU 4493. City of Rocks State Park, 04/15/72

NMSU 4494. Silver City. 05/10/66

NMSU 4495. Grant County airport, 4 mi S Hurley. 04/27/72

NMSU 4496. 9 mi S Silver City. 05/20/66

WNMU 12032. Silver City, Scott Park. 05/03/68

WNMU 12104. Silver City, WNMU Campus. 05/02/68

WNMU 12467. 4 mi S Silver City. 10/20/82

WNMU 12567. Silver City, 2402 Swarthmore Street. 06/20/81

WNMU 12568. 7 mi NE Separ, Jarrell Ranch. 09/11/81

NEW MEXICO: Hidalgo County:

MSB 177. 18 mi NW Lordsburg, T20S R19W sec. 5. 05/18/54

MSB 23064. 9.5 mi N on Hwy 464 from Red Rock turnoff, US 70. 08/10/69

NMSU 3701. 4 mi E Virden. 05/05/68

NMSU 5343. Pearson Mesa, 1.7 road mi W jct. NM 530 and NM 92, T19S R21W sec. 15. 08/27/77

MSB 5915. 9 mi N, 9 mi E Lordsburg, T21S R12W SE¼ sec. 11. 08/04/81

WNMU 12107. 3 mi S Virden on Hwy 82.. 05/04/68

Phrynosoma douglassii

NEW MEXICO: Catron County:

MSB 1258. 1 mi NE Pueblo Park, T8S R20W sec. 19. 09/07/48

MSB 1260. Rio San Francisco, 10 mi below Luna. 09/05/48

MSB 6122. 5 mi NE Reserve. 06/07/60

MSB 6516. Whitewater Canyon, E of Glenwood. 04/19/62

MSB 7160. Wall Lake

MSB 20962. Blue Mountains, jct. Dry Blue Creek and Blue River. 08/09/68

MSB 26395. 3.6 mi NE Mogollon on NM 78, DOR. 07/02/70

MSB 26401. On Deloche Trail, 1 mi E of intersection with NM 78. 07/12/70

MSB 26402. 1/5 mi E Deloche Trail on NM 78, DOR. 07/12/70

MSB 32170, 32255. San Francisco Mountains, 7 road mi E Luna on US 180, T7S R20W. 05/01/70

MSB 32255. San Francisco Mountains, 7 road mi E Luna on US 180, T7S R20W. 05/01/77

MSB 38884. 3.5 mi W Luna near San Francisco River. 04/29/83

MSB 41599. Gila National Forest, Gila Wilderness, Little Creek Trail, T12S R15W sec. 25. 05/28/84

MSB 41600. Gila National Forest, Gila Wilderness, Little Creek Trail, T12S R14W sec. 30-32. 05/28/84

MSB 41605. Gila National Forest, Gila Wilderness, Little Creek Trail, 2-3 mi SE McKenna Spring by Trail, T12S R15W sec. 30-31. 05/28/84

MSB 41612. Gila National Forest, Gila Wilderness, confluence White Creek and West Fork Gila River, White Creek cabin, T12S R16W sec. 1 and 2. 05/30/84

NMSU 4614. Snow Park, T12S R17W sec. 14. 06/06/72

NMSU 4615. McKenna air strip, T12S R15W sec. 19. 08/04/72

NMSU 4616. White Creek, T12S R16W sec. 10. 08/06/72

NMSU 4650. W. Baldy Peak, T12S R18W sec. 16. 09/16/72

NMSU 4651. White Creek cabin, T12S R16W sec. 1. 07/08/72

NMSU 5468. 0.3 road mi W Silver Creek Divide by NM 78. 08/01/78

NMSU 5586. Snow Lake, T10S R16W sec. 20. 09/09/79

WNMU 12015. Lilley Park Spring, T11S R16W sec. 25. 06/18/72

NEW MEXICO: Grant County:

MSB 14204. 2 mi N Mangas Springs, AOR, Rt 260. 04/17/62

MSB 26403. 2 mi S Cherry Creek campground entrance on NM 25-15. 07/22/70

MSB 26404. 2.5 mi S Cherry Creek campground entrance on NM 25-15. 07/22/70

MSB 38922. Gila National Forest, 4.25 mi S, 0.5 mi E Mule Creek on USFS Road 112, T14S R20W sec. 30. 04/30/83

MSB 42878. 2 mi S, 5 mi W Silver City, AOR, US 180, 5.3 km W Continental Divide, T18S R15W sec. 11. 04/18/84

MSB 42879. 7 mi E, 2 mi N Silver City, Fort Bayard, Whiskey Creek Pasture, T17S R13W NE¼ sec. 27. 04/07/84

MSB 42880. 2 mi S, 6 mi W Tyrone, Burro Mountains, Burro Spring Canyon, USFS Road 848, T19S R16W NW¼ sec. 23. 04/25/84

MSB 42882. 6 mi N, 3 mi E Pinos Altos, Pinos Altos Range, USFS Road 149, 2.4 km E NM 15, T15S R13W SE¼ sec. 33. 04/07/84

NMSU 3702. 10 mi SW Silver City. 09/16/67

NMSU 3802. Silver City. 04/08/70

NMSU 4518. 2.5 mi N Silver City. 04/02/74

NMSU 4519. Bear Creek, 5 mi N Pinos Altos. 04/07/74

NMSU 4617. Silver City. 04/11/66

NMSU 4618. Pinos Altos. 05/1-5/68

NMSU 4619. WNMU Campus, Silver City. 05/08/68

NMSU 4620. 5 mi NE Silver City. 04/27/68

NMSU 4621. WNMU Campus, Silver City. 04/24/68

NMSU 4622. 3.5 mi N Silver City, Bear Mountain. 04/25/68

NMSU 4623. 19 mi SW Silver City. 07/16/72
NMSU 4624. Silver City. 04/02/68
NMSU 4625. WNMU Campus, Silver City. 04/12/72
NMSU 4626. Silver City. 04/25/68
NMSU 4627. WNMU Campus, Silver City. 04/12/72
NMSU 4628. 13 mi NE Santa Rita. 04/11/66
NMSU 4629. 2 mi N Silver City. 04/27/72
NMSU 4630. 2 mi NE Fort Bayard. 04/21/72
NMSU 4631. 6 mi N Silver City. 04/03/72
NMSU 4632. 5 mi W Pinos Altos. 05/03/72
NMSU 4633. 1.5 mi W Pinos Altos. 09/27/67
NMSU 4634. Bayard. 04/08/72
NMSU 4635. 5 mi N WNMU Campus. 05/18/70
NMSU 4636. Silver City, WNMU Campus. 05/06/68
NMSU 4637. T13S R17W sec. 28. 06/19/71
NMSU 4638. 13 mi NE Santa Rita. 03/20/66
NMSU 4639. 10 mi N Silver City. 04/04/72
NMSU 4640. Bayard. 03/12/72
NMSU 4641. 2 mi S Cliff. 09/02/71
NMSU 4642. 4 mi N Silver City on Cottage San Road. 04/25/72
NMSU 4643. 4 mi N Silver City. 04/07/72
NMSU 4644. 801 Winifred Street, Bayard. 04/30/72
NMSU 4645. Silver City. 05/03/64
NMSU 4646. Bayard. 05/23/64
NMSU 4648. Silver City, WNMU Campus. 04/17/64
NMSU 4649. Meadow Creek, 24 mi NE Silver City. 04/19/64
NMSU 4972. Grandview mine entrance, 12.5 mi W Sawyers Rock. 05/01/77
NMSU 5307. 1.0 mi N, 0.5 mi E Rice Ranch, T13S R18W sec. 10. 07/07/77
WNMU 12001. 4 mi S Silver City. 04/17/80
WNMU 12002. Silver City. 03/03/76
WNMU 12003. Tyrone. 04/02/76
WNMU 12004. Silver City. 05/10/70
WNMU 12006. 3 mi S Silver City. 10/06/73
WNMU 12007. Silver City. 04/21/77
WNMU 12009. 4 mi N Silver City, T17S R14W sec. 15. 10/01/77
WNMU 12011. Pinos Altos. 04/15/76

WNMU 12012. Silver City, WNMU Campus. 03/10/76

WNMU 12013. Arenas Valley, 2 mi N airport. 03/20/76

WNMU 12014. Silver City. 03/20/76

WNMU 12016. Silver City. 05/01/70

WNMU 12465. 1 mi N Silver City. 08/30/83

WNMU 12466. Ca. 20 mi NW Silver City, Ben Lily Memorial. 08/27/81

WNMU 12492. 7 mi NE Separ, Burro Cienega Creek. 09/11/81

WNMU 12563. Ca. 7.5 mi N Silver City, Pinos Altos. 09/15/81

WNMU 12564. Ca. 20 mi NW Silver City, Ben Lily Memorial. 08/27/81

WNMU 12565. Silver City, Cottage San Road. 09/07/81

WNMU 12566. Silver City, 2418 Swarthmore Street. 07/10/81

WNMU 12581. 4 mi N Silver City. 06/27/81

WNMU 12601. Silver City, 2748 Todd Circle. 07/11/81

Phrynosoma modestum

NEW MEXICO: Grant County:

MSB 13378-13379. Top of cliff, 3.5 mi W Red Rock. 04/13/65

MSB 13815. Red Rock area, T19S R20W sec. 15. 04/15/65

MSB 14322. 8 mi W Red Rock bridge, Blue Creek Canyon area. 04/07/66

MSB 14549. Bajada W of Blue Creek Canyon (W of Red Rock). 04/09/66

MSB 14550. Between Red Rock and Blue Creek Canyon. 04/07/66

MSB 40958. Faywood (SE of Silver City). 05/30/58

MSB 42876-42877. Red Rock Wildlife Experimental Area, ca 2.6 km NE Red Rock, T18S R18W NW¼ sec. 28. 06/18/84

NMSU 3803. 12 mi SE Hurley. 07/16/72

NMSU 4520. 2 mi NE Red Rock. 04/06/74

NMSU 4715. 2 mi N Red Rock bridge. 05/04/68

NMSU 5310. Red Rock Canyon, T18S R18W NE¼ sec. 31. 07/31/77

WNMU 12020. Red Rock, W of Gila River. 04/26/63

WNMU 12022. 0.5 mi N of old bridge at Red Rock. 04/26/68

WNMU 12023. Red Rock. 04/27/68

NEW MEXICO: Hidalgo County:

MSB 176. 18 mi NW Lordsburg, T20S R19W sec. 5. 05/18/54

MSB 12381. 2 mi E Virden bridge. 04/15/65

MSB 12696. 1 mi E Virden bridge. 04/16/65

MSB 12900. 1 mi W Virden bridge. 04/17/65

MSB 13788-13789. Red Rock area, T19S R20W sec. 15. 04/15/65

MSB 13790. Red Rock area, T19S R20W sec. 9. 04/16/65

MSB 14321. 2 mi S Virden, Hwy 82. 04/09/66

NMSU 5211. Windmill Pearson Mesa, T19S R21W sec. 22. 08/17/77

NMSU 5212-5215. Dump, 1.8 road mi W jct. NM 530 and NM 92, T19S R21W sec. 14 or 15. 08/17/77

WNMU 12021. 3 mi S Virden. 05/04/68

Sceloporus clarkii

NEW MEXICO: Catron County:

MSB 2390. Rio San Francisco, 0.75 mi below Frisco Hot Springs. 09/05/48

MSB 4238, 10839. Glenwood. 05/14/60, 05/25/63

MSB 4239, 11953. Glenwood Fish Hatchery. 05/13/60, 05/09/64

MSB 4240-4241, 6504-6505. Whitewater Canyon E of Glenwood. 06/14/59, 04/19/62

MSB 5105-5108. Whitewater Canyon above Glenwood. 08/16/61

MSB 5258. 0.5 mi E Glenwood Fish Hatchery, Whitewater Canyon. 04/16/61

MSB 6507, 11949. San Francisco Hot Springs. 04/18/62, 05/09/64

MSB 11196. Whitewater Canyon, 5 mi from Glenwood. 05/25/63

MSB 11281-11284. Catwalk near Glenwood. 05/25/63

MSB 11416. Whitewater Canyon camping area. 05/25/63

MSB 11453. Whitewater recreation area. 05/19/63

MSB 19489. 2 mi S Pleasanton, Frisco Hot Springs. 05/18/68

MSB 19490. Mogollon Mountains, Whitewater Canyon. 05/18/68

MSB 38848-38852. San Francisco Hot Springs, 2 mi S, 0.25 mi W Pleasanton. 04/30/83

MSB 39293-39295. 2.2 road mi S jct. US 180/NM 78E, just N of Glenwood. 05/01/83

MSB 42930. 10 mi N, 3 mi W Glenwood, along San Francisco River between Devils Creek (T9S R20W sec. 34) and Long Canyon (T10S R20W sec. 9). 09/18/84

MSB 42931. 2 mi N, 3mi W Cliff Dwelling National Monument, along West Fork Gila River ca. 8 km downstream of White Rocks Canyon, T12S R14W SE¼ sec. 17. 09/12/84

NMSU 4432. Glenwood Fish Hatchery. 05/16/66

NMSU 4433. Whitewater Canyon, 6 mi E Glenwood. 06/02/64

NEW MEXICO: Grant County:

MSB 2389. 0.5 mi above Turkey Creek on Gila River. 06/10/53

MSB 5794. Mogollon Creek below the Falls, T13S R18W sec. 13. 08/29/49

MSB 6323. 4.5 mi E Mule Creek. 09/02/61

MSB 6324. 3 mi E Mule Creek. 09/02/61

MSB 6325. 0.7 mi NE jct 61-180. 09/03/61

MSB 8611. 2 mi N Red Rock. 05/22/62

MSB 11116-11117. 4 mi from Rt. 260, Little Dry Creek Canyon. 05/26/63

MSB 12144. "Fuller Farm," Gila Valley. 06/19/63

MSB 12391-12392. 7.6 mi E on Tyrone turnoff from Hwy 464. 04/15/65

MSB 12393-12395. 12.7 mi E on Tyrone turnoff from Hwy 464. 04/15/65

MSB 13571. 13 mi ESE Red Rock, Tyrone Road. 04/17/65

MSB 13785. Red Rock area, T19S R19W sec. 16. 04/15/65

MSB 14347. Red Rock bridge. 04/08/66

MSB 14348. 8 mi W Red Rock bridge, Blue Creek Canyon area. 04/07/66

MSB 14559. Between Red Rock and Blue Creek Canyon. 04/07/66

MSB 14560. Blue Creek Canyon, near Red Rock. 04/09/66

MSB 14798. Red Rock bridge area. 04/08/66

MSB 15295. 13 mi S Silver City. 04/10/66

MSB 16245. Burro Springs, Gila National Forest, R16W T19S sec. 30. 04/10/66

MSB 22258. 4.2 mi NW Gila River bridge at Red Rock. 08/09/69

MSB 22259. 8.0 mi N Gila River bridge at Red Rock. 08/09/69

MSB 22260. 0.2 mi SW Gila River bridge at Red Rock. 08/09/69

MSB 38925. Gila National Forest, 4.5 mi S, 0.5 mi E Mule Creek, USFS Road 112, T14S R20W sec. 30. 08/30/83

MSB 41776. 13.2 mi NE Gila, Turkey Creek between Skeleton and Brush Canyons, T14S R16W sec. 3. 08/28/84

MSB 42900. Ash Creek near Lydian Peak, ca. 4.8 km NE Red Rock, T17S R18W SE¼ sec. 16. 04/11/84

MSB 42901. 7 mi S, 7 mi E Riverside, Burro Mountains, Bar Six Canyon, USFS Road 848, T19S R16W NW¼ sec. 23. 05/11/84

MSB 42902-42905. 7 mi S, 7 mi E Riverside, Burro Mountains, Bar Six Canyon, USFS Road 848, T19S R16W NW¼ sec. 23. 06/03/84

MSB 42906. 5 mi S, 17 mi W Riverside, along Kemp Creek at Kemp Corral, SW of Kemp Peak, T17S R20W sec. 2. 06/12/84

MSB 42907. 7 mi S, 7 mi E Riverside, Burro Mountains, Bar Six Canyon, USFS Road 848, T19S R16W NW¼ sec. 23. 06/30/84

MSB 42908. Red Rock Wildlife Experimental Area, ca. 2.6 km NE Red Rock, T18S R18W NE¼ sec. 29. 04/25/84

MSB 42909-42910. 6 mi S, 14 mi W Cliff, Blue Creek at Chick Canyon, T16S R19W SE¼ sec. 31. 05/30/84

MSB 42911-42912. 5 mi S, 14 mi W Cliff, abandoned homestead beside Blue Creek ca. 1.4 km N jct. Blue Creek and Chick Canyon, T16S R19W SE¼ sec. 30. 05/30/84

MSB 42913-42916. 4 mi S, 14 mi W Cliff, along Blue Creek between Big Canyon (T16S R19W sec. 19) and Thompson Canyon (T16S R20W sec. 14). 05/29/84

MSB 42917-42918. Ash Creek near Lydian Peak, ca. 4.8 km NE Red Rock, T17S R18W SE¼ sec. 16. 06/27/84

MSB 42919-42922. Ash Creek near Lydian Peak, ca. 4.8 km NE Red Rock, T17S R18W SE¼ sec. 16. 06/18/84

MSB 42923-42924. 7 mi E, 14 mi N Gila, along Turkey Creek between Skeleton Canyon (T13S R16W NW¼ sec. 10) and Turkey Creek Hot Springs (T13S R16W sec. 34). 06/02/84

MSB 42925. 5 mi S, 15 mi W Riverside, along Cherry Creek from Lemmons Creek (T16S R20W sec. 26) to Blue Creek (T16S R19W sec. 31). 06/12/84

MSB 42926. Ash Creek arroyo, ca. 3.5 km NE Red Rock, T17S R18W NW¼ sec. 21. 06/18/84

MSB 42927. Beside Gila River ca. 4 km W Red Rock, Stillman Ranch, T19S R19W SW¼ sec. 2. 05/26/84

MSB 42932. Ash Creek near Lydian Peak, ca. 4.8 km NE Red Rock, T17S R18W SE¼ sec. 16. 08/11/84 (Skeleton)

NMSU 2116. McCauley Ranch, Red Rock. 05/11/64

NMSU 3680. 6 mi NE Cliff, mouth Mogollon Creek, 05/03/62

NMSU 3681. 3 mi S Pinos Altos. 04/22/66

NMSU 3682. Ash Creek. 04/12/72

NMSU 3683. 14 mi SW Cliff. 05/12/72

NMSU 3693. 19 mi SW Silver City. 08/31/72

NMSU 3694. 19 mi SW Silver City. 08/19/72

NMSU 3796. Ash Creek Canyon, 16 mi S Cliff. 05/12/72

NMSU 4403. Bear Mountain, 3.5 mi N Silver City. 10/10/67

NMSU 4404. Red Rock. 05/04/68

NMSU 4405. 16 mi S Cliff on Slate Creek. 05/14/72

NMSU 4406. Chloride Flat, 1 mi W Silver City. 05/01/68

NMSU 4408. 8 mi N Bayard. 10/01/67

NMSU 4409. 10 mi NE Santa Rita. 04/24/66

NMSU 4410. 2 mi E Tyrone. 05/05/68

NMSU 4411. 2 mi SW Silver City. 04/15/68

NMSU 4412. WNMU Campus, Silver City. 04/15/66

NMSU 4413. 7 mi NE Santa Rita. 03/20/66

NMSU 4414. 5 mi N WNMU Campus. 05/12/70

NMSU 4415. 15 mi NE Hurley. 05/03/68

NMSU 4416. 1 mi S Red Rock bridge. 05/04/68

NMSU 4417. Mogollon Creek, 0.5 mi W Gila River. 05/07/68

NMSU 4418. 3 mi S Red Rock bridge. 05/04/68

NMSU 4419. 5 mi N WNMU Campus. 05/12/70

NMSU 4420. 4.5 mi N Silver City. 04/27/68

NMSU 4421. 1 mi W Silver City. 05/05/66

NMSU 4422. 6 mi NE Cliff, Mogollon Creek. 05/03/62

NMSU 4423. 7 mi NW Silver City. 05/07/68

NMSU 4424. Silver City. 05/01/68

NMSU 4425. Red Rock, 2 mi N old bridge. 04/26/67

NMSU 4426, 4435. 6 mi NE Cliff, Mogollon Creek. 05/03/62

NMSU 4475. 6 mi N Silver City. 04/03/72

NMSU 4476. Ash Creek, 14 mi SW Cliff. 05/05/72

NMSU 4477. 6 mi NE Cliff, mouth Mogollon Creek. 05/03/62

NMSU 4478. Cameron Creek, 3 mi W Hurley. 05/24/64

NMSU 4479. Gila Hot Springs, West Fork Gila River. 04/19/63

NMSU 4480. 8 mi NE Santa Rita. 04/18/66

NMSU 4481. 0.25 mi SE Little Walnut. 04/12/72

NMSU 4482. Burro Mountains. 08/01/73

NMSU 4483. 4 mi S Cliff, Gila River. 09/24/71

NMSU 4525. Ash Creek. 04/13/72

NMSU 4526. 14 mi S Cliff, T18S R17W sec. 6. 04/13/74

NMSU 4527. Shine mine, 25.5 mi SW Silver City. 04/02/74

NMSU 4550. 15 mi S Cliff, T18S R17W sec. 7. 04/14/74

NMSU 5147. Lemmons Canyon, T16S R20W sec. 22. 08/22/77

NMSU 5148. Moonhull Canyon, T17S R17W NE¼ sec. 19. 08/26/77

NMSU 5149. Sycamore Canyon, Norris Ranch, T16S R18W NE¼ sec. 15. 08/27/77

NMSU 5150. Gila River, 0.8 mi S, 0.2 mi W gaging station, T14S R16W SW¼ sec. 30. 08/28/77

NMSU 5151. Red Rock, T18S R18W SW¼ sec. 32. 09/27/77

NMSU 5198. 0.3 mi E Gila River, 0.6 mi S Mogollon creek mouth, T14S R16W sec. 31. 07/05/77

NMSU 5199. Mouth Mogollon Creek, T14S R16W sec. 31. 07/06/77

NMSU 5200. 0.5 mi W Gila River, 0.7 mi N Mogollon Creek, T14S R17W sec. 25. 07/06/77

NMSU 5220. Blue Creek at mouth Thompson Canyon, T16S R20W NE¼ sec. 14. 08/21/77

NMSU 5266. Bear Creek, just below "The Box" Hooker Ranch, T15S R16W sec. 20 or 29. 07/14/77

NMSU 5267. 0.2 mi E Gila River, 0.9 mi N Spar Canyon, Gila National Forest, T15S R16W sec. 6. 07/06/77

NMSU 5268. Arroyo E end Sacaton landing strip, Gila National Forest, T13S R18W sec. 11. 07/08/77

NMSU 5269. Stock tank, 0.3 mi N, 1.6 mi W Dale McCauley Ranch, T17S R17W sec. 18. 07/10/77

NMSU 5308. Nichols Canyon, T19S R19W NW¼ sec. 20. 07/28/77

NMSU 5340. Ash Creek, T18S R18W sec. 16. 09/17/77

WNMU 12163. Burro Mountains. 10/15/73

WNMU 12165, 12167-12168, 12172, 12174. 4.5 mi WSW Red Rock, Lower Box Gila River. 09/17/77

WNMU 12170. 7 mi N Silver City. 08/13/73

WNMU 12171. 0.25 mi W Gila River bridge at Red Rock. 05/11/68

WNMU 12456. 1 mi N Red Rock. 06/15/79

WNMU 12457. 7 mi S Cliff. 09/17/83

WNMU 12458. 4.1 mi NW Red Rock. 04/25/76

WNMU 12584. 4 mi N Silver City. 06/27/81

WNMU 12587. 3 mi N Silver City. 09/13/81

WNMU 12597. 1.25 mi N Silver City. 06/06/81

NEW MEXICO: Hidalgo County:

MSB 12899. 1 mi SE Virden bridge, T19S R20W. 04/17/65

Sceloporus poinsettii

NEW MEXICO: Catron County:

MSB 4202-4215. Wall Lake. 08/15/59

MSB 4231. 2 mi N Wall Lake. 05/08/60

MSB 4233. Willow Creek, Mogollon Mountains. 04/19/58

MSB 11460. Whitewater Canyon, Mogollon Mountains. 05/25/63

MSB 20898. Rt. 61, 1 mi N Wall Lake. 07/13/69

MSB 20902-20903. Rt. 61, 3 mi N Wall Lake. 07/13/69

MSB 22250-22257. S end of Wall Lake on cliff face. 07/13/69

MSB 22348. Railroad Canyon. 06/10/70

MSB 32915. Along NM 78, in Railroad Canyon, 15 mi NE of Beaverhead Ranger Station. 06/15/75

MSB 41622. Gila National Forest, Gila Wilderness, West Fork Gila River, 4-6 mi upstream, Cliff Dwelling National Monument, T11S R14W sec. 11, 12, 16, 17, 18. 05/31/84

MSB 42795. Along USFS Trail 28, ca. 1.6 km N jct. West Fork Gila River (USFS Trail no. 151) ca. 2.7 km NW Gila Cliff Dwellings National Monument, T12S R14W SW¼ sec. 9. 09/12/84

NMSU 3689. Mogollon Creek, T12S R17W sec. 36. 08/08/72

NMSU 4111. T12S R15W sec. 3. 08/10/71

NMSU 4112. T12S R14W sec. 18. 08/15/71

NEW MEXICO: Grant County:

MSB 4232. 25.7 road mi S Wall Lake. 08/28/58

MSB 17563-17565. Lake Roberts, 16 mi N and 6 mi E Silver City, T14S R13W. 06/23/66

MSB 23124. On 756, 1/8 mi from jct with 255. 07/20/70

MSB 23129. 0.5 mi N Cherry Creek campground on NM 25-15. 07/20/70

MSB 23130. 2 1/8 mi S Cherry Creek campground entrance on NM 25-15. 07/20/70

MSB 23131. 1.5 mi E Cherry Creek campground entrance on NM 25-15. 07/20/70

MSB 40944-40947. 7 mi NE Sivler City; Pinos Altos. 05/31/58

NMSU 1947. Iron Creek camp. 07/24/62.

NMSU 3759. 10 mi S Silver City. 04/01/72

NMSU 3760. 12 mi W Silver City. 04/24/72

NMSU 3761. 0.25 mi N Little Walnut campground. 08/31/67

NMSU 3798. 0.25 mi W Silver City. 05/07/70

NMSU 3799. 1 mi SW Cherry Creek. 05/07/68

NMSU 4113. Ben Lily Monument, N of Pinos Altos. 04/14/66

NMSU 4114. 7 mi NW Silver City. 05/07/68

NMSU 4115. Ash Springs Canyon. 05/07/68

WNMU 12180. 0.5 mi N WNMU Campus, Silver City. 05/11/70

WNMU 12182. 7 mi N Silver City. 04/07/80

WNMU 12183. Pinos Altos. 10/25/69

WNMU 12185. 4.5 mi NE Silver City. 09/28/80

WNMU 12452. 3 mi NNW Pinos Altos. 08/13/81

WNMU 12453. Cherry Creek, 11.9 mi N Silver City. 09/16/81

WNMU 12454, 12589 Ca. 20 mi NW Silver City, Ben Lily Lake. 08/27/81

WNMU 12577-12580. 4 mi N Silver City. 06/27/81

WNMU 12585. 3 mi N Silver City. 09/19/81

Sceloporus undulatus

NEW MEXICO: Catron County:

MSB 1813. Rio San Francisco, 10 mi below Luna

MSB 1830. Tularosa River, 5 mi above Reserve, T6S R18W sec. 33. 09/04/48

MSB 2392-2393. Cottonwood Canyon, Gila National Forest near US 260. 06/07/50

MSB 4383. 2 mi N Wall Lake. 05/08/60

MSB 4430-4432. 4 mi E, 2 mi N Aragon. 06/13/59

MSB 4438. 10 mi N Alma, along San Francisco River. 06/13/59

MSB 4451. Whitewater Canyon, Glenwood. 06/14/59

MSB 4757, 5104. Whitewater Canyon, Glenwood

MSB 5253. Glenwood Fish Hatchery. 04/15/61

MSB 5254-5255. 19.1 mi N Glenwood on US 12. 04/16/61

MSB 6123-6129. 5 mi NE Reserve. 06/07/60

MSB 6138. Dry Creek Camp, N Fork Gila River. 06/07/50

MSB 6147. 1 mi NE Reserve. 06/06/50

MSB 6209. 5 mi E Aragon. 09/01/61

MSB 6230-6231. Pueblo Creek at Pueblo Park, T8S R21W sec. 23. 09/07/48

MSB 6249. Rio San Francisco about 5 mi above Luna, T5S R21W sec. 31. 09/06/48

MSB 6250. Dry Blue River Canyon, ca. 3 mi above mouth. 09/06/48

MSB 7161. Wall Lake

MSB 7285-7287. Mogollon. 08/28/62

MSB 11111. 2 mi E Los Olmos Guest Ranch. 05/25/63

MSB 11536. NM 78, 6 mi W Mogollon. 05/24/63

MSB 11952. 1 mi W Will Creek Camp, Mogollon Mountains. 05/10/64

MSB 13650-13651. Glenwood Fish Hatchery. 05/09/64

MSB 21216-21222. S end Wall Lake. 07/13/69

MSB 26396. Sled Sladdle, Mogollon. 07/06/70

MSB 32167. Canyon of San Francisco River, 0.8 road mi E intersection of river and US 180 ca. 0.5 mi S Hwy. 05/01/77

MSB 32254. 4 road mi W Luna on US 180, San Francisco River, T5N R21W SE¼ sec. 34. 05/01/77

MSB 32326, 32380, 32459. 4 road mi W Luna via US 180 Canyon of San Francisco River, 0.3 mi E of intersection river and US 180. 05/01/77

MSB 38879-38883. 3.5 mi W Luna near San Francisco River. 04/29/83

MSB 38885-38888. 4 mi W Luna on US 180, near San Francisco River. 04/29/83

MSB 38905-38909, 38912. 3.5 mi W Luna on US 180 near San Francisco River. 04/29/83

MSB 38952. Whitewater Recreation area 4 mi N, 3 mi E Glenwood, T11S R19W sec. 5. 04/30/83

MSB 39291-39292. Ca. 6 mi W, 1 mi S Reserve at jct. US 180/NM 12. 05/01/83

MSB 41583. Gila National Forest, 1.5 mi S, 2 mi W Gila Cliff Dwellings National Monument, T12S R14W sec. 33. 05/27/84

MSB 41587-41588. Gila National Forest, Gila Wilderness, Little Creek Trail, T12S R14W/15W sec. 25/30-31-32. 05/27/84

MSB 41595-41598. Gila National Forest, Gila Wilderness, Little Creek Trail, T12S R14W/15W sec. 25/30-31-32. 05/08/84

MSB 41613-41614. Gila National Forest, Gila Wilderness, Hell's Hole at West Fork Gila River, T12S R15W sec. 4. 05/31/84

MSB 41617. Gila National Forest, Gila Wilderness, West Fork Gila River, 10 mi upstream Cliff Dwellings National Monument, T12S R15W sec. 9 and 10. 05/31/84

MSB 43122. 20 mi N, 17 mi E Gila, along West Fork Gila River, ca. 1.6 km downstream of White Rocks Canyon, T12S R14W NE¼ sec. 18. 09/12/84

NMSU 636. Willow Creek Ranger Station. 05/06/61

NMSU 3690. White Creek Cabin, T12S R16W sec. 1. 07/08/72

NMSU 4353. 20 mi SSE Luna. 06/14/60 .

NMSU 4354. Gila Cliff Dwellings, ca. 35 mi N Silver City. 05/06/64

NMSU 4437. T12S R16W sec. 12. 06/18/71

NMSU 5467. 2.7 road mi W Silver Creek divide by NM 78. 07/31/78

NEW MEXICO: Grant County:

MSB 1825. Gila River at Red Rock. 08/24/49

MSB 4452-4453, 4457. Cliff. 06/13/59

MSB 6210. 4.5 mi E Mule Creek. 09/02/61

MSB 6252. Ca. 15 mi S Mule Creek. 06/11/51

MSB 6511-6514. 3 mi W (by road) Mule Creek. 04/03/62

MSB 10211. Big Dry Creek, 1 mi E Rt. 260. 04/17/62

MSB 11113. 2 mi from Rt. 260, Little Dry Creek Canyon. 05/26/63

MSB 13316. Red Rock area, T19S R16W sec. 17. 04/17/65

MSB 13381. 12 mi E Tyrone turnoff from Red Rock. 04/15/65

MSB 13797-1379. Red Rock area, T19S R20W sec. 20. 04/17/65

MSB 14338-14339. 6.8 mi S Silver City, Hwy 90. 04/09/66

MSB 14797. Red Rock bridge area. 04/07/66

MSB 15355-15358. Stock tank 8.8 mi SW Silver City. 04/09/66

MSB 32285, 32298-32301. Near bridge on Hwy 180 over Gila River, S of Cliff, T15S R17W. 04/30/77

MSB 38921. Gila National Forest, 4.25 m S, 0.5 mi E Mule Creek, USFS Road 112, T14S R20W sec. 30. 04/30/83

MSB 38922. Gila National Forest, 4.5 mi S, 0.5 mi E Mule Creek, USFS Road 112, T14S R20W sec. 30. 04/30/83

MSB 38935-38938. Sawmill Creek, 3 mi S, 0.75 mi E Mule Creek, USFS Road 112, T14S R20W sec. 18. 04/30/83

MSB 38940-38943. Mule Creek (town), 9 mi W, 0.75 mi S jct. US 180/NM 78. 04/30/83

MSB 40918-40919. Faywood. 05/30/58

MSB 41584. Gila National Forest, Little Creek, T13S R14W sec. 4. 05/27/84

MSB 43098. Fort Bayard at Whiskey Creek Pasture, R13W T17S NE¼ sec. 27

MSB 43099. Burro Mountains, Bar Six Canyon, USFS Road 848, T19S R16W NW¼ sec. 23. 03/14/84

MSB 43100-43101. Gila River ca. 2.9 km NE Cliff, NM 293 at Salado Site Indian Ruins, T15S R17W NW¼ sec. 23. 04/17/84

MSB 43103. Stillman Ranch, ca. 4 km W Red Rock, T19S R19W SW¼ sec. 2. 05/11/84

MSB 43104-43106. Burro Mountains, Bar Six Canyon, USFS Road 848, T19S R16W NW¼ sec. 23. 03/25/84

MSB 43107. Red Rock Wildlife Experimental Area, ca. 1.7 km NE Red Rock, T18S R18W NW¼ sec. 28. 05/10/84

MSB 43108. Red Rock Wildlife Experimental Area, ca. 2.6 km NE Red Rock, T18S R18W NE¼ sec. 29. 05/10/84

MSB 43109. Burro Mountains, Burro Spring Canyon, USFS Road 848, T19S R16W NW¼ sec. 23. 03/25/84

MSB 43110. 1 mi S, 13.5 mi W Riverside, Steep Hollow Tank in Steep Hollow Canyon, T16S R19W NW¼ sec. 17. 05/31/84

MSB 43111. Stillman Ranch ca. 2.5 mi W Red Rock, T19S R19W SW¼ sec. 2

MSB 43112. Burro Mountains, Bar Six Canyon, USFS Road 848, T19S R16W NW¼ sec. 23. 06/30/84

MSB 43113. 19 mi W, 5 mi S Buckhorn, along Apache Creek, ca. 2.4 km S Brushy Mountain, USFS Road 211, T15S R21W NE¼ sec. 35. 06/11/84

MSB 43114-43117. Stillman Ranch, ca. 4 km W Red Rock, T19S R19W SW¼ sec. 2. 06/18/84

MSB 43118. Fort Bayard, Whiskey Creek Pasture, T17S R13W NE¼ sec. 27. 07/01/84

MSB 43119. Pinos Altos Range, USFS Road 149, 2.4 km E NM 15, T15S R13W SE¼ sec. 33. 07/01/84

MSB 43120, 43123-43124. Gila River ca. 2.9 km NE Cliff, NM 293 at Salado Site Indian Ruins, T15S R17W NW¼ sec. 23. 05/17/84

MSB 43121. Stillman Ranch, ca. 4 km W Red Rock, T19S R19W SW¼ sec. 2. 05/26/84

MSB 43125. Pinos Altos Range, USFS Road 149, 2.4 km E NM 15, T15S R13W SE¼ sec. 33. 11/02/84

NMSU 1948. Iron Creek camp. 07/24/62

NMSU 2060, 2066, 2071. 1 mi S Hurley. 05/17/64

NMSU 3691. 12 mi SW Silver City. 08/31/72

NMSU 3692. 19 mi SW Silver City. 07/14/72

NMSU 3781. Whitewater Station. 04/12/68

NMSU 3782. WNMU Campus Health Center. 04/20/72

NMSU 3783. 1 mi E Cliff. 04/28/68

NMSU 3785-3787, 3789-3791. 19 mi SW Silver City. 08/31/82

NMSU 3788. 2 mi SW Silver City. 08/31/72

NMSU 3792. Lake below Ben Lily Memorial. 04/30/72

NMSU 3793. WNMU Campus, Science Building. 03/18/66

NMSU 3794. 13 mi S Silver City, ridge road. 04/28/68

NMSU 3795. 3 mi N Silver City. 05/01/68

NMSU 3800. WNMU Campus, Silver City. 04/24/70

NMSU 3801. 5 mi N Silver City. 05/03/72

NMSU 4083. 19 mi SW Silver City. 07/16/72

NMSU 4084. 10 mi NE Santa Rita. 04/24/66

NMSU 4293. 0.25 mi N Little Walnut Campground. 08/31/67

NMSU 4294. Santa Rita. 03/03/64

NMSU 4295. 0.5 mi W Gila, Gila River. 05/22/65

NMSU 4296. Faywood Hot Springs. 04/24/64

NMSU 4297. 1 mi W Gila on Gila River bank. 04/25/68

NMSU 4298. WNMU Campus, Silver City. 05/10/66

NMSU 4299. 1 mi W Gila, Gila River. 05/11/66

NMSU 4300. 1 mi W Gila. 05/22/66

NMSU 4302. Silver City. 04/11/66

NMSU 4303. WNMU Campus, Silver City. 05/02/68

NMSU 4304. 13 mi NE Santa Rita. 05/11/66

NMSU 4305-4306. Whitewater Station. 04/12/68

NMSU 4307. WNMU Campus, Silver City. 05/14/66

NMSU 4308. 0.5 mi W Gila, Gila River. 04/23/64

NMSU 4309. Hurley. 05/22/64

NMSU 4310. 14 mi SE Hurley. 04/23/64

NMSU 4311. 19 mi SW Silver City. 08/31/72

NMSU 4312. WNMU Campus, Silver City. 04/03/66

NMSU 4313. 8 mi S Silver City, 5400 ft. 04/12/68

NMSU 4314. 0.75 mi W Gila. 04/25/64

NMSU 4315. 14 mi SE Hurley. 04/24/64

NMSU 4316. WNMU Campus, Silver City. 04/16/72

NMSU 4317. 3 mi N Silver City. 05/01/68

NMSU 4318. 1 mi W Gila on Gila River. 04/28/68

NMSU 4319. 1 mi W Gila on Gila River. 05/11/64

NMSU 4322. Whitewater Station. 04/12/68

NMSU 4323. Lake below Ben Lily Memorial. 04/30/72

NMSU 4324. 1 mi NE Cliff. 04/27/68

NMSU 4325. 0.5 mi W Gila. 04/26/68

NMSU 4326. 0.5 mi W Gila, Gila River. 04/23/64

NMSU 4327. WNMU Campus, Silver City. 05/01/68

NMSU 4328. 8 mi SE Silver City, Ridge Road. 04/28/68

NMSU 4330-4331. Gila River, 1 mi W Gila. 05/11/64

NMSU 4332. 1 mi N Gila. 05/20/64

NMSU 4333. 8 mi S Silver City. 04/12/68

NMSU 4334. 1 mi W Hurley. 04/22/66

NMSU 4335. 0.5 mi W Gila. 04/26/68

NMSU 4336. WNMU Campus, Silver City. 04/27/70

NMSU 4337. 13 mi S Silver City, Ridge Road. 04/28/68

NMSU 4338. 2 mi N Gila. 05/14/68

NMSU 4339. 3 mi S Silver City. 04/30/68

NMSU 4340. WNMU Campus, Silver City. 05/03/68

NMSU 4341. 9.5 mi S Silver City. 04/29/66

NMSU 4342. Cherry Creek. 03/14/64

NMSU 4343. 0.5 mi W Gila, Gila River Valley. 04/12/62

NMSU 4344. 0.5 mi W Gila, Gila River Valley. 04/23/64

NMSU 4345. WNMU Campus, Silver City. 04/03/66

NMSU 4346. Silver City. 03/12/68

NMSU 4347. Gila River, 0.5 mi N Gila. 05/14/68

NMSU 4348. Cliff, Gila River. 10/25/68

NMSU 4350. 1 mi W Gila on Gila River. 04/28/68

NMSU 4351. 0.5 mi W Gila, Gila River Valley. 04/12/62

NMSU 4352. 6 mi NE Cliff, mouth Mogollon Creek. 05/25/61

NMSU 4439. Ben Lily Memorial, 11 mi N Silver City. 04/18/72

NMSU 4538. Silver City. 04/01/74

NMSU 4539. Silver City. 04/16/74

NMSU 4540. Alaw Springs, 10 mi N Silver City. 04/16/74

NMSU 4541. White Signal, Burro Mountains. 04/05/74

NMSU 4542. 2 mi NW Hurley. 03/23/74

NMSU 4543. Silver City. 03/25/74

NMSU 4544. Mouth Foxtail Canyon, T18S R17W sec. 6

NMSU 4545. 4.5 mi N Santa Rita. 03/20/74

NMSU 4546. 12 mi SE Red Rock. 04/07/74

NMSU 4547. WNMU Campus, 1 mi NW Post Office. 04/24/74

NMSU 4548. 4.5 mi N Santa Rita. 03/20/74

NMSU 5224. Gila River below mouth Blue Creek, T19S R19W sec. 17. 08/11/77

NMSU 5225. Blue Creek, T16S R20W SE¼ sec. 14. 08/19/77

NMSU 5226. Old ranch, Blue Creek, T16S R20W NE¼ sec. 16. 08/19/77

NMSU 5227. Alexander Canyon, T16S R20W NE¼ sec. 17. 08/20/77

NMSU 5251. 1 mi S, 0.6 mi W old ranch, T16S R20W NW¼ sec. 21. 08/23/77

NMSU 5311. Duck Creek at mouth Horse Lake Canyon, T15S R17W sec. 19. 07/15/77

NMSU 5312. Gila River below mouth Ash Creek, T18S R18W sec. 28. 07/31/77

WNMU 12143. 9 mi S Silver City. 04/01/74

WNMU 12144. Mouth of Mogollon Creek, 5 mi N Cliff. 04/11/70

WNMU 12146. 7 mi NE Silver City. 04/07/80

WNMU 12152. Silver City, WNMU Campus. 03/20/76

WNMU 12154. Silver City, WNMU Campus. 04/11/76

WNMU 12155. 3 mi S Silver City. 04/17/74

WNMU 12156. Silver City, WNMU Campus. 04/11/76

WNMU 12157. Silver City, WNMU Campus. 03/20/76

WNMU 12160. Burro Mountain Homestead. 03/20/76

WNMU 12202. Gila River, 1 mi N Gila. 05/11/64

WNMU 12205. 2.25 mi N Pinos Altos. 04/23/66

WNMU 12208. Silver City, WNMU Campus. 05/13/70

WNMU 12459. 3mi NNW Pinos Altos. 09/13/81

WNMU 12460. Red Rock. 06/12/79

WNMU 12461. 2.5 mi N Red Rock, Ash Creek. 05/28/79

WNMU 12486. 12 mile well. 09/12/81

WNMU 12494. 7 mi NE Separ, Burro Cienega Creek. 09/11/81

WNMU 12574. 7 mi NE Separ, Jarrell Ranch. 09/11/81

WNMU 12591–12592. Tyrone, 4.2 mi S Silver City. 05/09/81

WNMU 12593-12595. 4.5 mi S Silver City. 06/18/81

WNMU 12596. Silver City, WNMU Campus. 04/13/81

NEW MEXICO: Hidalgo County:

MSB-12141. 15 mi NNW Lordsburg. 10/30/63

MSB 33813. 1.5 mi S, 1 mi E Virden. 05/28/78

NMSU 3780. 7 mi NW Lordsburg. 10/01/72

NMSU 4355. 10 mi N Lordsburg. 04/20/68

NMSU 4860. 10 mi N Lordsburg. 04/20/68

NMSU 6085-6086. 9 mi N, 9 mi E Lordsburg, T21S R17W SE¼ sec. 11. 10/07/81

Urosaurus ornatus

NEW MEXICO: Catron County:

MSB 2361. Rio San Francisco, ca. 5 mi above Luna, T5S R21W sec. 31. 09/06/48

MSB 2364. Cottonwood Canyon, Gila National Forest near US 60, S of Reserve. 06/07/50

MSB 4322-4327. Whitewater Canyon above the Catwalk. 04/15/61

MSB 4382, 4384. 2 mi N Wall Lake. 05/08/60

MSB 4409-4411. 4 mi E, 2 mi N Aragon. 06/13/59

MSB 4417-4418. Mogollon

MSB 4763-4768. Whitewater Canyon, Glenwood

MSB 4770. 19 mi E Glenwood

MSB 5301, 5303-5305. Glenwood Fish Hatchery. 04/15/61

MSB 5302. 19.1 mi N Glenwood on NM 12. 04/16/61

MSB 5306-5307. 2 mi E Glenwood Fish Hatchery, Whitewater Canyon. 04/16/61

MSB 5420-5421. Whitewater Canyon above the Catwalk. 04/15/61

MSB 5422. 1 mi NE Glenwood. 04/16/61

MSB 5423. Dump, 2 mi SW Mogollon. 04/16/61

MSB 5424. Fish Hatchery, Glenwood. 04/15/61

MSB 6144-6146. Dry Creek Camp, N Fork Gila. 06/07/50

MSB 6358. San Francisco Hot Springs. 09/06/61

MSB 6486-6487. San Francisco Hot Springs. 04/18/62

MSB 6488-6493. State Fish Hatcher, Glenwood. 04/19/62

MSB 6494-6503. Whitewater Canyon, E of Glenwood. 04/19/62

MSB 7162-7164. Wall Lake

MSB 8636. 2 mi NE Aragon. 10/25/62

MSB 8637. Little Dry Creek. 10/26/62

MSB 10858. Glenwood. 05/25/63

MSB 11107, 11279, 11463. Fish Hatchery, Glenwood. 05/25/63

MSB 11462. 1 mi S Pleasanton. 05/19/63

MSB 11537. 1 mi S Pleasanton, 4 mi W near San Francisco River. 05/24/63

MSB 11539-11540. Glenwood Fish Hatchery. 05/25/63

MSB 11940. San Francisco Hot Springs. 05/09/64

MSB 11945-11946. Willow Creek Area, Mogollon Mountains. 05/24/64

MSB 20048-20050. Whitewater Canyon, 2 mi upstream from campground. 05/18/68

MSB 21865-21872. S end Wall Lake. 06/13/69

MSB 21876-21879. Apache Creek. 06/22/69

MSB 26398. 0.25 mi above Whitewater Creek on Old Powerhouse Road. 07/07/70

MSB 26400. 0.9 mi W Whitewater Creek on Deloche Trail. 07/12/70

MSB 32327, 32329. 4 road mi W Luna via US 180, Canyon of San Francisco River, 0.3 road mi E of intersection River and US 180. 05/01/77

MSB 32934. Wall Lake, along stream W of lake. 06/14/75

MSB 38856-38858. San Francisco Hot Springs, 2 mi S, 0.25 mi W Pleasanton. 04/30/83

MSB 38864-38866, 38868-38878. 3.5 mi W Luna near San Francisco River. 04/29/83

MSB 38889-38898. 4 mi W Luna on US 180 near San Francisco River. 04/29/83

MSB 38900-38904, 38911. 3.5 mi W Luna off US 180 near San Francisco River. 04/29/83

MSB 38948-38951. Whitewater Recreation Area, 4 mi N, 3 mi E Glenwood, T11S R19W sec. 5. 04/30/83

MSB 41232. Whitewater Canyon. 09/00/61

MSB 41289. 6 mi S jct. NM 59 and NM 61. 09/02/74

MSB 41589-41594. Gila National Forest, Gila Wilderness, Little Creek Trail, T12S R15W sec. 25, T12S R14W sec. 30, 31, 32. 05/28/84

MSB 41602-41603. Gila National Forest, Gila Wilderness, Little Creek Trail, 2-3 mi SE McKenna Spring by trail, T12S R15W sec. 30-32. 05/29/84

MSB 41615. Gila National Forest, Gila Wilderness, Hell's Hole at West Fork Gila River, T12S R15W sec. 4. 05/31/84

MSB 41616. Gila National Forest, Gila Wilderness, West Fork Gila River, 10 mi upstream of Cliff Dwellings National Monument, T12S R15W sec. 9 and 10. 05/31/84

MSB 41618-41621. Gila National Forest, Gila Wilderness, West Fork Gila River, 4-6 mi upstream Cliff Dwellings National Monument, T12S R14W sec. 11, 12, 16, 17, 18. 05/31/84

MSB 42933. Kelly Mountains, USFS Road 626 off US 180 along San Francisco River at Kelly Ranch, T9S R20W NE¼ se. 27. 03/28/84

MSB 42953. San Francisco River, ca. 1.2 km upstream of Saliz Canyon, T9S R20 sec. 1. 05/07/84

NMSU 1466-1467. Glenwood. 03/28/62

NMSU 1468. 5 mi NE Glenwood. 03/28/62

NMSU 1469. 3 mi SW Mogollon. 03/28/62

NMSU 4059. Gila Middle Fork, 1.5 mi past Little Bear Canyon. 03/26/72

NMSU 4060. Willow Creek. 04/22/72

NMSU 4061. Little Creek cabin, T12S R15W sec. 33. 06/10/71

NMSU 4062-4064. 0.5 mi NE Glenwood. 05/31/66

NMSU 4065-4066. 1.5 mi NE Glenwood. 03/31/66

WNMU 12113. 10 mi N Glenwood, T11S R30W sec. 23. 04/26/80

WNMU 12142. Gila Cliff Dwellings. 01/10/76

NEW MEXICO: Grant County:

MSB 2346. Mogollon Creek below the Falls. 08/29/49

MSB 2347-2352. Mogollon Creek near the Falls, T13S R18W sec. 13. 08/28/49

MSB 2355-2359. Mogollon Creek near the Falls, T13S R18W sec. 13. 08/29/49

MSB 6359-6361. 4.5 mi E Mule Creek. 09/02/61

MSB 6362. 3 mi W Mule Creek. 09/02/61

MSB 6363-6364. Mule Creek. 09/02/61

MSB 6448-6481. 3 mi W (by road) Mule Creek. 04/17/62

MSB 8612. 2 mi N Red Rock. 05/22/62

MSB 8638-8639. Bennett Ranch, W Cliff. 10/27/62

MSB 11118. 4 mi from Rt. 260, Little Dry Creek Canyon. 05/26/63

MSB 11349-11350. Water tank 0.25 mi from Mule Creek turnoff. 05/25/63

MSB 12306-12307. Red Rock. 04/16/65

MSB 12384-12387, 12439-12446, 12448. 12.7 mi E Tyrone turnoff, Hwy 464. 04/15/65

MSB 12665-12669. Red Rock, N side Gila River. 04/16/65

MSB 12907-12908. T18S R16W Red Rock. 04/16/65

MSB 13050. Gila River, N Red Rock in camp. 04/16/65

MSB 13107-13108. Near camp on Gila River, Red Rock. 05/12/65

MSB 13310-13315. Red Rock area, T19S R16W sec. 17. 04/17/65

MSB 13786. Red Rock area, T18S R18W sec. 31. 04/15/65

MSB 13787. Red Rock area, just upriver from bridge. 04/16/65

MSB 14340-14342. 6.8 mi S Silver City, Hwy 90. 04/09/66

MSB 14343-14346, 14799-14801. Red Rock bridge. 04/07/66

MSB 14551, 14554-14556. Between Red Rock and Blue Creek Canyon. 04/07/66

MSB 14802-14803. 6.8 mi S Silver City, Hwy 90. 04/09/66

MSB 15219-15220. 10 mi S, 8 mi W Silver City. 04/08/66

MSB 15221. 13 mi W Silver City, 20.8 mi SW on Red Rock road. 04/08/66

MSB 15222. 10 mi S, 8 mi W Silver City. 04/10/66

MSB 15296-15297. 13 mi S Silver City, 15.3 mi W toward Red Rock. 04/08/66

MSB 15298. 13 mi S Silver City. 04/09/66

MSB 15299. 10 mi S Silver City. 04/09/66

MSB 15300. Gila River at Red Rock bridge. 04/10/66

MSB 15359-15361. 4.8 mi SW Silver City. 04/08/66

MSB 15362-15363. Red Rock, Gila River. 04/07/66

MSB 16244. Burro Springs, Gila National Forest, T19S R16W sec. 30. 04/10/66

MSB 16449. East Fork Gila River. 04/30/67

MSB 21880. 10 mi S Buckhorn, US 180. 07/04/69

MSB 21881. 5.3 mi from Red Rock bridge. 08/10/69

MSB 23123. 0.25 mi down from Gila Hot Springs on Gila River. 07/20/70

MSB 23125. 9 mi N of 180 on Rice Ranch Road and Sacaton Helitack Base. 06/30/70

MSB 23126-23127. SW Corner, intersection 78 and 180. 07/01/70

MSB 32256-32258, 32286, 32290, 32323-32324. Near bridge on US 180 over Gila River, S of Cliff, T15S R17W. 04/30/77

MSB 33709. DOR NM 464, 0.7 mi N Hidalgo County line. 04/23/78

MSB 38917-38920. Gila National Forest, 4.25 mi S, 0.5 mi E Mule Creek on USFS Road 112, T14S R20W sec. 30. 04/30/83

MSB 38926-38927. Gila National Forest, 4.5 mi S, 0.5 mi E Mule Creek on USFS Road 112, T14S R20W sec. 30. 04/30/83

MSB 38928-38934. Sawmill Creek, 3 mi S, 0.75 mi E Mule Creek on USFS Road 112, T14S R20W Sec. 18. 04/30/83

MSB 38944-38946. Mule Creek (town), 9 mi W, 0.75 mi S jct. US 180/NM 78. 04/30/83

MSB 42934-42937. Turkey Creek (tributary to Gila River) ca. 2.4 km upstream from Skeleton Canyon, near Hot Springs, T13S R16W sec. 34, 1597 m. 04/14/84

MSB 42938-42942. Along Gila River, ca. 0.4 km NE Moonhull Canyon, USFS Road 809, T17S R17W NW¼ sec. 16. 04/04/84

MSB 42943. Stillman Ranch headquarters, ca. 1.1 km NW Red Rock, T18S R18W SW¼ sec. 31

MSB 42944-42948. Gila River ca. 2.8 km NE Cliff, NM 293 at Salado Site Indian Ruins, T15S R17W NW¼ sec. 23. 04/17/84

MSB 42955-42956. Abandoned homestead beside Blue Creek ca. 1.4 km N confluence Blue Creek and Chick Canyon, T16S R19W SE¼ sec. 30. 05/30/84

MSB 42957–42964. Along Blue Creek between Big Canyon (T16S R19W sec. 19) and Thompson Canyon (T16S R20W sec. 14). 05/29/84

MSB 42965–42971. Along Gila River, ca. 0.4 km NE Moonhull Canyon, USFS Road 809, T17S R17W NW¼ sec. 16. 03/31/84

MSB 42972. Along Cherry Creek from Lemmon's Creek (T16S R20W sec. 26) to Blue Creek (T16S R19W sec. 31). 06/12/84

MSB 42973. Stillman Ranch ca. 4.0 km W Red Rock, T19S R19W SW¼ sec. 2. 05/26/84

MSB 42974. Pinos Altos Range, USFS Road 149, 2.4 km E jct. NM 15, T15S R13W SE¼ sec. 33. 09/16/84

MSB 42975–42982. Gila River ca. 2.8 km NE Cliff, NM 293 at Salado Site Indian Ruins, T15S R17W NW¼ sec. 23. 05/17/84

MSB 42983. Red Rock Wildlife Experimental Area, ca. 2.6 km NE Red Rock, T18S R18W NE¼ sec. 29. 11/03/84

NMSU 3750. Iron Creek campground. 07/05/67

NMSU 3941. 0.5 mi W Gila, Gila River valley. 04/12/62

NMSU 3942. 0.5 mi W Gila, Gila River. 04/06/63

NMSU 3943. Scott Park. 05/03/68

NMSU 3944. 5 mi N Cliff. 04/30/72

NMSU 3945. 1 mi W Cliff. 04/23/72

NMSU 3946. 8 mi S Silver City. 04/12/68

NMSU 3947. 3 mi N Cliff. 05/16/72

NMSU 3948. 0.5 mi N Silver City. 05/12/68

NMSU 3949. 13 mi S Silver City, ridge road. 04/28/68

NMSU 3950–3952. 0.5 mi W Gila, Gila River. 04/12/62

NMSU 3953. 0.5 mi W Gila. 04/25/64

NMSU 3954, 3959, 3963. Red Rock. 05/03/70

NMSU 3955. 1 mi S Silver City. 04/12/68

NMSU 3956. Lake below Ben Lily Memorial. 04/30/72

NMSU 3957. Ash Creek Canyon, 16 mi S Cliff. 05/12/72

NMSU 3958. Cliff, Gila River. 04/25/70

NMSU 3960. 1 mi W Gila, Gila River. 05/20/68

NMSU 3961. 16 mi S Cliff, Ash Creek. 05/13/72

NMSU 3962. 10 mi S Silver City. 04/01/72

NMSU 3965. WNMU Campus, Silver City. 04/20/72

NMSU 3966. 8 mi S Silver City, old Smith place. 04/12/68

NMSU 3967. 0.5 mi W Gila, Gila River. 04/12/62

NMSU 3968. 1 mi W Gila, Gila River. 04/06/63

NMSU 3970. 8 mi S Silver City. 04/24/68

NMSU 3971. 1 mi W Gila, Gila River. 05/11/64

NMSU 3972. Red Rock. 05/03/70

NMSU 3973-3974. 15 mi NE Silver City near Allen Springs. 05/02/70

NMSU 3975. Silver City. 03/24/72

NMSU 3976. 15 mi NE Silver City. 03/08/72

NMSU 3977. 12.5 mi SE Silver City. 04/26/68

NMSU 3980. 14 mi NE Silver City. 05/17/70

NMSU 3981. 10 mi S Silver City. 05/10/72

NMSU 3982. Silver City. 04/20/64

NMSU 3983. 12 mi NW Silver City. 04/20/68

NMSU 3984. WNMU Campus, Silver City. 05/01/68

NMSU 3985. 3 mi W Silver City. 05/03/68

NMSU 3986. Gila River at Cliff. 05/05/68

NMSU 3987. 0.75 mi W Gila. 04/25/64

NMSU 3988. 8 mi S Silver City. 04/24/68

NMSU 3989. 27 mi NNW Cliff, Little Dry Creek. 05/12/68

NMSU 3990. 8 mi S Silver City, old Smith Place. 04/12/68

NMSU 3991. 6 mi NE Cliff, mouth Mogollon Creek. 05/03/62

NMSU 3992. 1 mi W Gila, Gila River. 04/06/63

NMSU 3993. Meadow Creek, 24 mi NE Silver City. 04/19/64

NMSU 3994. 0.5 mi W Gila, Gila River. 04/12/62

NMSU 3995-3996. Turkey Creek, 8 mi N Gila. 04/25/62

NMSU 3997. Silver City. 10/08/62

NMSU 3998. 0.75 mi W Gila. 04/25/64

NMSU 3999. 1 mi W Gila, Gila River. 05/11/64

NMSU 4000. Gila. 04/25/64

NMSU 4001. 4 mi NE Pinos Altos. 04/14/64

NMSU 4002. 1 mi W Gila, Gila River. 05/11/64

NMSU 4003. 0.5 mi W Gila, Gila River. 04/12/62

NMSU 4005-4006. Silver City. 04/20/64

NMSU 4007. 0.5 mi W Gila, Gila River. 04/12/62

NMSU 4008. Turkey Creek, 8 mi N Gila. 04/25/64

NMSU 4009. 30 mi W Silver City. 05/22/64

NMSU 4010. WNMU Campus, Silver City. 05/03/68

NMSU 4011. 0.75 mi W Gila, Gila River. 04/25/64

NMSU 4012-4013. Turkey Creek, 8 mi N Gila. 04/25/64

NMSU 4014. 0.5 mi W Gila, Gila River. 04/23/64
NMSU 4015. 0.75 mi W Silver City. 05/07/70
NMSU 4016. Silver City, Big Ditch. 05/20/66
NMSU 4017. Silver City. 04/17/64
NMSU 4018. WNMU Campus, Silver City. 04/13/66
NMSU 4019. Silver City. 05/02/66
NMSU 4021. 6 mi N Silver City. 04/14/64
NMSU 4022. Gila. 04/25/64
NMSU 4023. Silver City. 04/20/64
NMSU 4024–4026. Gila. 04/25/64
NMSU 4027. 0.5 mi W Gila, Gila River. 05/20/64
NMSU 4028–4029. 1 mi W Gila, Gila River. 05/22/64
NMSU 4030. WNMU Campus, Silver City. 04/03/66
NMSU 4031. WNMU Campus, Silver City. 03/20/66
NMSU 4032. WNMU Campus, Silver City. 05/02/66
NMSU 4033. 13 mi NE Santa Rita. 04/11/66
NMSU 4034. 10 mi NE Santa Rita. 04/24/66
NMSU 4035. Silver City. 04/07/66
NMSU 4036. WNMU Campus, Silver City. 04/22/66
NMSU 4037. 1 mi W Hurley. 04/22/66
NMSU 4038. WNMU Campus, Silver City. 03/20/66
NMSU 4039. Silver City, city dump. 04/09/66
NMSU 4040. Silver City. 04/28/64
NMSU 4041. 0.75 mi W Gila, Gila River. 04/25/64
NMSU 4042. 1 mi W Silver City. 05/05/66
NMSU 4043. 10 mi NE Santa Rita. 04/24/66
NMSU 4044. 2.25 mi N Pinos Altos. 04/23/66
NMSU 4045. Ben Lily Monument, N of Pinos Altos. 04/14/66
NMSU 4046. Silver City. 05/05/66
NMSU 4047. 30 mi W Silver City. 05/22/64
NMSU 4048. WNMU Campus, Silver City. 04/22/66
NMSU 4050. Lake Roberts. 05/24/66
NMSU 4051. WNMU Campus, Silver City. 04/22/66
NMSU 4052. Silver City, Big Ditch. 05/14/66
NMSU 4054. WNMU Campus, Silver City. 04/13/66
NMSU 4056. 0.5 mi W Gila, Gila River. 04/12/62

NMSU 4057. WNMU Campus, Silver City. 05/05/66

NMSU 4058. WNMU Campus, Silver City. 05/14/66

NMSU 4086. Ridge road, 10 mi S Silver City. 05/13/68

NMSU 4529. Silver City. 03/30/74

NMSU 4530. 8 mi SE Silver City. 04/16/74

NMSU 4531. Bear Creek, 5 mi N Pinos Altos. 04/07/74

NMSU 4532. T18S R17W sec. 6. 04/12/74

NMSU 4553. 12 mi S Cliff, T17S R17W sec. 28. 03/08/74

NMSU 4555. 17.5 mi SW Silver City. 03/05/74

NMSU 5201. Gila River near mouth Mogollon Creek. 07/05/77

NMSU 5202-5203. T14S R16W sec. 30. 07/05/77

NMSU 5228. East Fork Bircher Canyon, T16S R20W SW¼ sec. 11. 08/20/77

NMSU 5229. Old ranch, Blue Creek, T16S R20W NE¼ sec. 16. 08/18/77

NMSU 5246. Lemmon's Canyon, T16S R20W sec. 27. 08/22/77

NMSU 5248. Moonhull Canyon, T17S R17W SW¼ sec. 17. 08/26/77

NMSU 5249. Sycamore Canyon, 0.1 mi N, 1.0 mi E Norris Ranch, T16S R18W NW¼ sec. 13. 08/27/77

NMSU 5313-5314. Gila River, Gila National Forest, T14S R16W sec. 30. 07/07/77

NMSU 5315. Rain Creek, 0.5 mi N, 1.5 mi E Rice Ranch, T13S R18W sec. 11. 07/08/77

NMSU 5316. Gila River, 0.4 mi W Dale McCauley Ranch. 07/10/77

NMSU 5317. Stock tank, 0.3 mi N, 1.6 mi W Dale McCauley Ranch, T17S R117W sec. 18. 07/10/77

NMSU 5318-5319. Duck Creek, T15S R17W sec. 29. 07/13/77

NMSU 5320. Bear Creek at "YL," Hooker Ranch, T15S R16W sec. 27. 07/15/77

WNMU 12109, 12112. 3 mi NE Red Rock, T18S R18W sec. 28. 04/04/80

WNMU 12115. 0.5 mi N NM 15 along Sapillo Creek. 03/03/77

WNMU 12116. 12 mi E Red Rock, T19S R16W sec. 18. 04/04/80

WNMU 12117. Cliff, Gila River. 04/25/70

WNMU 12119. Silver City, WNMU Campus. 04/20/76

WNMU 12122. 9 mi S Silver City. 04/01/74

WNMU 12125. 3 mi NE Red Rock, T18S R18W sec. 28. 04/04/80

WNMU 12128. 7.5 mi SE Silver City. 04/20/76

WNMU 12130. Cliff, Sycamore Canyon. 04/07/76

WNMU 12131. Cliff, Gila River bridge. 04/08/76

WNMU 12325. Red Rock, T18S R18W sec. 6. 04/04/80

WNMU 12462. 0.25 mi W Gila. 09/17/83

WNMU 12463-12464. 3 mi NNW Pinos Altos. 09/13/81

WNMU 12499, 12570. 7 mi NE Separ. 09/12/81

WNMU 12582-12583. 4 mi N Silver City. 06/27/81

WNMU 12604. 7 mi NE Separ. 09/13/81

WNMU 12605. Tyrone, 4.2 mi S Silver City. 05/09/81

NEW MEXICO: Hidalgo County:

MSB 12447. 2 mi E Virden bridge. 04/15/65

NMSU 4070. 10 mi N Lordsburg. 04/13/68

NMSU 6059. 9 mi N, 9 mi E Lordsburg, T21S R12W SE¼ sec. 11. 09/16/81

Uta stansburiana

NEW MEXICO: Catron County:

MSB 4771-4772. 19 mi E Glenwood. 04/15/61

MSB 10975. Highway S of Glenwood. 05/25/63

MSB 41079. 2 mi NE Aragon on Tularosa Creek. 04/14/60

NEW MEXICO: Grant County:

MSB 13791. Red Rock area, T19S R19W sec. 9. 04/16/65

MSB 13817. Red Rock area, T19S R19W sec. 9. 04/15/65

MSB 14323-14324. 8 mi W Red Rock bridge, Blue Creek Canyon area. 04/07/66

MSB 42885. Red Rock Wildlife Experimental area, 2.6 km NE Red Rock, T18S R18W NW¼ sec. 28. 05/10/84

NMSU 3654. Red Rock, 2 mi N old bridge. 04/26/68

NMSU 3671. 10 mi S Hurley. 04/23/64

NMSU 5309. Mouth Red Rock Canyon, T18S R18W SE¼ sec. 13. 07/13/77

NMSU 5951. Gila River, 6.5 mi W Red Rock, T19S R19W SE¼ sec. 18. 07/23/81

WNMU 12084. 22 mi SE Silver City. 04/20/76

WNMU 12089. Red Rock, W of Gila River. 04/26/68

WNMU 12091. 3 mi NE Red Rock, T18S R18W sec. 28. 04/04/80

WNMU 12102. 3 mi NE Red Rock. 04/04/78

WNMU 12455. Red Rock. 11/13/83

WNMU 12490. 7 mi NE Separ, Burro Cienega Creek. 09/11/81

WNMU 12603. 7 mi SE Separ. 09/13/81

NEW MEXICO: Hidalgo County:

MSB 12430-12433. 2 mi E Virden bridge. 04/15/65

MSB 12670. 0.5 mi E Virden bridge. 04/17/65

MSB 13380. 1 mi E Virden. 04/14/65

NMSU 5264. Gila River, mouth of Box Canyon, T19S R20W NE¼ sec. 25. 07/28/77

NMSU 5279. Gila River, T19S R20W sec. 22. 08/15/77

NMSU 5917. 14 mi N, 12 mi W Lordsburg, T20S R20W NW¼ sec. 21. 08/05/81

NMSU 5918. 6 mi N, 5 mi W Lordsburg, T21S R19W NW¼ sec. 33. 08/26/81

NMSU 5950. 12 mi W, 11 mi N Lordsburg, T21S R20W SE¼ sec. 5. 07/15/81

WNMU 12093, 12097. 15 mi N Lordsburg. 10/01/73

WNMU 12095. 15 mi N Lordsburg. 12/03/73

WNMU 12096. 15 mi N Lordsburg. 08/01/73

TEIIDAE

Cnemidophorus exsanguis

NEW MEXICO: Catron County:

MSB 4279-4286. Whitewater Canyon, E of Glenwood. 06/14/59

MSB 4300. Wall Lake. 08/23/59

MSB 5452. Whitewater Forest Camp, 5 m ENE Glenwood. 04/16/61

MSB 6119-6121. 5 mi NE Reserve. 06/07/60

MSB 6133-6135. Dry Creek Camp, N Fork Gila. 06/08/50

MSB 6564. Frisco Hot Springs, 5 mi S Glenwood. 04/15/61

MSB 6565-6566. 2 mi E Glenwood Hatchery, Whitewater Canyon. 04/16/61

MSB 6712-6713, 6718, 6905-6906, 11942, 12152-12154, 17529. San Francisco Hot Springs. 04/18/62, 06/16/62, 06/16/62, 05/09/64, 04/18/62, 05/10/66

MSB 6719. Frisco Hot Springs, 4 mi S Glenwood. 04/15/69

MSB 6722, 9113, 9120-9122, 9133-9138, 9141-9142, 9173, 9154-9155, 9157-9158, 11273, 11277-11278, 29684-29687. Frisco Hot Springs. 04/19/62, 07/02/62, 07/02/62, 07/02/62, 07/02/62, 07/02/62, 07/02/62, 09/02/61, 05/25/63, 05/25/63, 05/18/72

MSB 9124. Whitewater Canyon, 0.5 mi S, 0.5 mi W Glenwood. 07/10/69

MSB 9130, 10280. Frisco Hot Springs, ca. 4 mi S Glenwood. 07/02/62, 04/16/61

MSB 9147-9148, 9164-9166. Whitewater Canyon, 0.5 mi S, 0.5 mi W Glenwood. 07/10/62, 07/10/62

MSB 9313. 3 mi N Alma. 08/28/62

MSB 10504-10506, 11191-11192, 11455, 11941, 11943-11944. Glenwood Fish Hatchery. 05/11/63, 05/25/63, 05/25/63, 05/09/63, 05/09/63

MSB 10841. Glenwood. 05/25/63

MSB 10976. Highway S of Glenwood. 07/08/61

MSB 11105. 0.25 mi above San Francisco Hot Springs. 05/25/63

MSB 11108. 1 mi SE Fish Hatchery, Glenwood. 05/25/63

MSB 11110. 2 mi E Los Olmos Guest Ranch. 05/25/63

MSB 11190. Frisco Hot Springs, 7 mi S Glenwood. 05/25/63

MSB 11345, 11351. Glenwood area, Whitewater forest camp. 05/25/63

MSB 11544. 4.8 mi S Pleasanton. 05/26/63

MSB 19214. 5 mi E Glenwood in Whitewater Canyon. 05/17/69

MSB 33180. DOR along San Francisco River, 5 mi N Alma. 05/21/77

MSB 38862. San Francisco Hot Springs, 2 mi S, 0.25 mi W Pleasanton. 04/30/83

MSB 41581-41582. Gila National Forest, 3 mi WSW Gila Cliff Dwellings National Monument, T12S R14W sec. 34. 05/27/84

MSB 43097. Along San Francisco River between Devils Creek (R20W T9S sec. 34) and Long Canyon (R20W T10S sec. 9). 09/18/84

NMSU 4824. 20 mi SSE Luna. 06/14/60

NMSU 4825-4826. Whitewater Creek, 1.5 mi E Glenwood. 05/12/63

NMSU 5466. Mouth of Whitewater Creek below the Catwalk. 08/01/78

NEW MEXICO: Grant County:

MSB 6058. 2.5 mi N Silver City. 06/08/53

MSB 6133. 3 mi S Gila. 06/08/53

MSB 7987-7988, 9129. Along Gila River at Red Rock. 07/16/62

MSB 11114-11115. 3 mi from Rt. 260, Little Dry Creek Canyon. 05/26/63

MSB 11351. Water tank 0.25 mi from Mule Creek turnoff. 05/25/63

MSB 14131. 6.5 mi S, 1.25 mi E Cliff. 06/08/62

MSB 14132. 7 mi S, 1 mi E Cliff. 05/29/62

MSB 14770. Ca. 8 mi W Red Rock bridge, Blue Creek Canyon. 04/08/66

MSB 14771. Ca. 7.5 mi W Red Rock bridge, above Gila River Canyon. 04/07/66

MSB 15250. 13 mi W Silver City. 04/08/66

MSB 15320. 10 mi NE Red Rock. 04/08/66

MSB 16254. Mouth of Blue Creek Canyon, T19S R19W sec. 14. 04/19/66

MSB 23078-23079, 23087. 10 mi N Buckhorn, US 180, Little Dry Creek. 07/04/69

MSB 32168, 32282-32283, 32321-32322. Near bridge on US 180 over Gila River, S of Cliff. 04/30/77

MSB 32350-32357. Mule Creek, ca. 1/8-1/4 mi S intersection Mule Creek and NM 78, along Mule Creek, T14S R21W NE¼. 04/30/77

MSB 38914-38916. Gila National Forest, 4.25 mi S, 0.5 mi E Mule Creek on USFS Road 112, T14S R20W sec. 30. 04/30/83

MSB 40643. 4.5 mi N Ft. Bayard near Barrel Springs, T17S R13W sec. 11. 06/04/75

MSB 40948-40950. 7 mi NE Silver City, Pinos Altos. 05/31/58

MSB 40951. 7 mi NE Silver City, Pinos Altos. 06/03/58

MSB 43069. Burro Mountains, Bar Six Canyon, USFS Road 851, T18S R16W SE¼ sec. 18. 05/11/84

MSB 43070, 43071-43074. Along Blue Creek between Big Canyon (T16S R19W sec. 19) and Thompson Canyon (T16S R19W sec. 14). 05/29/84

MSB 43075-43076. Fort Bayard at Whiskey Creek pasture, T17S R13W NE¼ sec. 27. 05/23/84

MSB 43077-43078. Burro Mountains, Bar Six Canyon, USFS Road 851, T18S R16W SE¼ sec. 18. 06/03/84

MSB 43079. 11 mi N, 6 mi E Gila, along Turkey Creek between Skeleton Canyon (T13S R16W NW¼ sec. 10) and Turkey Creek Hot Springs (T13S R16W sec. 34). 07/02/84

MSB 43080. 10 mi W, 4 mi S Riverside, ca. 3.2 km SE Deer Peak along Cherry Creek, T16S R19W NE¼ sec. 34. 06/11/84

MSB 43081. 5 mi S, 17 mi W Riverside, Kemp Creek at Kemp corral, SW of Kemp Peak, T17S R20W sec. 2. 06/12/84

MSB 43082-43083. 17 mi W, 4 mi S Buckhorn, ca. 2.4 km S Brushy Mountain, USFS Road 112 beside Apache Creek, T15S R21W NE¼ sec. 35. 06/11/84

MSB 43084-43086, 43087-43088. Along Gila River ca. 0.4 km NE Moonhull Canyon, USFS Road 809, T17S R17W NW¼ sec. 16. 03/31/84

MSB 43089-43091. Along Cherry Creek from Lemmons Creek (T16S R20W sec. 26) to Blue Creek (16S R19W sec. 31). 06/12/84

MSB 43092. 11 mi W, 9 mi N Red Rock, along Cherry Creek at Battleground, ca. 2.1 km ESE Bm 5787, T17S R20W SE¼ sec. 28. 06/13/84

MSB 43093-43094. Burro Mountains, Burro Spring Canyon, USFS Road 848, T19S R16W NW¼ sec. 23. 09/16/84

MSB 43095. Red Rock Wildlife Experimental Area, ca. 2.6 km NE Red Rock, T18S R18W NW¼ sec. 28. 09/16/84

MSB 43096. Gila River, ca. 2.5 mi NE Cliff NM 293 at Salado Site Indian Ruins, T15S R17W NW¼ sec. 23. 05/17/84

NMSU 2172. 1 mi S Hurley. 05/17/64

NMSU 3765. 6 mi NE Cliff near Mogollon Creek. 05/25/61

NMSU 3766. 1 mi W Gila on Gila River. 04/21/64

NMSU 3767. Silver City. 07/19/62

NMSU 4737. Silver City, N city limit. 05/12/68

NMSU 4739. Mogollon Creek, 0.5 mi W Gila River. 05/07/68

NMSU 4742. 3 mi N Silver City. 05/05/68

NMSU 4743. Santa Rita. 05/15/66

NMSU 4744. 3 mi W Hurley, Cameron Creek. 05/24/64

NMSU 4749. 5 mi N Silver City. 05/09/61

NMSU 4755. Choride Flats, 2 mi NW Silver City. 05/09/62

NMSU 4767. Silver City. 05/14/70

NMSU 4771. WNMU Campus, Silver City. 05/13/70

NMSU 4772. WNMU Campus, Silver City. 04/13/66

NMSU 4775. 2 mi NE Cliff. 05/13/68

NMSU 4793. Silver City. 05/06/72

NMSU 4794. Ash Creek. 04/13/72

NMSU 4797. 3 mi S Silver City. 04/27/72

NMSU 4798. Silver City. 04/17/72

NMSU 4799. WNMU Campus, Silver City. 04/29/72

NMSU 4800. Bayard. 04/26/72

NMSU 4806. Gila River at Cliff, 4000 ft. 05/14/72

NMSU 5153, 5182. Blue Creek, T16S R20W NE¼ sec. 24. 08/21/77

NMSU 5169-5170. Gila River at mouth Mogollon Creek, T14S R16W sec. 31. 07/05/77

NMSU 5171-5172. Gila River, Gila National Forest, T14S R16W sec. 30. 07/05/77

NMSU 5173. Mouth Mogollon Creek, Gila National Forest, T14S R16W sec. 31. 07/06/77

NMSU 5174-5175. Arroyo E end Sacaton Landing Strip, Gila National Forest, T13S R18W sec. 1. 07/08/77

NMSU 5176. Corral, 1.6 mi E, 0.1 mi S Rice Ranch, T13S R18W sec. 14. 07/09/77

NMSU 5177. Mogollon Creek, 2.7 mi E, 0.5 mi S Rice Ranch, T13S R18W sec. 13. 07/09/77

NMSU 5178. Gila River, 0.3 mi N, 0.3 mi W Dale McCauley Ranch, Gila National Forest. 07/10/77

NMSU 5179. Brushy Canyon, near confluence Bear Creek and Hooker Ranch, T15S R16W sec. 26 or 27. 07/15/77

NMSU 5180. Blue Creek, T16S R20W SE¼ sec. 14. 08/19/77

NMSU 5181. Mouth Bircher Canyon, T16S R20W NW¼ sec. 14. 08/20/77

Cnemidophorus flagellicaudus

NEW MEXICO: Catron County:

MSB 6706. 2 mi E Glenwood Fish Hatchery, Whitewater Canyon. 04/16/61

MSB 6707-6711, 6714-6717, 9114-9117, 9119, 9123, 9131-9132, 9139-9140, 9143-9146, 9151-9153, 9156, 9159-1963, 9172, 9174-9177, 10281, 10289, 10334-10337, 10363-10364, 10441. Frisco Hot Springs

MSB 6720-6722. Whitewater Canyon, E of Glenwood. 04/19/62

MSB 6723, 6725. State Fish Hatchery, Glenwood. 04/19/62

NEW MEXICO: Grant County:

MSB 9095-9098. Mule Creek. 07/10/62

MSB 33695. Along NM 464, 0.5 mi S Red Rock. 05/28/78

MSB 33801-33802. Gila River at mouth of Nichols Canyon, T19S R19W. sec. 18. 05/27/78

MSB 42984. Abandoned homestead beside Blue Creek, ca. 1.4 km N confluence Blue Creek and Chick Canyon, T16S R19W SE¼ sec. 30. 05/30/84

MSB 42985. Burro Mountains, 1 mi S, 6 mi W Tyrone, Burro Spring Canyon, USFS Road 848, T19S R16W NW¼ sec. 23. 06/03/84

MSB 42986. Burro Mountains, 2 mi S, 16 mi W Silver City, Bar Six Canyon, USFS Road 851, T18S R16W SE¼ sec. 18. 06/03/84

MSB 42987. Ash Creek near Lydian Peak ca. 4.8 km NE of Red Rock, T17S R18W SE¼ sec. 16. 06/18/84

MSB 42988. Along Gila River ca. 0.4 km NE Moonhull Canyon, USFS Road 809, T17S R17W NE¼ sec. 16. 03/31/84

MSB 42989-42990. Along Cherry Creek from Lemmons Creek (T16S R20W sec. 26) to Blue Creek (T16S R19W sec. 31). 06/12/84

MSB 42991. Stillman Ranch, ca. 4.0 km W Red Rock, T19S R19W SW¼ sec. 2. 06/18/84

MSB 42992. Stillman Ranch, ca. 4.0 km W Red Rock, T19S R19W SW¼ sec. 2. 05/26/84

NMSU 5154. Alexander Windmill, T16S R20W NE¼ sec. 17. 08/23/77

NMSU 5155. Mouth Moonhull Canyon, 0.5 mi W Dale McCauley Ranch, Gila National Forest. 07/10/77

NMSU 5156-5158. Gila River, Gila National Forest, T17S R17W sec. 21. 07/11/77

NMSU 5159. Gila River above mouth Whiterock Canyon, T19S R19W SW¼ sec. 19. 07/28/77

NMSU 5160. Gila River, T19S R19W sec. 9. 07/29/77

NMSU 5162. Gila River, near mouth Nichols Canyon, T19S R19W SE¼ sec. 18. 08/11/77

NMSU 5163. Blue Creek, 1.5 mi S Summit Applegate Mountain, T16S R20W sec. 13. 08/21/77

NMSU 5164. Lemmons Canyon just below warm springs, T16S R20W sec. 26. 08/22/77

NMSU 5165. Tributary to Moonhull Canyon, T17S R17W NW¼ sec. 20. 08/26/77

NMSU 5166. 0.6 mi S, 0.1 mi W Dale McCauley Ranch, T17S R17W SW¼ sec. 17. 08/26/77

NMSU 5167. Moonhull Canyon, T17S R17W sec. 17. 08/26/77

NMSU 5168. Red Rock at Gila River bridge, T18S R18W SE¼ sec. 31. 09/24/77

NEW MEXICO: Hidalgo County:

NMSU 5161. Gila River, Gila Lower Box, T19S R20W sec. 24. 07/30/77

NMSU 5980. Black Mountain, 7.5 mi W Red Rock, T19S R20W NW¼ sec. 12. 07/16/81

Cnemidophorus inornatus

NEW MEXICO: Catron County:

MSB 2309. Rio San Francisco, 10 mi below Luna. 09/05/48

NEW MEXICO: Grant County:

MSB 12378-12379. 6 mi W Red Rock, Gila River valley. 04/14/65

MSB 12380. 7.6 mi E on Tyrone turnoff, Hwy 464. 04/15/65

MSB 13804. Red Rock area, T19S R17W sec. 32. 04/17/65

MSB 23095. 16.2 mi N jct. US 70, NM 464. 08/10/69

MSB 40954. 10 mi E Red Rock. 06/07/58

NMSU 4804. 7 mi SE Hurley. 07/30/72

NMSU 5938. 8 mi S, 4 mi E Hurley, T20S R12W NW¼ sec. 14. 08/18/81

NMSU 5984-5985. 3 mi W Red Rock, T19S R19W SE¼ sec. 3. 08/31/81

NMSU 6065. 3 mi W Red Rock, T19S R19W SE¼ sec. 3. 09/23/81

NEW MEXICO: Hidalgo County:

NMSU 5922. 9 mi N, 9 mi E Lordsburg, T21S R17W SE¼ sec. 11. 08/26/81

NMSU 5982-5983. 12 mi W, 11 mi N Lordsburg, T21S R20W SE¼ sec. 5. 07/15/81

Cnemidophorus neomexicanus

NEW MEXICO: Catron County:

MSB 41080. 2 mi NE Aragon on Tularosa Creek. 05/14/60

NEW MEXICO: Grant County:

MSB 11714-11715. Lampbright Creek, 0.8 mi N jct. Hwys 260 and 261 along NM 464, 4 mi S Red Rock. 04/18/61

NMSU 4808. Silver City, 5850 ft. 05/04/72

Cnemidophorus tigris

NEW MEXICO: Grant County:

MSB 9296. Along Gila River at Red Rock. 07/16/62

MSB 12377. 6 mi W Red Rock, Gila River valley. 04/14/65

MSB 13818. Red Rock area, T19S R20W sec. 18. 04/15/65

MSB 21654. Gila River, 1 mi NW Red Rock bridge. 08/09/69

MSB 21657-21658. 1 mi NW Red Rock bridge, Gila River

MSB 33572. Red Rock Wildlife Experimental Area, 1 mi NE of headquarters, R19W sec. 20. 04/22/78

MSB 33694. Nichols Canyon, 1/8 mi N Consolation mine, S of Gila River, T19S R19W sec. 20. 05/27/78

MSB 33806. Nichols Canyon, 1/8 mi N Consolation mine. 05/27/78

MSB 41011-41012. Red Rock area. 05/23/72

MSB 43021. Stillman Ranch at "Dripping Springs" ca. 5.1 km W Red Rock, T19S R19W SW¼ sec. 3. 04/25/84

MSB 43022. Ash Creek near Lydian Peak ca. 4.8 km NE Red Rock, T17S R18W SE¼ sec. 16. 05/10/84

MSB 43023-43025. Ash Creek arroyo ca. 3.5 km NE Red Rock, T17S R18W NW¼ sec. 21. 04/25/84

MSB 43026-43029. Ash Creek arroyo ca. 3.5 km NE Red Rock, T17S R18W NW¼ sec. 21. 05/10/84

MSB 43030. Conner Ranch ca. 7.2 km NE Red Rock near USGS gaging station on Gila River, T18S R18W SW¼ sec. 23. 05/25/84

MSB 43031. Ash Creek near Lydian Peak ca. 4.8 km NE Red Rock, T17S R18W SE¼ sec. 16. 05/26/84

MSB 43032. Ash Creek arroyo ca. 3.5 km NE Red Rock, T17S R18W NW¼ sec. 21. 06/27/84

MSB 43033-43034. Ash Creek arroyo ca. 3.5 km NE Red Rock, T17S R18W NW¼ sec. 21. 06/18/84

MSB 43035. Stillman Ranch ca. 3.9 km WNW Red Rock, T19S R19W NW¼ sec. 2, 1219 m. 06/18/84

MSB 43036-43037. Red Rock Wildlife Experimental Area, ca. 2.6 km NE Red Rock, T18S R18W NW¼ sec. 28. 06/18/84

MSB 43038. Red Rock Wildlife Experimental Area, ca. 2.6 km NE Red Rock, T18S R18W NW¼ sec. 28. 09/16/84

MSB 43039, 43040-43041. Ash Creek near Lydian Peak, ca. 4.8 km NE Red Rock, 17S R18W SE¼ sec. 16. 05/26/84

NMSU 4536. Silver City, 5900 ft. 04/00/72

NMSU 4740. Red Rock, 27 mi NW Lordsburg. 05/04/68

NMSU 4741. 2 mi N Red Rock bridge. 05/04/68

NMSU 5925. 3 mi W Red Rock, T19S R19W SE¼ sec. 3. 08/26/81

NMSU 6035. Upper Box Canyon, S of Gila River, T19S R19W SW¼ sec. 30. 08/19/81

NEW MEXICO: Hidalgo County:

MSB-1574-1578. Gila River, 7 mi SE Virden, T19S R20W sec. 21. 08/22/49

MSB 9295. 1.7 mi S Gila River on 82. 07/12/62

MSB 12691. Virden bridge. 04/16/65

MSB 12924. 0.5 mi SE Virden, T19S R20W sec. 18. 04/17/65

MSB 13792-13795. Virden area, T19S R20W sec. 18. 04/16/65

MSB 33808-33809. 1 mi E Virden. 05/28/78

NMSU 3727-3728. 8.5 mi NE Lordsburg. 06/26/75

NMSU 5988. 6 mi N, 1 mi W Lordsburg, T21S R18W SW¼ sec. 35

Cnemidophorus uniparens

NEW MEXICO: Grant County:

MSB 6130-6132. 3 mi S Gila. 06/08/50

MSB 7661-7667. 5.4 mi NW Grant County airport. 04/18/62

MSB 7976-7986. Along Gila River at Red Rock. 04/19/62

MSB 8015-8021. Jct. Hwy 61, E 180. 06/30/62

MSB 8063-8065. Mule Creek. 07/10/62

MSB 8140-8141. 4 mi NW Grant County airport on US 180. 04/18/62

MSB 8142-8144. Mule Creek. 09/02/61

MSB 10378. 3.7 mi S jct. 180 and 260 on Hwy 260. 04/18/62

MSB 10388-10395. Jct. Hwys 61 and 180. 06/30/62

MSB 11119. 6 mi from Rt. 260. 05/26/63

MSB 11545-11546. 11.6 mi S Pleasanton, 6 mi E Hwy 180/260. 05/26/63

MSB 12155. 0.5 mi N Mangas Springs. 05/25/63

MSB 13799-13803. Red Rock area, T19S R18W sec. 20. 04/17/65

MSB 13816. Red Rock area, T19S R18W sec. 15. 04/17/65

MSB 14557. Between Red Rock and Blue Creek Canyon. 04/07/66

MSB 32259-32260, 32287, 32297. Near bridge on US 180 over Gila River, S of Cliff, T15S R17W. 04/30/77

MSB 32302. Ca. 1/8-1/4 mi S intersection Mule Creek and NM 78, along Mule Creek. 04/30/77

MSB 33179. Along Gila River, 8 mi NE Cliff. 05/22/77

MSB 36072-36074. Between Red Rock and Blue Creek Canyon, N of Gila River. 05/30/69

MSB 43042. Red Rock Wildlife Experimental Area, ca. 2.6 km NE Red Rock, T18S R18W NE¼ sec. 29. 03/14/84

MSB 43043. Ca. 2.8 km NNE of Gila, along Gila River at Salado Site Indian Ruins, NM 293, T15S R17W NW¼ sec. 23. 04/17/84

MSB 43044. Burro Mountains, 2 mi W, 7 mi S Managas Springs, Bar Six Canyon, USFS Road 851, T18S R16W SE¼ sec. 18. 03/25/84

MSB 43045. Red Rock Wildlife Experimental Area, ca. 2.6 km NE Red Rock, T18S R18W NW¼ sec. 28. 05/10/84

MSB 43046. Red Rock Wildlife Experimental Area, ca. 2.6 km NE Red Rock, T18S R18W NE¼ sec. 29. 05/10/84

MSB 43047. Red Rock Wildlife Experimental Area, ca. 2.6 km NE Red Rock, T18S R18W NE¼ sec. 29. 04/25/84

MSB 43048. 15 mi W, 5 mi S Riverside, abandoned homestead beside Blue Creek, ca. 1.4 km N jct. Blue Creek and Chick Canyon, T16S R19W SE¼ sec. 30. 05/30/84

MSB 43049-43050. 14 mi W, 4 mi S Riverside, along Blue Creek between Big Canyon (T16S R19W sec. 19) and Thompson Canyon (T16S R20W sec. 14). 05/29/84

MSB 43051. Red Rock Wildlife Experimental Area, ca. 2.6 km NE Red Rock, T18S R18W NW¼ sec. 28. 05/26/84

MSB 43052. Ash Creek near Lydian Peak ca. 4.8 km NE Red Rock, T17S R18W SE¼ sec. 16. 05/26/84

MSB 43053. Red Rock Wildlife Experimental Area, ca. 2.6 km NE Red Rock, T18S R18W NW¼ sec. 28. 06/27/84

MSB 43055-43056. Stillman Ranch ca. 3.9 km WNW Red Rock, T19S R19W NW¼ sec. 2, 1219 m. 06/27/84

MSB 43057-43058. 16 mi W, 5 mi S Buckhorn, ca. 2.4 km S Brushy Mountain, USFS Road 112 beside Apache Creek, T15S R21W NE¼ sec. 35. 06/11/84

MSB 43059. 5 mi W, 3 mi S Mangas Springs, along Gila River ca. 0.4 km NE Moonhull Canyon, USFS Road 809, T17S R17W NE¼ sec. 16. 03/31/84

MSB 43060. Stillman Ranch ca. 4.0 km W Red Rock, T19S R19W SW¼ sec. 2. 06/18/84

MSB 43061. Red Rock Wildlife Experimental Area, ca. 2.6 km NE Red Rock, T18S R18W NW¼ sec. 28. 06/18/84

MSB 43062. Fort Bayard, Whiskey Creek pasture, T17S R13W NE¼ sec. 27. 07/01/84

MSB 43063-43064 Stillman Ranch ca. 4.0 km W Red Rock, T19S R19W SW¼ sec. 2. 05/26/84

MSB 43065-43067. Burro Mountains, Burro Spring Canyon, USFS Road 848, T19S R16W NW¼ sec. 23. 06/30/84

MSB 43068. Stillman Ranch ca. 4.0 km W Red Rock, T19S R19W SW¼ sec. 2. 09/16/84

NMSU 3768. 35 mi S Silver City. 05/24/64

NMSU 3769. Silver City. 05/23/63

NMSU 3770. 30 mi S Silver City. 05/24/64

NMSU 4535. WNMU campus, 1 mi NW post office. 04/29/74

NMSU 4551. 14 mi S Cliff, T18S R17W sec. 5. 04/13/74

NMSU 4738. 3 mi N Silver City, 5900 ft. 05/05/68

NMSU 4746. WNMU campus, Silver City. 05/14/66

NMSU 4747. WNMU cooler, Silver City. 03/30/66

NMSU 4748. Silver City, Big Ditch. 05/20/66

NMSU 4750. 1 mi W Silver city. 05/05/66

NMSU 4751-4752. 19 mi SW Silver City. 08/31/72

NMSU 4753. WNMU Campus, Silver City. 05/07/66

NMSU 4754. 19 mi SW Silver City. 07/14/72

NMSU 4756. Bayard, Cobre High School. 05/02/66

NMSU 4757. 3 mi SW Red Rock, 5500 ft. 05/02/70

NMSU 4758. WNMU Campus, Silver City. 04/13/66

NMSU 4759. 1 mi S Silver City. 07/01/72

NMSU 4760. 19 mi SW Silver City. 08/31/72

NMSU 4761. 9.5 mi S Silver City. 05/29/66

NMSU 4762. WNMU Campus, Silver City. 04/04/66

NMSU 4763. 1.5 mi by road Silver City to Scott Park. 05/20/66

NMSU 4765. 1 mi E Cliff. 04/28/68

NMSU 4766. WNMU Campus, Silver City. 05/01/68

NMSU 4768. 15 mi NE Hurley. 05/03/68

NMSU 4769. 1 mi N Red Rock bridge. 05/04/68

NMSU 4770. WNMU Campus, Silver City. 05/16/66

NMSU 4773. 12 mi SE Hurley. 07/01/72

NMSU 4774. 12 mi SE Hurley. 07/16/72

NMSU 4776. Airport, Areal Fire Control Unit. 05/15/66

NMSU 4777-4778, 4783-4784, 4787-4789, 4795-4796, 4803. 12 mi SE Hurley. 07/01/72

NMSU 4779-4782. 12 mi SE Hurley. 07/16/72

NMSU 4785. Red Rock, W side of Gila River. 04/26/68

NMSU 4786. Red Rock, 1 mi N old bridge. 04/26/68

NMSU 4790-4791. 12 mi SE Hurley. 07/30/72

NMSU 4792. 12 mi NE Hurley. 07/01/72

NMSU 4801. 2.5 mi E Cliff. 03/11/72

NMSU 4802. 2.5 mi S Cliff. 05/12/72

NMSU 4805. Ash Creek, 14 mi SW Cliff. 05/15/72

NMSU 4807. 12 mi SE Hurley. 07/16/72

NMSU 5185. Gila River, Gila National Forest, T14S R16W sec. 30. 07/05/77
NMSU 5186. Mogollon Creek, T14S R17W sec. 36. 07/06/77
NMSU 5187. Gila River, 0.3 mi N, 0.3 mi W Dale McCauley Ranch. 07/10/77
NMSU 5188. Gila River, Gila National Forest, T17S R17W sec. 9. 07/13/77
NMSU 5189-5190. Gila River, T19S R19W sec. 10. 07/29/77
NMSU 5191. Gila River, below Ash Creek, T18S R18W sec. 28. 07/31/77
NMSU 5192-5193. Red Rock Canyon, T18S R18W sec. 31. 08/01/77
NMSU 5953. Gila River, T19S R19W SE¼ sec. 3. 07/21/81
NMSU 5995. Gila River, 6.5 mi W Red Rock, T19S R19W sec. 18. 07/16/81
NMSU 5996. Gila River, 2 mi W Red Rock, T19S R17W sec. 3. 07/29/81

NEW MEXICO: Hidalgo County:
NMSU 4818. 10 mi N Lordsburg. 04/13/68
NMSU 4821. 1 mi W Virden. 05/03/68
NMSU 5197. Gila River, mouth of Cottonwood Canyon, T19S R20W sec. 21. 08/16/77
NMSU 5928. 14 mi N, 12 mi W Lordsburg, T20S R20W NW¼ sec. 21. 08/05/81
NMSU 5929-5930. 9 mi N, 9 mi E Lordsburg, T21S R17W SE¼ sec. 11. 08/10/81
NMSU 5999. 11 mi N, 12 mi W Lordsburg, T21S R20W sec. 5. 07/29/81
NMSU 6000. 1 mi E Canadora Peak, T19S R20W sec. 15. 07/20/81
NMSU 6001-6002. 9 mi N, 9 mi E Lordsburg, T21S R17W SE¼ sec. 11. 07/23/81

Chemidophorus velox

NEW MEXICO: Catron County:
MSB 39079. 1 mi E Aragon on NM 12. 05/01/83

NEW MEXICO: Grant County:
MSB 11346-11348. Water tank, 0.25 mi from Mule Creek turnoff. 05/25/63
MSB 23076-23077. 10 mi N Buckhorn, US 180, Little Dry Creek. 07/04/69
MSB 40953. 13 mi SW Silver City, Tyrone. 06,07/00/58

LEPTOTYPHLOPIDAE

Leptotyphlops dulcis

NEW MEXICO: Grant County:
MSB 42887. Red Rock Wildlife Experimental Area, ca. 2.6 km NE Red Rock, T18S R18W NE¼ sec. 29. 06/27/84

MSB 42888–42890. Burro Mountains, Burro Spring Canyon, USFS Road 848, T19S R16W NW¼ sec. 23. 06/30/84

WNMU 12412. 1 mi E Red Rock, T18S R18W NE¼ sec. 6. 06/11/79

WNMU 12606. T18S R16W sec. 24. 08/31/81

WNMU 12684. 2.5 mi S Cliff. 10/02/00

WNMU 12698. Along Gila River near Cliff. 04/01/64

Leptotyphlops humilis

NEW MEXICO: Grant County:

MSB 42891. Ash Creek arroyo ca. 3.5 km NE Red Rock, T17S R18W NW¼ sec. 21. 06/27/84

MSB 42892. Ash Creek arroyo ca. 3.5 km NE Red Rock, T17S R18W NW¼ sec. 21. 06/18/84

MSB 42893. Stillman Ranch, ca. 3.9 km WNW Red Rock, T19S R19W NW¼ sec. 2, 1219 m. 06/18/84

MSB 42894. Ash Creek near Lydian Peak ca. 4.8 km NE Red Rock, T17S R18W SE¼ sec. 16. 05/26/84

COLUBRIDAE

Arizona elegans

NEW MEXICO: Catron County:

MSB 11004. Wall Lake, jct. Taylor and Hoyt Creeks, T11S R12W sec. 10. 04/13/63

NEW MEXICO: Grant County:

MSB 6427. 1 mi SE Buckhorn, T15S R18W sec. 3. 09/03/61

WNMU 12642. 4 mi E Silver City, Arenas Valley, T17S R13W sec. 33 07/08/83

Diadophis punctatus

NEW MEXICO: Catron County:

MSB 42756. San Francisco River ca. 100 m upstream of Frisco Hot Springs, T12S R20W SW¼ sec. 23. 05/08/84

NEW MEXICO: Grant County:

MSB 6037. Mogollon Creek above the falls. 08/29/49

MSB 42757. 1.6 km N, 27.4 km W Silver City, Middle Box Gila River at Road Canyon, T17S R17W NW¼ sec. 21. 05/14/84

WNMU 12644. 4 mi E Silver City. 09/25/83

Gyalopion canum

NEW MEXICO: Grant County:

MSB 6735. 11 mi E Mule Creek. 09/03/61

MSB 6736. 3.5 mi NW Buckhorn. 09/03/61

MSB 43449. Stillman Ranch ca. 3.9 km WNW Red Rock, T19S R19W NW¼ sec. 2, 1219 m (skeleton)

Heterodon nasicus

NEW MEXICO: Grant County:

MSB 42755. DOR, US 180, 6.4 km S Hurley, T19S R12W sec. 19. 09/27/84

NMSU 3684. Hurley. 05/15/74

NMSU 3696. Silver City Airport. 05/15/66

WNMU 12451. 2 mi S Silver City. 06/10/77

WNMU 12641. 0.75 mi S Silver City. 07/05/83

NEW MEXICO: Hidalgo County:

MSB 33815. Hwy 70, 0.7 mi S jct. NM 464. 05/27/78

MSB 36935. US 70, 2 mi NW jct. NM 90. 09/12/78

Hypsiglena torquata

NEW MEXICO: Grant County:

MSB 4818. Silver City. 08/25/59

WNMU 12623. 4 mi E Silver City, Arenas Valley. 10/12/84

WNMU 12686. 2 mi E Silver City. 09/21/80

WNMU 12687. Bayard. 09/24/81

WNMU 12692. 1 mi W Gila. 10/11/64

NEW MEXICO: Hidalgo County:

MSB 22090. 5.6 mi from Red Rock turnoff, N of US 70. 08/09/69

Lampropeltis pyromelana

NEW MEXICO: Catron County:

MSB 416. 8 mi N Apache Creek. 08/30/49

MSB 6045. Glenwood

MSB 26397. 3/8 mi above Whitewater Creek on Old Powerhouse Road. 07/07/70

NMSU 2960. Dry Creek Canyon, 3 mi W Baldy Peak. 05/15/71

NEW MEXICO: Grant County:

MSB 42744. Pinos Altos Mountains, DOR NM 15, 1.9 km N jct. NM 35, T14S R13W sec. 31. 07/09/84

WNMU 12474. No other data. 05/00/60

WNMU 12475. 6 mi NE Bayard. 09/29/73

WNMU 12476. Gila Hot Springs, Doc Campbells. 06/29/82

Lampropeltis getulus

NEW MEXICO: Grant County:

WNMU 12676. 10 mi S Cliff. 09/23/81

WNMU 12677. 1 mi W Cliff. 05/19/62

WNMU 12678. 6 mi N Cliff. 09/03/67

NEW MEXICO: Hidalgo County:

MSB 32032. 11.4 road mi N jct. SR 90 and US Hwy 70. 05/09/77

WNMU 12474. No other data. 05/00/60

WNMU 12475. 6 mi NE Bayard. 09/29/73

WNMU 12476. Gila Hot Springs, Doc Campbells. 06/29/82

Lampropeltis getulus

NEW MEXICO: Grant County:

WNMU 12676. 10 mi S Cliff. 09/23/81

WNMU 12677. 1 mi W Cliff. 05/19/62

WNMU 12678. 6 mi N Cliff. 09/03/67

NEW MEXICO: Hidalgo County:

MSB 32032. 11.4 road mi N jct. SR 90 and US Hwy 70. 05/09/77

Masticophis flagellum

NEW MEXICO: Catron County:

MSB 9312. Mouth Little Dry Creek. 10/27/62

NMSU 4566. Glenwood Fish Hatchery. 05/14/66

NEW MEXICO: Grant County:

MSB 42773. DOR US 180 ca. 1.6 km N Cliff, T15S R17W sec. 29. 05/08/84

MSB 42774. DOR US 180 ca. 4.8 km S Catron County Line, T13S R19W sec. 28. 05/08/84

NMSU 3735. 12 road mi NW Silver City. 04/11/66

NMSU 4135. 2 mi E White Signal. 05/00/61

NMSU 4562. 3 mi S Mangas Springs. 05/11/62

NMSU 4563. Red Rock. 03/27/63

NMSU 4564. Airport. 05/15/66

WNMU 12645. 18 mi S Silver City. 01/16/83

WNMU 12646. 2 mi S Hurley on US 180. 09/26/83

NEW MEXICO: Hidalgo County:

MSB 42772. DOR NM 464, 2.1 km S Grant County Line, Willow Draw, T20S R18W NE¼ sec. 7. 05/02/84

Masticophis taeniatus

NEW MEXICO: Catron County:

MSB 4723. 1 mi by road S Glenwood. 08/24/59

MSB 6794. Whitewater Canyon, E of Glenwood. 04/19/62

MSB 11535. 13.5 mi NE Glenwood, Hwy 260. 05/24/63

MSB 18740. 4 mi S Glenwood, Route 260. 04/17/62

MSB 32169. Pleasanton, T12S R20W NE¼ sec. 11. 05/01/77

MSB 33122. DOR US Hwy 180, 10 mi N Alma. 05/21/77

MSB 38853. San Francisco Hot Springs, 2 mi S, 0.25 mi W Pleasanton. 04/30/83

MSB 42766. DOR US 180, 2.4 km N Glenwood, T11S R20W sec. 22, 1639 m. 05/07/84

MSB 42767. DOR US 180, 2.4 km S Pleasanton, T12S R20W sec. 14. 05/08/84

NMSU 2956-2957. Dry Creek Canyon, 4 mi W Baldy Peak. 05/16/71

NMSU 3734, 4401. Glenwood Fish Hatchery. 05/14/66

NEW MEXICO: Grant County:

MSB-4721. 1 mi S Silver City. 06/14/59

MSB 6425. 5 mi NW Buckhorn. 09/03/61

MSB 15205. 10 mi S, 8 mi W Silver City. 04/08/66

MSB 15294. 13 mi S Silver City, 15.3 mi W toward Red Rock. 04/08/66

MSB 16243. Burro Springs, Gila National Forest, R16W T19S sec. 30. 04/10/66

MSB 32033. 13.3 road mi NE jct. SR 90 and US 70. 05/09/77

MSB 37768. NM 293, 5.5 km E, 6.2 km N Cliff. 05/30/82

MSB 38913. Gila National Forest, 4.25 mi S, 0.5 mi E Mule Creek on USFS Road 112, T14S R20W sec. 30. 04/30/83

MSB 41775. SR 293, 2 mi NE Gila, T15S R17W SW¼ sec. 13. 04/28/84

MSB 42760. AOR NM 464, 5.1 km S Red Rock, T19S R18W sec. 18. 04/25/84

MSB 42761. 3.2 km N, 27.4 km W San Vicente, DOR USFS Road 851, 8.4 km W USFS Boundary, T19S R16W SW¼ sec. 3. 04/25/84

MSB 42762. 6.4 km S, 16.1 km E Red Rock, AOR USFS Road 851, Burro Springs Canyon, 0.6 km E USFS Boundary, T19S R17W SE¼ sec. 23. 04/25/84

MSB 42763. DOR US 180, 0.1 km N Blacksmith Canyon, T17S R16W sec. 5. 05/05/84

MSB 42764. DOR US 180, 11.4 km S Riverside, T16S R16W sec. 29. 05/05/84

MSB 42765. DOR Hwy 78 at Mule Creek, T14S R21W sec. 1. 05/05/84

MSB 42768. AOR at Red Rock Wildlife Experimental Area, ca. 4.5 km NNE Red Rock, T18S R18W SE¼ sec. 20. 05/11/84

MSB 42769. 3.2 km S, 3.2 km E Riverside, DOR USFS Road 809, 0.2 km SW jct. US 180, T16S R17W SW¼ sec. 15. 05/14/84

MSB 42770. Silver City, DOR Market Street, ca. 150 m W California Street. 05/21/84

MSB 42771. DOR US 180, 9.7 km N Continental Divide between mile post 103 and 104, T18S R15W sec. 6. 05/21/84

NMSU 3730. Red Rock. 05/17/70

NMSU 3733. 4 road mi N Cliff. 05/05/66

NMSU 4389. 1 mi NNE Vanadium. 04/26/66

NMSU 4390. 2 road mi W Sapillo Creek bridge. 05/12/66

NMSU 4391. 4 mi S Cliff. 05/13/72

NMSU 4392. 16 mi SW Cliff, 5500 ft. 05/13/72

NMSU 4393. Ridge road, 3 mi S Silver City. 05/14/68

NMSU 4394. Slades Canyon. 05/13/72

NMSU 4395. 7.5 mi N Cliff. 05/13/68

NMSU 4396. Gila River, 16 mi SW Cliff. 05/13/72

NMSU 4397. Silver City, E of city limits. 05/08/68

NMSU 4398. 11 mi W Silver City, T18S R16W sec. 12. 05/23/62

NMSU 4400. 25 mi SW Silver City on US 180. 04/26/68

NMSU 4512. Sapillo Creek bridge. 05/06/66

NMSU 4513. Silver City. 05/19/64

NMSU 4694. Red Rock Road, Eccles Canyon, Burro Mountains, T19S R17W sec. 20. 04/00/69

NMSU 4695. 19 mi W Silver City near Mangus Springs. 05/13/66

NMSU 4696. Silver City. 05/30/60

NMSU 4697. 0.5 mi N Silver City. 05/13/70

NMSU 5259. Blue Creek, T16S R19W NW¼ sec. 19. 08/21/77

NMSU 5328. Gila River, mouth of Nichols Canyon, T19S R19W SE¼ sec. 18. 07/30/77

NMSU 6019. Gila River, T19S R19W SE¼ sec. 3. 08/19/81

WNMU 12663. 7 mi NE Separ-Jarrell Ranch, T23S R14W sec. 7. 09/11/81

WNMU 12664. 6 mi E Gila, T15S R16W sec. 27. 09/18/83

WNMU 12665. 3.5 mi E Silver City. 11/06/83

WNMU 12681. Gila, Graveyard Mesa

WNMU 12693. 10 mi N Red Rock. 06/26/79

NEW MEXICO: Hidalgo County:

MSB 6793. 0.7 mi S Hidalgo-Grant County line on Silver City-Lordsburg Hwy (NM 464). 04/17/62

Pituophis melanoleucus

NEW MEXICO: Catron County:

MSB 259. Reserve. 07/24/52

MSB 4045. Glenwood. 06/14/59

MSB 4734. 11.3 mi N Glenwood. 05/15/60

MSB 5150. Frisco Hot Springs ca. 4 mi S Glenwood. 04/15/61

MSB 6433. 7 mi NW Pleasanton, Rt. 260. 09/01/61

MSB 6795. 1.5 mi W Reserve. 06/16/62

MSB 6796. 2 mi W Aragon. 06/16/62

MSB 6980. Pleasanton. 07/10/62

MSB 9311. 9 mi SW Aragon. 10/25/62

MSB 19682. 2 mi S Pleasanton, Frisco Hot Springs. 05/18/68

MSB 32226. 4.3 road mi S Aragon, DOR St. Road 12. 04/29/77

MSB 32227. 9.6 mi S Apache Creek, DOR St. Road 12. 05/01/77

MSB 32304. 1.3 road mi N Aragon, DOR St. Road 12. 05/07/77

MSB 32377. 7.9 road mi S Glenwood, DOR US 180, T12S R20W. 04/30/77

MSB 36947. Taylor Creek, 0.25 mi SW Wall Lake. 06/15/75

MSB 38947. 1 mi SW Aragon on NM 12, DOR. 04/29/83

MSB 38953. 4 mi SW Aragon on NM 12, DOR. 04/30/83

MSB 38954. 5 mi SW Aragon on NM 12, DOR. 04/30/83

MSB 39628. Whitewater Recreation Area, 4 mi N, 3 mi E Glenwood, T11S R19W sec. 5. 04/30/83

MSB 42840. AOR USFS Road 626, ca. 1.8 km E from jct with US 180, T9S R20W sec. 21. 05/07/84

MSB 42850. DOR US 180, 4.5 km N Alma, T10S R20W sec. 33. 09/18/84

NMSU 5117. Pleasanton. 10/11/77

NEW MEXICO: Grant County:

MSB 242. 10 mi NW Cliff on US 260. 10/20/59

MSB 291. 3 mi SSE Cliff. 06/11/53

MSB 4060. 2 mi W, 2 mi N Buckhorn. 06/13/59

MSB 4736. 10 mi NW Silver City (by road). 08/25/59

MSB 6428. 2.7 mi NE jct. 180-160. 09/03/61

MSB 7600. Burro Mountains, T19S R16W sec. 3. 08/25/49

MSB 17024. Jct. NM 25 and USFS Road 756. 04/30/67

MSB 18743. Big Dry Creek, 1 mi E Route 260. 04/17/67

MSB 25577. DOR NM 25, 3.5 mi N Redstone. 07/20/70

MSB 32029. 13.3 road mi NE jct. NM 90 and US 70. 05/09/77

MSB 32252. Ca. 1/8-1/4 air mi S intersection Mule Creek and NM 78, T14S R21W NE¼ sec. 1. 04/30/77

MSB 32378. Near bridge on US 180 over Gila River, S of Cliff. 05/01/77

MSB 37769. NM 293, 5.1 km E, 6 km N Cliff. 05/30/82

MSB 38956. NM 78, 8 mi E Arizona state line, DOR. 04/30/83

MSB 42838. Along Gila River ca. 4 km NE Moonhull Canyon, USFS Road 809, T17S R17W NW¼ sec. 16. 03/31/84

MSB 42839. DOR USFS Road 851, 8.4 km W USFS Boundary, T19S R16W SW¼ sec. 3. 04/25/84

MSB 42843. DOR US Hwy 180 at Mangas Springs, T17S R16W NE¼ sec. 8. 05/02/84

MSB 42844. DOR USFS Road 851, 3.2 km W Tyrone Cutoff road, T18S R16W NW¼ sec. 25. 05/10/84

MSB 42845. DOR US 180, 0.2 km SE jct. USFS Road 809, T16S R17W NE¼ sec. 15. 05/16/84

MSB 42846. DOR US 180, 14.8 km N Cliff, T15S R18W sec. 4. 05/21/84

MSB 42847. DOR US 180, 12.5 km N Continental Divide, T17S R16W sec. 36. 05/21/84

MSB 42848–42849, 42851–42856. DOR along Tyrone cutoff road between US 180 and USFS Road 851, Mangas Valley, T18S R16W sec. 2, 12, 13. 09/16/84

MSB 42857. DOR NM 464 at Red Rock, T19S R18W NE¼ sec. 6. 04/18/84

NMSU 3757. 8 mi S Silver City. 04/12/68

NMSU 4140. 0.5 mi SW Silver City, 6000 ft. 03/11/72

NMSU 4141. 2.5 mi S Cliff. 04/22/72

NMSU 4167. 8 mi S Silver City, 5400 ft. 04/12/68

NMSU 4168. 4 mi W Cliff on Hwy 180. 05/05/68

NMSU 4169. 5 mi S Red Rock. 04/27/68

NMSU 4171. 18 mi SE Silver City. 04/13-15/68

NMSU 4172. Cherry Creek. 05/13/72

NMSU 4173. 4 mi E Lake Roberts. 04/30/72

NMSU 4174. Red Rock. 05/05/72

NMSU 4175. 0.5 mi NW Fort Bayard, 6100 ft. 04/16/72

NMSU 4176. 2 mi S Cliff. 05/11/72

NMSU 4178. 30 mi SE Silver City. 05/01/70

NMSU 4179. 2 mi S Cliff. 05/29/71

NMSU 4180. 18 mi W Silver City. 04/30/72

NMSU 4181. 4 road mi N Silver City. 10/20/71

NMSU 4183. 9 mi S Silver City. 04/04/72

NMSU 4234. 10 mi W Silver City. 05/10/70

NMSU 4235. 2.5 mi S Cliff. 04/22/72

NMSU 4376. Arenas Valley. 09/25/68

NMSU 4470. Gila. 04/25/64

NMSU 4471. 0.7 mi W Grant County Airport. 04/14/66

NMSU 4472. 9.5 mi S Silver City. 04/29/66

NMSU 4473. 4 road mi E Tyrone. 04/26/66

NMSU 4474. 1 mi S Silver City. 05/19/64

NMSU 4511. 0.5 mi N Mangas Springs, 5200 ft. 05/10/69

NMSU 4556. 1.5 mi S Silver City. 04/29/64

NMSU 4557. Bear Mountain, 3.5 mi N Silver City. 03/21/68

NMSU 4558. Silver City. 04/19/66

NMSU 4608. 1 mi NNE Vanadium. 04/24/66

NMSU 4609. Mule Creek Road, 27 mi NW Cliff. 04/14/68

NMSU 4611. 0.7 mi W Grant County Airport. 05/15/66

NMSU 4612. 1 mi W Silver City. 05/05/66

NMSU 4613. 4.8 road mi SE Silver City. 04/26/66

NMSU 5327. US 180, 0.2 mi N Mangas Springs. 07/15/77

NMSU 5330. Gila River, 0.3 mi S, 0.4 mi W USGS gaging station, T14S R17W NE¼ sec. 25. 08/28/77

NMSU 5335-5336. Gila River, mouth Nichols Canyon, T19S R19W SE¼ sec. 18. 08/11/77

WNMU 12484. Hurley, Pine Street. 10/10/83

WNMU 12556. NM 15, 9.2 mi N Silver City. 03/06/81

WNMU 12557. Silver City, 2610 Silver Street. 06/18/81

WNMU 12558. 1/8 mi N Silver City. 06/14/81

WNMU 12627. Silver City, Silver City High School parking lot. 09/30/77

WNMU 12628. 3 mi N Fort Bayard. 11/15/76

WNMU 12629. 3 mi S Cliff. 10/15/83

WNMU 12630-12631. Lake Roberts, T15S R13W sec. 2. 04/20/80

WNMU 12632. Red Rock Road, T18S R16W sec. 35. 04/19/80

WNMU 12633. 7.5 mi SE Silver City. 04/08/76

WNMU 12634. 18 mi S Silver City, West Hurley. 10/23/83

WNMU 12635. 4 mi E Silver City, Arenas Valley. 06/14/83

WNMU 12636. Bill Evans Lake. 04/07/78

WNMU 12637. 10 mi SE Cliff, T16S R16W sec. 29. 09/23/81

WNMU 12638. 18 mi SW Silver City. 10/23/77

WNMU 12639. 28 mi NW Silver City, T16S R17W. 10/14/83

WNMU 12640. Burro Mountains, T19S R16W sec. 3. 04/16/78

WNMU 12675. 3 mi NE Red Rock. 06/10/81

WNMU 12680. 5 mi N Pinos Altos. 09/25/71

NEW MEXICO: Hidalgo County:

MSB 4051. 12 mi N, 1 mi W Lordsburg. 06/14/59

MSB 25568. DOR NM 464 18.3 road mi S Red Rock. 05/29/69

MSB 32030. 4.1 road mi NE jct. SR 90 and US 70. 05/09/77

MSB 32031. 11.4 road mi NE jct SR 90 and US 70. 05/09/77

MSB 33800. DOR NM 92, 2 mi N US 70 jct. S of Virden. 05/28/78

MSB 42841. DOR NM 464, 3.4 km N jct. Hwy 70, T22S R18W NW¼ sec. 5. 05/02/84

MSB 42842. DOR NM 464, 1.6 km S Grant County line, T20S R18W SE¼ sec. 6. 05/02/84

NMSU 5276. St. Hwy 92, 1.0 road mi N Gila River. 08/17/77

NMSU 5334. St. Hwy 92, 1.4 road mi E Virden. 08/17/77

NMSU 6068. 7 mi S Red Rock, T20S R18W NE¼ sec. 7. 09/22/81

Rhinocheilus lecontei

NEW MEXICO: Grant County:

MSB 42758. Stillman Ranch at Red Rock, NM 464, T18S R18W SW¼ sec. 31. 09/24/84

Salvadora deserticola

NEW MEXICO: Grant County:

MSB 33790. AOR dirt road along Gila River N bank, 0.5 mi N Red Rock. 05/27/78

MSB 33791. AOR Red Rock Post Office. 04/22/78

MSB 42738. AOR gravel road 5.8 air km NE Red Rock near House Canyon ca. 0.8 km SW Conner Ranch Headquarters, T18S R18W NW¼ sec. 27, 1250 m. 05/02/84

MSB 42739. 3.2 km S, 19.3 km W Tyrone, AOR USFS Road 851 at Burro Spring Canyon, Burro Mountains, T19S R17W SE¼ sec. 23, 1669 m. 05/11/84

MSB 42740. AOR gravel road ca. 4.5 air km NE Red Rock, Graveyard Canyon, T18S R18W SE¼ sec. 28, 1250 m. 05/01/84

MSB 42741. AOR gravel road ca. 3.2 air km NE Red Rock, Toney Canyon, T18S R18W NW¼ sec. 33, 1260 m. 05/10/84

MSB 42742. Red Rock Wildlife Experimental Area ca. 2.6 air km NE Red Rock, T18S R18W NW¼ sec. 28, 1245 m. 05/26/84

NMSU 3744. 3 mi N Cliff. 05/16/72

NMSU 5207. 0.2 mi E Gila River, 0.8 mi N Spar Canyon, Gila National Forest, T15S R16W sec. 6. 07/06/77

NMSU 5329. Mouth Red Rock Canyon, T18S R18W SE¼ sec. 31. 07/31/77

WNMU 12418. 1.5 mi SW Riverside, T16S R17W sec. 15. 06/10/83

NEW MEXICO: Hidalgo County:

MSB 33792. On NM 464, 0.7 mi N US 70 and NM 464 jct, 4 mi N Lordsburg. 05/27/78

Salvadora grahamiae

NEW MEXICO: Catron County:

MSB 4729. Wall Lake. 07/15/61

MSB 7159. Wall Lake

MSB 10831. Glenwood Fish Hatchery. 05/25/63

MSB 26399. 0.5 mi W Whitewater Creek on Deloche Trail. 07/12/70

MSB 32871. DOR, Whitewater Creek Road, 4 mi NE Glenwood. 07/05/75

NEW MEXICO: Grant County:

MSB 4731. Silver City. 08/25/59

MSB 5797. Silver City (near). 09/22/57

MSB 18742. Big Dry Creek, 1 mi E Route 260. 04/17/67

MSB 32894. DOR NM 78, ca. 4 mi E Mule Creek. 06/29/74

MSB 42734. 3.2 km S, 24.1 km W Tyrone, DOR USFS Road 851, 3.5 km W Gila National Forest Boundary, T19S R17W NW¼ sec. 28, 1637 m. 04/12/84

MSB 42735. AOR US 180, 3.1 km S Tyrone Cutoff Road, T18S R16W NE¼ sec. 1, 1609 m. 06/03/84

MSB 42736. DOR US 180, 2.3 km N jct. NM 78, T13S R19W sec. 21, 1615 m. 06/08/84

MSB 42737. 1.6 km S, 8 km W Silver City, DOR US 180, 3.2 km N Continental Divide, Wind Canyon, T18S R15W sec. 11, 1798 m. 08/11/84

NMSU 3732. 0.25 mi W Silver City. 05/07/70

NMSU 3737. 3 mi N Silver City. 09/08/62

NMSU 3743. 16 mi SW Cliff. 05/13/72

WNMU 12419. Silver City water tanks, James Stadium. 10/11/83

Tantilla hobartsmithi

NEW MEXICO: Grant County:

WNMU 12697. Red Rock. 04/14/68

Tantilla nigriceps

NEW MEXICO: Grant County:

MSB 42886. Burro Mountains, Burro Spring Canyon, USFS Road 848, T19S R16W NW¼ sec. 23. 06/03/84

NMSU 3736. Red Rock, old station. 04/26/68

NMSU 4189. Red Rock, E of River, 1 mi S of bridge. 04/26/68

WNMU 12696. 3 mi S Silver City. 08/03/77

Thamnophis cyrtopsis

NEW MEXICO: Catron County:

NMSU 4690. Willow Creek, 12 mi E Mogollon. 10/06/63

NMSU 4691. 3 mi SE Gila Cliff Dwellings. 08/29/64

NMSU 4916-4917. Negrito Creek, Gila National Forest, T8S R17W NW¼ sec. 18. 08/22/77

NMSU 5332. Negrito Creek. 09/00/77

MSB 42785. Middle Fork Gila River along USFS Trail No. 157 at Gila Wilderness Boundary, T12S R14W SE¼ sec. 24. 09/13/84

NEW MEXICO: Grant County:

MSB 4628. Cliff. 08/25/59

MSB 6025-6029. Mogollon Creek near the falls, T31S R18W sec. 13. 08/28/49

MSB 6431. 4.5 mi E Mule Creek. 09/02/61

MSB 11120. 6 mi from Rt. 260, Little Dry Creek Canyon. 05/26/63

MSB 11547. 11.6 mi S Pleasanton, 6 mi E Hwy 180/260. 05/26/63

MSB 17578. Lake Roberts. 06/23/66

MSB 25693. DOR 2 mi N Redstone on NM 25-15. 07/20/70

MSB 25694. DOR 3.3 mi N Copperas Vista on NM 527-15. 07/23/70

MSB 38923. Gila National Forest, 4.5 mi S, 0.5 mi E Mule Creek USFS Road 112, T14S R20W sec. 30. 04/30/83

MSB 40641. Sycamore Creek, 10.5 mi N, 5.5 mi W Silver City, T16S R15W sec. 11. 06/17/75

MSB 42775. Turkey Creek ca. 2.4 km upstream from Skeleton Canyon near Hot Srpings, T13S R16W sec. 34, 1597. 04/14/84

MSB 42777. 6.4 km S, 22.5 km W Riverside, Blue Creek at Chick Canyon, T16S R19W sec. 31. 05/30/84

MSB 42778-42780. 3.2 km S, 21 mi W Riverside, Blue Creek between Big Canyon (T16S R19W sec. 19) and Thompson Canyon (T16S R20W sec. 14). 05/29/84

MSB 42781-42783. 4.8 km S, 29 km W Riverside, along Lemmons Creek between (T16S R20W SW¼ sec. 26) at confluence with Cherry Creek and (T16S R20W SE¼ sec. 22) SE of Deer Peak. 06/11/84

MSB 42784. 6.4 km N, 9.7 km W Tyrone, Mangas Valley, Tyrone cutoff road ca. 3.2 km N jct. USFS Road 851, T18S R16W sec. 24. 06/28/84

MSB 42786. DOR US 180, 1.6 km S Cliff, T15S R17W sec. 33. 10/28/84

MSB 42776. Turkey Creek ca. 2.4 km upstream from Skeleton Canyon, near Hot Springs, T13S R16W sec. 34, 1597 m. 07/02/84

NMSU 4679. 15 mi NW Silver City, Steamboat Canyon, T15S R15W sec. 34. 09/08/62

NMSU 4680. Lake Roberts. 09/19/67

NMSU 4681. Cherry Creek, 8 mi N Pinos Altos. 04/20/66

NMSU 4682. 15 mi S Silver City, US 180. 05/01/68

NMSU 4683. Gila River Valley, 10 mi SW Heart Bar Ranch. 03/28/68

NMSU 4684. Lake Roberts. 05/24/66

NMSU 4685. 15 mi NE Silver City. 05/08/72

NMSU 4686. 2 mi S Cliff. 09/21/71

NMSU 4687. 0.5 mi W Gila. 04/28/68

NMSU 4688. Lake below Ben Lily Memorial. 04/30/72

NMSU 4689. Mill Creek, 2 mi NW Pinos Altos. 09/26/63

NMSU 5206. Gila River, Gila National Forest, T14S R16W sec. 29. 07/05/77

NMSU 5253. Lemmons Canyon, T16S R20W sec. 27. 08/22/77

NMSU 5254. Lemmons Canyon, T16S R20W SE¼ sec. 22. 08/22/77

NMSU 5255. 0.5 mi S, 0.9 mi E Deer Peak, T16S R20W SW¼ sec. 23. 08/22/77

NMSU 5260. Gila River, Gila Lower Box, T19S R20W SW¼ sec. 24. 07/30/77

NMSU 5270. Gila River, 0.3 mi N, 0.3 mi W Dale McCauley Ranch Gila National Forest. 07/10/77

NMSU 5271. Rain Creek near confluence with Mogollon Creek, T13S R18W sec. 13. 07/09/77

NMSU 5331. Sycamore Creek, 0.6 mi W Morris Ranch, T16S R18W NE¼ sec. 15. 08/27/77

NMSU 5338. Sycamore Creek, 1.2 mi E Morris Ranch, T16S R18W NE¼ sec. 15. 08/27/77

WNMU 12443. 1m i N Silver City. 08/03/83

WNMU 12588, 12649. Ca. 20 mi NW Silver City, Ben Lily Lake. 08/27/81

WNMU 12648. 12 mi NE Silver City. 09/20/81

WNMU 12650. 3 mi NNW Pinos Altos. 09/13/81

WNMU 12651. 3 mi W Gila. 10/10/81

WNMU 12652. Turkey Creek Hot Springs. 06/26/83

NEW MEXICO: Hidalgo County:

NMSU 5275. NM 92, 2.0 road mi N Gila River. 08/17/77

Thamnophis elegans

NEW MEXICO: Catron County:

MSB 334. Rio San Francisco, ca. 5 mi above Luna, T5S R21W sec. 31. 09/06/48

MSB 4467–4477. Glenwood. 06/14/59

MSB 4478-4496. 1 mi E, 2 mi N Apache Creek. 06/13/59

MSB 4497-4498. Wall Lake. 03/00/60

MSB 4501-4505. Wall Lake. 08/27/60

MSB 4506-4515. Glenwood. 08/20/58

MSB 4531-4552. 10 mi E Mogollon, Willow Creek. 06/21/60

MSB 4557-4558. 2 mi E, 2 mi N Aragon. 06/13/59

MSB 4561-4564. Willow Creek, Mogollon Mountains. 08/18/58

MSB 4611=4615. Glenwood. 06/14/59

MSB 5325-5326. Glenwood Fish Hatchery. 04/15/61

MSB 5441-5442. Tularosa Creek 100 yd below jct. Apache Creek. 04/16/61

MSB 5443-5447, 5459-5460. Fish Hatchery, Glenwood. 04/15/61

MSB 6792. State Fish Hatchery, Glenwood. 04/18/62

MSB 8296. Willow Creek Mogollon Mountains. 05/11/63

MSB 10507-10508. Glenwood Fish Hatchery. 05/11/63

MSB 10569-10570. Mangas Creek Ranger Station. 08/30/56

MSB 11109. 0.25 mi SE Fish Hatchery, Glenwood. 05/25/63

MSB 11194-11195. Fish Hatchery, Glenwood. 05/25/63

MSB 11201. Glenwood. 05/25/63

MSB 11452. Tularosa Creek, 2.2 mi NE Aragon. 05/26/63

MSB 11556. Tularosa Creek, 2.2 mi NE Aragon, Hwy 12. 05/24/63

MSB 20405. Wall Lake, 8.5 mi SSE Beaverhead. 07/12/69

MSB 25698-25699. Willow Creek in front of Ranger Station. 07/03/76

MSB 26509. DOR at gas pump of Apache Creek Store on NM 12, 56 road mi SW Datil. 09/02/73

MSB 32018-32026. 4.2 road mi N Aragon, via SR 12, Tularosa River, T4S R16W. 05/01/77

MSB 32165-32166. 4.2 road mi N Aragon, via SR 12, Tularosa River, T4S R16W. 04/29/77

MSB 32247. Apache Creek and Tularosa Creek Marsh. 04/28/77

MSB 32303. 0.3 road mi E intersection San Francisco River, US 180, ca. 0.5 mi S Hwy, T5N R21W SE¼ sec. 30. 05/01/77

MSB 32328. 4 road mi W Luna via US 180, Canyon of San Francisco River, 0.3 road mi E intersection of River and US 180. 05/01/77

MSB 32884. Los Olmos Lodge, near Fish Hatchery, Glenwood. 04/23/76

MSB 38867, 38910. 3.5 mi W Luna near San Francisco river. 05/29/83

MSB 38978-38979. Aragon, near roadside ditch. 05/01/83

MSB 38980. 1 mi E Aragon on NM 12. 05/01/83

MSB 41611. Gila National Forest, Gila Wilderness, confluence White Creek and West Fork Gila River, White Creek Cabin, T12S R16W sec. 1, 2. 05/30/84

MSB 42789. West Fork Gila River at Gila Cliff Dwellings, T12S R14W NE¼ sec. 27. 06/09/84

MSB 42790. Ca. 4.8 km S Reserve, Tularosa River ca. 2.4 km upstream of confluence with San Francisco River, Joe Mullins Ranch, T7S R19W SE¼ sec. 24

MSB 42791. Taylor Creek ca. 0.8 km upstream of Wall Lake, T11S R12W NE¼ sec. 10. 08/21/84

MSB 42792. Centerfire Bog, USFS Road 216, ca. 15.8 km NE Luna, T4S R19W NW¼ sec. 33. 09/17/84

MSB 42793. San Francisco River at Reserve, NM 12, T7S R19W sec. 1, 1753 m. 09/17/84

NMSU 2749. 28.5 mi E Reserve by NM 12. 07/19/70

NMSU 2958. Dry Creek canyon, 3 mi W Baldy Peak. 05/16/71

NMSU 4122. Little Creek, ca. 40 mi N Silver City. 04/18/64

NMSU 4126. At base of Cliff Dwellings. 04/21/68

NMSU 4130-4131. Glenwood Fish Hatchery. 04/05/74

NMSU 4132. Glenwood Fish Hatchery. 03/31/74

NMSU 4133. Glenwood. 03/31/74

NMSU 4377. T12S R16W sec. 1. 06/17/71

NMSU 4378. 0.5 mi NE Glenwood. 03/31/60

NMSU 4379. T12S R16W sec. 1. 08/07/71

NMSU 4428. Snow Park, T12S R17W sec. 14. 06/06/72

NMSU 4915. Jct. North and South Forks of Negrito Creek, Gila National Forest, T8S R17W SE¼ sec. 18. 08/22/76

NMSU 4918. Negrito Creek, T8S R17W SW¼ sec. 7. 08/23/76

NMSU 5333. Negrito Creek. 09/00/77

WNMU 12436. Willow Creek. 04/23/72

WNMU 12437. 0.5 mi NE Glenwood. 03/31/66

WNMU 12438. Little Creek, 4 mi SE Gila Cliff Dwellings. 08/29/64

WNMU 12440. Willow Creek. 04/23/72

WNMU 12441. West Fork Corral. 07/18/72

WNMU 12442. Glenwood Fish Hatchery. 05/16/66

WNMU 12450. Glenwood Fish Hatchery. 05/13/66

WNMU 12690. T11S R15W sec. 6. 06/23/72

NEW MEXICO: Grant County:

MSB 11353. Mangas Springs. 05/25/63

MSB 32284. Near bridge on Hwy 180 over Gila River, S of Cliff, T15S R17W. 04/30/77

MSB 42794. Along Gila River ca. 0.4 km NE Moonhull Canyon USFS Road 809, T17S R17W NW¼ sec. 16. 08/00/84

NMSU 4117. Gila River, 1 mi N Gila. 05/14/68

NMSU 4118. 1 mi E Cliff. 04/28/68

NMSU 4119. Camp Thunderbird. 05/05-11/68

NMSU 4121. 1 mi W Gila. 05/22/64

NMSU 4123. Gila River 0.5 mi W Gila. 04/21/64

NMSU 4124. 2 mi N Cliff. 05/14/68

NMSU 4125. Indian Creek, 12 mi E Mogollon. 05/11/68

NMSU 4128. 3 mi NW Hurley, 5500 ft. 03/23/74

NMSU 4129. Lake Roberts. 09/01/73

NMSU 4380. 20 mi E Silver City. 05/06/72

WNMU 12435. 5 mi SW Silver City. 10/07/77

WNMU 12439. Redstone Cabin, Cherry Creek. 06/05/79

WNMU 12444. 2.5 mi N Pinos Altos. 05/19/63

WNMU 12446. Lake Roberts. 09/12/81

WNMU 12449. Lake Roberts. 08/12/81 .

WNMU 12653. 0.5 mi W Gila. 04/26/68

WNMU 12654. 1 mi W Gila. 04/28/68

WNMU 12655-12656. Lake Roberts. 04/20/80

WNMU 12657. 0.5 mi W Gila at Cliff-Gila Bridge. 04/08/76

WNMU 12682. Lake Roberts. 04/20/80

Thamnophis eques

NEW MEXICO: Grant County:

MSB 37806. Mule Creek

MSB 31991-32016. Mule Creek, ca. 1/8-1/4 mi S intersection Mule Creek and SR 78 along Mule Creek, T14S R12W NE¼ sec. 1. 04/30/77

MSB 38939. Mule Creek (town of), 9 mi W, 0.75 mi S jct. US 180/NM 78. 04/30/83

NEW MEXICO: Hidalgo County:

NMSU 5377. 5 mi E Virden in Gila River. 07/00/73

Thamnophis marcianus

NEW MEXICO: Catron County:

WNMU 12647. 0.75 mi W Gila Cliff Dwellings. 09/04/83

NEW MEXICO: Grant County:

NMSU 4188. 8 mi S Silver City. 04/12/68

WNMU 12658. 8 mi SE Silver City. 05/14/70

WNMU 12659. 8 m S Silver City. 04/12/68

NEW MEXICO: Hidalgo County:

MSB 381. Gila River, 7 mi E Virden, T19S R20W sec. 21. 08/22/40

NMSU 5274. NM 92, 2.8 road mi N Gila River. 08/14/77

Thamnophis rufipunctatus

NEW MEXICO: Catron County:

MSB 385-386. Beaver Creek, T11S R12W sec. 6. 09/04/49

MSB 387. Rio San Francisco, 2 mi above Frisco Hot Springs. 09/25/50

MSB 4582. Snow Creek Middle Fork Gila River, Mogollon Mountains, 2.5 mi W Wall Lake. 08/31/58

MSB 4616-4617. Wall Lake. 08/27/58

MSB 6023. Wall Lake. 05/00/60

MSB 6809. Glenwood Canyon. 04/15/61

MSB 7442. Near Gila Cliff Dwellings National Monument. 08/21/52

MSB 10832. Ca. 5 mi E Glenwood. 05/25/63

MSB 32017. Pleasanton, T12S R20W NE¼ sec. 11. 05/01/77

MSB 41625. Gila Wilderness, West Fork Gila River, 9 mi upstream of Cliff Dwellings National Monument, T12S R15W sec. 10. 05/31/84

MSB 43126. 1 mi E, 7 mi S Pine Lawn, San Francisco River at Tub Spring Canyon, T8S R19W sec. 31. 05/07/84

MSB 43128. Tularosa River at USFS Road 233 (Eagle Peak road) ca. 4.8 km NE Reserve, T6S R18W sec. 33. 06/07/84

MSB 43129. 17 mi E, 19 mi N Gila, West Fork Gila River at Gila Cliff Dwellings, T12S R14W ne¼ sec. 27 (found dead). 06/09/84

MSB 43130. 1 mi S, 1mi E San Francisco Plaza, Tularosa River ca. 2.4 km upstream from confluence with San Francisco River, T7S R19W SE¼ sec. 24.

MSB 43131. 20 mi n, 14 mi E Gila, West Fork Gila River at White Rocks canyon, T12S R14W NE¼ sec. 18. 09/12/84

NMSU 5375. Negrito Creek. 09/10/77

WNMU 12413. Middle Fork Gila River, Trotter Place, T11S R15W sec. 5. 09/02/70

WNMU 12689. San Francisco River at Frisco Hot Springs, ca. 7 mi S Glenwood. 10/01/77

NEW MEXICO: Grant County:

MSB 43127. 5 mi W, 5 mi S Mangas Springs, Middle Box Gila River, Gila River at Ira Ridge, T17S R17W NW¼ sec. 33. 05/14/84

NMSU 5374. Turkey Creek, 100 ft below Hot Springs, Gila National Forest. 10/08/77

NEW MEXICO: Hidalgo County:

NMSU 5257. Gila River at mouth of Cottonwood Canyon, T19S R19W SW¼ sec. 21.

NMSU 5376. 5 mi E Virden in Gila River. 07/00/73

Trimorphodon biscutatus

NEW MEXICO: Catron County:

NMSU 2959. The Catwalk, Gila Wilderness. 05/08/71

WNMU 12411. Glenwood, along Whitewater Creek. 10/10/82

ELAPIDAE

Micruroides euryxanthus

NEW MEXICO: Catron County:

MSB 420. State Fish Hatchery, Glenwood. 04/00/55

MSB 6048. State Fish Hatchery, Glenwood. 00/00/50

WNMU 12421. DOR, road to Glenwood Fish Hatchery. 09/14/84

NEW MEXICO: Grant County:

MSB 42473. Stillman Ranch at Red Rock, NM 464, T18S R18W SW¼ sec. 31. 07/00/84

WNMU 12477, 12479. Along Gila River, no other data

WNMU 12478. Saddle Rock Canyon. 09/10/72

WNMU 12480. 1 mi N Gila. 06/26/77

WNMU 12481. Cliff, 0.25 mi W Gila River. 08/25/80

VIPERIDAE

Crotalus atrox

NEW MEXICO: Grant County:

MSB 15899. Near Red Rock. 05/14/65

MSB 22313. 0.7 mi SW Post Office, Red Rock. 05/31/69

MSB 42746. DOR NM 464, 2.3 km S Red Rock, T19S R18W sec. 7. 05/25/84

NMSU 5273. Ash Creek, T18S R18W NW¼ sec. 21. 08/12/77

WNMU 12555. 7 mi NE Separ. 09/12/81

WNMU 12695. 2.1 mi W White Signal. 10/15/83

NEW MEXICO: Hidalgo County:

NMSU 5258. NM 92, 3.2 road mi N Gila River. 08/14/77

NMSU 5352. Gila Lower Box, T19S R20W sec. 24

Crotalus lepidus

NEW MEXICO: Catron County:

MSB 25231. Middle Fork Gila River, 1 mi below Clayton Creek, T11S R16W. 07/18/63

NMSU 584. 7 mi W Beaverhead. 05/07/60

NMSU 593. Gila Wilderness. 08/27/60

NEW MEXICO: Grant County:

WNMU 12643. 3 mi NW Tyrone. 05/07/68

WNMU 12679. 1.5 mi N Pinos Altos. 10/11/81

WNMU 12688. T15S R15W sec. 10. 08/07/71

Crotalus molossus

NEW MEXICO: Catron County:

MSB 4134. Whitewater Canyon E of Glenwood. 08/24/59

MSB 8352. Tularosa River, ca. 5 mi above Reserve. 08/24/49

MSB 30883. Wall Lake. 08/31/74

MSB 38861. San Francisco Hot Springs, 2 mi S, 0.25 mi W Pleasanton. 04/30/83

NMSU 4386. T12S R15W sec. 4. 08/10/71

NMSU 4387. T12S R14W sec. 2. 08/28/71

NMSU 4388. T12S R14W sec. 31. 06/16/71

WNMU 12672. 4 mi N Gila Center, Little Bear Canyon. 04/29/72

NEW MEXICO: Grant County:

MSB 7436. 1 mi W, 1 mi S Buckhorn. 06/13/59

MSB 11578. Red Rock, Ash Canyon. 08/22/63

MSB 15192. 10 mi S, 8 mi W Silver City. 04/08/66

MSB 41801. 1.2 mi S Catron County Line, US 180 near Soldier Hill. 08/13/84

MSB 42752. 1.6 km S, 32.2 km W Silver City, Gila River Middle Box near Buzzard Canyon, T18S R17W NE¼ sec. 5. 05/15/84

MSB 42753. DOR NM 61, 11.3 km N Luna County Line near Tom Brown Canyon-Swartz, T18S R10W sec. 35. 09/27/84

NMSU 4139. 15 mi S Glenwood. 04/14/74

NMSU 4382. 1mi W Tyrone mine. 05/18/70

NMSU 5143. Gila River, 0.3 mi N, 0.3 mi W McCauley Ranch, Gila National Forest. 07/10/77

NMSU 5144. Gila River, mouth Blue Creek, T19S R19W sec. 17. 07/27/77

NMSU 5261. Gila River, T19S R19W NW¼ sec. 16. 07/29/77

NMSU 5272. Gila River, Gila National Forest, T14S R16W sec. 30

WNMU 12554. 3 mi N Silver City, T17S R14W sec. 13. 05/23/81

WNMU 12666. Rainbow mine, T20S R16W sec. 20. 04/16/74

WNMU 12670-12671. 3 mi N Central, Fort Bayard. 09/09/63

WNMU 12673. 3 mi SW Tyrone. 06/10/70

WNMU 12674. 20 mi S Tyrone. 04/16/74

Crotalus viridis

NEW MEXICO: Catron County:

MSB 303. 30 mi NE Reserve on NM 12. 06/20/49

MSB 8405. 15 mi N Luna. 06/22/49

MSB 32027. 4 road mi W Luna, via US 180, Canyon of San Francisco River, 0.3 road mi E intersection river and US 180. 05/01/77

MSB 38863. 3.5 mi W Luna near San Francisco River. 04/29/83

MSB 41409. 6.3 road mi NE Aragon on NM 12. 05/28/82

NMSU 3687. Mogollon Creek, T12S R17W sec. 36. 08/08/72

NEW MEXICO: Grant County:

MSB 9314. 10 mi E, 1 mi N Mule Creek. 08/28/62

MSB 13721. AOR between Red Rock and Lordsburg. 05/14/65

MSB 22559. DOR US 180, 4 mi NW Buckhorn. 08/15/70

MSB 42748. DOR US 180, 9.3 km S Mangas Springs, T17S R16W sec. 36. 08/30/84

MSB 42749. DOR US 180 at Blacksmith Canyon ca. 1.6 km N Mangas Springs, T17S R16W SE¼ sec. 5. 08/09/84

NMSU 4225. 3 mi S Silver City, 5800 ft. 05/22/69

NMSU 4226. Red Rock. 05/17/70

NMSU 4227. Ridge Road, 4 mi E Hwy 90. 08/25/61

NMSU 4229. 2 mi W Bayard. 04/01/72

NMSU 4230. Vicinity of Red Rock. 04/15/63

NMSU 4231. Bill Evans Lake, 4400 ft. 04/30/72

NMSU 4375. 1 mi W Tyrone. 03/05/72

NMSU 6072. 5 mi S, 3 mi E Red Rock, T19S R18W NW¼ sec. 34. 09/23/81

WNMU 12667. 4 mi S Red Rock. 04/04/70

WNMU 12668. 8 mi S Silver City. 08/14/73

WNMU 12669. 4 mi W Tyrone mine. 09/09/77

WNMU 12691. 3 mi S Red Rock. 11/05/82

WNMU 12694. NM 90, 15 mi S Silver City. 08/14/83

NEW MEXICO: Hidalgo County:

MSB 4108. 11 mi N, 1 mi W Lordsburg. 06/14/59

MSB 42751. DOR NM 464, ca. 0.4 km N jct. US 70, T22S R18W sec. 7, 1292 m. 09/16/84

NMSU 5353. NM 464, 4.0 road mi S Grant-Hidalgo County Line. 09/17/77

NMSU 6054. Hwy 90, 13 mi N Lordsburg, T21S R17W NW¼ sec. 15. 06/15/81

NMSU 6071. 6 mi S Red Rock, T20S R18W NE¼ sec. 6. 09/22/81

EMYDIDAE

Terrapene ornata

NEW MEXICO: Grant County:

MSB 43323. Red Rock Wildlife Experimental Area ca. 2.6 km NE Red Rock, T18S R18W NW¼ sec. 28. 06/27/84

MSB 43324. 9 mi W, 5 mi S Silver City, AOR US 180, 11.4 km E Continental Divide, T18S R15W sec. 6. 07/02/84

WNMU 12527. Hurley. 10/07/83

KINOSTERNIDAE

Kinosternon sonoriense

NEW MEXICO: Catron County:

MSB 2568. Taylor Creek, 1.5 mi NE Wall Lake. 04/14/61

MSB 20466, 20552, 20609-20610. Wall Lake, 8.5 road mi SSE Beaverhead. 07/12/69

NEW MEXICO: Grant County:

MSB 8157-8169. Bennett Ranch, W of Cliff. 10/27/62

MSB 20611. Pond 1 mi E Red Rock Post Office, S side of Gila River. 05/31/69

NMSU 4102. Cattle tank, 1 mi NW Cliff. 04/23/72

WNMU 12523-12524. Along Gila River 0.5 mi W Gila. 05/10/68

WNMU 12525. Ca. 2 mi N Cliff, Ormand's Pond. 03/12/63

WNMU 12526. 1 mi NE Cliff. 04/23/72

NEW MEXICO: Hidalgo County:

MSB 33937. 1.5 mi S, 1 mi E Virden in shallow side flow of Gila River. 05/28/78

TRIONYCHIDAE

Trionyx spiniferus

NEW MEXICO: Catron County:

MSB 466. Rio San Francisco, Frisco Hot Springs. 09/08/45

NEW MEXICO: Grant County:

MSB 43327. 9 mi E, 3.5 mi S Virden, Gila River, Gila Lower Box near White Rock Canyon ca. 2.8 km downstream of USGS gaging station, T19S R20W SE¼ sec. 24, 1195 m. 06/19/84

NEW MEXICO: Hidalgo County:

MSB 43328. 7 mi E, 3.5 mi S Virden, Gila River, Lower Box at Cottonwood Canyon, T19S R20W SE¼ sec. 23, 1195 m. 06/19/84